Department of Computer Science and Applications

Board of Studies

B.Sc, B.Com, B.A

For all Computer Science And Applications

2021-22

Government College (A), Rajahmundry

Accredited with 'A+' grade by NAAC

GOVERNMENT COLLEGE AUTONOMOUS RAJAHMUNDRY

(Affiliated to Adikavi Nannaya University)

Re-Accredited by NAAC with "A+" grade

BOARD OF STUDIES 2021-22

Under Graduate Programmes

FOR ALL SEMESTERS

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(*Accredited by NAAC "A+" Grade)*

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS & APPLICATIONS

COMPOSITION OF BOARD OF STUDIES FOR THE YEAR 2021-22

Chairman	Mr. Suneel Kumar Duvvuri In-charge of the Department, Department Of Computer Science & Applications Government College (A), Rajahmundry.
University Nominee	Dr.V. Persis Dept. of CSC, UCEngg. AdikaviNannaya University, Rajahmundry.
Subject Expert	Smt. E. Jyothi Kiranmayi SVD Govt. College for Women, Nidadavole
Subject Expert	Mr. R V Satyanarayana PR GDC, Kakinada
Expert from Industry	Sri S. Narendra Krishna Mohan, Application Development Senior Analyst Accenture, Hyderabad
Members	
Smt U. Sandhya Rani	Faculty Member
Sri Devaraju Hanumanthu	Faculty Member
Sri P. Narsingarao	Faculty Member
Sri. D. SeethaRamulu	Faculty Member
Sri R.V. Raja Sekhar	Faculty Member
Sri K.Ramesh	Faculty Member
Kum S.Jaya Lakshmi	Faculty Member
Smt A. UmaMaheswari	Faculty Member
Smt M.Surekha	Faculty Member
Kum V.Jyothsna	Faculty Member
Mr. M. Durga Sagar	Student

ACADEMIC CELL, GOVERNMENT COLLEGE
(AUTONOMOUS) RAJAHMUNDRY

PROCEEDINGS OF THE PRINCIPAL
GOVERNMENT AUTONOMOUS COLLEGE, RAJAHMUNDRY

PRESENT: Dr.R. David Kumar, M.Sc., M.Phil.., Ph.D.

RC. NO. 128/GCRJY/ACAD. CELL//BOS/2021/, DATED. 14.09. 2021

Sub: GCRJY-**Conduct of BoS Meetings for the Academic Year 2021-22** - Regarding

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ORDER:

With reference to the subject cited, the lecturers-in-Charge of all the departments are hereby informed to conduct their respective Board of Studies (BoS) meetings between 16 and 18 April 2018.

You are also informed to intimate the date of your BoS meeting well in advance to the subject experts/University nominee/Industrial Nominee/members of BoS/Student nominee concerned to get their valuable views and suggestions in the deliberations to frame the concrete syllabi for your subjects keeping in view the objectives of the college and interest of the stake holders. The date should also be indicated to Academic Cell in advance.

You are further suggested to utilize the academic autonomy in incorporating the additional modules in the syllabi and identify the pedagogical strategies to implement the same.

Please note that your BoS document should contain the following contents in order

a) Proceedings of the Principal pertaining to BoS
b) Composition of BoS
c) Table showing the Allocation of Credits in the following table for both theory and Lab in case of science subjects

S. No	Semester	Course Code	Title of the Course (Paper)	Max. Marks (SEE)	Marks in CIA	Hrs./week			
						L	T	P	C

L= Lecture, T= Tutorial, P= Practical, C= Credits

d) Resolutions adopted in the meeting with detailed discussions
e) Table showing Members present with signatures
f) List of Examiners & Paper setters
g) Syllabus for each course in the **Proforma given** (both theory & Practical in case of Science subjects) followed by model question papers (theory & practical)

You are requested to submit a separate document regarding addition/deletion of specific topics from the syllabus in each course (paper) with justification, if any.

ACADEMIC CELL, GOVERNMENT COLLEGE
(AUTONOMOUS) RAJAHMUNDRY

All the ***new certificate courses*** proposed for the calendar year 2021, Seminars/ workshops, field visits, study tours for 2021-22 should be placed before the respective Board and get them approved.

You are also requested to submit 2 hard copies & 2 soft copies (CDs) of BoS document to the Academic cell along with original bills and settle the bills after completion of the BoS meeting. You can approach the Academic Cell for necessary documents.

Most Important: You are requested to submit soft & hard copies of ***Resolutions (including discussion)*** separately to IQAC immediately after BoS meeting is completed.

PRINCIPAL
GOVERNMENT AUTONOMOUS COLLEGE
RAJAHMUNDRY

Copy to:

1. Lecturers-in-Charge of all the departments
2. File

Proceedings of the Principal, Government College (Autonomous), Rajahmundry

Present: Dr.R.David Kumar Swamy, M.Sc, M.Phil., Ph.D

Rc. No: Spl./Acad.Cell-GC[A]-RJY/BOS/2021-1, Dated: 01 October 2021

Sub:- Government College (Autonomous), Rajahmundry– **Boards of Studies** (BoS) – Nomination of Members - Orders Issued.

Ref:- 1) UGC Guidelines for Autonomous Colleges - 2018.
2) Proceedings of the Principal Rc. No: Spl./Acad.Cell-GC[A]-RJY/BOS/2021-1, Dated: 13 September 2021

ORDER:

In partial modification of Proceedings cited under Ref. 2 above, the Principal, Government College (Autonomous), Rajahmundry is pleased to constitute **Board of studies in COMPUTER SCIENCE** for framing the syllabi in Computer Science subject for all semesters duly following the norms of the UGC Autonomous guidelines.

S. No	Name	Designation
1	Sri Suneel Kumar Duvvuri Lecturer In- Charge/HoD, Department of Computer Science, GC[A], Rajahmundry	Chairman
2	All Faculty members in the department	Member
3	Smt. E. Jyothi Kiranmayi SVD Govt. College for Women, Nidavavole	Subject Expert
4	Sri R. V. Satyanarayana P.R. Government College (Autonomous), Kakinada	Subject Expert
5	Dr.V. Persis Dept. of CSC, UCEngg. ANUR	University Nominee
6	Sri S. Narendra Krishna Mohan, Application Development Senior Analist Accenture, Hyderabad	Expert from Industry/Corporate Sector
7	Mr. M. Durga Sagar	Student Nominee

The above members are requested attend the BOS meetings and share their valuable views, suggestions on the following functionaries:

a) Prepare syllabi for the subject keeping in view the objectives of the college, interest of the stake holders and national requirement for consideration and approval of the Academic Council
b) Suggest methodologies for innovate teaching and evaluation techniques
c) Suggest panel of names to the Academic council for appointment of examiners
d) Coordinate research, teaching, extension and other activities in the department of the college.

The term of the members will be two years from the date of issue of this proceedings. The Chairman of the BoS (HoD/lecturer In-Charge of the department) is directed to coordinate with the Principal of the College and conduct BoS meetings as and when necessary, but at least once a year.

PRINCIPAL
GOVERNMENT COLLEGE [A]
RAJAHMUNDRY

Copy to:

1. The above individuals
2. File

B.Sc. Computer Science

B Sc Computer Science Syllabus (w.e.f: 2020-21 A.Y)

B.Sc. PROGRAMME – COURSE STRUCTURE OF COMPUTER SCIENCE UNDER CBCS PATTERN

S.No	Semester	Course Code	Title of the Course (Paper)	Max Marks (SEE)	Marks in CIA	Hrs/Week			
						L	T	P	C
1	SEM - I	CSC-155	Problem Solving in C	50	50	**3**	**1**	**-**	**3**
2		CSC-155P	Problem Solving in C Lab	50	--	**-**	**-**	**3**	**2**
3	SEM - II	CSC-156	Data Structures using C	50	50	**3**	**1**	**-**	**3**
4		CSC-156P	Data Structures using CLab	50	--	**-**	**-**	**3**	**2**
5	SEM-III	CSC155	Database Management System	50	50	**3**	**1**	**-**	**3**
6		CSC155P	Database Management System Lab	50	--	**-**	**-**	**3**	**2**
7	SEM-IV	CSC156	Object Oriented Programming using Java	50	50	**3**	**1**	**-**	**3**
8		CSC156P	Object Oriented Programming using Java Lab	50	--	**-**	**-**	**3**	**2**
9		CSC157	Operating Systems	50	50	**3**	**1**	**-**	**3**
10		CSC157P	Operating Systems Lab using C/Java	50	--	**-**	**-**	**3**	**2**

L= Lecture, T= Tutorial, P= Practical, C= Credits

B Sc Computer Science Syllabus (w.e.f: 2019-20 A.Y)

B.Sc. PROGRAMME – COURSE STRUCTURE OF COMPUTER SCIENCE UNDER CBCS PATTERN

S.No	Semester	Course Code	Title of the Course (Paper)	Max Marks (SEE)	Marks in CIA	Hrs/Week			
						L	T	P	C
1	SEM-V	CSC117	Database Management System	50	50	3	-	-	3
2		CSC117P	DBMS Lab	50	--	-	-	3	2
3		CSC118	Software Engineering	50	50	3	-	-	3
4		CSC118P	Software Engineering Lab	50	--	-	-	3	2
5	SEM-VI ELECTIVES	CSC123	Elective-A: Web Technologies	50	50	3	-	-	3
6		CSC123P	Web Technologies Lab	50	--			3	2
7		CSC130	Elective B: Computer Networks	50	50	3			3
8		CSC130P	Computer Networks Lab	50	--			3	2
9		CSC121	Elective C: Operating System	50	50	3			3
10		CSC121P	Operating System Lab.	50	--			3	2
11	SEM-VI CLUSTERS	CSC154	Cluster A1: JavaScript	50	50	3			3
12		CSC154P	JavaScript Lab	50	--			3	2
13		CSC142	Cluster A2: PHP & MYSQL	50	50	3			3
14		CSC142P	PHP & MYSQL Lab	50	--			3	2
15		CSC124	Cluster A3: Project Work	50	50			5	5
16		CSC125	Cluster B1: Foundation of Data Science	50	50	3			3
17		CSC125P	Foundation of Data Science Lab Through R	50	--			3	2
18		CSC126	Cluster B2: Big Data	50	50	3			3
19		CSC126P	Big Data Lab Using Hadoop	50	--			3	2
20		CSC124	Cluster B3: Project work	50	50			5	5
21		CSC140	Cluster C1: Distributed Systems	50	50	3			3
22		CSC140P	Distributed Systems Lab	50	--			3	2
23		CSC141	Cluster C2: Cloud Computing	50	50	3			3
24		CSC141P	Cloud Computing Lab	50	--			3	2
25		CSC124	Cluster C3: Project	50	50			5	5

L= Lecture, T= Tutorial, P= Practical, C= Credits

GOVERNMENT COLLEGE (AUTONOMOUS) :: RAJAMAHENDRAVARAM

B Sc IoT Syllabus (w.e.f: 2020-21 A.Y)

B.Sc. Programme in IoT– COURSE STRUCTURE IN UNDER CBCS PATTERN

S.No	Semester	Course Code	Title of the Course (Paper)	Max Marks (SEE)	Marks in CIA	Hrs/Week			
						L	T	P	C
1	SEM - I	IOT-103	Fundamentals of Computer and C – Programming	50	50	3	1	-	3
2		IOT-103P	C Programming Lab	50	--	-	-	3	2
3	SEM - II	IOT-106	Fundamentals of IoT and Applications	50	50	3	1	-	3
4		IOT-106P	Arduino Programming Lab	50	--	-	-	3	2
5	SEM-III	IOT-104	Data Communications & Computer Networks	50	50	3	1	-	3
6		IOT-104P	Network Simulation Lab	50	--	-	-	3	2
7	SEM-IV	IOT-105	RFID and Sensor Networks	50	50	3	1	-	3
8		IOT-105P	Network Simulation Lab using NS2/NS3	50	--	-	-	3	2
9		IOT-116	Implementing IoT with Raspberry Pi	50	50	3	1	-	3
10		IOT-116P	Raspberry Pi Lab	50	--	-	-	3	2

L= Lecture, T= Tutorial, P= Practical, C= Credits

B Sc IoT Syllabus (w.e.f: 2019-20 A.Y)

S.No	Semester	Course Code	Title of the Course (Paper)	Max Marks (SEE)	Marks in CIA	Hrs/Week			
						L	T	P	C
1	SEM-V	IOT-107	Computer Architecture and Organisation	50	50	3	-	-	3
2		IOT-107P	Computer Architecture and Organisation Lab	50	0			3	2
3		IOT-108	Implementing IoT with Raspberry Pi	50	50	3			3
4		IOT-108P	Raspberry Pi Lab	50	0			3	2
5	SEM-VI ELECTIVES	IOT-109	Elective-I(A): Big Data Technology	50	50	3			3
6		IOT-109P	Big Data Technology through Hadoop lab	50	0			3	2
7		IOT-110	Elective-I(B): Service Oriented Architecture	50	50	3			3
8		IOT-110P	SOA Lab	50	0			3	2
	SEM-VI CLUSTERS	Elective-II(Cluster A):							
9		IOT-111	Security and Privacy in IoT	50	50	3			3
10		IOT-111P	Security and Privacy in IoT Lab	50	0			3	2
11		IOT-112	Mobile Internet: Enabling Technologies and Services	50	50	3			3
12		IOT-112P	Mobile Internet: Enabling Technologies and Services LAB	50	0			3	2
13		IOT-113	Project	50	50			5	5
		Elective-II(Cluster B):							
14		IOT-114	Data Mining and Data Analysis	50	50	3			3
15		IOT-114P	Data Mining and Data Analysis Lab	50	0			3	2
16		IOT-115	Big Data and IoT	50	50	3			3
17		IOT-115P	Big Data and IoT Lab	50	0			3	2
18		IOT-113	Project	50	50			5	5

L= Lecture, T= Tutorial, P= Practical, C= Credits

B.Sc., Information Technology(Hons)
Complete Courses Structure (w.e.f. 2020 – 2021)

Semester	Course	Title	Hrs/W	Credits	Remarks
I	Ability Enhancement Courses	English	4	3	
		Skill Enhancement Course Libre Office	2	2	Mapped to Spoken Tutorial/NPTEL/SWAYAM
		Life Skills –I	2	2	
		Skill Development Course - I	2	2	
	Major 1(Core 1)	Programming Fundamentals Using C	4	3	
		Programming Fundamentals Using C Lab	3	2	
	Major 2(Core 2)	Computer System Architecture & Organization	6	5	
	Minor 1(Gen Elective)		6	5	Student can choose an elective from other dept\ Maths/Physics/statistics
		Total	29	24	
II	Ability Enhancement Courses	English	4	3	
		Skill Enhancement Course GIMP	2	2	Mapped to Spoken Tutorial/NPTEL/SWAYAM
		Life Skills –I	2	2	
		Skill Development Course - I	2	2	
		Skill Development Course - I	2	2	
	Major 1(Core 1)	Object Oriented Programming Using Java	4	3	
		Object Oriented Programming Using Java Lab	3	2	
	Major 2(Core 2)	System Analysis and Design	6	5	
	Minor 1(Gen Elective)		6	5	Student can choose an elective from other dept\ Maths/Physics/statistics
		Total	31	26	
III	Ability Enhancement Courses	English	4	3	
		Skill Enhancement Course Linux & Ubuntu	2	2	Mapped to Spoken Tutorial/NPTEL/SWAYAM
		Life Skills –I	2	2	
		Life Skills –II	2	2	
		Skill Development Course - I	2	2	
	Major 1(Core 1)	Relational Database Management System	4	3	
		Relational Database Management System Lab	3	2	
	Major 2(Core 2)	Fundamentals of Software Engineering	6	5	
	Minor 1(Gen Elective)	M/P/St	6	5	Student can choose an elective from other dept\ Maths/Physics/statistics
		Total	29	26	
IV	Major 1(Core 1)	Operating Systems	4	3	
		Operating Systems Lab	3	2	
	Major 2(Core 2)	Computer Networks	6	5	
	Major 3(Core 3)	Data Structures	4	3	

		Data Structures Lab	3	2	
	Minor 1(Gen Elective)	Software Testing & Quality Assurance	6	5	
	Minor 2(Gen Elective)	Visual Programming	4	3	
		Visual Programming Lab	3	2	
	Minor 3(Gen Elective)	Fundamentals of IoT	6	5	
		Total	39	30	
V	Major 1(Core 1)		4	3	
		Lab	3	2	
	Major 2(Core 2)		6	5	
	Major 3(Core 3)		4	3	
		Lab	3	2	
	Minor 1(Gen Elective)		6	5	
	Minor 2(Gen Elective)		4	3	
		Lab	3	2	
	Minor 3(Gen Elective)		6	5	
		Total	39	30	

B Sc IT (Hons) Syllabus (w.e.f: 2020-21 A.Y)– COURSE STRUCTURE UNDER CBCS PATTERN

S.No	Semester	Course Code	Title of the Course (Paper)	Max Marks (SEE)	Marks in CIA	Hrs/Week			
						L	T	P	C
1.	SEM - I	IT101	Programming Fundamentals Using C	50	50	3	1	-	3
2.		IT101P	Programming Lab	0	50	-	-	3	2
3.		IT102	Computer System Architecture & Organization	50	50	5	1	-	5
4.	SEM - II	IT103	Object Oriented Programming Using JAVA	50	50	3	1	-	3
5.		IT103P	JAVA Programming Lab	50	0	-	-	3	2
6.		IT104	System Analysis and Design	50	50	5	1	-	5
7.	SEM-III	IT105	Relational Database management System	50	50	3	1	-	3
8.		IT105P	RDBMS Lab	0	50			3	2
9.		IT106	Software Engineering	50	50	5	1	-	5
10.	SEM-IV	IT121	Operating Systems	50	50	3	1	-	3
11.		IT121P	Operating Systems Lab	50	0	-	-	3	2
12.		IT122	Computer Networks	50	50	5	1	-	5
13.		IT123	Data Structures	50	50	3	1	-	3
14.		IT123P	Data Structures Lab	50	0	-	-	3	2
15.		IT124	Software Testing & Quality Assurance	50	50	5	1	-	5

L= Lecture, T= Tutorial, P= Practical, C= Credits

B.Sc., Information Technology (Hons)

Syllabus (w.e.f. 2019 – 2020**) – COURSE STRUCTURE**

S.No	Semester	Course Code	Title of the Course (Paper)	Max Marks (SEE)	Marks in CIA	Hrs/Week			
						L	T	P	C
16.	SEM-V	IT109	Python programming	50	50	3	1	-	3
17.		IT109P	Python programming lab	50	0	-	-	3	2
18.		IT110	Computer networks	50	50	5	-	-	5
19.		IT112	Fundamentals of IoT	50	50	5	1	-	5
20.		IT111	DSE 1: Operating systems	50	0	3	1	-	3
21.		IT111P	Operating systems lab	50	50	-	-	3	2
22.		IT113	DSE 2: Data structures	50	50	3	1	-	3
23.		IT113P	Data Structures Lab	50	0			3	2
24.	SEM-VI	IT114	Information Security	50	50	3	1	-	3
25.		IT114P	Information Security Lab	50	0	-	-	3	2
26.		IT115	Computer Graphics	50	50	3	1	-	3
27.		IT115P	Computer Graphics Lab.	50	0	-	-	3	2
28.		IT116	ELECTIVE A1: Foundation of Data Science	50	50	3	1	-	3
29.		IT116P	Foundation of Data Science Lab Through R	50	0	-	-	3	2
30.		IT117	ELECTIVE A2: Machine Learning	50	50	3	1	-	3
31.		IT117P	Machine Learning Lab	50	0	-	-	3	2
32.		IT118	ELECTIVE B1: PHP & MYSQL	50	50	3	1	-	3
33.		IT118P	PHP & MYSQL Lab	50	0			3	2
34.		IT119	ELECTIVE B2: Android	50	50	3	1	-	3
35.		IT119P	Android lab	50	0	-	-	3	2
36.		IT120	Project Work	50	50	-	-	5	5

L= Lecture, T= Tutorial, P= Practical, C= Credits

B.Com. Computer Applications (EM & TM)

(w.e.f. 2020-21)

COURSE STRUCTURE OF COMPUTER APPLICATIONS UNDER CBCS PATTERN

S.No	Semester	Course Code	Title of the Course (Paper)	Max Marks (SEE)	Marks in CIA	Hrs/Week			
						L	T	P	C
1	Sem-I	CAP168	Information Technology	50	50	5	-	-	5
2	Sem-II	CAP169	E-commerce and Web Designing	50	50	5	-	-	5
3	Sem-III	CAP170	Programming with C &C++	50	50	5	-	-	5
4	Sem-IV	CAP171	Data Base Management System	50	50	5	-	-	5

L= Lecture, T= Tutorial, P= Practical, C= Credits

B.Com. Computer Applications- PROGRAMME

(w.e.f. 2020-21**)**

COURSE STRUCTURE OF COMPUTER APPLICATIONS

UNDER CBCS PATTERN

S.No	Semester	Course Code	Title of the Course (Paper)		Max Marks (SEE)	Marks in CIA	Hrs/Week			
							L	T	P	C
37.	Sem-V	CAP155	Data Base Management System		50	50	5	-	-	5
38.		CAP156	E-Commerce		50	50	5	-	-	5
39.		CAP153	Computer Accounting with Tally		50	50	5	-	-	5
40.	Sem-VI	CAP160	Web Technology	Cluster-1	50	50	5	-	-	5
41.		CAP161	PHP & MySQL		50	50	5	-	-	5
42.		CAP162	Project Work		50	50	5	-	-	5
43.		CAP164	Multimedia Technology	Cluster-2	50	50	5	-	-	5
44.		CAP165	Programming in Visual Basic		50	50	5	-	-	5
45.		CAP162	Project Work		50	50	5	-	-	5
46.		CAP150	Computer Applications in Banking	Cluster-3	50	50	5	-	-	5
47.		CAP149	Acc. Software Applications		50	50	5	-	-	5
48.		CAP162	Project Work		50	50	5	-	-	5

L= Lecture, T= Tutorial, P= Practical, C= Credits

B.A Computer Applications (EM)

W.E.F Academic Year 2020-2021

B.A PROGRAMME – COURSE STRUCTURE IN COMPUTER APPLICATIONS UNDER CBCS PATTERN

S.No	Semester	Course Code	Title of the Course (Paper)	Max Marks (SEE)	Marks in CIA	Hrs/Week			
						L	T	P	C
1	SEM - I	CAP169	Information technology	50	50	3	1	-	3
2		CAP169P	Information technology Lab	50	--			3	2
3	SEM - II	CAP170	Fundamental Of Programming And C Language	50	50	3	1	-	3
4		CAP170P	Fundamental Of Programming And C Language Lab	50	--			3	2
5	SEM-III	CAP120	Office Automation Tool	50	50	3	1	-	3
6		CAP120P	Office Automation Tool – Lab	50	--			3	2
7	SEM-IV	CAP167	Python Programming	50	50	3	1	-	3
8		CAP167P	Python Programming – Lab	50	--			3	2
9		CAP168	Data Base Management System	50	50	3			3
10		CAP168P	DBMS lab	50	--			3	2

L= Lecture, T= Tutorial, P= Practical, C= Credits

B.A PROGRAMME – COURSE STRUCTURE IN COMPUTER APPLICATIONS
UNDER CBCS PATTERN
W.E.F A.Y 2019-2020

S.No	Semester	Course Code	Title of the Course (Paper)	Max Marks (SEE)	Marks in CIA	Hrs/Week			
						L	T	P	C
1	SEM-V	CAP155	Data Base Management System	50	50	3			3
2		CAP155P	DBMS lab	50	--			3	2
3		CAP131	Software Engineering	50	50	3			3
4		CAP131P	Software Engineering Lab	50	--			3	2
5	SEM-VI	CAP123	Web Technologies	50	50	3			3
6		CAP123P	Web Technologies Lab	50	--			3	2
7		CAP124	Operating System	50	50	3			3
8		CAP124P	Operating System Lab	50	--			3	2
9		CAP168	Cluster A1: JavaScript	50	50	3			3
10		CAP168P	JavaScript Lab	50	--			3	2
11		CAP127	Cluster A2: PHP & MYSQL	50	50	3			3
12		CAP127P	PHP & MYSQL Lab	50	--			3	2
13		CAP162	Cluster A3: Project Work	50	50			5	5
14		CAP164	MULTIMEDIA TECHNOLOGY	50	50	3			3
15		CAP164P	MULTIMEDIA TECHNOLOGY Lab	50	--			3	2
16		CAP165	PROGRAMMING IN VB.NET	50	50	3			3
17		CAP165P	PROGRAMMING IN VB.NET Lab	50	--			3	2
18		CAP162	Project Work	50	50			5	5

L= Lecture, T= Tutorial, P= Practical, C= Credits

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC with "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

CONSOLIDATED REPORT OF BOARD OF STUDIES FOR THE YEAR 2021-22

The Meeting Board of Studies of Computer Science & Applications department was convened on _____under the Chairmanship of Mr. Suneel Kumar Duvvuri Head / Lecturer-in-charge of Department of Computer Science and Applications.

The following members are present

S.No.	Name	Designation	Signature
1.	Dr. V. Persis	University Nominee	
2.	Smt. E. Jyothi Kiranmayi	Local Nominee	
3.	Mr. R V Satyanarayana	Local Nominee	
4.	Sri S. Narendra Krishna Mohan	Industrial Nominee	
5.	Smt U Sandhya Rani	Faculty Member	
6.	Mr Devaraju Hanumanthu	Faculty Member	
6.	Sri P. Narasinga Rao	Faculty Member	
7.	Sri. D. Seetha Ramulu	Faculty Member	
8.	Sri R.V. Raja Sekhar	Faculty Member	
9.	Sri K.Ramesh	Faculty Member	
10.	Kum S.Jaya Lakshmi	Faculty Member	
11.	Smt A. UmaMaheswari	Faculty Member	
12.	Smt M.Surekha	Faculty Member	
13.	Kum V.Jyothsna	Faculty Member	
16.	Mr. M. Durga Sagar	Student	

The following documents are submitted to the Academic coordinator and Controller of Examinations:

- Resolutions of Board of Studies Meeting.
- Syllabus of All semesters under CBCS pattern for All UG Computer Science Programmes.
- Model Question Papers for All semesters under CBCS pattern
- List of Revised Examiners (if any)
- Any other new proposals.

Date:

Chairman
Board of Studies
Department of Computer Science & Applications

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY
(*Accredited by NAAC with "A+" Grade)*
DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

Board of Studies
Dated: _____

Meeting of the Board of studies is held at _____ in the Department of Computer Science & Applications, Govt. College (A), Rajahmundry with the following agenda.

Agenda

1. Curriculum Design for all the Semesters
2. Designing of Course Outcomes and Course Objectives
3. Identifying /inclusion of components of Skill Development, Employability and Entrepreneurship in the curriculum
4. Additional inputs into the curriculum
5. Designing Model Question Papers and identifying potential paper setters
6. Innovative Teaching – Learning Methodology (Learner Centric)
7. Curriculum for the Certificate Courses
8. Academic activities of the Department
9. Any other proposal with the permission of the chair

(Suneel Kumar Duvvuri)
CHAIRMAN
BOARD OF STUDIES

Government College (Autonomous), Rajahmundry

(*Accredited by NAAC "A+" Grade)*

Board of Studies Meeting on _____

Department Of Computer Science & Applications

List of Paper Setters and Examiners

S No	Name of the Lecturer /Reader/Professor	Papers	College	City
1.	Prof P Suresh Varma	ALL	Dept of CSE, AKNU	Rajahmundry
2.	Dr V Persis	ALL	Dept of CSE, AKNU	Rajahmundry
3.	Dr M Kamala Kumari	ALL	Dept of CSE, AKNU	Rajahmundry
4.	Dr P Venkateswara Rao	ALL	Dept of CSE, AKNU	Rajahmundry
5.	R V Satyanarayana	ALL	GDC (P R) KAKINADA	Kakinada
6.	G Balavenkata Padmanadh	ALL	GDC (P R) KAKINADA	Kakinada
7.	Dr N Sridhar	ALL	GDC TUNI	Tuni
8.	E Jyothikiranmayi	ALL	GDC (W) NIDADAVOLE	Niddadavole
9.	Rebba Ashok Kumar	ALL	GDC CHINTALPUDI	Chintalapudi
10.	Smt M Rajini	ALL	GDC (SCIM) TANUKU	Tanuku
11.	Dr K Satya Rajesh	ALL	GDC (CSTS) JANGAREDDIGUDEM	Jangareddigudem
12.	Vijayadeep gummadi	ALL	GDC KAIKAKULURU	Kaikakuluru
13.	T Jayakrishna	ALL	GDC (SRR & CVR) VIJAYAWADA	Vijayawaada
14.	D Meenakshi	ALL	GDC TIRUVURU	Tiruvuru
15.	Smt N Swarnajyothi	ALL	GDC (VRK) MOVVA	Movva
16.	U Sarala	ALL	GDC AVANIGADDA	Avanigadda
17.	Dr A Sivaprasad	ALL	GDC TEKKALI	Tekkali
18.	I Srilakshmi	ALL	GDC (W) SRIKAKULAM	Srikakulam
19.	Sri B Raghuram	ALL	GDC SEETHAMPETA	Seethampeta
20.	Sri B Srinivas	ALL	GDC (M) SRIKAKULAM	Srikakulam
21.	Dr K V Sobha Rani	ALL	GDC (P R) KAKINADA	Kakinada
22.	R Venakataphani Kumar	ALL	GDC (P R) KAKINADA	Kakinada
23.	G Satyasuneetha	ALL	GDC (W) KAKINADA	Kakinada
24.	Smt U Subhashini	ALL	GDC RAVULAPALEM	Ravulapalem

25.	Dr N Manisha	ALL	GDC (ASNM) PALAKOL	Palakol
26.	Kum P Purnachandravathi	ALL	GDC MYLAVARAM	Mylavaram
27.	B Rajkumar	ALL	GDC (SRR & CVR) VIJAYAWADA	Vijayawada
28.	B Hemaraju	ALL	GDC TEKKALI	Tekkali
29.	P Jyothi	ALL	GDC PATHAPATNAM	Pathapatnam
30.	S Vani Kumari	ALL	GDC (W) SRIKAKULAM	Pathapatnam
31.	Simma Madhavi Latha	ALL	GDC (W) SRIKAKULAM	Pathapatnam
32.	V Chandrasekhar	ALL	GDC SEETHAMPETA	Seethampeta
33.	Smt J Sharmila Rani	ALL	GDC (M) SRIKAKULAM	Srikakulam
34.	Smt K Anusha Devi	ALL	GDC PADERU	Paderu

GOVERNMENT COLLEGE (AUTONOMOUS):RAJAHMUNDRY
DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS
SCHEME OF EVALUATION

MODEL OF SEMESTER END EXAMINATION QUESTION PAPER (THEORY)

(As Approved in the BOS meeting held on _____)

EVALUATION SCHEME

Standard Operating Procedure for Continuous Internal Assessment (Internal Marks – 50)

The Internal marks in all the courses/subjects will be awarded based on continuous internal assessment made during the semester concerned. For each Courses/subject 50 marks are allotted for internal assessment and 50 marks are allotted for the End Semester Examination.

1. Continuous Internal Evaluation (CIA):

It has been decided to introduce Continuous Internal assessment marks for a total of **50 marks**, which are to be distributed as follows:

S.No.	Component			Distribution of Marks
1	CIE I (after completion of 50% of syllabus)			20
2	CIE II (Online Exam)			10
3	ATTENDANCE	Above 95%	5	5
		91% to 95%	4	
		86% to 90%	3	
		81% to 85%	2	
		75% to 80%	1	
		Below 75%	0	
Pedagogical Strategies				
4	ASSIGNMENT			5
5	Participation or Paper Presentation in Student Seminars/Workshops/Group Discussions/ Quiz/ Student Study Project/Field Visit/Survey			5
6	Viva-voce			5
TOTAL				**50**

Sections	Description	Marks
A	Short Answer Questions – Four questions are to be asked. Students has to answer any 2 questions Each questions carries 5 Marks	2Q X5M=10M
B	Essay type Questions – 4 Questions to be asked with Internal choice in each question (A or B) from each unit. Student has to answer all four questions choosing one (A or B) from each question. Each question carries 10 Marks	4Q X10M =40M
	TOTAL MARKS:	**50M**

Component I : CIE I & CIE II (20+10 = 30 Marks)

Two Internal Examinations, out of which one is Mandatorily Online examination, for each Course shall be conducted for assessment. These examinations will be conducted during August/September (CIE –I) and January/February (CIE-II). CIE-I carries 20 marks and CIE-II carries 10 marks. CIE- I will be conducted after completion of 50% of syllabus. The second internal examination, i.e., CIE –II, which is **mandatorily online examination** will cover the entire syllabus and consists of 20 multiple choice questions having ½mark for each question. The sum of both the CIEs will be considered for awarding marks for CIA.

Suggestive Question Paper Pattern for CIE I & CIE II (Based on Blooms Taxonomy):

Though the faculty concerned are empowered to adopt their own pattern for question paper, a general and suggestive model for question paper is given below based on Blooms Taxonomy.

Q No	Learning Objective	Marks
1	Memory based (Remember)	2
2	Understand (Comprehension)	2
3	Application	3
4	Analysis	3
5	Evaluation	5
6	Creativity	5
	TOTAL	**20 marks**

The active verbs used to frame the question based on Blooms Taxonomy is given below for the convenience.

Active verbs developed based on Bloom's Taxonomy

Knowledge	Understand	Apply	Analyze	Evaluate	Create
define	explain	solve	analyze	reframe	design
identify	describe	apply	compare	criticize	compose
describe	interpret	illustrate	classify	evaluate	create
label	paraphrase	modify	contrast	order	plan
list	summarize	use	distinguish	appraise	combine
name	classify	calculate	infer	judge	formulate
state	compare	change	separate	support	invent
match	differentiate	choose	explain	compare	hypothesize
recognize	discuss	demonstrate	select	decide	substitute
select	distinguish	discover	categorize	discriminate	write
examine	extend	experiment	connect	recommend	compile
locate	predict	relate	differentiate	summarize	construct
memorize	associate	show	discriminate	assess	develop
quote	contrast	sketch	divide	choose	generalize
recall	convert	complete	order	convince	integrate
reproduce	demonstrate	construct	point out	defend	modify
tabulate	estimate	dramatize	prioritize	estimate	organize
tell	express	interpret	subdivide	find errors	prepare
copy	Identify	Manipulate	survey	grade	produce
discover	indicate	Paint	advertise	measure	rearrange
duplicate	Infer	Prepare	appraise	predict	rewrite
enumerate	relate	produce	Break down	rank	role-play

CIE II will consist of multiple choice questions (MCQs). Number of questions and distribution of marks is at the discretion of the faculty concerned. However, a half an hour exam consisting of 20 MCQs with ½ mark for each question is suggestible in view of the huge number of students. All the HoDs should supply a question bank of MCQs of all the courses covering the entire syllabus along with key to the Computer Science department to enable them to conduct the online examination in the designated laboratories. Alternatively, all the HoDs may upload the MCQs in the portal through their logins.

Further, all the HoDs should submit their schedule of CIE II to IQAC in advance to monitor the systematic conduct of the online examination.

Important Note:

Students who absent themselves from any CIE will lose the marks for the respective test. However, if a student is not able to write the CIE I / II because of his/her participation in an important event related to NSS/NCC or Games/Sports representing the College/University/health grounds, the student has to get the prior permission of the Principal through the proper channel and submit the same to the Office of the Controller of Examinations. Deadline is 7 days after the CIE. Applications submitted after the deadline will not be considered for the retest.

Component III: Attendance (5 Marks)

Attendance mark will be awarded to the students based on their attendance percentage on a particular course. Faculty of each course has to award the attendance mark based on their subject attendance. The marks split-up is given below

Above 95%	5
91% to 95%	4
86% to 90%	3
81% to 85%	2
75% to 80%	1
Below 75%	0

Component IV: Assignment (5 Marks)

One Assignment for each course must be submitted by a student in each semester. The marks allotted to this component will be awarded based on the performance of the student. The assignment topic may be assigned either individually or group. Assignment should be submitted by the student in the first half of the semester. Also maximum of 7 days should be given to students to submit the assignment. Assignments should be evaluated by the faculty concerned and the same to be verified by the student. The assignment should be kept in department for the Academic Audit by IQAC and also for external academic audit conducted by office of Commissionerate of Collegiate Education. The marks should be awarded by the faculty.

Component V (Pedagogical Strategies): Participation /Paper Presentation in Student Seminars/Workshops/Group Discussions/ Quiz/ Student Study Project/Field Visit/Survey (5 Marks)

For this component, the marks will be provided to student, if he/she participate/win in the external college technical events. To score marks, the student has to participate / present papers related to subject in the technical events organized in the other colleges/other departments in the college.

	Participation	Second Prize	First Prize / Best Paper
Workshop / Seminar / Technical Symposium	2	3	5

National / International Conference	3	4	5

In case of Classroom seminar, one seminar for each course must be presented by a student in each semester. Each student should be given individual topic for seminar, the student has to submit the seminar topic as assignment and the same will be presented minimum of 10 minutes in the class through ICT. The seminar presented by the student should be evaluated by the subject faculty and based on the performance of the presentation, the marks will be awarded.

Similarly, reports on field visits, educational tours, study projects in prescribed format will be considered for awarding marks in this component.

For a student who has not participated in any events in that semester, the student will be awarded "0" for this component. If a student participates more than one event and win prize, the best would be considered for the subject.

In case of Quiz, preferably online quiz, it should be conducted after the CIE II and well before the SEE. Faculty concerned has to announce the schedule for the quiz and create the quiz in the ERP (College Management System). The subject staff has to upload all the questions (unit-wise) in the ERP. Quiz should be created with 30 questions (ERP should choose 30 questions randomly out of 100 questions uploaded).The timing for quiz should be 30 minutes. No negative marking. Each question carries 1 mark. The marks secured should be converted to5.

2. Semester End Examinations (SEE)

The question paper is of 2 ½ duration for 50 marks. The suggestive question paper model given in section 1.1.1.may be used for framing the question. This kind of question paper will be helpful in CO-PO Mapping and thereby graduate attributes.

(Prepared by IQAC & Academic Cell and submitted to the Chairman, IQAC & Principal on 3 April 2019)

GOVERNMENT COLLEGE (AUTONOMOUS) : RAJAHMUNDRY

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

SCHEME OF VALUATION

FOR PRACTICAL EXAMINATIONS

(As Approved in the BOS meeting held on _____, 2021 For 2021-2022)

S.No.	Description	Marks
1.	Procedure Explanation with Coding (including Algorithm & Flowchart if any)	20
2.	Execution of Program	10
3.	VIVA VOCE	10
4.	RECORD **	10
	EXTERNAL PRACTICAL EXAM (at the end of II, IV& VI Semester)	**50**
5.	Internal Practical Exam (At the end of I, III & V Semester)	50
	GRAND TOTAL	**100**

** Award of marks for number of practicals recorded in the Record.

- 10 Practicals and Above 10
- 8 Practicals 08
- 6 Practicals 06
- 5 Practicals 05
- Less than 5 00

B.Sc (Computer Science)

(For M.P.Cs, M.S.Cs, G.G.Cs, M.G.Cs)

Syllabus and Model Papers

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code **CSC-155**	**TITLE OF THE COURSE** **Problem Solving in C**	I B.Sc. (I Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Basic Mathematics Knowledge	3	1	-	3

Course Objectives:

1. The aim of this course is to provide exposure to problem-solving through programming. It introduces the concepts of the C Programming language.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understand the evolution and functionality of a Digital Computer
CO2	Apply logical skills to analyze a given problem
CO3	Develop an algorithm for solving a given problem.
CO4	Understand 'C' language constructs like Iterative statements, Array processing, Pointers, etc
CO5	Apply 'C' language constructs to the algorithms to write a 'C' language program.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I

General Fundamentals: Introduction to computers: Block diagram of a computer, characteristics and limitations of computers, applications of computers, types of computers, computer generations.
Introduction to Algorithms and Programming Languages: Algorithm – Key features of Algorithms, Flow Charts, Programming Languages – Generations of Programming Languages – Structured Programming Language.

UNIT–II

Introduction to C: Introduction – Structure of C Program – Writing the first C Program – File used in C Program – Compiling and Executing C Programs – Using Comments – Keywords – Identifiers – Basic Data Types in C – Variables – Constants – I/O Statements in C- Operators in C- Programming Examples.
Decision Control and Looping Statements: Introduction to Decision Control Statements– Conditional Branching Statements – Iterative Statements – Nested Loops – Break and Continue Statement – Goto Statement

UNIT–III

Arrays: Introduction – Declaration of Arrays – Accessing elements of the Array – Storing Values in Array– Operations on Arrays – one dimensional, two dimensional and multi-dimensional arrays, character handling and strings.

Functions: Introduction – using functions – Function declaration/ prototype – Function definition – function call – return statement – Passing parameters – Scope of variables – Storage Classes – Recursive functions.

UNIT–IV

Structure, Union, and Enumerated Data Types: Introduction – Nested Structures – Arrays of Structures – Structures and Functions– Union – Arrays of Unions Variables – Unions inside Structures – Enumerated Data Types.

Pointers: Understanding Computer Memory – Introduction to Pointers – declaring Pointer Variables – Pointer Expressions and Pointer Arithmetic – Null Pointers - Passing Arguments to Functions using Pointer – Pointer and Arrays – Memory Allocation in C Programs – Memory Usage – Dynamic Memory Allocation – Drawbacks of Pointers

Textbooks:

1. E Balagurusamy – Programming in ANSIC – Tata McGraw-Hill publications.
2. Yashavant Kanetkar - Let Us 'C' – BPB Publications.
3. Brain W Kernighan and Dennis M Ritchie - The 'C' Programming language" - Pearson publications.

Reference books:

1. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publications.
2. Programming in C second edition. Pradep Day, ManasGhosh

Web Links:

1. https://nptel.ac.in/courses/106/104/106104128/
2. https://nptel.ac.in/courses/106/105/106105171/
3. https://www.programiz.com/c-programming
4. https://data-flair.training/blogs/c-tutorial/

CO-POMapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

(*Accredited with "A+" Grade by NAAC)*

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

PAPER – I: CSC-155: Problem Solving in C

MODEL QUESTION PAPER (W.E.F 2020-2021)

SEMESTER – I

Time: 2 ½ Hrs. **Max Marks : 50 M**

SECTION - I

Answer any **Two** of the following: **2 X 5M=10 M**

1. Write the characteristics of computers
2. Explain various data types in C.
3. Explain about Array?
4. Distinguish between Structures and Unions.

SECTION –II

Answer **ALL** Questions: **4 X 10M=40 M**

5. a). Explain the Logical Organization of a Digital Computer with the help of Block Diagram?

   (Or)

   b). Write about the classification of computer in detail?

6. a). Explain various Conditional Control Statements in 'C' with examples?

   (Or)

   b).Explain various Conditional Looping Statements in 'C' with examples?

7. a). Explain the difference different types Array?

   (Or)

   b). Explain various String handling Functions in C?

8. a). Explain different types of Functions in C?

   (Or)

   b).Explain about different types of Pointers in C?

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC-155P	**TITLE OF THE COURSE** Problem Solving in C Lab	I B.Sc. (I Sem)			
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:	Basic Mathematical Knowledge	0	0	3	2

Objectives:

1. The purpose of this course is to introduce to students to the field of programming in C language.
2. The students will be able to enhance their analyzing and problem solving skills and use the same for writing programs in C.

List of Experiments/Syllabus:

1. Write a program to check whether the given number is Armstrong or not.
2. Write a program to find the sum of individual digits of a positive integer.
3. Write a program to generate the first n terms of the Fibonacci sequence.
4. Write a program to find both the largest and smallest number in a list of integer values
5. Write a program to demonstrate refection of parameters in swapping of two integer values using Call by Value & Call by Address
6. Write a program that uses functions to add two matrices.
7. Write a program to calculate factorial of given integer value using recursive functions
8. Write a program for multiplication of two N X N matrices.
9. Write a program to perform various string operations.
10. Write a program to search an element in a given list of values.
11. Write a program to sort a given list of integers in ascending order.
12. Write a program to calculate the salaries of all employees using Employee (ID, Name, Designation, Basic Pay, DA, HRA, Gross Salary, Deduction, Net Salary) structure.

    DA is 30 % of Basic Pay

    HRA is 15% of Basic Pay

    Deduction is 10% of (Basic Pay + DA)

    Gross Salary = Basic Pay + DA+ HRA

    Net Salary = Gross Salary - Deduction
13. Write a program to illustrate pointer arithmetic.

14. Write a program to read the data character by character from a file.
15. Write a program to create Book (ISBN, Title, Author, Price, Pages, Publisher)structure and store book details in a file and perform the following operations
    a. Add book details
    b. Search a book details for a given ISBN and display book details, if available
    c. Update a book details using ISBN
    d. Delete book details for a given ISBN and display list of remaining Books

Referencebooks:

1. E Balagurusamy – Programming in ANSIC – Tata McGraw-Hill publications.
2. Yashavant Kanetkar - Let Us 'C' – BPB Publications.
3. Brain W Kernighan and Dennis M Ritchie - The 'C' Programming language" - Pearson publications.

Virtual Lab Links:

IIIT Hyderabad: Computer Programming LAB
https://cse02-iiith.vlabs.ac.in/

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC-156	**TITLE OF THE COURSE** Data Structures using C	I B.Sc (II sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	C Programming (Arrays and Pointers)	3	1	-	3

Course Objectives:

1. To introduce the fundamental concept of data structures and to emphasize the importance of various data structures in developing and implementing efficient algorithms

CourseOutcomes:

On Completion of the course, the students will be able to-	
CO1	Illustrate the concepts of pointers and dynamic memory allocation with programs.
CO2	Describe data structures and different types of linked list
CO3	Construct stacks and queues using the concept of Arrays and Linked lists.
CO4	Illustrate the use of Binary Trees and its operations.
CO5	Demonstrate sorting and searching techniques with associated programs.
CO6	Illustrate Graphs and Minimum Cost Spanning Trees

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development			Employability			Entrepreneurship	

Syllabus:

UNIT–I

Introduction to Data Structures: Introduction to the Theory of Data Structures, Abstract Data Types, Difference between Abstract Data Types, Data Types, and Data Structures, Primitive and Non-primitive Data Structures, Linear and Non-Linear Data Structures.

Principles of Programming and Analysis of Algorithms: Algorithm, Characteristics of an Algorithm, Algorithm Analysis: Model, what to Analyze, Running time calculation, Complexity, Big 'O' Notation.

Arrays: One- Dimensional Arrays, Array Operations, Two- Dimensional arrays, Multidimensional Arrays

Pointers: Concept of pointers, Declaring and initializing pointers, Accessing variables using pointers, Pointers and arrays, Pointers and structures. Dynamic Memory allocation – Introduction, Dynamic memory allocation: Malloc, Calloc, Free, Realloc.

UNIT–II

Linked Lists: Introduction to Linked Lists, Basic Linked List Operations, Single Linked List, Doubly

Linked List, Circular Linked List, Linked List versus Arrays
Stacks: Introduction to Stacks, Stack as an Abstract Data Type, Representation of Stacks through Arrays, Representation of Stacks through Linked Lists, Applications of Stacks, Stacks and Recursion

UNIT–III

Queues: Introduction, Queue as an Abstract data Type, Representation of Queues, Circular Queues, Double Ended Queues- Deques, Priority Queues, Application of Queues

Binary Trees: Introduction to Non- Linear Data Structures, Introduction Binary Trees, Types of Trees, Basic Definition of Binary Trees, Properties of Binary Trees, Representation of Binary Trees, Binary Search Trees, Operations on a Binary Search Tree, Binary Tree Traversal, Applications of Binary Tree

UNIT–IV

Graphs: Introduction to Graphs, Terms Associated with Graphs, Sequential Representation of Graphs, Linked Representation of Graphs, Traversal of Graphs, Spanning Trees, Minimum Spanning Tree: Prim's Algorithm, Kruskal's Algorithm, Shortest Path, Dijkstra's Algorithm, Application ofGraphs.

Searching and sorting: Sorting – An Introduction, Bubble Sort, Selection Sort, Insertion Sort, Quick Sort, Heap Sort, Merge Sort, Searching – An Introduction, Linear or Sequential Search, Binary Search

Textbooks:

1. "Data Structures Using C" Balagurusamy E.TMH
2. "Data Structures through C", Yashavant Kanetkar, BPB Publications

Reference books:

1. Classic Data Structures Debasis Samanta. Second edition
2. Data Structures and algorithms GAV PAI

Web Links:

1. https://nptel.ac.in/courses/106/102/106102064/
2. https://nptel.ac.in/noc/courses/noc18/SEM1/noc18-cs25/
3. https://www.geeksforgeeks.org/data-structures/

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(Accredited with "A+" grade by NAAC)
DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS
PAPER – I:CSC: DATA STRUCTURES Using C
MODEL QUESTION PAPER (W.E.F 2020-2021)
SEMESTER – II

Time: 2 ½ Hrs. **Max Marks : 50 M**

SECTION - I

Answer any **Two** of the following: **2 X 5M=10 M**

1. Write short note on ADT
2. Compare Linked list with Arrays
3. Describe Priority Queues
4. Write an algorithm on Bubble sort

SECTION –II

Answer **ALL** Questions: **4 X 10M=40 M**

5. a) Explain in detail Dynamic Memory Allocation

(Or)

b) Briefly discuss the Characterization of Data Structures

6. a) Write algorithms to insert a node at various places in Single Linked List

(Or)

b) Define Stack ADT. Write algorithms to implement Stack using Arrays

7. a) Demonstrate Queue implementation using Linked lists

(Or)

b) What is BST? Explain various Tree Traversal Techniques

8. a) Explain Quick sort algorithm wth an example?

(Or)

b). Write a C Program to perform Binary Search

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC-156P	**TITLE OF THE COURSE** **DATA STRUCTURES Using C**	I B.Sc. (II Sem)			
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:	C Programming (Arrays & Pointers)	0	0	3	2

Objectives:

The purpose of this course is to introduce to students to the field of programming in Data structures using C language. The students will be able to enhance their analyzing and problem solving skills and use the same for writing programs in Data Structures using C.

List of Experiments/Syllabus:

1. Write a program to read 'N' numbers of elements into an array and also perform the following operation on an array
    - Add an element at the begging of an array
    - Insert an element at given index of array
    - Update a element using a values and index
    - Delete an existing element
2. Write a program using stacks to convert a given infix expression to postfix
3. Write Programs to implement the Stack operations using an array
4. Write Programs to implement the Stack operations using Liked List.
5. Write Programs to implement the Queue operations using an array.
6. Write Programs to implement the Queue operations using Liked List.
7. Write a program for Binary Search Tree Traversals
8. Write a program to search an item in a given list using the following Searching Algorithms
    - Linear Search
    - Binary Search.
9. Write a program for implementation of the following Sorting Algorithms
    - Bubble Sort
    - Insertion Sort
    - Quick Sort
10. Write a program to find out shortest path between given Source Node and Destination Node in a given graph using Dijkstra's algorithm

11. Write a program to implement Depth First Search graph traversals algorithm
12. Write a program to implement Breadth First Search graph traversals algorithm

Reference books:

1. Classic Data Structures Debasis Samanta. Second edition
2. "Data Structures Using C" Balagurusamy E.TMH

Virtual Lab Links:

https://cse01-iiith.vlabs.ac.in/

https://ds1-iiith.vlabs.ac.in/

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC155	**TITLE OF THE COURSE** Database Management System	II B.Sc. (III Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		3	1	-	3

Course Objectives:

1. Design & develop database for large volumes & varieties of data with optimized data processing techniques

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Design and model of data in database.
CO2	Store, Retrieve data in database.
CO3	Understands Normalization
CO4	Do PL/SQL programming, Data base triggers.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT I:

Overview of Database Management System: Introduction, file-based system, Drawbacks of file-Based System, Data and information, Database, Database management System, Objectives of DBMS, Evaluation of Database management System, Classification of Database Management System, DBMS Approach, advantages of DBMS, data models, Components and Interfaces of Database Management System. Database Architecture, Situations where DBMS is not necessary.

UNIT II:

Entity-Relationship Model: Introduction, the building blocks of an entity relationship diagram, classification of entity sets, attribute classification, relationship degree, relationship classification, reducing ER diagram to tables, enhanced entity-relationship model (EER model), generalization and specialization, **IS A** relationship and attribute inheritance, multiple inheritance, constraints on specialization and generalization, aggregation and composition, entity clusters, connection types, advantages of ER modeling.

Normal Forms: Introduction, Functional Dependencies, Normal Forms: I, II, III.

UNIT III

Relational Model: Introduction, CODD Rules, relational data model, concept of key, relational integrity, relational algebra, relational algebra operations, advantages of relational algebra, limitations of relational algebra, relational calculus, tuple relational calculus, domain relational Calculus (DRC). QBE

UNIT IV:

Structured Query Language: Introduction, History of SQL Standard, Commands in SQL, Data Types in SQL, Data Definition Language, Selection Operation, Projection Operation, Aggregate functions, Data Manipulation Language, Table Modification Commands, Table Truncation, Imposition of Constraints, Join Operation, Set Operation, View, Sub Query, Embedded SQL

PL/SQL: Introduction, Shortcoming in SQL, Structure of PL/SQL, PL/SQL Language Elements, Data Types, Operators Precedence, Control Structure, Steps to Create a PL/SQL, Program, Iterative Control, Cursors, Steps to create a Cursors, Procedure, Function, Packages, Exceptions Handling, Database Triggers, Types of Triggers.

Text books:

1. "Database System Concepts" by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill, 2010, 9780073523323

Reference books:

1. "Database Management Systems" by Raghu Ramakrishnan, McGrawhill, 2002, for Unit-I & Unit-II
2. Fundamentals of Relational Database Management Systems by S. Sumathi, S. Esakkirajan, Springer Publications for Unit-III, Unit-IV

WebLinks:

1. https://onlinecourses.nptel.ac.in/noc21_cs04/preview
2. https://nptel.ac.in/courses/106/106/106106095/

CO-POMapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(Accredited with "A+" grade by NAAC)
DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS
PAPER – I:CSC155: DATABASE MANAGEMENT SYSTEM
MODEL QUESTION PAPER (W.E.F 2020-2021)
SEMESTER – III

Time: 2 ½ Hrs. **Max Marks : 50 M**

SECTION - I

Answer any **Two** of the following: **2 X 5M=10 M**

1. Explain disadvantages of file processing system
2. What are the advantages of Relational algebra? Explain
3. Explain about various attribute classification.
4. Explain the selection command with an example

SECTION –II

Answer **ALL** Questions: **4 X 10M=40 M**

5. a) With a neat diagram, explain the architecture of a DBMS

   (Or)

   b) Explain about Data Models

6. a) Explain about Specialization and Generalization in EER model

   (Or)

   b) What is ER-Modeling? Write advantages and disadvantages of ER-Modelling

7. a) What is Functional Dependency? Explain difference between 3NF and BCNF

   (Or)

   b) What is relational model? Write about key features of relational model.

8. a) What is SQL? Explain different types of commands in SQL

   (Or)

   b) What is Nested Queries? How to create them? Discuss it with relevant example

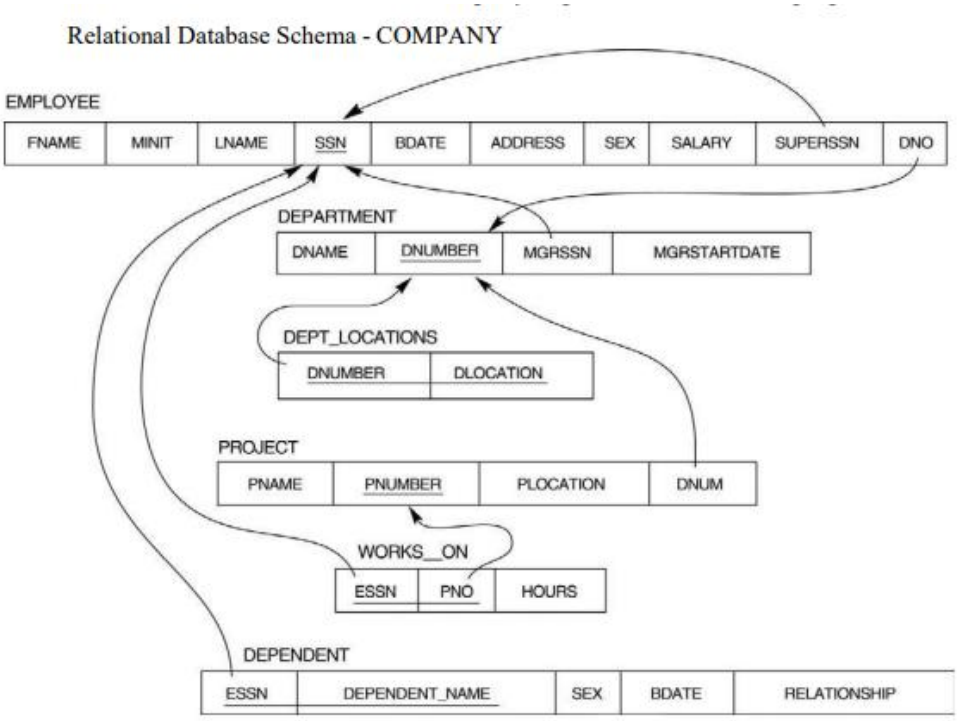
	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC 155P	**TITLE OF THE COURSE** DBMS Lab	**II** B.Sc. (III Sem)			
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:		0	0	3	2

Objectives:

- The objective of this lab course is to understand the practical applicability of database management system concepts.
- Working on existing database systems, designing of database, creating relational database, analysis of table design.
- The lab course also provides practical knowledge to understand advanced database concepts.

List of Experiments/Syllabus:

1. Draw ER diagram for hospital administration
2. Creation of college database and establish relationships between tables
3. Relational database schema of a company is given in the following figure.



Questions to be performed on above schema

a) Create above tables with relevant Primary Key, Foreign Key and other constraints
b) Populate the tables with data
c) Display all the details of all employees working in the company.
d) Display ssn, lname, fname, address of employees who work in department no 7.
e) Retrieve the Birthdate and Address of the employee whose name is 'Franklin T.Wong'
f) Retrieve the name and salary of every employee. 7. Retrieve all distinct salary values
g) Retrieve all employee names whose address is in ‘Bellaire’
h) Retrieve all employees who were born during the 1950s
i) Retrieve all employees in department 5 whose salary is between 50,000 and60,000 (inclusive)
j) Retrieve the names of all employees who do not have supervisors
k) Retrieve SSN and department name for all employees
l) Retrieve the name and address of all employees who work for the 'Research 'department
m) For every project located in 'Stafford', list the project number, the controlling department number, and the department manager's last name, address, and birth date.
n) For each employee, retrieve the employee's name, and the name of his or her immediate supervisor. 16.Retrieve all combinations of Employee Name and Department Name
o) Make a list of all project numbers for projects that involve an employee whose last name is 'Narayan’ either as a worker or as a manager of the department that controls the project.
p) Increase the salary of all employees working on the 'Product X' project by 15%. Retrieve employee name and increased salary of these employees.
q) Retrieve a list of employees and the project name each works in, ordered by the employee's department, and within each department ordered alphabetically by employee first name.
r) Select the names of employees whose salary does not match with salary of any employee in department.
s) Retrieve the employee numbers of all employees who work on project located in Bellaire, Houston, or Stafford.
t) Find the sum of the salaries of all employees, the maximum salary, the minimum salary, and the average salary. Display with proper headings
u) Find the sum of the salaries and number of employees of all employees of the ‘Marketing’ department, as well as the maximum salary, the minimum salary, and the average salary in this department.
v) Select the names of employees whose salary is greater than the average salary of all employees in department 10.
w) Delete all dependents of employee whose ssn is ‘123456789’.
x) Perform a query using alter command to drop/add field and a constraint in Employee table.

Referencebooks:

1. “Database System Concepts” by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill, 2010

Virtual LabLinks:

http://vlabs.iitb.ac.in/vlabs-dev/labs/dblab/index.php

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CS156	**TITLE OF THE COURSE** Object Oriented Programming Using JAVA	II BSC (IV Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	C Programming	3	1	-	3

Course Objectives:

1. To introduce the fundamental concept of Object Oriented Programming and to emphasize the importance of Object Oriented concepts in Java Programming.

CourseOutcomes:

On Completion of the course, the students will be able to-	
CO1	Illustrates Object Oriented concepts
CO2	Understand OOPS constructs and implementation
CO3	Construct Inheritence and Interfaces using java
CO4	Illustrate the use Multithreading
CO5	Demonstrates Exception Handling

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT–I

Fundamentals of Object-Oriented Programming: Introduction, Object Oriented paradigm, Basic Concepts of OOP, Benefits of OOP, Applications of OOP

Overview of JAVA Language: Introduction, Java Features, Simple java program structure, difference between C,C++ and Java, Java and Internet, Java tokens, Java Statements, Implementing a Java Program, Java Virtual Machine, Command line arguments

Constants, Variables and Data Types : Introduction, Constants, Variables, Data Types, Declaration of Variables, Giving Value to Variables, Scope of variables, symbolic Constants, Type casting, Getting Value of Variables, Standard Default values.

UNIT–II

OPERATORS AND EXPRESSIONS: Arithmetic operators, Relational operators, logical operators, Assignment Operators, Increment and decrement operators, Conditional operators, Bitwise operators,

Special Operators, Arithmetic operators, Precedence of Arithmetic operators.
DECISION MAKING & BRANCHING: Introduction, Decision making with If statement, Simple if statement, If Else statement, Nesting of if else statements, the else if ladder, the switch statement, the conditional operator.
DECISION MAKING &LOOPING :Introduction, The While statement, the Do-While statement, the for statement, Jumps in loops
CLASSES, OBJECTS & METHODS: Introduction, Defining a class, Adding variables, Adding methods, Creating objects, Accessing class members, Constructors, Method overloading, static members, Nesting of methods, visibility controls

UNIT–III

INHERITANCE : Inheritance and Types of Inheritances, Extending a class, Overloading methods, Final variables and methods, Final classes, Abstract methods and classes.
ARRAYS, STRINGS AND VECTORS: Arrays, One-Dimensional Arrays, Creating an Array, Two-Dimensional Arrays, Strings, Vectors, Wrapper classes
INTERFACES: MULTIPLE INHERITANCE: Introduction , Defining interfaces, Extending interfaces, Implementing interfaces, Assessing interface variables

UNIT–IV

MULTITHREADED PROGRAMMING: Introduction, Creating Threads, Extending the Threads, Stopping and Blocking a Thread, Life cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization, Implementing the 'Runnable' Interface
MANAGING ERRORS AND EXCEPTIONS: Types of Errors: Compile-time errors, Run-time Errors, Exceptions, Exception handling, Multiple catch statements, Using finally statement
Packages: creating Packages, Accessing a Package, Using a Package, Adding class to a Package

Text books:

1. E.Balaguruswamy, Programming with JAVA , A PRIMER, 3e, TATA McGraw-Hill Company

Reference books: Deitel & Deitel. Java TM: How to Program, PHI(2007)

1. Deitel & Deitel. Java TM: How to Program, PHI(2007) (Unit V)
2. Java Complete Reference. Herberth Schildt

WebLinks:

1. https://onlinecourses.nptel.ac.in/noc21_cs56/preview
2. https://nptel.ac.in/courses/106/105/106105225/
3. https://www.javatpoint.com/java-tutorial

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A+" Grade)*

II B.Sc COMPUTER SCIENCE
MODEL QUESTION PAPER (W.E.F 2020-21)
PAPER – II: CSC156: OBJECT ORIENTED PROGRAMMINGUSING JAVA
SEMESTER – IV

Time: 2 ½ Hrs **Max Marks :50M**

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SECTION –A

Answer any TWO Questions **2 x 5M=10M**

1. What is Java Virtual Machine
2. Explain the Java program Structure
3. Explain about Type casting.
4. Define Abstract class and Abstract method

SECTION –B

Answer ALL questions. **4 x 10M=40M**

5. (a) Explain Looping statements in JAVA

(Or)

(b) Explain operators and types of operators

6. (a) Explain Inheritance and types of Inheritance

(Or)

(b) Explain constructors and types of constructors with an example.

7. (a) Describe Interface? Critically explain and define Accessing Interface variable.

(Or)

(b) Explain concept of Exception handling.

8. (a) Explain the concept of Creating a file using File Writer using an example program

(Or)

(b) Discuss Thread Life Cycle

* * *

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CS 156P	**TITLE OF THE COURSE** OBJECT ORIENTED PROGRAMMING USING JAVA LAB	**II** B.Sc. (IV Sem)			
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:	C programming	0	0	3	2

Objectives:

1. The purpose of this Lab course is to introduce to students to the field of programming in Object Oriented Programming. The students will be able to enhance their analyzing and problem solving skills and use the same for writing programs in JAVA.

List of Experiments/Syllabus:

1. Write a program to perform various String Operations
2. Write a program on class and object in java
3. Write a program to illustrate Function Overloading & Function Overriding methods in Java
4. Write a program to Illustrate the implementation of abstract class
5. Write a program to implement Exception handling
6. Write a program to create packages in Java
7. Write a program on interface in java
8. Write a program to Create Multiple Threads in Java
9. Write a program to write Applets to draw the various polygons
10. Write a program which illustrates the implementation of multiple Inheritance using interfaces in Java
11. Write a program to assign priorities to threads in java

Reference books:

1. Deitel & Deitel. Java TM: How to Program, PHI(2007)
2. Java Complete Reference. Herberth Schildt

Virtual Lab Links:

http://vlabs.iitb.ac.in/vlabs-dev/labs/java-iitd/index.html

https://java-iitd.vlabs.ac.in/

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC157	**TITLE OF THE COURSE** Operating System	**II** B.Sc. (IV Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Basic Computer Hardware	3	1	-	3

Course Objectives:

1. This course aims to introduce the structure and organization of a file system. It emphasizes various functions of an operating system like memory management, process management, device management, etc

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Know various Computer system resources and the role of operating system in resource management with algorithms
CO2	Understand Operating System Architectural design and its services.
CO3	Gain knowledge of various types of operating systems including Unix and Android.
CO4	Understand various process management concepts include process scheduling, synchronization, and deadlocks.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT I

What is Operating System? History and Evolution of OS, Basic OS functions, Resource Abstraction,Types of Operating Systems– Multiprogramming Systems, Batch Systems, Time Sharing Systems;Operating Systems for Personal Computers, Workstations and Hand-held Devices, Process Control &Realtime Systems

UNIT II

Processor and User Modes, Kernels, System Calls and System Programs, System View of the Processand Resources, Process Abstraction, Process Hierarchy, Threads, Threading Issues, Thread Libraries;ProcessScheduling,Non-Preemptiveand PreemptiveSchedulingAlgorithms

UNIT III

Process Management: Deadlock, Deadlock Characterization, Necessary and Sufficient Conditions forDeadlock, Deadlock Handling Approaches: Deadlock Prevention, Deadlock

Avoidance and Deadlock Detection and Recovery. Concurrent and Dependent Processes, Critical Section, Semaphores, Methods for Inter- process Communication; Process Synchronization, Classical Process Synchronization Problems: Producer-Consumer, Reader-Writer

UNIT IV

Memory Management: Physical and Virtual Address Space; Memory Allocation Strategies– Fixed and-Variable Partitions, Paging, Segmentation, Virtual Memory.

File and I/O Management, OS security: Directory Structure, File Operations, File Allocation Methods, Device Management, Pipes, Buffer, Shared Memory, Security Policy Mechanism, Protection, Authentication and Internal Access Authorization Introduction to Android Operating System, Android Development Framework, Android Application Architecture, Android Process Management and File System, Small Application Development using Android Development Framework

Textbooks:

1. Operating System Principles by Abraham Silberschatz, Peter Baer Galvin and Greg Gagne (7thEdition) Wiley India Edition.
2. Operating Systems: Internals and Design Principles by Stallings (Pearson)

Reference books:

1. Operating Systems by J. Archer Harris (Author), Jyoti Singh (Author) (TMH)

Web Links:

1. https://nptel.ac.in/courses/106/105/106105214/
2. https://nptel.ac.in/courses/106/106/106106144/
3. https://nptel.ac.in/courses/106/106/106106147/
4. https://www.tutorialspoint.com/operating_system/index.htm

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(Accredited with "A+" grade by NAAC)

II B.Sc. COMPUTER SCIENCE
MODEL QUESTION PAPER (W.E.F 2020-2021)
PAPER – IV: OPERATING SYSTEMS
SEMESTER – IV

Time: 2 ½ Hrs **Max Marks :50M**

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SECTION –A

Answer any TWO Questions **2 x 5M=10M**

1. Write about the process and the process state
2. Explain about process Synchronization
3. Discuss some necessary and sufficient conditions for deadlock
4. Explain about Virtual memory

SECTION –B

Answer ALL questions. **4 x 10M=40M**

5. (a) Explain various types of Operating Systems

(Or)

(b) What is Operating System? Explain functions of Operating System

6. (a) Explain in detail about Process Scheduling.

(Or)

(b) Explain system view of the process and resources.

7. (a) Explain about deadlock Detection and recovery

(Or)

(b) Discuss classical process synchronization problems

8. (a) Explain the Segmentation, Fixed and variable partitions

(Or)

(b) Explain in detail about Demand-paging

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC157P	**TITLE OF THE COURSE** Operating System (Linux) Lab	**II** B.Sc. (IV Sem)			
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:	C Programming skills	0	0	3	2

Objectives:

1. To use Linux operating system for study of operating system concepts.
2. To write the code to implement and modify various concepts in operating systems

List of Experiments/Syllabus:

1. Usage of following commands
   Ls,pwd,tty,cat,who,who am I,rm, mkdir,rmdir,touch,cd.
2. Usage of following commands
   Cal,cat(append),cat(concatenate),mv,cp,man,date.
3. Usage of following commands
   Chmod,grep,tput(clear,highlight),bc.
4. Write a shell script to check if the number entered at the command line is Prime or not.
5. Write a shell script to modify "cal" command to display calendars of the specified months.
6. Write a shell script to modify "cal" command to display calendars of the specified range of months.
7. Write a shell script to accept a login name. If not a valid login name display message "entered
8. login name is invalid"
9. Write a shell script to display date in the mm/dd/yy format.
10. To implement the FCFS Algorithm.
11. To implement the shortest job First Algorithm.
12. To implement the priority algorithm.
13. To implement the round robin Algorithm.
14. To implement the FIFO page replacement algorithm
15. To implement the LRU page replacement Algorithm.
16. To implement the Resource request Algorithm.
17. To implement the First-Fit, Best-Fit, Worst-Fit Algorithm.
18. To implement the sequential file organization.
19. To implement the Random file organization
20. Simulate Page Replacement Algorithms FIFO
21. Simulate Page Replacement Algorithms LRU

22. Simulate Page Replacement Algorithms OPTIMAL
23. Simulate Algorithm For Deadlock Prevention

Reference books:

1. Operating System Principles, Abraham Silberchatz, Peter B. Galvin, Greg Gagne 8th Edition, Wiley Student Edition

Virtual Lab Links:

http://vlabs.iitb.ac.in/vlabs-dev/vlab_bootcamp/bootcamp/CRUX/index.html

http://210.212.172.182/Information%20Technology/TY%20BTech/Operating%20Systems%20Lab/subject.name.html

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC117	**TITLE OF THE COURSE** Database Management System	III B.Sc. (V Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		3	1	-	3

Course Objectives:

Design & develop database for large volumes & varieties of data with optimized data processing techniques

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Design and model of data in database.
CO2	Store, Retrieve data in database.
CO3	Understands Normalization
CO4	Do PL/SQL programming, Data base triggers.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT I:

Overview of Database Management System: Introduction, file-based system, Drawbacks of file-Based System, Data and information, Database, Database management System, Objectives of DBMS, Evaluation of Database management System, Classification of Database Management System, DBMS Approach, advantages of DBMS, data models, Components and Interfaces of Database Management System. Database Architecture, Situations where DBMS is not necessary.

UNIT II:

Entity-Relationship Model: Introduction, the building blocks of an entity relationship diagram, classification of entity sets, attribute classification, relationship degree, relationship classification, reducing ER diagram to tables, enhanced entity-relationship model (EER model), generalization and specialization, **IS A** relationship and attribute inheritance, multiple inheritance, constraints on specialization and generalization, aggregation and composition, entity clusters, connection types, advantages of ER modeling.

Normal Forms: Introduction, Functional Dependencies, Normal Forms: I, II, III.

UNIT III

Relational Model: Introduction, CODD Rules, relational data model, concept of key, relational integrity, relational algebra, relational algebra operations, advantages of relational algebra, limitations of relational algebra, relational calculus, tuple relational calculus, domain relational Calculus (DRC). QBE

UNIT IV:

Structured Query Language: Introduction, History of SQL Standard, Commands in SQL, Data Types in SQL, Data Definition Language, Selection Operation, Projection Operation, Aggregate functions, Data Manipulation Language, Table Modification Commands, Table Truncation, Imposition of Constraints, Join Operation, Set Operation, View, Sub Query, Embedded SQL

PL/SQL: Introduction, Shortcoming in SQL, Structure of PL/SQL, PL/SQL Language Elements, Data Types, Operators Precedence, Control Structure, Steps to Create a PL/SQL, Program, Iterative Control, Cursors, Steps to create a Cursors, Procedure, Function, Packages, Exceptions Handling, Database Triggers, Types of Triggers.

Text books:

1. "Database System Concepts" by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill, 2010, 9780073523323

Reference books:

1. "Database Management Systems" by Raghu Ramakrishnan, McGrawhill, 2002, for Unit-I & Unit-II
2. Fundamentals of Relational Database Management Systems by S. Sumathi, S. Esakkirajan, Springer Publications for Unit-III, Unit-IV

Web Links:

1. https://onlinecourses.nptel.ac.in/noc21_cs04/preview
2. https://nptel.ac.in/courses/106/106/106106095/

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

(Accredited with "A+" grade by NAAC)

III B.Sc COMPUTER SCIENCE
(W.E.F 2019-2020)
PAPER – V: CSC128: DATA BASE MANAGEMENT SYSTEMS
SEMESTER – V
MODEL QUESTION PAPER

Time: 2 ½Hrs **Max Marks: 50M**

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SECTION – I

Answer any **TWO** of the following: **2 X 5=10 M**

1. Explain the following terms
   a. Data b. Information c. Database d. Database Management System
2. What are the functions of Database Administrator?
3. What is week entity? Explain with suitable example.
4. Explain Join operations in relational algebra.

SECTION –II

Answer **ALL** questions **4 X 10=40 M**

5. a) Explain Database Management System Architecture in detail.

   (Or)

   b) What is data model? Explain different data models in DBMS.
6. a) Explain about Extended Entity Relationship (EER) model.

   (Or)

   b) Explain different integrity constraints over relations

7. a).List and explain Codd's relational database rules

   (Or)

   b).Discuss about nested and correlated nested queries with suitable examples.

8. a). Explain DML commands in SQL with examples

   (Or)

   b).Explain DDL commands in SQL with examples

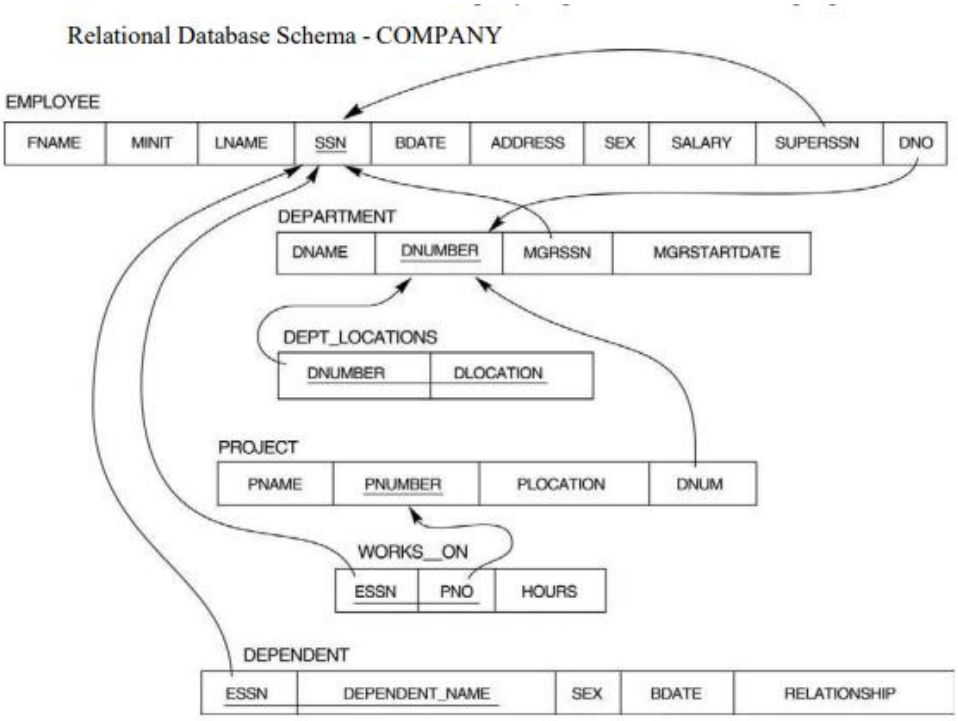
	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC 117P	**TITLE OF THE COURSE** DBMS Lab	**III** B.Sc. (V Sem)			
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:		0	0	3	2

Objectives:

- The objective of this lab course is to understand the practical applicability of database management system concepts.
- Working on existing database systems, designing of database, creating relational database, analysis of table design.
- The lab course also provides practical knowledge to understand advanced database concepts.

List of Experiments/Syllabus:

1. Draw ER diagram for hospital administration
2. Creation of college database and establish relationships between tables
3. Relational database schema of a company is given in the following figure.



Questions to be performed on above schema

a) Create above tables with relevant Primary Key, Foreign Key and other constraints
b) Populate the tables with data
c) Display all the details of all employees working in the company.
d) Display ssn, lname, fname, address of employees who work in department no 7.
e) Retrieve the Birthdate and Address of the employee whose name is 'Franklin T.Wong'
f) Retrieve the name and salary of every employee. 7. Retrieve all distinct salary values
g) Retrieve all employee names whose address is in ‘Bellaire’
h) Retrieve all employees who were born during the 1950s
i) Retrieve all employees in department 5 whose salary is between 50,000 and60,000 (inclusive)
j) Retrieve the names of all employees who do not have supervisors
k) Retrieve SSN and department name for all employees
l) Retrieve the name and address of all employees who work for the 'Research 'department
m) For every project located in 'Stafford', list the project number, the controlling department number, and the department manager's last name, address, and birth date.
n) For each employee, retrieve the employee's name, and the name of his or her immediate supervisor. 16.Retrieve all combinations of Employee Name and Department Name
o) Make a list of all project numbers for projects that involve an employee whose last name is 'Narayan’ either as a worker or as a manager of the department that controls the project.
p) Increase the salary of all employees working on the 'Product X' project by 15%. Retrieve employee name and increased salary of these employees.
q) Retrieve a list of employees and the project name each works in, ordered by the employee's department, and within each department ordered alphabetically by employee first name.
r) Select the names of employees whose salary does not match with salary of any employee in department.
s) Retrieve the employee numbers of all employees who work on project located in Bellaire, Houston, or Stafford.
t) Find the sum of the salaries of all employees, the maximum salary, the minimum salary, and the average salary. Display with proper headings
u) Find the sum of the salaries and number of employees of all employees of the ‘Marketing’ department, as well as the maximum salary, the minimum salary, and the average salary in this department.
v) Select the names of employees whose salary is greater than the average salary of all employees in department 10.
w) Delete all dependents of employee whose ssn is ‘123456789’.
x) Perform a query using alter command to drop/add field and a constraint in Employee table.

Referencebooks:

2. “Database System Concepts” by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill, 2010

Virtual LabLinks:

http://vlabs.iitb.ac.in/vlabs-dev/labs/dblab/index.php

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC118	**TITLE OF THE COURSE** Software Engineering	III B.Sc. (V Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Programming and Back end Technologies	3	1	-	3

Course Objectives:

1. The Objective of the course is to assist the student in understanding the basic theory of software engineering, and to apply these basic theoretical principles to a group software development project.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Gather and specify requirements of the software projects.
CO2	Analyze software requirements with existing tools
CO3	Differentiate different testing methodologies
CO4	Understand and apply the basic project management practices in real life projects
CO5	Work in a team as well as independently on software projects

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT-I:

INTRODUCTION: Software Engineering Process paradigms - Project management - Process and Project Metrics – software estimation - Empirical estimation models - Planning - Risk analysis - Software project scheduling.

UNIT- II:

REQUIREMENTS ANALYSIS: Requirement Engineering Processes – Feasibility Study – Problem of Requirements – Software Requirement Analysis – Analysis Concepts and Principles – Analysis Process – Analysis Model

UNIT- III:

SOFTWARE DESIGN: Software design - Abstraction - Modularity - Software Architecture - Effective modular design - Cohesion and Coupling - Architectural design and Procedural design - Data flow oriented design.

USER INTERFACE DESIGN AND REAL TIME SYSTEMS: User interface design - Human factors - Human computer interaction - Human - Computer Interface design - Interface design - Interface standards.

UNIT –IV:

SOFTWARE QUALITY AND TESTING: Software Quality Assurance - Quality metrics - Software Reliability - Software testing - Path testing – Control Structures testing - Black Box testing - Integration, Validation and system testing - Reverse Engineering and Re-engineering. CASE tools –projects management, tools - analysis and design tools – programming tools - integration and testing tool - Case studies.

Textbooks:

1. Roger Pressman S., "Software Engineering: A Practitioner's Approach", 7th Edition, McGraw Hill, 2010

Reference books:

1. Carlo Ghazi, Mehdi Jazayari, Dino Mandrioli, "Fundamentals of Software Engineering", Pearson Education, 2003 for Unit-I & Unit-II
2. Software Engineering Principles and Practice by Deepak Jain Oxford University Press for Unit-III, Unit-IV & Unit-II

Web Links:

1. https://nptel.ac.in/courses/106/105/106105087/
2. https://www.tutorialspoint.com/software_engineering/index.htm

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(Accredited with "A+" grade by NAAC)

III B.Sc COMPUTER SCIENCE
(W.E.F 2019-20)
PAPER – VI: CSC129: SOFTWARE ENGINEERG

SEMESTER – V
MODEL QUESTION PAPER

Time: 2 ½Hrs **Max Marks: 50M**

……

SECTION – I

Answer any **TWO** of the following : **2X5=10 M**

1. Explain the process and project metrics.
2. Explain various decomposition techniques
3. Explain metrics for software quality
4. Explain size oriented and function oriented functions

SECTION –II

Answer **ALL** questions **4X10=40 M**

5. a) Why it is important to manage project? Explain software management

   (or)

   b) Write about software planning and project scheduling
6. a) Explain the requirement engineering process with the help of a diagram and also explain the spiral model of requirements.

   (or)

   b) Describe the process of creating an analysis model and list out its elements
7. a) Explain about the Software Architecture Design

   (or)

   b) Explain in detail different elements on design model
8. a) What is software architecture? Why it is so important? Explain structural partitioning

   (or)

   b) Explain the various user interface analysis and design models

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC118P	**TITLE OF THE COURSE** **SOFTWARE ENGINEERG LAB**	**III** B.Sc. (V Sem)			
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:	Programming and Back end Technologies	0	0	3	2

Objectives:

The Objective of the course is to assist the student to acquire the generic software development skill through various stages of software life cycle.

List of Experiments/Syllabus:

1. Studying various phases of Water-Fall Model.
2. Prepare SRS for Banking or On line book store domain problem
3. Using COCOMO model estimate effort for Banking or on line book store domain problem.
4. Calculate effort using FP oriented estimation model
5. Analyze the Risk related to the project and prepare RMMM plan.
6. Develop Time-line chart and project table using PERT or CPM project scheduling methods.
7. Draw E-R diagram, DFD, CFD and STD for the project.
8. Design of the test cases.
9. Prepare FTR. Version control and change control for software configuration item.

Reference books:

1. Roger Pressman S., “Software Engineering: A Practitioner's Approach”, 7th Edition, McGraw Hill, 2010

Virtual Lab Links:

http://vlabs.iitkgp.ernet.in/se/1/theory/

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code **CSC123**	**TITLE OF THE COURSE** **Elective-A: Web Technologies**	III B.Sc. (VI Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		3	1	-	3

Course Objectives:

1. To provide knowledge on web architecture, web services, client side and server-side scripting technologies to focus on the development of web-based information systems and web services.
2. To provide skills to design interactive and dynamic web sites.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Create Static pages using HTML
CO2	Create Cascading style sheets
CO3	Use XML documents
CO4	Understands XSLT, document object model, Web Services

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT – I

HTML: Basic HTML, Document body, Text, Hyperlinks, Lists, Tables, images, Multimedia objects, Frames, Forms, HTML document heading details.

UNIT – II

Cascading Style Sheets: Introduction, Levels of style sheets: inline, internal, external. Style specification formats, selector forms, property- value forms, font properties.
Cascading Style Sheets: List properties, colour properties, Alignment of text, Box model, Background images, the **** and ** ** tags

UNIT – III

XML: Introduction, The syntax of XML, XML document structure, document type definition: Elements, attributes, entities, namespaces and xml-schemas.

UNIT – IV

XSLT, document object model, Web Services: Web Services Description Language (WSDL), Simple Object Access Protocol (SOAP), Universal Description, Discovery and Integration (UDDI).

Text books:

1. Harvey M. Deitel and Paul J. Deitel, **"Internet & World Wide Web How to Program", 4/e,** Pearson Education.
2. Robert W . Sebesta "**Programming world wide web**" 7th edition, Pearson Education.

Reference books:

1. Uttam Kumar Roy, Web Technologies from Oxford University Press

Web Links:

1. https://nptel.ac.in/courses/106/105/106105084/
2. https://www.w3schools.com/html/

CO-POMapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(Accredited with "A+" grade by NAAC)

III B.Sc. COMPUTER SCIENCE
MODEL QUESTION PAPER (W.E.F 2019-2020)
PAPER – VII: WEB TECHNOLOGIES
SEMESTER – VI

Time :2 ½ Hrs. **Max Marks:50 M**

SECTION – I

Answer any **TWO** of the following: **2X5=10 M**

1. What is hyperlink? Explain about anchor tag
2. Explain different font properties in CSS
3. What are the different XSLT elements?
4. Compare and contrast HTML and XML

SECTION –II

Answer **ALL** the questions: 4**X 10=40 M**

5. a). Explain how Forms are created with an example.

   (Or)

   b). Explain three types of lists in html with examples.

6. a). Explain Inline, internal and external CSS with examples.

   (Or)

   b). With the neat block diagram explain the CSS Box Model

7. a). What is Document Type Definition (DTD)? Explain how a DTD is created with an example.

   (or)

   b). Explain the concept of XML Schema.

8. a). What is Document object model in XML? Explain.

   (or)

   b). Explain the following

   i. i. Simple Object Access Protocol (SOAP)
   ii. ii. Universal Description, Discovery and Integration (UDDI)

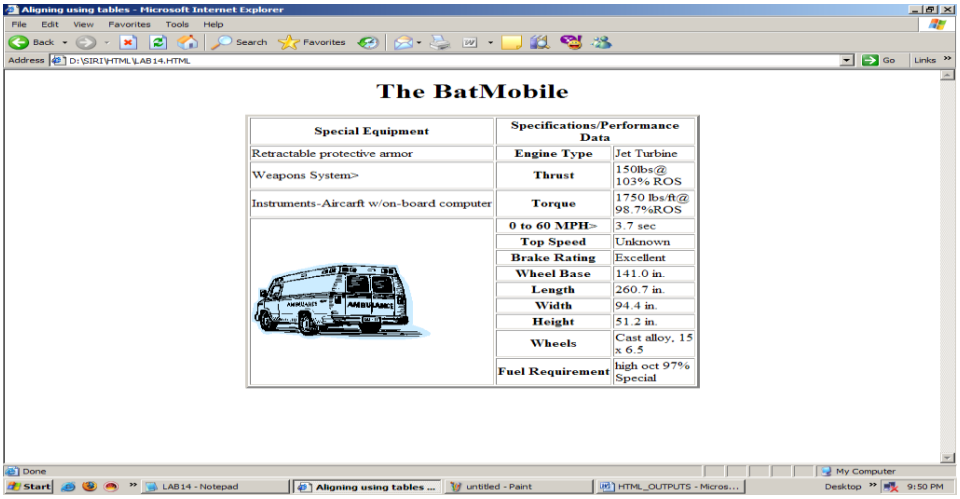
	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC123P	**TITLE OF THE COURSE** Web Technologies Lab	III BSC (VI Sem)			
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:		0	0	3	2

Objectives:

To provide skills to design interactive and dynamic web sites.

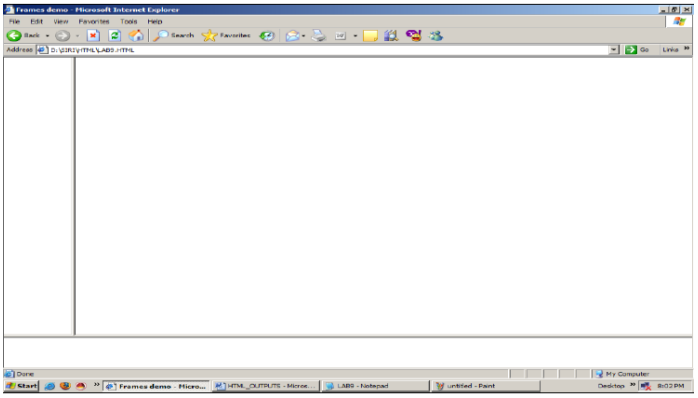
List of Experiments/Syllabus:

1. Write a HTML program illustrating text formatting.
2. Illustrate font variations in your HTML code.
3. Prepare a sample code to illustrate links between different sections of the page.
4. Create a simple HTML program to illustrate three types of lists.
5. Embed a real player in your web page.
6. Embed a calendar object in your web page.
7. Create an applet that accepts two numbers and perform all the arithmetic operations on them.
8. Create nested table to store your curriculum.
9. Create a form that accepts the information from the subscriber of a mailing system.
10. Design the page as follows:

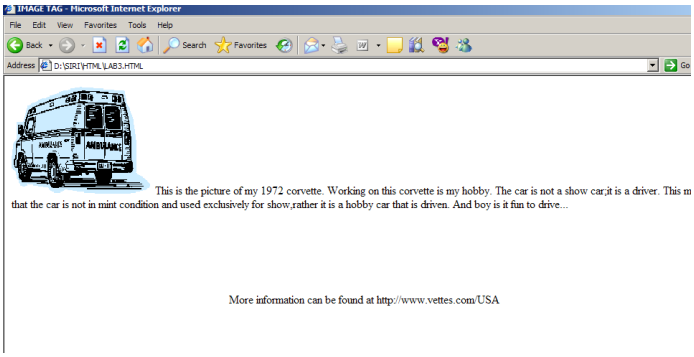


11. Using “table” tag, align the images as follows:

12. Divide the web page as follows:

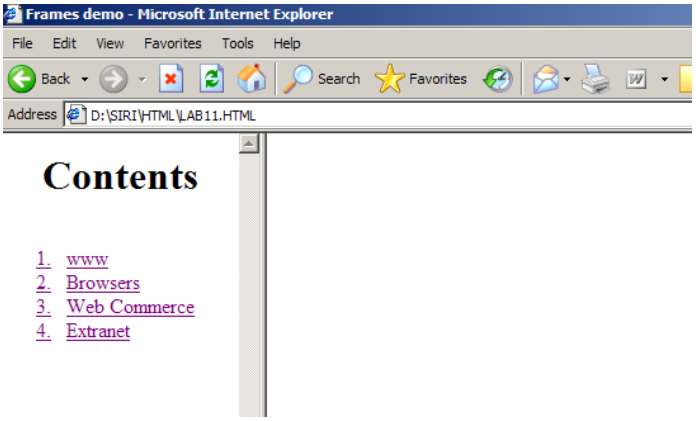


13. Design the page as follows:



14. Illustrate the horizontal rulers in your page.

15. Create a help file as follows:



16. Create a form using form tags (assume the form and fields).
17. Create a webpage containing your bio-data (assume the form and fields).
18. Write a html program including style sheets.
19. Write a html program to include audio or video into webpage.
20. Write a html program to layers of information in web page.

Reference books:

1. Harvey M. Deitel and Paul J. Deitel, "Internet & World Wide Web How to Program", 4/e, Pearson Education.

Virtual Lab Links:

http://vlabs.iitb.ac.in/vlabs-dev/vlab_bootcamp/bootcamp/bots_with_dots/index.html

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC130	**TITLE OF THE COURSE** Elective B: Computer Networks	III B.Sc. (VI Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		3	1	-	3

Course Objectives:

1. To provide an introduction to the fundamental concepts on data communication and the design of computer networks.
2. To get familiarized with the basic protocols of computer networks.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Identify the different components in a Communication System and their respective roles.
CO2	Describe the technical issues related to the local Area Networks
CO3	Identify the common technologies available in establishing LAN infrastructure.
CO4	Analyze various Routing Algorithms

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT – I

Introduction: Uses of Computer Networks, Network Hardware, Network Software, Reference Models, Example Networks.

The Physical Layer: The Theoretical Basis for Data Communication, Guided Transmission Media, Wireless transmission, the public switched telephone network

UNIT – II

The Data Link Layer: Data Link Layer Design Issues, Error Detection and Correction, Sliding Window Protocols.

The Medium Access Control Sub-layer: The channel allocation problem, **Multiple Access Protocols**, **Ethernet,** Data Link Layer Switching.

UNIT – III

The Network Layer: Network Layer Design Issues, Routing Algorithms, Congestion control algorithms, Quality of Service.

Internet Working, The Network Layer in the Internet

UNIT – IV

The Transport Layer: The Transport Service, Elements of Transport Protocols, Congestion Control Algorithms, The Internet Transport Protocols, The Internet Transport Protocols: TCP, Delay Tolerant Networks.

The Application Layer: DNS – The Domain Name System, Electronic Mail, The World Wide Web, Real Time Audio & Video, Content Delivery & Peer-to-Peer.

Text books:

1. Andrew S. Tanenbaum, "Computer Networks", Fifth Edition, Pearson Education.

Reference books:

1. BhushanTrivedi, Computer Networks , Oxford University Press
2. James F.Kurose, Keith W.Ross, "Computer Networking", Third Edition, Pearson Education
3. Behrouz A Forouzan,"Data Communications and Networking", Fourth Edition, TMH (2007).
4. Kurose & Ross,"***COMPUTER NETWORKS***"–A Top-down approach featuring the Internet",
5. Pearson Education – Alberto Leon –Garciak.

Web Links:

1. https://nptel.ac.in/courses/106/105/106105183/
2. https://www.javatpoint.com/computer-network-tutorial

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(Accredited with "A+" grade by NAAC)

III B.Sc. COMPUTER SCIENCE
MODEL QUESTION PAPER (W.E.F 2019-2020)
PAPER – VII: Elective –B - COMPUTER NETWORKS
SEMESTER – VI

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION – I

Answer any **TWO** of the following: **2X5=10 M**

1. Explain the uses of Computer Networks
2. Explain Sliding Window Protocols
3. What is meant by Congestion control algorithms
4. How working internet in Network Layer

SECTION –II

Answer **ALL** the questions: 4**X 10=40 M**

5. a). What is Computer Network? Explain its types give examples

   (Or)

   b). Explain about Data Communication

6. a). Briefly explain the Error Detection and Correction

   (Or)

   b). Explain how Multiple Access Protocols used in Networks

7. a). Explain the various issues in Network Layer Design

   (Or)

   b). How working Network Layer in the Internet

8. a). What is Transport Protocols? Explain the Elements of Transport Protocols

   (Or)

   b). Explain the Congestion Control Algorithms

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC130P	**TITLE OF THE COURSE** Computer Networks Lab	III B.Sc. (VI Sem)			
Teaching	Hours Allocated: 30 (Lab)	L	T	P	C
Pre-requisites:		0	0	3	2

Objectives:

1. Analyze the different layers in networks.
2. Define, use, and differentiate such concepts as OSI-ISO, TCP/IP.
3. How to send bits from physical layer to data link layer
4. Sending frames from data link layer to Network layer
5. They can understand how the data transferred from source to destination
6. They can come to know that how the routing algorithms worked out in network layer

List of Experiments/Syllabus:

1. Write a program to implement data link layer framing method bit stuffing.
2. Write a program to implement data link layer framing method characters tuffing.
3. Write a program to implement data link layer framing method character count.
4. Write a program to implement Cyclic Redundancy Check (CRC 12, CRC 16 and CRC 32) on a data set of characters.
5. Write a program to implement Dijkstra's algorithm to compute the shortest path through a graph.
6. Write a program to implement subnet graph with weights indicating delay between
7. Write a program to implement subnet

Reference books:

Andrew S. Tanenbaum, "Computer Networks", Fifth Edition, Pearson Education.

Virtual Lab Links:

http://vlabs.iitb.ac.in/vlabs-dev/labs_local/computer-networks/labs/explist.php

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC121	**TITLE OF THE COURSE** Elective C: Operating System	III B.Sc. (VI Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Basic Computer Hardware	3	1	-	3

Course Objectives:

1. This course aims to introduce the structure and organization of a file system. It emphasizes various functions of an operating system like memory management, process management, device management, etc

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understand Operating Systems Objectives and functions, Computer System Architecture
CO2	Demonstrate Process and CPU Scheduling
CO3	Illustrate Memory management.
CO4	Understands file system structure and deadlocks

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT - I

Operating System Introduction: Operating Systems Objectives and functions, Computer System Architecture, OS Structure, OS Operations, Evolution of Operating Systems-Simple Batch, Multi programmed, time shared, Parallel, Distributed Systems, Real-Time Systems, Operating System services.

UNIT - II

Process and CPU Scheduling - Process concepts - The Process, Process State, Process Control Block, Threads, Process Scheduling - Scheduling Queues, Schedulers, Context Switch, Pre-emptive Scheduling, Dispatcher, Scheduling Criteria, Scheduling algorithms, Case studies: Linux, Windows.

Process Coordination - Process Synchronization, The Critical section Problem, Synchronization Hardware, Semaphores, and Classic Problems of Synchronization, Monitors,

Case Studies: Linux, Windows.

UNIT - III

Memory Management and Virtual Memory - Logical & physical Address Space, Swapping, Contiguous Allocation, Paging, Structure of Page Table. Segmentation, Segmentation with Paging, Virtual Memory, Demand Paging, Performance of Demanding Paging, Page Replacement Page Replacement Algorithms, Allocation of Frames.

UNIT - IV

File System Interface - The Concept of a File, Access methods, Directory Structure, File System Mounting, File Sharing, Protection, File System Structure,
Mass Storage Structure - Overview of Mass Storage Structure, Disk Structure, Disk Attachment, Disk Scheduling.

Deadlocks - System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery from Deadlock.

Text books:

1. Operating System Principles, Abraham Silberchatz, Peter B. Galvin, Greg Gagne 8th Edition, Wiley Student Edition.

Reference books:

1. Principles of Operating Systems by Naresh Chauhan, OXFORD University Press
2. Operating systems-Internals and Design Principles,W.Stallings, 6thEdition, Pearson.
3. Modern Operating Systems, Andrew S Tanenbaum 3rd Edition PHI.
4. OperatingSystemsAconcept-basedApproach,2ndEdition,D.M.Dhamdhere, TMH.
5. Principles of Operating Systems, B. L. Stuart, Cengage learning, IndiaEdition.
6. Operating Systems, A. S. Godbole, 2nd Edition,TMH

Web Links:

1. https://nptel.ac.in/courses/106/105/106105214/
2. https://www.tutorialspoint.com/operating_system/index.htm

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(Accredited with "A+" grade by NAAC)

III B.Sc. COMPUTER SCIENCE
MODEL QUESTION PAPER (W.E.F 2019-2020)
PAPER – VII: Elective – C: OPERATING SYSTEMS
SEMESTER – VI

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION – I

Answer any **TWO** of the following: **2X5=10 M**

1. Write about the structure and operations of Operating System
2. Explain about Semaphores
3. Discuss in detail about the process control block
4. Write about Swapping

SECTION –II

Answer **All** the questions **4X10=40 M**

5. (a) Discuss the functions and objectives of OS

(Or)

(b) Explain in detail about time shared and Distributed systems

6. (a) Explain in detail about FCFS and SJF algorithms with examples

(Or)

(b)Explain in detail about Semaphores

7. (a) Explain about Contiguous memory Allocations

(Or)

(b) Explain the steps in handling a page fault

8. (a) Explain in detail about FCFS and SCAN disk scheduling algorithms

(Or)

(b) Explain in detail about file attributes and file operations

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC121P	**TITLE OF THE COURSE** Operating System Lab	**III** B.Sc. (VI Sem)			
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:	C Programming skills	0	0	3	2

Objectives:

1. To use Linux operating system for study of operating system concepts.
2. To write the code to implement and modify various concepts in operating systems

List of Experiments/Syllabus:

1. Usage of following commands

Ls,pwd,tty,cat,who,who am I,rm, mkdir,rmdir,touch,cd.

2. Usage of following commands

Cal,cat(append),cat(concatenate),mv,cp,man,date.

3. Usage of following commands

Chmod,grep,tput(clear,highlight),bc.

4. Write a shell script to check if the number entered at the command line is Prime or not.

5. Write a shell script to modify “cal” command to display calendars of the specified months.

6. Write a shell script to modify “cal” command to display calendars of the specified range of months.

7. Write a shell script to accept a login name. If not a valid login name display message “entered

8. login name is invalid”

9. Write a shell script to display date in the mm/dd/yy format.

10. To implement the FCFS Algorithm.

11. To implement the shortest job First Algorithm.

12. To implement the priority algorithm.

13. To implement the round robin Algorithm.

14. To implement the FIFO page replacement algorithm
15. To implement the LRU page replacement Algorithm.
16. To implement the Resource request Algorithm.
17. To implement the First-Fit, Best-Fit, Worst-Fit Algorithm.
18. To implement the sequential file organization.
19. To implement the Random file organization
20. Simulate Page Replacement Algorithms FIFO
21. Simulate Page Replacement Algorithms LRU
22. Simulate Page Replacement Algorithms OPTIMAL
23. Simulate Algorithm For Deadlock Prevention

Reference books:

Operating System Principles, Abraham Silberchatz, Peter B. Galvin, Greg Gagne 8th Edition, Wiley Student Edition

Virtual Lab Links:

http://vlabs.iitb.ac.in/vlabs-dev/vlab_bootcamp/bootcamp/CRUX/index.html

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC154	**TITLE OF THE COURSE** Cluster A1: Java Script	III B.Sc. (VI Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Web Technologies (HTML, CSS)	3	1	-	3

Course Objectives:

Inculcate the sufficient knowledge towards dynamic webpage designing

CourseOutcomes:

On Completion of the course, the students will be able to-	
CO1	Use operators, variables, arrays, control structures, functions and objects in JavaScript.
CO2	Map HTML using the DOM - Document Object Model.
CO3	Identify popular JavaScript Libraries.
CO4	Create dynamic styles.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT – I

Introduction to JavaScript: Over view of JavaScript, Object Orientation and JavaScript, General Syntactic Characteristics, Primitives, Operations, and Expressions, Screen Output and Keyboard Input.

UNIT – II

Decision Making Statements: if, if..else, if..else if ..else , switch, Iterative Statements: for, while, do while. Break, continue, JavaScript Objects: Math, Date.

Strings and string methods, Arrays and array methods, functions: Function declaration, function definition, parameter passing, function call, scope rules, constructors.

UNIT -III

JavaScript and XHTML Documents : The JavaScript Execution Environment, The

Document Object Model, Element Access in JavaScript, Events and Event Handling, Handling Events from Body Elements, Handling Events from Button Elements, Handling Events from Text Box and Password Elements, The DOM 2 Event Model, The navigator Object, DOM Tree Traversal and Modification

UNIT -IV

Dynamic Documents with JavaScript: Introduction, Positioning Elements, Moving Elements, Element Visibility, Changing colours and Fonts, Dynamic Content, Stacking Elements, Locating the Mouse Cursor, Reacting to a Mouse Click, Slow Movement of Elements, Dragging and Dropping Elements

Text books:

1. Harvey M. Deitel and Paul J. Deitel, "Internet & World Wide Web How to Program", 4/e, Pearson Education.

Reference books:

1. Robert W . Sebesta "Programming world wide web" 7th edition, Pearson Education.

WebLinks:

1. https://nptel.ac.in/courses/106/105/106105084/
2. https://www.w3schools.com/js/DEFAULT.asp

CO-POMapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(Accredited with "A+" grade by NAAC)
III B.Sc. COMPUTER SCIENCE
MODEL QUESTION PAPER (W.E.F 2019-2020)
PAPER – VIII: Cluster A1: JAVASCRIPT
SEMESTER – VI

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION – I

Answer any **TWO** of the following: **2X5=10 M**

1. Explain JavaScript break and continue statements with examples.
2. List and explain any 5 methods available in Math object
3. explain how JavaScript objects are created with an example
4. Compare and contrast HTML and DHTML

SECTION –II

Answer **ALL** the questions: 4**X 10=40 M**

5. a). Explain primitive data types in JavaScript

   (or)

   b). Explain operators in Java Script

6. a). Explain decision control statements in JavaScript

   (or)

   b). Explain iterative statements in JavaScript

7. a). Write about various string manipulations in JavaScript.

   (or)

   b). How to declare functions in JavaScript? Write a JavaScript to find the sum of 'n' even numbers and display the result

8. a). Explain about JavaScript event handling

   (Or)

   b). Explain about document object model

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC154P	**TITLE OF THE COURSE** Cluster A1: JavaScript Lab	III BSC (VI Sem)			
Teaching	Hours Allocated: 30 (Lab)	L	T	P	C
Pre-requisites:	HTML, CSS	0	0	3	2

Objectives:

Use operators, variables, arrays, control structures, functions and objects in JavaScript. Map HTML using the DOM - Document Object Model. Identify popular JavaScript Libraries. Create dynamic styles.

List of Experiments/Syllabus:

1. Create one java script in which swap two variable values.(with and without using third variable)
   e.g. a=10, b=15 then output should be a=15 and b=10
2. Write a function to find the sum of two numbers in Java Script
3. Write a program to implement factorial of a given number using java script.
4. Write a program to find roots of a quadratic equation using java script.
5. Write a program to check whether a given number is prime or not using java script.
6. Write a JavaScript program to compute the GCD of 2 numbers using function.
7. Write a java script to find the second largest number in an array.
8. Write a JavaScript program to illustrate a subroutine
9. Write a program to search an element in an array of size “n” using JavaScript.
10. Design basic calculator using JavaScript
11. Design a registration form and validate its field by using JavaScript.
12. Design a login form and validate its field by using JavaScript.

Reference books:

1. Robert W . Sebesta “Programming world wide web” 7th edition, Pearson Education.

Virtual Lab Links:

http://vlabs.iitb.ac.in/vlabs-dev/labs/javascript/index.php

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC142	**TITLE OF THE COURSE** Cluster A2: PHP & MYSQL	III B.Sc. (VISem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	HTML, CSS and Java Script	3	1	-	3

Course Objectives:

The objective of this course is to provide the necessary knowledge to design and develop dynamic, database-driven web applications using PHP version

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	List the major elements of the PHP & MySQL work and explain why PHP is good for web development
CO2	Learn how to take a static website and turn it into a dynamic website run from a database using PHP and MySQL.
CO3	Analyze the basic structure of a PHP web application and be able to install and maintain the web server, compile, and run a simple web application.
CO4	Learn how databases work and how to design one, as well as how to use php My Admin to work with MySQL.
CO5	Learn different ways of connecting to MySQL through PHP, and how to create tables, enter data, select data, change data, and delete data. Connect to SQL Server and other data sources.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

Unit-I:

Building blocks of PHP: Variables, Data Types, Operators and Expressions, Constants. **Flow Control Functions in PHP:** Switching Flow, Loops, Code Blocks and Browser Output. **Working with Functions:** Defining Functions, Calling functions, returning the values from User-Defined Functions, Variable Scope, Saving State between Function calls with the Static statement, more about arguments.

Unit-II:

Working with Arrays: Arrays, Creating Arrays, Some Array-Related Functions.**Working with Objects:** Creating Objects, Object Instance. **Working with Strings, Dates and Time:** Formatting Strings with PHP, Investigating Strings with PHP, Manipulating Strings with PHP, Using Date and Time Functions in PHP.

Unit-III:

Working with Forms: Creating Forms, Accessing Form - Input with User defined Arrays, Combining HTML and PHP code on a single Page, Using Hidden Fields to save state, Redirecting the user, Sending Mail on Form Submission, Working with File Uploads**. Working with Cookies and User Sessions:** Introducing Cookies, Setting a Cookie with PHP, Session Function Overview, Starting a Session, Working with session variables, passing session IDs in the Query String, Destroying Sessions and Unsetting Variables, Using Sessions in an Environment with Registered Users.

Unit-IV:

Working with Files and Directories: Including Files with include(), Validating Files, Creating and Deleting Files, Opening a File for Writing, Reading or Appending, Reading from Files, Writing or Appending to a File, Working with Directories, Open Pipes to and from Process Using popen (), Running Commands with exec(), Running Commands with system ( ) or pass-through ( ). **Working with Images:** Understanding the Image-Creation Process, Necessary Modifications to PHP, Drawing a New Image, Getting Fancy with Pie Charts, Modifying Existing Images, Image Creation from User Input.
Interacting with MySQL using PHP: MySQL Versus MySQLi Functions, Connecting to MySQL with PHP, Working with MySQL Data.**Creating an Online Address Book:** Planning and Creating Database Tables, Creating Menu, Creating Record Addition Mechanism, Viewing Records, Creating the Record Deletion Mechanism, Adding Sub-entities to a Record.

Textbooks:

1. Julie C. Meloni, PHP MySQL and Apache, SAMS Teach Yourself, Pearson Education (2007).

Reference books:

1. XueBai Michael Ekedahl, The Web Warrior Guide to Web Programming, Thomso (2006).

Web Links:

1. https://spoken-tutorial.org/tutorial-search/?search_foss=PHP+and+MySQL&search_language=
2. https://www.w3schools.com/js/DEFAULT.asp

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT – IV	1	2

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC142P	**TITLE OF THE COURSE** Cluster A2: PHP & MYSQL Lab	**III** B.Sc. (VI Sem)			
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:	HTML, CSS and Java Script	0	0	3	2

Objectives:

The objective of this Lab course is to provide the necessary knowledge to design and develop dynamic, database-driven web applications using PHP version

List of Experiments/Syllabus:

Cycle -1

An Enterprise wishes to maintain the details about his suppliers and other corresponding details.

For that he uses the following details.

Suppliers (sid: Integer, sname: string, address: string)

Parts (pid: Integer, pname: string, color: string)

Catalog (sid: integer, pid: integer, cost: real)

The catalog relation lists the prices charged for parts by suppliers.

Write the following queries in SQL:

1. Find the pnames of parts for which there is some supplier.
2. Find the snames of suppliers who supply every part.
3. Find the snames of supplier who supply every red part.
4. Find the pnames of parts supplied by London Supplier abd by no one else.
5. Find the sid's of suppliers who charge more for some part than the average cost of that part.
6. For each part, find the sname of the supplier who charges the most for that part.
7. Find the sid's of suppliers who supply only red parts.
8. Find the sid's of suppliers who supply a red and a green part.
9. Find the sid's of suppliers who supply a red or green part.
10. Find the total amount has to pay for that suppler by part located from London.

Cycle – 2

An organisation wishes to maintain the status about the working hours made by his employees.

For that he uses the following tables.

Emp (eid: integer, ename: string, age: integer, salary: real)

Works (eid: integer, did: integer, pct_time: integer)

Dept (did: integer, budget: real, managerid: integer)
An employee can work in more than one department; the pct_time field of the works relation shows the percentage of time that a given employee works in a given department. Resolve the following queries.

1. Print the names and ages of each employee who works in both Hardware and Software departments.
2. For each department with more than 20 full time equivalent employees (i.e., where the part-time and full-time employees add up to at least that many full-time employees), print the did's together with the number of employees that work in that department.
3. Print the name of each employee whose salary exceeds the budget of all of the departments that he or she work in.
4. Find the managerid's of managers who manage only departments with budgets greater than 1,000,000.
5. Find the enames of managers who manage the departments with largest budget.
6. If a manager manages more than one department, he or she controls the sum of all the budgets for those departments. Find the managerid's of managers who control more than

5,000,000.

7. Find the managerid's of managers who control the highest amount.
8. Find the average manager salary.

PHP Lab Cycle

1. Write a PHP program to Display "Hello"
2. Write a PHP Program to display the today's date.
3. Write a PHP Program to read the employee details.
4. Write a PHP Program to display the
5. Write a PHP program to prepare the student marks list.
6. Write a PHP program to generate the multiplication of two matrices.
7. Write a PHP Application to perform demonstrate the college website.
8. Write a PHP application to add new Rows in a Table.
9. Write a PHP application to modify the Rows in a Table.
10. Write a PHP application to delete the Rows from a Table.
11. Write a PHP application to fetch the Rows in a Table.
12. Develop an PHP application to make following Operations
    i. Registration of Users.
    ii. Insert the details of the Users.
    iii. Modify the Details.
    iv. Transaction Maintenance.
        a. No of times Logged in
        b. Time Spent on each login.
        c. Restrict the user for three trials only.
        d. Delete the user if he spent more than 100 Hrs of transaction

Virtual Lab Links:

http://vlabs.iitb.ac.in/vlabs-dev/labs/phplab/labs/mysql-database-pvg/theory.html

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC124	**TITLE OF THE COURSE** Cluster A3: Project Work	III B.Sc. (VI Sem)			
Teaching	Hours Allocated: 60	L	T	P	C
Pre-requisites:		5	-	-	5

Syllabus:

Follow SDLC process for real time applications and develop real time application project

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories. The project is of 2 hours/week for one (semester VI) semester duration and a student is expected to do planning, analysing, designing, coding, and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

Title

Objectives

Input and output

Details of modules and process logic Limitations of the project

Tools/platforms, Languages to be used Scope of future application

The Project work should be either an individual one or a group of not more than three members and submit a project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examinations.

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC125	**TITLE OF THE COURSE** Cluster B1: Foundation of Data Science	III B.Sc. (VI Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	DBMS and Basic Statistics	3	1	-	3

Course Objectives:

Modern scientific, engineering, and business applications are increasingly dependent on data, existing traditional data analysis technologies were not designed for the complexity of the modern world. Data Science has emerged as a new, exciting, and fast-paced discipline that explores novel statistical, algorithmic, and implementation challenges that emerge in processing, storing, and extracting knowledge from Big Data.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Able to apply fundamental algorithmic ideas to process data.
CO2	Learn to apply hypotheses and data into actionable predictions.
CO3	Document and transfer the results and effectively communicate the findings using visualization techniques.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT- I:

INTRODUCTION TO DATA SCIENCE: Data science process – roles, stages in data science project–working with data from files–working with relational databases–exploring data–managing data–cleaning and sampling for modeling and validation–introduction to NoSQL.

UNIT-II

MODELING METHODS : Choosing and evaluating models – mapping problems to

machine learning, evaluating clustering models, validating models – cluster analysis – K-means algorithm, Naïve Bayes – Memorization Methods – Linear and logistic regression – unsupervised methods.

UNIT- III

INTRODUCTION TO R Language: Reading and getting data into R – ordered and unordered factors – arrays and matrices – lists and data frames – reading data from files.

PROBABILITY DISTRIBUTIONS in R - Binomial, Poisson, Normal distributions. - Manipulating objects - data distribution.

UNIT- IV

DELIVERING RESULTS :Documentation and deployment – producing effective presentations– Introduction to graphical analysis – plot() function – displaying multivariate data – matrix plots – multiple plots in one window - exporting graph - using graphics parameters in R Language. Case studies.

Text books:

1. NinaZumel, John Mount, "Practical Data Science with R", Manning Publications, 2014.

Reference books:

1. JureLeskovec, AnandRajaraman, Jeffrey D.Ullman, "Mining of Massive Datasets",Cambridge University Press, 2014.
2. Mark Gardener, "Beginning R - The Statistical Programming Language", John Wiley & Sons, Inc., 2012.

Web Links:

1. https://onlinecourses.nptel.ac.in/noc21_cs69/preview
2. https://www.w3schools.com/datascience/

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(Accredited with "A+" grade by NAAC)

III B.Sc. COMPUTER SCIENCE
MODEL QUESTION PAPER (W.E.F 2019-2020)
Cluster B1: PAPER – VIII: FOUNDATION OF DATA SCIENCE
SEMESTER – VI

Time: 2½ Hrs. **Max Marks: 50 M**

SECTION – I

Answer any **TWO** of the following: **2X5=10 M**

1. Explain the properties of No-SQL
2. Explain the Memorization Methods
3. Why is R important for data science
4. What is a block and block scanner in HDFS

SECTION –II

Answer **ALL** the questions: 4**X 10=40 M**

5. a) What are the different properties and characteristics of relational databases

(**Or**)

b) What is data science and explain the data science

6. a) Explain the Logistic Regression? Discuss the unsupervised methods

(**Or**)

b) What is meant by machine learning algorithm? Discuss the evaluating clustering Models

7. a) Explain the data frames with an example? Explain the Reading the data from files

(Or)

b) What is meant by R-Studio and explain the features of characteristics of R

8. a) How to Loading data into HDFS

(Or)

b) Define Hadoop and explain the characteristics of Hadoop

	Government College (Autonomous) Rajahmundry	**Program & Semester** III B.Sc. (VI Sem)			
Course Code CSC125P	TITLE OF THE COURSE Foundation of Data Science Lab Through R				
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:	DBMS	0	0	3	2

Objectives:

1. R is a well-developed, simple and effective programming language which includes conditionals, loops, user defined recursive functions and input and output facilities.
2. R has an effective data handling and storage facility,
3. R provides a suite of operators for calculations on arrays, lists, vectors and matrices.
4. R provides a large, coherent and integrated collection of tools for data analysis.

List of Experiments/Syllabus:

I. Installing R and R studio
II. Basic Operations in r
    1. Arithmetic Operations
    2. Comments and spacing
    3. Logical Operators - <, <=, >, >=, = , !=, &&, 1
III. 1. Getting data into R, Basic data manipulation
    2. Vectors, Materials, operation on vectors and matrices.
IV. 1. Basic Plotting
    2. Quantitative data
    3. Frequency plots
    4. Box plots
    5. Scatter plot
    6.Categorial data
    7. Bar charts
    8. Pie charts
V. Loops and functions
    1. if, if else, while, for break, next, repeat.
    2. Basic functions- Print(), exp( ), Log( ), sqrt( ), abs( ), sin( ), Cos( ), tan( ), factorial( ), rand ().

Reference books:

1. Mark Gardener, “Beginning R - The Statistical Programming Language”, John Wiley & Sons, Inc., 2012.

Virtual Lab Links:

https://www.iiitmk.ac.in/DAVirtalLab/

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC126	**TITLE OF THE COURSE** Cluster B2: Big Data	III B.Sc. (VI Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Database Management Systems	3	1	-	3

Course Objectives:

The Objective of this course is to provide practical foundation level training that enables immediate and effective participation in big data projects. The course provides grounding in basic and advanced methods to big data technology and tools, including Map Reduce and Hadoop and its ecosystem.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Learn tips and tricks for Big Data use cases and solutions.
CO2	Learn to build and maintain reliable, scalable, distributed systems with Apache Hadoop
CO3	Able to apply Hadoop ecosystem components.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT- I:

INTRODUCTION TO BIG DATA: Introduction – distributed file system – Big Data and its importance, Four V's in big data, Drivers for Big data, Big data analytics, Big data applications. Algorithms using map reduce, Matrix-Vector Multiplication by Map Reduce.

UNIT- II:

INTRODUCTION HADOOP : Big Data – Apache Hadoop & Hadoop Eco-System – Moving Data in and out of Hadoop – Understanding inputs and outputs of Map Reduce - Data Serialization.

UNIT- III:

HADOOP ARCHITECTURE: Hadoop Architecture, Hadoop Storage: HDFS, Common Hadoop Shell commands , Anatomy of File Write and Read., Name Node, Secondary NameNode, and DataNode, HadoopMapReduce paradigm, Map and Reduce tasks, Job, Task

trackers - Cluster Setup – SSH &Hadoop Configuration – HDFS Administering – Monitoring & Maintenance.

UNIT-IV:

HADOOP ECOSYSTEM AND YARN : Hadoop ecosystem components - Schedulers - Fair and Capacity, Hadoop 2.0 New Features- NameNode High Availability, HDFS Federation, MRv2, YARN, Running MRv1 in YARN.

HIVE AND HIVEQL, HBASE:-Hive Architecture and Installation, Comparison with Traditional Database, HiveQL - Querying Data - Sorting And Aggregating, Map Reduce Scripts, Joins &Sub queries, HBase concepts- Advanced Usage, Schema Design, Advance Indexing - PIG, Zookeeper - how it helps in monitoring a cluster, HBase uses Zookeeper and how to Build Applications with Zookeeper.

Text books:

1. Boris lublinsky, Kevin t. Smith, Alexey Yakubovich, "Professional Hadoop Solutions", Wiley, ISBN: 9788126551071, 2015.
2. Chris Eaton, Dirk deroos et al. , "Understanding Big data ", McGraw Hill, 2012.

Reference books:

1. Tom White, "HADOOP: The definitive Guide" , O Reilly 2012.
2. Vignesh Prajapati, "Big Data Analytics with R and Hadoop", Packet Publishing 2013.
3. Tom Plunkett, Brian Macdonald et al, "Oracle Big Data Handbook", Oracle Press, 2014.
4. JyLiebowitz, "Big Data and Business analytics", CRC press, 2013.

Web Links:

1. https://onlinecourses.nptel.ac.in/noc20_cs92/preview
2. https://www.javatpoint.com/what-is-big-data

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(Accredited with "A+" grade by NAAC)

III B.Sc. COMPUTER SCIENCE
MODEL QUESTION PAPER (W.E.F 2019-2020)
Cluster B2: PAPER – IX : BIG DATA
SEMESTER – VI

Time: 2½ Hrs. **Max Marks: 50 M**

SECTION – I

Answer any **TWO** of the following: **2X5=10 M**

1. What is distributed File system? Explain the significance of four V's in Big Data
2. Explain the Map Reduce Scripts
3. Explain briefly about Hadoop Architecture
4. Explain the HBase usage in Zookeeper

SECTION –II

Answer **ALL** the questions: 4**X 10=40 M**

5. a) What is Big Data? Explain the characteristics and proper APACHE Hadoop

(**Or**)

b) Explain the map reduce by using Algorithm

6. a) Discuss about Hadoop Ecosystem?

(**Or**)

b) Explain the Understanding inputs and outputs of Map Reduce

7. a) Explain Hadoop shell commands?

(**Or**)

b) Explain the HDFS Administering

8. a)What are the schedulers used in Hadoop

(**Or**)

b) Explain steps for running the MRVI in YARN

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC126P	**TITLE OF THE COURSE** Big Data Lab Using Hadoop	**III** B.Sc. (VI Sem)			
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:	DBMS	0	0	3	2

Objectives:

1. Understand what Hadoop is
2. Understand what Big Data is
3. Learn about other open source software related to Hadoop

List of Experiments/Syllabus:

1. Implement the following Data Structures in Java

   a) Linked Lists

   b) Stacks

   c) Queues

   d) Set

   e) Map

2. (i) Perform setting up and Installing Hadoop in its three operating modes:

   Standalone Pseudo distributed fully distributed

   (ii) Use the web based tools to monitor your Hadoop setup.

3. Implement the following file management tasks in Hadoop.

   Adding files and directories

   Retrieving files

   Deleting files

Reference books:

1. Vignesh Prajapati, “Big Data Analytics with R and Hadoop”, Packet Publishing 2013.

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. (VI Sem)			
Course Code CSC124	**TITLE OF THE COURSE** Cluster B3: Project work				
Teaching	Hours Allocated: 60	L	T	P	C
Pre-requisites:		5		-	5

Follow SDLC process for real time applications and develop real time application project

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories.

The project is of 2 hours/week for one (semester VI) semester duration and a student is expected to do planning, analysing, designing, coding, and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic Limitations of the project
- Tools/platforms, Languages to be used Scope of future application
- The Project work should be either an individual one or a group of not more than three members and submit a project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examinations.

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC140	**TITLE OF THE COURSE** **Cluster C1: Distributed Systems**	III B.Sc. (VISem)			
Teaching	**Hours Allocated: 60 (Theory)**	L	T	P	C
Pre-requisites:	Operating Systems, DBMS	3	1	-	3

Course Objectives:

1. To expose the fundamentals of distributed computer systems, assuming the availability of facilities for data transmission.
2. To discuss multiple levels of distributed algorithms, distributed file systems, distributed databases, security and protection.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Create models for distributed systems.
CO2	To discuss multiple levels of distributed algorithms, distributed file systems, distributed databases, security and protection.
CO3	Illustrates Load Balancing Approaches

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT -I

Introduction to Distributed Computing Systems, System Models, and Issues in Designing a Distributed Operating System, Examples of distributed systems.

UNIT -II

Features of Message Passing System, Synchronization and Buffering, Introduction to RPC and its models, Transparency of RPC, Implementation Mechanism, Stub Generation and RPC Messages, Server Management, Call Semantics, Communication Protocols and Client Server Binding.

UNIT -III

Introduction, Design and implementation of DSM system, Granularity and Consistency Model, Advantages of DSM, Clock Synchronization, Event Ordering, Mutual exclusion, Deadlock, Election Algorithms.

UNIT -IV

Task Assignment Approach, Load Balancing Approach, Load Sharing Approach, Process Migration and Threads.
File Models, File Accessing Models, File Sharing Semantics, File Caching Schemes, File Replication, Atomic Transactions, Cryptography, Authentication, Access control and Digital Signatures.

Text books:

1. Pradeep. K. Sinha: " Distributed Operating Systems: Concepts and Design " , PHI, 2007.

Reference books:

1. George Coulouris, Jean Dollimore, Tim Kindberg: " Distributed Systems" , Concept and Design, 3rdEdition, Pearson Education,2005.

Web Links:

1. https://onlinecourses.nptel.ac.in/noc21_cs87/preview
2. https://www.geeksforgeeks.org/tag/distributed-system/

CO-POMapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(Accredited with "A+" grade by NAAC)

III B.Sc. COMPUTER SCIENCE
MODEL QUESTION PAPER (W.E.F 2019-2020)
Cluster C1: PAPER – VIII: DISTRIBUTED SYSTEMS
SEMESTER – VI

Time: 2½ Hrs. **Max Marks: 50 M**

SECTION – I

Answer any **TWO** of the following: **2X5=10 M**

1. Define Distributed Systems. What are the advantages of Distributed Operating System
2. What are the advantages and disadvantages of DSM
3. Explain Task Assignment Approach
4. Define the properties of the Distributed system

SECTION –II

Answer **ALL** the questions: 4**X 10=40 M**

5. a) Explain System Models in Distributed System

(**Or**)

b) Explain the issues in Designing of Distributed operating systems

6. a) Explain Synchronization and Buffering?

(**Or**)

b) Explain about RPC models

7. a) Explain about Design and Implementation of DSM system?

(**Or**)

b) Explain Mutual Exclusion and Dead lock

8. a) Explain Load Balancing Approach in Distributed Systems

(**Or**)

b) Explain Threads in Distributed Systems

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC140P	**TITLE OF THE COURSE** Distributed Systems Lab	III B.Sc. (VI Sem)			
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:		0	0	3	2

Objectives:

It covers all the aspects of distributed system. It introduce its readers to basic concepts of middleware, states of art middleware technology

List of Experiments/Syllabus:

1. Students will get the concepts of Inter-process communication
2. Students will get the concepts of Distributed Mutual Exclusion and Distributed Deadlock Detection algorithm.
3. To study client server based program using RPC.
4. To study Client server based program using RMI.
5. To study Implementation of Clock Synchronization(Logical/Physical)
6. To study Implementation of Election algorithm.
7. To study Implementation of Mutual Exclusion algorithms.
8. To write program multi-threaded client/server processes.
9. To write program to demonstrate process/code migration.

Reference books:

1. George Coulouris, Jean Dollimore, Tim Kindberg: " Distributed Systems" , Conceptand Design, 3rdEdition, Pearson Education,2005.

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC141	**TITLE OF THE COURSE** Cluster C2: Cloud Computing	III B.Sc. (VI Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Network Technologies	3	1	-	3

Course Objectives:

The student will learn about the cloud environment, building software systems and components that scale to millions of users in modern internet, cloud concepts capabilities across the various cloud service models including Iaas, Paas, Saas, and developing cloud based software applications on top of cloud platforms.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Compare the strengths and limitations of cloud computing
CO2	Identify the architecture, infrastructure and delivery models of cloud computing
CO3	Apply suitable virtualization concept.
CO4	Choose the appropriate cloud player, Programming Models and approach.
CO5	Address the core issues of cloud computing such as security, privacy and interoperability

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

Unit -1

Cloud Computing Overview – Origins of Cloud computing – Cloud components - Essential characteristics – On-demand self-service, broad network access, Location independent resource pooling, Rapid elasticity, measured service

Cloud scenarios – Benefits: scalability, simplicity, vendors, security. Limitations – Sensitive information - Application development – Security concerns - privacy concern with a third party - security level of third party - security benefits Regularity issues: Government policies.

Unit -II

Cloud architecture: Cloud delivery model – SPI framework , SPI evolution. Software as a Service (SaaS): SaaS service providers – Google App Engine, Salesforce.com and Googleplatfrom – Benefits – Operational benefits - Economic benefits- Evaluating SaaSPlatform as a Service (PaaS): PaaS service providers–Salesforce.com- Services and Benefits

Unit -III

Infrastructure as a Service (IaaS): IaaS service providers – Amazon EC2 , GoGrid - Benefits Cloud deployment model : Public clouds – Private clouds – Community clouds - Hybrid clouds - Advantages of Cloud computing

Unit -IV

Virtualization: Virtualization and cloud computing - Need of virtualization – cost , administration, fast deployment , reduce infrastructure cost - limitations
Types of hardware virtualization: Full virtualization - partial virtualization - para virtualization
Desktop virtualization: Software virtualization – Memory virtualization - Storage virtualization – Data virtualization – Network virtualization Microsoft Implementation: Microsoft Hyper V – Vmware features and infrastructure – Virtual Box - Thin client

Text books:

1. Cloud computing a practical approach - Anthony T.Velte , Toby J. Velte Robert Elsenpeter TATA McGraw- Hill , New Delhi -2010
2. Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online - Michael Miller - Que2008

Reference books:

1. Cloud Computing, Theory and Practice, Dan C Marinescu, MKElsevier.
2. Cloud Computing, A Hands on approach, Arshadeep Bahga, Vijay Madisetti, University Press
3. Mastering Cloud Computing, Foundations and Application Programming, Raj Kumar Buyya, Christenvecctiola, S Tammaraiselvi, TMH

WebLinks:

1. https://onlinecourses.nptel.ac.in/noc21_cs14/preview
2. https://www.javatpoint.com/cloud-computing-tutorial

CO-POMapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(Accredited with "A+" grade by NAAC)

III B.Sc. COMPUTER SCIENCE
MODEL QUESTION PAPER (W.E.F 2019-2020)
Cluster C2: PAPER – VIII: CLOUD COMPUTING
SEMESTER – VI

Time: 2½ Hrs. **Max Marks: 50 M**

SECTION – I

Answer any **TWO** of the following: **2X5=10 M**

1. Explain the Origins of Cloud computing
2. Write about Security Levels with a third party
3. Write about Economic benefits
4. Explain Private Clouds

SECTION –II

Answer **ALL** the questions: 4**X 10=40 M**

5. a) Briefly describe the components of Cloud computing

   (**Or**)

   b) Explain the characteristics of cloud computing
6. a) Explain in detail about the cloud scenarios

   (**Or**)

   b) Briefly describe the limitations of Cloud computing

7. a) Write about SaaS in detail

   (**Or**)

   b) Describe briefly about IaaS
8. a) Explain about Cloud development model

   (**Or**)

   b) Explain about Cloud computing Architecture

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC141P	**TITLE OF THE COURSE** Cloud Computing Lab	III B.Sc. (VI Sem)			
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:	Network Technologies	0	0	3	2

Objectives:

1. Create and run virtual machines on open source OS
2. Implement Infrastructure, storage as a Service.

List of Experiments/Syllabus:

1. Find procedure to run the virtual machine of different configuration. Check how many virtual machines can be utilized at particular time.
2. Find procedure to attach virtual block to the virtual machine and check whether it holds the data even after the release of the virtual machine.
3. Install a C compiler in the virtual machine and execute a sample program.
4. Show the virtual machine migration based on the certain condition from one node to the other.
5. Find procedure to install storage controller and interact with it.
6. Introduction to cloud computing.
7. Creating a Warehouse Application in SalesForce.com.
8. Creating an Application in Sales Force.com using Apex programming Language.
9. Implementation of SOAP web services in C#/ JAVA Applications.
10. Implementation of Para- Virtualization using VM ware's workstation/ Oracle's Virtual Box and Guest O.S.
11. Case study: PAAS (Face book, Google App Engine)
12. Case Study: Amazon web services.

Referencebooks:

1. Cloud computing a practical approach - Anthony T.Velte , Toby J. Velte Robert Elsenpeter TATA McGraw- Hill , New Delhi -2010

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CSC124	**TITLE OF THE COURSE** Cluster C3: Project	III B.Sc. (VISem)			
Teaching	Hours Allocated: 60	L	T	P	C
Pre-requisites:		5		-	5

Follow SDLC process for real time applications and develop real time application project

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories.

The project is of 2 hours/week for one (semester VI) semester duration and a student is expected to do planning, analysing, designing, coding, and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic Limitations of the project
- Tools/platforms, Languages to be used Scope of future application
- The Project work should be either an individual one or a group of not more than three members and submit a project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examinations.

B.Sc (Internet of Things)

(For M.E.IoT)

Syllabus and Model Papers

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code **IoT103**	**TITLE OF THE COURSE** **Fundamentals of Computer and C-Programming**	I B.Sc. M.E.IoT (I Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		3	1	-	3

Course Objectives:

1. To explore basic knowledge on computers
2. Learn how to solve common types of computing problems.
3. Learn basic constructs of computer programming languages
4. Learn data types and control structures of C
5. Learn to map problems to programming features of C.
6. Learn to write good portable C programs.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Appreciate and understand the working of a digital computer
CO2	Analyze a given problem and develop an algorithm to solve the problem
CO3	Improve upon a solution to a problem
CO4	Use the 'C' language constructs in the right way
CO5	Design, develop and test programs written in 'C'

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT-I

Introduction to computers - Characteristics and limitations of computer, Block diagram of computer, types of computers, computer generations. Number systems: binary, hexadecimal and octal numbering system. Input and output devices: Keyboard and mouse, inputting data in other ways

Types of Software: system software, Application software, commercial, open source, domain and free ware software, Memories: primary, secondary and cache memory.

UNIT-II

Problem Analysis and its Tools: Problem solving technique and Program Development Life Cycle, Problem Definition, Algorithm, Flow Charts, Types of Errors, Testing and Debugging. **Basics of C**: Historical development of C Language, Basic Structure of C Program, C Character Set, Identifiers and Keywords, constants, variables, Data types.

Operators and expressions: Arithmetic, Relational, Logical, Assignment, Unary, Conditional and Bitwise operators.Type conversions. Input and output statements: getchar( ), getch( ), getche( ), putchar( ), printf( ), scanf( ), gets( ), puts( )

UNIT-III

Control statements: Decision making statements: if, if else, else if ladder, switch statements. Loop control statements: while loop, for loop and do-while loop. Jump Control statements: break, continue and goto.
Arrays: one dimensional Array, two dimensional arrays.
Strings: Input/ Output of strings, string handling functions, table of strings

UNIT-IV

Functions: Function Prototype, definition and calling. Return statement. Nesting of functions.Categories of functions.Recursion, Parameter Passing by address & by value.Local and Global variables. Storage classes: automatic, external, static and register.
Pointers: Pointer data type, Pointer declaration, initialization, accessing values using pointers. Pointer arithmetic.Pointers and arrays, pointers and functions.
Structures and Unions : Using structures and unions, use of structures in arrays and arrays in structures. Comparison of structure and Union.

Text Books:

1. E. Balagurusway, “Programming in C”, Tata McGrwal Hill.
2. Computer fundamentals and c programming in c by Reemathareja, oxford university press

Reference Books

1. Introduction to C programming by REEMA THAREJA from OXFORD UNIVERSITY PRESS
2. E Balagurusamy: ―COMPUTING FUNDAMENTALS & C PROGRAMMING – Tata McGraw-Hill, Second Reprint 2008, ISBN 978-0-07-066909-3.
3. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publ, 2002.
4. Henry Mullish&HuubertL.Cooper: The Spirit of C An Introduction to modern Programming, Jaico Pub. House,1996.
5. Y kanithkar, let us C BPB, 13 th edition-2013, ISBN:978-8183331630,656 pages.

WebLinks:

1. https://nptel.ac.in/courses/106/105/106105171/
2. https://www.programiz.com/c-programming

CO-POMapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

(*Accredited by NAAC "A" Grade)*

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

PAPER – I:Fundamentals of Computer and C-Programming

MODEL QUESTION PAPER (W.E.F 2020-2021)

SEMESTER – I

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer any **Two** of the following: **2X5M=10 M**

1. Explain the characteristics and limitations of computers
2. Explain about Structure of C Program
3. Explain storage classes in C
4. Write a short note on Nested Structures

SECTION –II

Answer **ALL** Questions: **4X10M=40 M**

5. a). Define Computer? Explain the Block diagram of a computer with neat diagram

   (Or)

   b). Discuss in detail primary, secondary and cache memory

6. a). Explain various Data types available in C ? Explain each with example

   (Or)

   b).What is Decision Control Statement? Explain each with example

7. a). Write a C program to find the Multiplication of Two Matrices

   (Or)

   b). Explain the String Handling functions with examples

8. a). Discuss the different categories of functions? Illustrate with example

   (Or)

   b). What is a pointer and Structure ? Explain with example program

	Government College (Autonomous) Rajahmundry	Program & Semester I B.Sc. M.E.IoT (I Sem)			
Course Code **IoT103P**	**TITLE OF THE COURSE** **Hardware and C Programming Lab**				
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:		0	0	3	2

Objectives:

To aim of this lab course is to equip the students with Basic Hardware and Programming Skills.

List of Experiments

Hardware Lab:

1. Identify various Memory components of the Computer.
2. Identify Various Cables and their uses
3. Identify various Network Devices.
4. Assembling and Disassembling of Computers.

C Programming Lab

1. Find the biggest of three numbers using C.
2. Write a c program to find the sum of individual digits of a positive integer.
3. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence.
4. Write a c program to check whether a number is Armstrong or not.
5. Write a program to perform various string operations.
6. Write a c program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
7. Write a c program that uses functions to perform the following: Addition of two matrices. Multiplication of two matrices.
8. Write a c program that implements searching of given item in given list.
9. Write a c program to sort a given list of integers in ascending order.
10. Write a c program to perform various operations using pointers.

11. Write a c program to read data of 10 employees with a structure of 1.employee id 2.aadar no, 3.title, 4.joined date, 5.salary, 6.date of birth, 7.gender, 8.department.
12. Write a program for concatenation of two strings.
13. Write a program for length of a string

Referencebooks:

1. Computer fundamentals and c programming in c by Reemathareja, oxford university press

Virtual LabLinks:

https://cse02-iiith.vlabs.ac.in/

http://ps-iiith.vlabs.ac.in/

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code **IoT106**	**TITLE OF THE COURSE** **Fundamentals of IoT and Applications**	I B.Sc. M.E.IoT (II Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Basic Computer hardware	3	1	-	3

Course Objectives

1. To study fundamental concepts of IoT
2. To understand roles of sensors in IoT
3. To Learn different protocols used for IoT design
4. To be familiar with data handling and analytics tools in IoT
5. Appreciate the role of big data, cloud computing and data analytics in a typical IoT system.
6. Understand the role of IoT in various domains of Industry.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understand the various concepts, terminologies and architecture of IoT systems.
CO2	Use sensors and actuators for design of IoT.
CO3	Understand and apply various protocols for design of IoT systems
CO4	Use various techniques of data storage and analytics in IoT
CO5	Understand various applications of IoT
CO6	Understand APIs to connect IoT related technologies

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus

UNIT-I

Fundamentals of IoT: Introduction, Definitions & Characteristics of IoT, IoT Architectures, Physical & Logical Design of IoT, Enabling Technologies in IoT, History of IoT, About Things in IoT, The Identifiers in IoT, About the Internet in IoT, IoT frameworks, IoT and M2M.

UNIT-II

Sensors Networks : Definition, Types of Sensors, Types of Actuators, Examples and Working, IoT Development Boards: Arduino IDE and Board Types, RaspberriPi Development Kit, RFID Principles and components, Wireless Sensor Networks: History and

Context, The node, Connecting nodes, Networking Nodes, WSN and IoT.

UNIT-III

Wireless Technologies for IoT: WPAN Technologies for IoT: IEEE 802.15.4, Zigbee, HART, NFC, Z-Wave, BLE, Bacnet, Modbus.

IP Based Protocols for IoT IPv6, 6LowPAN, RPL, REST, AMPQ, CoAP, MQTT.

Edge connectivity and protocols

UNIT-IV

Data Handling& Analytics: Introduction, Bigdata, Types of data, Characteristics of Big data, Data handling Technologies, Flow of data, Data acquisition, Data Storage, Introduction to Hadoop. Introduction to data Analytics, Types of Data analytics, Local Analytics, Cloud analytics and applications

Applications of IoT: Home Automation, Smart Cities, Energy, Retail Management, Logistics, Agriculture, Health and Lifestyle, Industrial IoT, Legal challenges, IoT design Ethics, IoT in Environmental Protection.

Text Books:

1. HakimaChaouchi, — "The Internet of Things Connecting Objects to the Web" ISBN : 978-1- 84821-140-7, Wiley Publications
2. Olivier Hersent, David Boswarthick, and Omar Elloumi, — "The Internet of Things: Key Applications and Protocols", WileyPublications
3. Vijay Madisetti and ArshdeepBahga, — "Internet of Things (A Hands-on-Approach)", 1st Edition, VPT, 2014.
4. J. Biron and J. Follett, "Foundational Elements of an IoT Solution", O'Reilly Media, 2016.
5. Keysight Technologies, "The Internet of Things: Enabling Technologies and Solutions for Design and Test", Application Note, 2016.

References Books

1. Daniel Minoli, — "Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications", ISBN: 978-1-118-47347-4, Willy Publications
2. Pethuru Raj and Anupama C. Raman, "The Internet of Things: Enabling Technologies, Platforms, and Use Cases", CRC Press

Web Links:

1. https://onlinecourses.nptel.ac.in/noc17_cs22/course
2. http://www.cse.wustl.edu/~jain/cse570-15/ftp/iot_prot/index.html

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

(*Accredited by NAAC "A$^+$" Grade)*

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

PAPER – II:Fundamentals of IoT and Applications

MODEL QUESTION PAPER (W.E.F 2020-2021)

SEMESTER – II

Time: 2 ½ Hrs. **Max Marks : 50 M**

SECTION - I

Answer any **Two** of the following: **2X5M=10 M**

1. Discuss the Characteristics of IoT
2. Write the Types of Sensors
3. Explain about IEEE 802.15.4
4. Write a short note Characteristics of Big data

SECTION –II

Answer **ALL** Questions: **4X10M=40 M**

5. a). Explain in detail Physical & Logical Design of IoT

   (Or)

   b). Discuss how Enabling Technologies in IoT

6. a). Explain the Arduino IDE and Board Types

   (Or)

   b). Describe the RFID Principles and components

7. a). Explain about WPAN Technologies for IoT

   (Or)

   b). write a note on IP Based Protocols for IoT IPv6

8. a). What is Bigdata? Explain Data handling Technologies

   (Or)

   b).What is data Analytics? Explain Types of Data analytics

	Government College (Autonomous) Rajahmundry	Program & Semester I B.Sc. M.E.IoT (I Sem)			
Course Code **IoT106P**	**TITLE OF THE COURSE** **Arduino Lab**				
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:		0	0	3	2

Objectives:

To aim of this lab course is to provide hands on experience to the students with Arduino Micro Controller

List of Experiments

1. Understanding Arduino UNO Board and Components
2. Installing and work with Arduino IDE
3. Blinking LED sketch with Arduino
4. Simulation of 4-Way Traffic Light with Arduino
5. Using Pulse Width Modulation
6. LED Fade Sketch and Button Sketch
7. Analog Input Sketch (Bar Graph with LEDs and Potentiometre)
8. Digital Read Serial Sketch (Working with DHT/IR/Gas or Any other Sensor)
9. Working with Adafruit Libraries in Arduino
10. Spinning a DC Motor and Motor Speed Control Sketch
11. Working with Shields
12. Interfacing Arduino with Cloud (Thingspeak API)

Referencebooks:

1. Arduino: A Technical Referenceby J. M. Hughes

Virtual LabLinks:

https://www.tinkercad.com/

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code **IoT104**	**TITLE OF THE COURSE** **Data Communications & Computer Networks**	II B.Sc. M.E.IoT (III Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		3	1	-	3

Course Objectives:

1. Appreciate the use of computer networking in various walks of life, describe the types of networks, network configurations and network topologies. Also Write the OSI and TCP/IP reference models for networking.
2. Explain responsibilities of data link layer, its implementation and associated protocols, algorithms/pseudo codes.
3. Explain the various techniques used to access a shared channel in the network and IEEE specifications for LANs.
4. List types of networking devices, backbone networks and Internet Protocol (IP) addressing.
5. Explain the responsibilities of network, transport and application layers.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Define computer networks, list network configurations, types, topologies, the applications of computer networks in different fields, network models and description of physical layer.
CO2	Reason the need for flow and error control at the data link layer and explain the associated protocols.
CO3	Enumerate the shared channel access methods, associated protocols and Wired & Wireless LAN standards and implementations.
CO4	List the types of networking devices / equipments and also explain the addressing scheme used at the network layer.
CO5	Explain how network layer, transport layer and application layer facilitates the transfer of message from one node to another in a global network

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT - I

Introduction to Data communications, Network Criteria, point-to-point and multi point connection, physical topology, Local Area Networks, Metropolitan Area Networks, Wide Area Networks, Wireless Networks, protocols and standards.
Network Models: Layered tasks, Connection-Oriented and Connectionless Services, Service Primitives, The OSI Reference Model, The TCP/IP Reference Model, Comparison of the OSI and TCP/IP Reference Models, addressing.

UNIT – II

Physical Layer: Basis for Data Communication: Transmission of digital signals: Bit rate, bit length, baseband and broadband transmission, transmission impairment, data rate limits, performance, Guided Transmission Media Twisted Pair Coaxial Cable and Fiber Optics
Data Link Layer: Framing, Error Control, Flow Control, Error-Detection and correction: Introduction, Error detection using CRC. Data Link Protocols: Simplest Protocol, Stop-and-Wait Protocol, Stop-and-Wait ARQ, Go Back-N ARQ, Selective Repeat ARQ, HDLC.

UNIT – III

Multiple Accesses. Random Access: ALOHA, Carrier Sense Multiple Access (CSMA) Protocols, CSMA with Collision Detection, CSMA with Collision Avoidance..Controlled Access: Reservation, Polling and Token Passing. Channelization: FDMA, TDMA, CDMA.
Wired LAN: Ethernet, IEEE standards, Standard Ethernet.Changes in the standards, Fast Ethernet, Gigabit Ethernet, Wireless LAN (802.11).

UNIT - IV

Connecting LANs, Backbone and Virtual LANs: Connecting devices, Back bone Networks, Virtual LANs. Network Layer: Need for network layer, Logical addressing, Ipv4 addresses, Ipv6 addresses, Ipv4 and Ipv6 datagram, Transition from Ipv4 to Ipv6.

Network Layer: Delivery, Forwarding, Types of Routing protocols, Unicast Routing Protocols, The Transport Layer: Process to process Delivery, User Datagram Protocol (UDP) and TCP. Application layer: Domain name space, Distribution of name space, Resolution.

Text Books:

1. Data communications and Networking-4th edition BeharouzA.Forouzan, TMH

Reference Books

1. Data Communications and Computer Networks By Prakash C. Gupta, PHI Publishers.
2. Computer Networks By Andrew S.Tanenbaum, Pearson Education.
3. Wireless Technologies Circuits, Systems and Devices by Krzysztof Iniewski CRC Press.
4. Wireless Networking Technology: From Principles to Successful Implementationby Stephen A. Rackley.

WebLinks:

1. https://nptel.ac.in/courses/106/105/106105082/

2. https://nptel.ac.in/courses/117/105/117105076/

CO-POMapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

(*Accredited by NAAC "A+" Grade)*

II B.Sc Internet of Things (M.E.Internet of Things)

MODEL QUESTION PAPER (W.E.F 2019-2020)

PAPER – III: IOT-104: **Data Communications & Computer Networks**

SEMESTER – III

Time: 2 ½Hrs **Max Marks: 50M**

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SECTION - I

Answer any **Two** of the following: **5X2=10 M**

1. Explain various types of addressing
2. Explain Transmission Impairment
3. Explain FDMA, TDMA and CDMA
4. Explain about transition from IPV4 to IPV6

SECTION –II

Answer ALL Questions: **4X10=40 M**

5. (a) Compare various categories of Network topologies

(Or)

(b) Discuss the functions of various layers of OSI Model

6. (a) Explain Stop and Wait, Stop and Wait ARQ Protocols

(Or)

(b) What is Random Access? Explain about CSMA/CD Protocol

7. (a) Write short notes on Wireless LAN (802.11) Standards

(Or)

(b) What are Back bone Networks? Explain

8. (a).What is logical addressing? Discuss IPV4 addressing

(Or)

(b) Explain Distance Vector and Link State Routing Protocols

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	Government College (Autonomous) Rajahmundry	Program & Semester I B.Sc. M.E.IoT (III Sem)			
Course Code **IoT104P**	**TITLE OF THE COURSE** **Network Simulation Lab**				
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:	Data Communications	0	0	3	2

Objectives:

- To understand the functioning of various protocols in Wired and Wireless Environment.
- To perform real time experimentation using the existing infrastructure.
- To impart programming to construct LAN, WLAN , and VLAN in a real- time environment.

List of Experiments (NS2/QUALNET/BWSIM/MATLAB)

1. Study Of Network Simulator (NS-2)
2. Simulation of Four Node Point To Point Network
3. Transmission Of Ping Message
4. Implement Bus Topology
5. Implement Star Topology
6. Simulation of Stop and Wait, Sliding Window Protocols
7. Simulation of Distance vector routing algorithm
8. Simple ESS With Wireless LAN

Referencebooks:

1. TeerawatIssariyakul and Ekram Hossain. 2011. Introduction to Network Simulator NS2 (2nd. ed.). Springer Publishing Company, Incorporated.
2. http://www.mathcs.emory.edu/~cheung/Courses/455/Syllabus/A3-NS/Book/Introduction-to-Network-Simulator-NS2-2012.pdf

Virtual LabLinks:

http://vlabs.iitkgp.ac.in/ant/1/theory/

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code **IoT105**	**TITLE OF THE COURSE** **RFID and Sensor Networks**	II B.Sc. M.E.IoT (IV Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Data Communications and Computer Networks	3	1	-	3

Course Objectives:

Introducing RFID and related Architectures and to discuss the uses of RFID Principles, RFID Components and security issues. Introducing Wireless Sensor Networks, Various Small Components, embedded systems, introducing various technologies.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Familiar with RFID technology, various components involved.
CO2	Familiar with various RFID standards, Students learn various Security issues involved in RFID.
CO3	Learn about Wireless Sensor Networks
CO4	Familiar with WSN protocols routing algorithms.
CO5	Demonstrate Various Security issues involved in Wireless Sensor Networks.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

Unit-I

Introduction of RFID, Automatic Identification Systems, A Comparison of Different ID Systems, Components of an RFID System, Differentiation Features of RFID Systems, Transponder Construction Formats, Frequency, Range and Coupling , Active and Passive Transponders, Information Processing in the Transponder , Selection Criteria for RFID Systems, Fundamental Operating Principles.

Unit-II

Frequency Ranges and Radio Licensing Regulations, Coding and Modulation, Data Integrity, Multi-Access Procedures – Anticollision, Security of RFID Systems, Attacks on RFID Systems

Unit-III

Wireless Sensor Networks- Introduction, Challenges and Constraints, Applications, Node Architecture, Operating Systems, Physical Layer.

Unit-IV

Medium Access Control: Characteristics of MAC Protocols in Sensor Networks, Contention-Free MAC Protocols, Contention-Based MAC Protocols, Network Layer: Various Routing Protocols.

Security in WSN: Challenges of Security in Wireless Sensor Networks, Security Attacks in Sensor Networks, Protocols and Mechanisms for Security, IEEE 802.15.4 and ZigBee Security

Text Books:

1. RFID Handbook,KlausFinkenzeller,WILEY& SONS
2. Fundamentals of Wireless Sensor Networks: theory and practice byWaltenegusDargie, Christian Poellabauer

Reference Books

1. RFID and Sensor Networks Architecture, Protocols, Security and integration by Yan Zhang, Laurence T. Yang, Jining.
2. Wireless Sensor Networks Technology, protocols and applications by KAZEM SOHRABY, DANIEL MINOLI TAIEB ZNATI, JOHN WILEY & SONS, INC Publication.
3. REILLY, RFID Essentials By Bill Glover, Himanshu Bhatt.

WebLinks:

1. https://nptel.ac.in/courses/108/108/108108179/
2. https://nptel.ac.in/courses/106/105/106105160/

CO-POMapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A+" Grade)*

II B.Sc. IOT (M.E.IOT)
MODEL QUESTION PAPER (W.E.F 2020-2021)
PAPER – IV: RFID and Sensor Networks
SEMESTER – IV

Time: 2 ½Hrs **Max Marks: 50M**

……...……

SECTION - I

Answer any **Two** of the following: **5X2=10 M**

1. What is the difference between Active and Passive Transponders
2. Discuss about Open issues in RFID Security?
3. Explain the application areas of WSN
4. Write about Zigbee security

SECTION –II

Answer ALL Questions: **4X10=40 M**

5. (a) Explain about Fundamental Operating Principles of RFID

(Or)

(b) Briefly discuss about Anti-collision procedures in RFID

6. (a) Discuss about Security attacks in RFID

(Or)

(b) Write about various challenges and constraints of Wireless Sensor Networks

7. (a) What are the various functional and non-functional aspects required for Operating System in WSN

(Or)

(b) Mention the Characteristics of MAC Protocols in WSN

8. (a) Explain about Pro-active and reactive routing Protocols in WSN

(Or)

(b) Explain the defence mechanisms against DoS Attacks and Routing Attacks

@@@@

	Government College (Autonomous) Rajahmundry	Program & Semester I B.Sc. M.E.IoT (III Sem)			
Course Code **IoT105P**	**TITLE OF THE COURSE** **Network Simulator Lab using NS2/NS3**				
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:	Data Communications	0	0	3	2

Objectives:

- To understand the functioning of Wireless Technologies

List of Experiments (NS2/QUALNET/BWSIM/MATLAB)

1. Introduction to network simulators used for wireless Ad Hoc and Sensor Networks.
2. Introduction to TCL scripting: demonstration of one small network simulation script.
3. To study various trace file formats of network simulators.
4. To implement and compare various MAC layer protocols.
5. To implement and compare AODV and DSR routing algorithms in MANET.
6. To implement DSDV routing algorithms in MANET.
7. To implement signal strength based link management routing protocols.
8. To calculate and compare average throughput for various TCP variants.
9. To implement and compare various routing protocols for wireless sensor networks.
10. Using Virtual labs to simulate the Protocols: http://vlabs.iitkgp.ernet.in/

Referencebooks:

https://www.nsnam.org/docs/release/3.9/manual.pdf

Virtual LabLinks:

http://vlabs.iitkgp.ac.in/ant/5/procedure/

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code **IoT114**	**TITLE OF THE COURSE** **Implementing IoT with Raspberry Pi**	II B.Sc. M.E.IoT (IV Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Foundations of IoT and Arduino	3	1	-	3

Course Objectives:

1. This program aims to train students to be equipped with a solid theoretical foundation, systematic professional knowledge and strong practical skills in the Raspberry Pi.
2. The course focuses on higher-level operating systems, advanced networking, user interfaces, multimedia and uses more computing intensive IoT applications as examples using Raspberry Pi running Linux as the platform of choice
3. After doing this course, students should be able to design and deploy multiple IoT devices that could connect to the gateway.
4. Acquainting students with the basic web app creation
5. Connecting and Using various IoT Cloud Based Platforms such as Blynk, Things peak, AWS IoT, Google Cloud IoT Core etc..
6. Working with Big Data Processing Techniques
7. Developing Mobile App for IoT applications

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Appreciate the development technology for IoT
CO2	Familiar with Basic Concepts of Linux
CO3	Design real time IoT Devices.
CO4	Familiar with basic foundations of Python Programming and libraries
CO5	Comprehend the basic concepts of Mobile Cloud Computing
CO6	Develop a Mobile App for IoT applications.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT-I

Getting Started with Raspberry Pi: Basic functionality of Raspberry Pi B+ board, setting up theboard, configuration and use, implications of an operating system on the behavior of the Raspberry Pi as an IoT device, booting Raspberry Pi 3, Downloading an Operating

System,format an SD card and booting the OS, Basics of Linux and its use, main features including navigating the file system and managing processes, text based user interface through the shell,overview of the graphic user interface for Raspbian Linux distribution.

UNIT-II

Interfacing Hardware with the Raspberry Pi, Raspberry Pi Remote Access, operate the RaspberryPi in “headless mode”, Bash Command line, operating Raspberry Pi without needing a GUIinterface.

Basics of the Python programming language, programming on the Raspberry Pi. Python on Raspberry Pi, Python Programming Environment, Python Expressions, Strings, Functions andFunction arguments, Lists, List Methods, Control Flow.

UNIT-III

Communication with devices through the pins of the Raspberry Pi, RPi.GPIO library, Python Functions, setting up the pins, General purpose IO Pins, Protocol Pins, GPIO Access, applyingdigital voltages, and generating Pulse Width Modulated signals, Tkinter Python library,accessing pins through a graphic user interface

UNIT-IV

IoT Design using Raspberry Pi IoT Applications based on Pi, LAMP Web-server, GPIO Control over Web Browser, Creating Custom Web Page for LAMP, Communicating data usingon-board module, Home automation using Pi, Node-RED, MQTT Protocol, Using Node-RED, Visual Editor on Rpi

Additional Input:

IoT Physical Servers and Cloud Offerings: Introduction to Cloud Storage models andcommunication APIs. Webserver – Web server for IoT, Cloud for IoT, Python web applicationframework. Designing a RESTful web API. Connecting to APIs

Text Books:

1. Simon Monk, “Programming the Raspberry Pi: Getting Started with Python”, January 2012, McGraw Hill Professional
2. The official raspberry Pi Projects Book https://www.raspberrypi.org/magpi-issues/Projects_Book_v1.pdf

Reference Books

1. Eben Upton and Gareth Halfacree, “Raspberry Pi User Guide”, August 2016, 4th edition, John Wiley & Sons
2. Alex Bradbury and Ben Everard, “Learning Python with Raspberry Pi”, Feb 2014, JohnWiley& Sons
3. Michael Margolis, “Arduino Cookbook”, First Edition, March 2011, O'Reilly Media, Inc.

WebLinks:

1. https://nptel.ac.in/courses/106/105/106105166/

CO-POMapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A+" Grade)*

II B.Sc. IOT (M.E.IOT)
MODEL QUESTION PAPER (W.E.F 2020-2021)
PAPER – IV: Implementing IoT with Raspberry Pi
SEMESTER – IV

Time: 2 ½Hrs **Max Marks: 50M**

……...……

SECTION - I

Answer any **Two** of the following: **5X2=10 M**

1. What is the difference between Active and Passive Transponders
2. Discuss about Open issues in RFID Security?
3. Explain the application areas of WSN
4. Write about Zigbee security

SECTION –II

Answer ALL Questions: **4X10=40 M**

5. (a) Explain about Fundamental Operating Principles of RFID

(Or)

(b) Briefly discuss about Anti-collision procedures in RFID

6. (a) Discuss about Security attacks in RFID

(Or)

(b) Write about various challenges and constraints of Wireless Sensor Networks

7. (a) What are the various functional and non-functional aspects required for Operating System in WSN

(Or)

(b) Mention the Characteristics of MAC Protocols in WSN

8. (a) Explain about Pro-active and reactive routing Protocols in WSN

(Or)

(b) Explain the defence mechanisms against DoS Attacks and Routing Attacks

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	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. M.E.IoT (IVSem)			
Course Code **IoT114P**	**TITLE OF THE COURSE Raspberry Pi lab**				
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:	Arduino, Basic Electronics	0	0	3	2

Objectives:

The main aim of this lab course is to provide hands on experience to the students towards the developing the IoT Devices with the state of art Raspberry pi microprocessor.

List of Experiments

1. Getting started with Raspberry Pi, Install Raspian on your SD card
2. Linux basic commands.
3. Coding simple programs in Python.
4. How to use Python-based IDE (integrated development environments) for the Raspberry Pi and how to trace and debug Python code on the device
5. How to have your Raspberry Pi interact with online services through the use of public APIs and SDKs
6. Understanding the connectivity of Raspberry-Pi with IR sensor. Write an application to detect obstacle and notify user using LEDs.
7. Design APP Using MIT App Inventor and Connect to Temperature Sensor

Virtual LabLinks:

https://ocw.cs.pub.ro/courses/iot/labs/01

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code **IoT107**	**TITLE OF THE COURSE** **Computer Organization and Architecture**	III B.Sc. M.E.IoT (V Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Basic Electronics	3	1	-	3

Course Objectives:

- To conceptualize the basics of organizational and architectural issues of a digital computer.
- To analyze performance issues in processor and memory design of a digital computer.
- To understand various data transfer techniques in digital computer.
- To analyze processor performance improvement using instruction level parallelism Course

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understand basic structure of computer.
CO2	Understand control unit operations
CO3	Design memory organization that uses banks for different word size operations.
CO4	Demonstrate the concept of cache mapping techniques.
CO5	Conceptualize the I/O organization.
CO6	Conceptualize instruction level parallelism.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

Unit I

Register Transfer and Micro operations
Register Transfer Language, Register Transfer, Bus and Memory Transfers, Arithmetic Micro operations, Logic Micro operations and Shift Micro operations.

Basic Computer Organization and Design:
Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, Input-Output and Interrupt.

Unit II

Micro programmed Control:
Control Memory, Address Sequencing, Micro program Example, Design of Control Unit.

Central Processing Unit:

Introduction, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program Control, Reduced Instruction Set Computer(RISC)

Unit III

Input/output Organization:

Peripheral Devices, I/O interface, Asynchronous data transfer, Modes of transfer, priority Interrupt, Direct memory access, Input-Output Processor (IOP), Serial Communication.

Unit IV:

Memory Organization: Memory Hierarchy, Main memory, Auxiliary memory, Associate Memory, Cache Memory, and Virtual memory, Memory Management Hardware.

Additional Input:

Overview of Computer Architecture:

Evolution of Computer Systems, Parallelism in uni- processor System, Parallel Computer Structures, Architectural Classification Schemes, Parallel Processing Applications.

Text Books:

1. Computer System Architecture, M. Morris Mano, Prentice Hall of India Pvt. Ltd., Third Edition, Sept. 2008
2. Computer Architecture and Parallel Processing, Kai Hwang and Faye A. Briggs, McGraw Hill, International Edition1985.

Reference Books

1. Computer Architecture and Organization, William Stallings, PHI Pvt. Ltd., Eastern Economy Edition, Sixth Edition, 2003.
2. "Computer System Architecture", John. P. Hayes.
3. Computer Architecture A quantitative approach 3rd edition John L. Hennessy & David A. Patterson Morgan Kufmann (An Imprint of Elsevier).

Web Links:

https://nptel.ac.in/courses/106/105/106105163/

https://course.ece.cmu.edu/~ece447/s13/doku.php?id=home

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

III Year B.Sc., IoT (Maths, Electronics, Internet of Things)

SEMESTER V

Model Question Paper (W.E.F 2019-2020)

COMPUTER ORGANISATION & ARCHITECHTURE

Time: 2½ Hrs. **Max Marks: 50 M**

SECTION – I

Answer any **TWO** of the following: **2 X 5=10 M**

1. List and Explain Logic Micro- operation
2. Explain the phases of an Instruction Cycle
3. List the characteristics of RISC processor
4. List and Explain the functions of a control Unit

SECTION –II

Answer **ALL** the questions: 4 **X 10 =40 M**

5. a). What is arithmetic micro-operations? Write about bus and memory transfers

OR

b). Define registertransferlanguage? Explain input-out interrupts.

6. a). What is design of control unit? Explain various types of addressing modes

OR

b) Define stack organization? Explain data transfer and manipulation

7. a) Explain directmemoryaccess

OR

b). Explain modes of transfer

8. a) What is the principle of cache memory .Explain various Mapping methods.

OR

b) What is virtual memory? Explain

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. M.E.IoT (VSem)			
Course Code **IoT107P**	**TITLE OF THE COURSE** ***COMPUTER ORGANISATION & ARCHITECHTURE LAB***				
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:	Basic Electronics	0	0	3	2

Objectives:

The main aim of this lab course is to provide hands on experience to the students towards the developing the IoT Devices with the state of art Raspberry pi microprocessor.

List of Experiments

1. Design of Ripple Carry Adder
2. Design of Carry Look ahead Adder
3. Synthesis of flip-flops
4. Design of Registers and Counters
5. Design of Combinational Multiplier
6. Design of ALU
7. Design of Memory
8. Design of Associative Cache
9. CPU Design

Virtual LabLinks:

http://vlabs.iitkgp.ernet.in/coa/

https://cse.iitkgp.ac.in/~chitta/coldvl/

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code **IoT108**	**TITLE OF THE COURSE** **Implementing IoT with Raspberry Pi**	III B.Sc. M.E.IoT (V Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Arduino and Basic Electronics	3	1	-	3

Course Objectives:

- This program aims to train students to be equipped with a solid theoretical foundation, systematic professional knowledge and strong practical skills in the Raspberry Pi.
- The course focuses on higher-level operating systems, advanced networking, user interfaces, multimedia and uses more computing intensive IoT applications as examples using Raspberry Pi running Linux as the platform of choice
- After doing this course, students should be able to design and deploy multiple IoT devices that could connect to the gateway.
- Acquainting students with the basic web app creation
- Connecting and Using various IoT Cloud Based Platforms such as Blynk, Things peak, AWS IoT, Google Cloud IoT Core etc..
- Working with Big Data Processing Techniques
- Developing Mobile App for IoT applications

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Appreciate the development technology for IoT
CO2	Familiar with Basic Concepts of Linux
CO3	Design real time IoT Devices.
CO4	Familiar with basic foundations of Python Programming and libraries
CO5	Comprehend the basic concepts of Mobile Cloud Computing
CO6	Develop a Mobile App for IoT applications.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

Unit I

Getting Started with Raspberry Pi: Basic functionality of Raspberry Pi B+ board, setting up theboard, configuration and use, implications of an operating system on the behavior of the Raspberry Pi as an IoT device, booting Raspberry Pi 3, Downloading an Operating System,format an SD card and booting the OS, Basics of Linux and its use, main features

includingnavigating the file system and managing processes, text based user interface through the shell,overview of the graphic user interface for Raspian Linux distribution.

Unit-II

Interfacing Hardware with the Raspberry Pi, Raspberry Pi Remote Access, operate the RaspberryPi in “headless mode”, Bash Command line, operating Raspberry Pi without needing a GUIinterface.
Basics of the Python programming language, programming on the Raspberry Pi. Python on Raspberry Pi, Python Programming Environment, Python Expressions, Strings, Functions andFunction arguments, Lists, List Methods, Control Flow.

Unit-III

Communication with devices through the pins of the Raspberry Pi, RPi.GPIO library, Python Functions, setting up the pins, General Purpose IO Pins, Protocol Pins, GPIO Access, applyingdigital voltages, and generating Pulse Width Modulated signals, Tkinter Python library,accessing pins through a graphic user interface

Unit-IV

IoT Design using Raspberry Pi IoT Applications based on Pi, LAMP Web-server, GPIOControl over Web Browser, Creating Custom Web Page for LAMP, Communicating data usingon-board module, Home automation using Pi, Node-RED, MQTT Protocol, Using Node-RED, Visual Editor on Rpi

Additional Input:
IoT Physical Servers and Cloud Offerings: Introduction to Cloud Storage models andcommunication APIs. Webserver – Web server for IoT, Cloud for IoT, Python web applicationframework. Designing a RESTful web API. Connecting to APIs

Text Books:

1. Simon Monk, “Programming the Raspberry Pi: Getting Started with Python”, January 2012, McGraw Hill Professional
2. The official raspberry Pi Projects Book https://www.raspberrypi.org/magpi-issues/Projects_Book_v1.pdf

Reference Books

1. Eben Upton and Gareth Halfacree, “Raspberry Pi User Guide”, August 2016, 4th edition, John Wiley & Sons

2. Alex Bradbury and Ben Everard, “Learning Python with Raspberry Pi”, Feb 2014, JohnWiley& Sons

2. Michael Margolis, “Arduino Cookbook”, First Edition, March 2011, O'Reilly Media, Inc.

WebLinks:

https://nptel.ac.in/courses/106/105/106105166/

CO-POMapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A+" Grade)*

III B.Sc. IOT (M.E.IOT)
MODEL QUESTION PAPER (W.E.F 2019-2020)
PAPER – IV: Implementing IoT with Raspberry Pi
SEMESTER – V

Time: 2 ½Hrs **Max Marks: 50M**

……...……

SECTION - I

Answer any **Two** of the following: **5X2=10 M**

1. What is the difference between Active and Passive Transponders
2. Discuss about Open issues in RFID Security?
3. Explain the application areas of WSN
4. Write about Zigbee security

SECTION –II

Answer ALL Questions: **4X10=40 M**

5. (a) Explain about Fundamental Operating Principles of RFID

(Or)

(b) Briefly discuss about Anti-collision procedures in RFID

6. (a) Discuss about Security attacks in RFID

(Or)

(b) Write about various challenges and constraints of Wireless Sensor Networks

7. (a) What are the various functional and non-functional aspects required for Operating System in WSN

(Or)

(b) Mention the Characteristics of MAC Protocols in WSN

8. (a) Explain about Pro-active and reactive routing Protocols in WSN

(Or)

(b) Explain the defence mechanisms against DoS Attacks and Routing Attacks

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	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. M.E.IoT (V Sem)			
Course Code **IoT108P**	**TITLE OF THE COURSE Raspberry Pi lab**				
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:	Arduino, Basic Electronics	0	0	3	2

Objectives:

The main aim of this lab course is to provide hands on experience to the students towards the developing the IoT Devices with the state of art Raspberry pi microprocessor.

List of Experiments

8. Getting started with Raspberry Pi, Install Raspian on your SD card
9. Linux basic commands.
10. Coding simple programs in Python.
11. How to use Python-based IDE (integrated development environments) for the Raspberry Pi and how to trace and debug Python code on the device
12. How to have your Raspberry Pi interact with online services through the use of public APIs and SDKs
13. Understanding the connectivity of Raspberry-Pi with IR sensor. Write an application to detect obstacle and notify user using LEDs.
14. Design APP Using MIT App Inventor and Connect to Temperature Sensor

Virtual LabLinks:

https://ocw.cs.pub.ro/courses/iot/labs/01

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	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code **IoT109**	**TITLE OF THE COURSE** **BIG DATA TECHNOLOGY** **Elective- I (A)**	III B.Sc. M.E.IoT (VI Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	DBMS and Java	3	1	-	3

Course Objectives:

The Objective of this course is to provide practical foundation level training that enables immediate and effective participation in big data projects. The course provides grounding in basic and advanced methods to big data technology and tools, including Map Reduce and Hadoop and its ecosystem.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Learn tips and tricks for Big Data use cases and solutions.
CO2	Learn to build and maintain reliable, scalable, distributed systems with Apache Hadoop.
CO3	Apply Hadoop ecosystem components.
CO4	Apply Big Data in IoT

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

Unit I

INTRODUCTION TO BIG DATA: Introduction – distributed file system – Big Data andits importance, Four V's in big data, Drivers for Big data, Big data analytics, Big data applications. Algorithms using map reduce, Matrix-Vector Multiplication by Map Reduce.

Unit- II

INTRODUCTION HADOOP : Big Data – Apache Hadoop& HadoopEco-System –Moving Data in and out of Hadoop – Understanding inputs and outputs of Map Reduce – DataSerialization.

Unit- III

HADOOP ARCHITECTURE: Hadoop Architecture, Hadoop Storage: HDFS, CommonHadoop Shell commands , Anatomy of File Write and Read., NameNode, Secondary NameNode, and DataNode, HadoopMapReduce paradigm, Map and Reduce tasks, Job,Tasktrackers - Cluster Setup –SSH &Hadoop Configuration – HDFS Administering – Monitoring & Maintenance.

Unit-IV

HADOOP ECOSYSTEM AND YARN: Hadoop ecosystem components - Schedulers -Fair

and Capacity, Hadoop 2.0 New Features- NameNode High Availability, HDFS Federation, MRv2, YARN, Running MRv1 in YARN.

Additional Input:

HIVE AND HIVEQL, HBASE:-Hive Architecture and Installation, Comparison withTraditional Database, HiveQL - Querying Data - Sorting And Aggregating, Map Reduce Scripts, Joins & Sub queries, HBase concepts- Advanced Usage, Schema Design, Advance Indexing - PIG, Zookeeper - how it helps in monitoring a cluster, HBase uses Zookeeper and how to BuildApplications with Zookeeper.

Text Books:

1. Boris lublinsky, Kevin t. Smith, Alexey Yakubovich, "Professional Hadoop Solutions", Wiley,ISBN: 9788126551071, 2015.
2. Chris Eaton, Dirk deroos et al. , "Understanding Big data ", McGraw Hill, 2012.

Reference Books

1. Tom White, "HADOOP: The definitive Guide" , O Reilly 2012.
2. VigneshPrajapati, "Big Data Analytics with R and Haoop", Packet Publishing 2013.
3. Tom Plunkett, Brian Macdonald et al, "Oracle Big Data Handbook", Oracle Press, 2014.
4. JyLiebowitz, "Big Data and Business analytics",CRC press, 2013.

WebLinks:

https://nptel.ac.in/courses/106/104/106104189/
https://www.edx.org/course/big-data-fundamentals

CO-POMapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A+" Grade)*

III Year B.Sc., IoT (Maths, Electronics, Internet of Things)
SEMESTER VI

Model Question Paper (W.E.F 2019-2020)
Elective-I (A): BIG DATA TECHNOLOGY

Time: 2½ Hrs. **Max Marks: 50 M**

SECTION – I

Answer any **TWO** of the following: **2X5=10 M**

1. Explain briefly about Big Data Analysis
2. Explain the HDFS federation
3. Explain briefly about Hadoop Architecture
4. Explain the HBase usage in Zookeeper

SECTION –II

Answer **ALL** the questions: 4**X 10=40 M**

5. a) What is Big Data? Explain the characteristics and proper APACHE Hadoop

(**Or**)

b) Explain the map reduce by using Algorithm

6. a) Discuss about Hadoop Ecosystem?

(**Or**)

b) Explain the Understanding inputs and outputs of Map Reduce

7. a) Explain Hadoop shell commands?

(**Or**)

b) Explain the HDFS Administering

8. a)What are the schedulers used in Hadoop

(**Or**)

b) Explain steps for running the MRVI in YARN

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. M.E.IoT (VI Sem)			
Course Code **IoT109P**	**TITLE OF THE COURSE BIG DATA TECHNOLOGY ThroughHadoop LAB**				
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:	DBMS and Java	0	0	3	2

Objectives

The main objective of this lab course is to provide basic knowledge and practical exposure to implement Big Data techniques in Hadoop

List of Experiments

1. Installation of Hadoop
    a. Ubuntu Operating System in stand-alone mode
    b. Psuedo Distributed Mode(Locally)
    c. Psuedo Distributed Mode(YARN)
2. File Management tasks in Hadoop
    a. Create a directory in HDFS at given path(s).
    b. List the contents of a directory.
    c. Upload and download a file in HDFS.
    d. See contents of a file
    e. Copy a file from source to destination
    f. Copy a file from/To Local file system to HDFS
    g. Move file from source to destination.
    h. Remove a file or directory in HDFS.
    i. Display last few lines of a file.
    j. Display the aggregate length of a file.

3. Word Count Map Reduce program to understand Map Reduce Paradigm
4. Weather Report POC-Map Reduce Program to analyse time-temperature statistics and generate report with max/min temperature.
5. Implementing Matrix Multiplication with Hadoop Map Reduce
6. Pig Latin scripts to sort,group, join,project, and filter your data.
7. Hive Databases,Tables,Views,Functions and Indexes

Virtual LabLinks:

https://www.iiitmk.ac.in/DAVirtalLab/

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code **IoT110**	**TITLE OF THE COURSE** **SERVICE ORIENTED ARCHITECTURE** **Elective- I (B)**	III B.Sc. M.E.IoT (VI Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	JSON	3	1	-	3

Course Objectives:

- Learn XML fundamentals.
- Be exposed to build applications based on XML. Understand the key principles behind SOA.
- Be familiar with the web Services technology elements for realizing SOA. Learn the various web Service standards.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Build applications based on XML. Develop web services using technology elements.
CO2	Build SOA-based applications for intra-enterprise and inter-enterprise applications.
CO3	Apply SOA to IoT.
CO4	Make XML formats from the IoT data

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

Unit-I

INTRODUCTION TO XML: XML document structure – Well formed and valid documents –Namespaces – DTD – XML Schema – X-Files.

Unit-II

BUILDING XML- BASED APPLICATIONS: Parsing XML – using DOM, SAX – XML Transformation and XSL – XSL Formatting – Modelling Databases in XML.

Unit-III

SERVICE ORIENTED ARCHITECTURE: Characteristics of SOA, Comparing SOA with Client-Server and Distributed architectures – Benefits of SOA — Principles of Service orientation – Service layers.

Unit-IV

WEB SERVICES: Service descriptions – WSDL – Messaging with SOAP – Service discovery – UDDI – Message Exchange Patterns – Orchestration – Choreography –WS Transactions.

Additional Input:

BUILDING SOA-BASED APPLICATIONS: Service Oriented Analysis and Design – Service Modelling – Design standards and guidelines — Composition – WS-BPEL – WS-Coordination – WS-Policy – WS-Security – SOA support in J2EE

Text Books:

1. Ron Schmelzer et al. "XML and Web Services", Pearson Education,2002.
2. Thomas Erl, "Service Oriented Architecture: Concepts, Technology, andDesign",Pearson Education, 2005.

Reference Books

1. Frank P.Coyle, "XML, Web Services and the Data Revolution", Pearson Education,2002
2. Eric Newcomer, Greg Lomow, "Understanding SOA with WebServices",PearsonEducation, 2005
3. SandeepChatterjee and James Webber, "Developing Enterprise WebServices:An Architect's Guide", Prentice Hall,2004.
4. James McGovern, Sameer Tyagi, Michael E.Stevens, Sunil Mathew, "JavaWeb Services Architecture", Morgan Kaufmann Publishers, 2003

WebLinks:

https://www.coursera.org/learn/service-oriented-architecture

CO-POMapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A+" Grade)*

III Year B.Sc., IoT (Maths, Electronics, Internet of Things)
SEMESTER VI

Model Question Paper (W.E.F 2020-2021)
Elective-I (B): SERVICE ORIENTED ARCHITECTURE

Time: 2½ Hrs. **Max Marks: 50 M**

SECTION – I

Answer any **TWO** of the following: **2X5=10 M**

1. Explain X-Files
2. What is DOM
3. Explain XSL
4. Explain Service Layers

SECTION –II

Answer **ALL** the questions: 4**X 10=40 M**

5. a). Briefly explain XML document Structure

   (Or)

   b). Discuss and Compare Well-formed and Valid documents
6. a). Explain about XSL Formatting

   (Or)

   b). Describe the Modelling Databases in XML
7. a). Explain the characteristics of SOA

   (Or)

   b). How Comparing SOA with Client Server and Distributed Architecture
8. a). Discuss about WSDL

   (Or)

   b). Explain the Message Exchange Patterns

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. M.E.IoT (VI Sem)			
Course Code **IoT110P**	**TITLE OF THE COURSE** SERVICE ORIENTED ARCHITECTURE LAB				
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:	JSon	0	0	3	2

Objectives

The main objective of this lab course is to provide basic knowledge on Service Oriented Architecture

List of Experiments

Design based Problems (DP)/Open Ended Problem

1. Think, analyze and implement SOAP based web service to create to-do list application in your preferred language.

2. Consider library management system for your college and create REST based web service for it to manage all the functionalities of your college library.

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code **IoT111**	**TITLE OF THE COURSE** **SECURITY and PRIVACY INIoT** **Elective- II (Cluster-A)**	III B.Sc. M.E.IoT (VI Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Foundations of IoT	3	1	-	3

Course Objectives:

- This course gives an overview of IoT system in security aspects.The course mainly focuses on current security risks IoT domain faces and countermeasure available for the known.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understand IoT general models and security challenges.
CO2	Recognize IoT security and vulnerability threats.
CO3	Understand different IoT protocols and their security measures.
CO4	Interpret how to secure an IoT environment
CO5	Interpret differentIoT types of attacks.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT-I

IOT-SECURITY OVERVIEW: IoTReference Model- Introduction -Functional View,IoT Security Challenges-Hardware Security Risks -Hardcoded/Default Passwords -Resource Constrained Computations -Legacy Assets Connections -Devices Physical Security, Software Security Risks -Software Vulnerabilities -Data Interception -Identification of Endpoints -Tamper Detection, Lack of Industrial Standards

UNIT- II

IOT- SECURITY &VULNERABILITY ISSUES: IoT Security Requirements -Data Confidentiality -Data Encryption -Data Authentication -Secured Access Control –IoT-Vulnerabilities – Secret-Key, Authentication/Authorization for Smart Devices -Constrained System Resources -Device Heterogeneity -Fixed Firmware.IoT Attacks -Side-channel Attacks -Reconnaissance -Spoofing -Sniffing -Neighbour -Discovery -Rogue Devices-Man-in-Middle

UNIT-III

SECURED PROTOCOLS FOR IOT: Infrastructure- IPv6– LowPAN, Identification-Electronic Product Code -uCode, Transport-BluetoothLPWAN, Data -MQTT -CoAP, Multi-layer Frameworks-Alljoyn,-IoTivity.

UNIT-IV

SECURING INTERNET OF THINGS ENVIRONMENT: IoT Hardware -Test Device Range-Latency and Capacity -Manufacturability Test -Secure from Physical Attacks, IoT Software -Trusted IoT Application Platforms, -Secure Firmware Updating -Network Enforced Policy -Secure AnalyticsVisibility and Control.

Additional Modules:

IOT ATTCAKS -CASE STUDY, MIRAI Botnet Attack -Iran's Nuclear FacilityStuxnet Attack –TeslaCryptojacking Attack -The TRENDnetWebcam Attack -The Jeep SUV Attack -The Owlet Wi-Fi Baby Heart Monitor Vulnerabilities -St. Jude_HackableCardiac Devices.

Text Books:

1. Fei HU, “Security and Privacy in Internet of Things (IoTs): Models, Algorithms, andImplementations”, CRC Press,2016

Reference Books

1. Russell, Brian and Drew Van Duren, “Practical Internet of Things Security”, Packt Publishing, 2016.
2. Ollie Whitehouse, “Security of Things: An Implementers' Guide to Cyber-Security forInternet of Things Devices and Beyond”, NCC Group, 2014

WebLinks:

1. https://www.postscapes.com/internet-of-things-protocols/
2. https://www.cse.wustl.edu/~jain/cse570-15/ftp/iot_prot/index.html
3. https://www.cisco.com/c/en/us/about/security-center/secure-iot-proposed-framework.html
4. https://www.iotforall.com/5-worst-iot-hacking-vulnerabilities/

CO-POMapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A+" Grade)*

III Year B.Sc., IoT (Maths, Electronics, Internet of Things)
SEMESTER VI

Elective-II (Cluster-A): SECURITY and PRIVACY INIoT

Time: 2½ Hrs. **Max Marks: 50 M**

SECTION – I

Answer any **TWO** of the following: **2X5=10 M**

1. Explain Vision of IoT
2. Explain Applications of IoT
3. What is meant by Threats
4. Explain Taxonomy

SECTION –II

Answer **ALL** the questions: 4**X 10=40 M**

5. a). Explain the System Model for IoT

   (Or)

   b). Discuss in detail Concept of IoT

6. a). Explain Large Scale Ubiquitous and Pervasive Connectivity

   Or)

   b). Describe Network Neutrality

7. a). Briefly explain Vulnerable Features of the Internet of Things,

   (Or)

   b). Explain about Threat Taxonomy

8. a). Discuss System Security Threats

   (Or)

   b). Compare Privacy Threats and Reputation Threats

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. M.E.IoT (VI Sem)			
Course Code **IoT111P**	**TITLE OF THE COURSE IoT Security Lab**				
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:	DBMS and Java	0	0	3	2

Objectives

- Know about the devices and components in a wireless network.
- Know about the network security issues in different types of network devices.
- Identify a mobile security app and how it works for mobile security?

List of Experiments

1. Study of different wireless network components and features of any one of the Mobile Security Apps.
2. Study of the features of firewall in providing network security and to set Firewall Security in windows.
3. Steps to ensure Security of any one web browser (Mozilla Firefox/Google Chrome)
4. Study of different types of vulnerabilities for hacking a websites / Web Applications.
5. Analysis the Security Vulnerabilities of E-commerce services.
6. Analysis the security vulnerabilities of E-Mail Application
7. Demonstrate intrusion detection system (ids) using any tool eg. Snort or any other s/w.
8. Automated Attack and Penetration Tools Exploring N-Stalker, a Vulnerability AssessmentTool.
9. Defeating Malware - Building Trojans, Rootkit Hunter

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code **IoT112**	**TITLE OF THE COURSE** **Mobile Internet: Enabling Technologies and Services** **Elective- II (Cluster-A)**	III B.Sc. M.E.IoT (VI Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Foundations of IoT	3	1	-	3

Course Objectives:

- To learn Wireless technologies and planning Ad-hoc Network. .

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understand concepts of Mobile Communication. (Understand
CO2	Analyse next generation Mobile Communication System. (Analyze)
CO3	Understand network and transport layers of Mobile Communication. (Understand)
CO4	Analyze various protocols of all layers for mobile and ad hoc wireless communication networks. (Analyze)
CO5	Understand IP and TCP layers of Mobile Communication. (Understand)

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT-I

Detailed Introduction of Mobile Computing: History, Types, Benefits, Application, Evolution, Security Concern regarding Mobile Computing, Different Propagation Modes, Wireless Architecture and its types, needs of mobile user

The cellular concept: Cellular system, Hexagonal geometry cell and concept of frequency reuse, Channel Assignment Strategies Distance to frequency reuse ratio

UNIT- II

Telecommunication System: GSM: - Channel allocation , call routing Architecture, PLMN interface, addresses and identifiers, network aspects, frequency allocation, authentication and security, Handoffs Technique.

GPRS: network operation, data services, Applications, Billing and charging

UNIT-III

Mobile IP: Need of mobile IP, IP packet delivery, Agent Discovery, Registration, Tunnelling and encapsulation, Route optimization, IP Handoff.

Mobile Transport Layer: Overview of Traditional TCP and implications of mobility control. Improvement of TCP: Indirect TCP, Snoop TCP, Mobile TCP, Fast Retransmit/fast recovery, Time-out freezing, Selective retransmission, Transaction-oriented TCP.

UNIT-IV

Wireless Application Protocol: Introduction of WAP, WAP applications, WAP Architecture, WAP Protocol Stack, Challenges in WAP

Introduction to 4G: Introduction, features and challenges, Applications of 4G, 4G network architecture.

Text Books:

1. Mobile Computing Technology, Applications and service creation ,Asoke K Telukder, Roopa R Yavagal by TMH.
2. Mobile Computing,Raj Kamal by Oxford

Reference Books

1. Wireless Communications & Networks, Second Edition,William Stallings by Pearson
2. Mobile Computing Theory and Practice-Kumkum Garg-Pearson
3. TCP/IP Protocol Suite by Behrouz A Forouzan, Third Edition,TMH

Web Links:

https://nptel.ac.in/noc/courses/noc16/SEM2/noc16-cs13/

CO-POMapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A+" Grade)*

III Year B.Sc., IoT (Maths, Electronics, Internet of Things)
SEMESTER VI

Elective-II (Cluster-A): Mobile Internet: Enabling Technologies and Services

Time: 2½ Hrs. **Max Marks: 50 M**

SECTION – I

Answer any **TWO** of the following: **2X5=10 M**

1. Explain Wireless LANs
2. Explain GPRS
3. What is Mobile IP Networks
4. Explain Security Issues

SECTION –II

Answer **ALL** the questions: 4**X 10=40 M**

5. a). Write the Evolution toward the Mobile Internet
   (Or)
   b). Explain how Internet Access over Wireless LANs

6. a). Explain how Internet Access over GPRS
   Or)
   b). Discuss Mobility Management in Mobile IP Networks

7. a). Explain how Quality of Service in Mobile IP Networks
   (Or)
   b). Explain about Multicast in Mobile IP Networks

8. a). Describe Secure Mobility in Wireless IP Networks
   (Or)
   b). Explain Security Issues in Wireless IP Networks

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. M.E.IoT (VI Sem)			
Course Code **IoT112P**	**TITLE OF THE COURSE Mobile Computing Lab**				
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:	Data Communications	0	0	3	2

Objectives

List of Experiments

1. What is Mobile Computing? Explain the three tier architecture of mobile computing with diagram.
2. Write a WML program to create a card.
3. Write a WML program to create a deck that contain two cards and provide the Functionality of calling two cards from one another.
4. Write a WML program to display list of following card and provide the functionality to load a particular card, a. Sales b. Product c. Services
5. Write a WML program for usage of template tag.
6. Write a WML program to display the text in the following format. a) Bold b) Underlined c) Emphasized d) Big font e) Small font f) Strong font
7. Write a WML program to create the following table. Honda Suzuki Yamaha Mitsubishi Ford Maruti
8. Write a WML program to implement the functionality of Login by username.
9. Write a WML program to display special characters on the screen.
10. Write a WML program to create following selection list. a. Red b. Green c. Yellow d. Blue
11. Write a WML program to create following option group. 1. Honda 1.1 CD 100 1.2 CD Dawn 2. Suzuki 2.1 Max 100 2.2 Samurai
12. Write a WML program to display the image on the screen after 5 seconds.
13. Write a WML program to develop the calculator.

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code **IoT113**	**TITLE OF THE COURSE** **Project Work** **Elective- II (Cluster-A)**	III B.Sc. M.E.IoT (VI Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		5	1	-	5

Follow SDLC process for real time applications and develop real time application project

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories.

The project is of 5 hours/week for one (semester VI) semester duration and a student is expected to do planning, analysing, designing, coding, and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic Limitations of the project
- Tools/platforms, Languages to be used Scope of future application
- The Project work should be either an individual one or a group of not more than three members and submit a project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examinations.

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code **IoT114**	**TITLE OF THE COURSE** **DATA MINING AND DATA ANALYSIS** **Elective- II (Cluster-B)**	III B.Sc. M.E.IoT (VI Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Foundations of IoT	3	1	-	3

Course Objectives:

- To learn data analysis techniques.
- To understand Data mining techniques and algorithms.
- Comprehend the data mining environments and application.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Compare various conceptions of data mining as evidenced in both research and application.
CO2	Characterize the various kinds of patterns that can be discovered by association rule mining.
CO3	Evaluate mathematical methods underlying the effective application of data mining.
CO4	
CO5	

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

Unit-I

Data mining-KDD versus data mining, Stages of the Data Mining Process-Task primitives. Data Mining Techniques – Data mining knowledge representation.

Unit-II

Data mining query languages- Integration of Data Mining System with a Data Warehouse- Issues, Data pre-processing – Data Cleaning.

Data transformation – Feature selection – Dimensionality reduction – Discretization and generating concept hierarchies – Mining frequent patterns association – correlation.

Unit-III

Classification: Basic Concepts, General Approach to solving a classification problem, Decision Tree Induction: Working of Decision Tree, building a decision tree, methods for expressing an attribute test conditions, measures for selecting the best split, Algorithm for decision tree induction.

Model Over fitting: Due to presence of noise, due to lack of representation samples, evaluating the performance of classifier: holdout method, random sub sampling, cross-validation, bootstrap

Unit-IV

Bayesian Classification – Rule Based Classification – Classification by back propagation – Support Vector Machines –Associative Classification – Lazy Learners – Other Classification Methods-

Additional Input:

Clustering techniques – Partitioning methods-k-means-Hierarchical Methods – Distance based agglomerative and divisible clustering – Density – Based Methods – Expectation maximization – Grid Based Methods – Model – Based Clustering – Methods – Constraint – Based Cluster Analysis – Outlier Analysis.

Text Books:

1. AdelchiAzzalini, Bruno Scapa, "Data Analysis and Data mining" ,2nd Ediiton, Oxford Univeristy Press Inc.,2012.

Reference Books

1. JiaweiHanandMichelineKamber,"DataMining:ConceptsandTechniques",3rd Edition, Morgan Kaufmann Publishers, 2011.
2. AlexBersonandStephenJ.Smith,"DataWarehousing,DataMining&OLAP",10th Edition, TataMcGraw Hill Edition , 2007.
3. G.K. Gupta, "Introduction to Data Mining with Case Studies", 1st Edition, Easter Economy Edition, PHI,2006.

Web Links:

https://nptel.ac.in/courses/110/107/110107092/

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A+" Grade)*

III Year B.Sc., IoT (Maths, Electronics, Internet of Things)
SEMESTER VI

Elective-II (Cluster-B): DATA MINING AND DATAANALYSIS

Time: 2½ Hrs. **Max Marks: 50 M**

SECTION – I

Answer any **TWO** of the following: **2X5=10 M**

1. What is Data Mining
2. Explain Data Transformation
3. Explain Decision Tree
4. Write measures for selecting the best split

SECTION –II

Answer **ALL** the questions: 4**X 10=40 M**

5. a). Explain the various Stages of the Data Mining Process

   (Or)

   b). Briefly explain Data Mining Techniques

6. a). Explain how integration of Data Mining System with a Data Warehouse

   Or)

   b). Discuss Dimensionality reduction

7. a). Explain how Working of Decision Tree

   (Or)

   b). Describe methods for expressing an attribute test conditions

8. a). Explain the Classification by back propagation

   (Or)

   b). Explain how Associative Classification

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. M.E.IoT (VI Sem)			
Course Code **IoT114P**	**TITLE OF THE COURSE DATA MINING AND DATAANALYSIS LAB**				
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:	Data Communications	0	0	3	2

Objectives

- To Analyze the data using statistical methods
- To understand and demonstrate data mining

List of Experiments

1. Data Analysis – Getting to know the Data (Using ORANGEWEKA)
    - Parametric – Means . T-Test, Correlation
    - Prediction for numerical outcomes – Linear regression
    - Correlation analysis
    - Preparing data for analysis
        - Pre-Processing techniques

2. Data Mining (Using ORANGE WEKA or any source data mining tool)
    - Implement clustering algorithm
    - Implement classification using
        - Decision tree
        - Back Propagation
        - Visualization methods

Virtual Lab Link

https://www.iiitmk.ac.in/DAVirtalLab/#work

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code **IoT115**	**TITLE OF THE COURSE** **BIG DATA AND IoT** **Elective- II (Cluster-B)**	III B.Sc. M.E.IoT (VI Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Foundations of IoT	3	1	-	3

Course Objectives:

Learn how to apply software solutions for different systems and Big Data needs to your IoT designs.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Appreciate the software needs of an IoT project
CO2	Understand how data is managed in an IoT network
CO3	Apply software solutions for different systems and Big Data to your IoT concept designs
CO4	Create Python scripts to manage large data files collected from sensor data and interact with the real world via actuators and other output devices.
CO5	

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT-I

Big Data Solutions and the Internet of Things, Evaluating the Art of the Possible

UNIT-II

Understanding the Business, Business Information Mapping for Big Data and Internet of Things

UNIT-III

Understanding Organizational Skills, Designing the Future State Information Architecture

UNIT-IV

Defining an Initial Plan and Roadmap, Implementing the Plan.

Case studies in role of big data and IoT in big data business, market and governance

Text Books:

1. Big Data and The Internet of Things: Enterprise Information Architecture

byRobertStackowiak, Art Licht, VenuMantha, Louis Nagode ,actpress

Reference Books

1. Information Fusion and Analytics for Big Data and IoT by EloiBosse, Basel Solaiman , ARTECHHOUSE
2. Big-Data Analytics for Cloud, IoT and Cognitive Learning by Kai Hwang, Min Chen, Wiley.

Web Links:

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A+" Grade)*

III Year B.Sc., IoT (Maths, Electronics, Internet of Things)
SEMESTER VI

Elective-II (Cluster-B): *BIG DATA AND IoT*

Time: 2½ Hrs. **Max Marks: 50 M**

SECTION – I

Answer any **TWO** of the following: **2X5=10 M**

1. Explain Incremental Approach
2. Explain Data Flow Diagram basics
3. Explain Integration Skills
4. What is meant by Initial Plan

SECTION –II

Answer **ALL** the questions: 4**X 10=40 M**

5. a). Explain about Big Data Solutions in IoT

   (Or)

   b). Discuss Evaluating Data Management Strategies

6. a). Explain how Understanding the Business in IoT

   Or)

   b). Describe Mapping for Big Data and Internet of Things

7. a). Briefly explain Skills Assessment and Metrics

   (Or)

   b). Explain the Current State Information Architecture

8. a). Explain how Revisiting Earlier Findings

   (Or)

   b). Write note on Gaining Approval and the Transition

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. M.E.IoT (VI Sem)			
Course Code **IoT115P**	**TITLE OF THE COURSE Big Data and IoT LAB**				
Teaching	Hours Allocated: 30 (**Lab**)	L	T	P	C
Pre-requisites:	Data Communications	0	0	3	2

Objectives

1. To understand setting up of Hadoop Cluster
2. To solve problems using Map Reduce Technique
3. To solve Big Data problems

List of Experiments

1. Set up a pseudo-distributed, single-node Hadoop cluster backed by the Hadoop Distributed File System, running on Ubuntu Linux. After successful installation on one node, configuration of a multi-node Hadoop cluster(one master and multiple slaves).
2. MapReduce application for word counting on Hadoop cluster
3. Unstructured data into NoSQL data and do all operations such as NoSQL query with API.
4. K-means clustering using map reduce
5. Page Rank Computation
6. Mahout machine learning library to facilitate the knowledge build up in big data analysis.
7. Application of Recommendation Systems using Hadoop/mahout libraries TOTA

Virtual Lab Link

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code **IoT113**	**TITLE OF THE COURSE** **Project Work** **Elective- II (Cluster-B)**	III B.Sc. M.E.IoT (VI Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		5	1	-	5

Follow SDLC process for real time applications and develop real time application project

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories.

The project is of 5 hours/week for one (semester VI) semester duration and a student is expected to do planning, analysing, designing, coding, and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic Limitations of the project
- Tools/platforms, Languages to be used Scope of future application
- The Project work should be either an individual one or a group of not more than three members and submit a project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examinations.

B.Sc (Information Technology)

Syllabus and Model Papers

	Government College (Autonomous) Rajahmundry	Program & Semester I B.Sc. (I Sem)			
Course Code **IT 101**	**TITLE OF THE COURSE** **Programming Fundamentals Using C**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Should have computer knowledge	3	1	-	3

Course Objectives:

1. Learn data types and control structures of C
2. Learn to map problems to programming features of C.
3. Learn to write good portable C programs.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Appreciate and understand the working of a digital computer
CO2	Analyze a given problem and develop an algorithm to solve the problem
CO3	Improve upon a solution to a problem
CO4	Use the 'C' language constructs in the right way
CO5	Design, develop and test programs written in 'C'.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I

Introduction to computers - Characteristics and limitations of computer, Block diagram of computer, types of computers, computer generations.

Number systems: binary, hexa and octal numbering system. Input and output devices: Keyboard and mouse, inputting data in other ways.

Types of Software: system software, Application software, commercial, open source, domain and free ware software, Memories: primary, secondary and cache memory.

UNIT –II

Problem Analysis and its Tools: Problem solving technique and Program Development Life Cycle, Problem Definition, Algorithm, Flow Charts, Types of Errors, Testing and Debugging.

Basics of C: Historical development of C Language, Basic Structure of C Program, C Character Set, Identifiers and Keywords, constants, variables, Data types.

Operators and expressions: Arithmetic, Relational, Logical, Assignment, Unary, Conditional and Bitwise operators. Type conversions.

Input and output statements: getchar( ), getch( ), getche( ), putchar( ), printf( ), scanf( ), gets( ), puts( )

UNIT –III

Control Statements : Decision making statements: if, if else, else if ladder, switch statements. Loop control statements: while loop, for loop and do-while loop. Jump Control statements: break, continue and goto.

Arrays : one dimensional Array, two dimensional arrays.

Strings: Input/ Output of strings, string handling functions, table of strings

UNIT –IV

Functions: Function Prototype, definition and calling. Return statement. Nesting of functions. Categories of functions. Recursion, Parameter Passing by address & by value. Local and Global variables. Storage classes: automatic, external, static and register.

Pointers: Pointer data type, Pointer declaration, initialization, accessing values using pointers. Pointer arithmetic. Pointers and arrays, pointers and functions.

Structures and Unions: Using structures and unions, use of structures in arrays and arrays in structures. Comparison of structure and Union.

Text books:

1. E. Balagurusway, “Programming in C”, Tata McGrwal Hill.
2. Computer fundamentals and c programming in c by Reemathareja, oxford university Press.

Reference books:

1. Introduction to C programming by REEMA THAREJA from OXFORD UNIVERSITY PRESS
2. E Balagurusamy: ―COMPUTING FUNDAMENTALS & C PROGRAMMING – Tata McGraw-Hill, Second Reprint 2008, ISBN 978-0-07-066909-3
3. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publ, 2002.

Web Links:

1. https://nptel.ac.in/courses/106/104/106104128/
2. https://nptel.ac.in/courses/106/105/106105171/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Chapter Name	Short Questions 5 Marks	Essay Questions 10 Marks	Marks allotted to the chapter
UNIT -I	**1**	**2**	**25**
UNIT -II	**1**	**2**	**25**
UNIT -III	**1**	**2**	**25**
UNIT -IV	**1**	**2**	**25**
Total No. of questions	**4**	**8**	
Total Marks Including choice			**100**

GOVERNMENT AUTONOMOUS COLLEGE, RAJAMAHENDRAVARAM

B.Sc. (Hons.) Information Technology

SYLLABUS (w.e.f 2020-2021 Admitted Batch)

PAPER – I: IT101: Programming Fundamentals Using C

SEMESTER – I

Time: 2 ½ Hrs **Max Marks: 50M**

……

SECTION - I

Answer any **TWO** of the following: **5X2=10 M**

1. Convert $(2547)_{10}$ to equivalent Binary, Octal and Hexa decimal Numbers
2. List out various symbols used in flow chart design
3. Discuss various String handling functions in C
4. Compare and Contrast Structures with Unions

SECTION –II

Answer **ALL** Questions: **4X10=40 M**

5. (a) Draw block diagram of computer? Explain each part of the computer

(Or)

(b) Discuss about primary memory and secondary memory

6. (a) Explain the structure of c program with example

(Or)

(b) Explain various Data types available in C ? Explain each with example

7. (a) What is Decision control statement ? Explain each with example

(Or)

(b) Write a C program to find the Multiplication of Two Matrices Discuss the different categories of functions? Illustrate with example

8. (a)Discuss the different categories of functions? Illustrate with example

(Or)

(b) What is a pointer and structure ? Explain with example program

*** * ***

	Government College (Autonomous) Rajahmundry	Program & Semester I B.Sc. (I Sem)			
Course Code **IT101P**	**TITLE OF THE COURSE** **Programming Fundamentals Using C Lab**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:	Basics of Computer Programming terminologies.	0	0	3	2

Objectives:

1. The course is designed to provide complete knowledge of C language.
2. Students will be able to develop logics which will help them to create programs
3. Learning the basic programming constructs they can easily switch over to any other language in future.

List of Experiments/Syllabus:

1. Find the biggest of three numbers using C.
2. Write a c program to find the sum of individual digits of a positive integer.
3. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence.
4. Write a c program to check whether a number is Armstrong or not.
5. Write a program to perform various string operations.
6. Write a c program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
7. Write a c program that uses functions to perform the following:
8. Addition of two matrices.
9. Multiplication of two matrices.
10. Write a c program that implements searching of given item in given list.
11. Write a c program to sort a given list of integers in ascending order.
12. Write a c program to perform various operations using pointers.
13. Write a c program to read data of 10 employees with a structure of 1.employee id 2.aadar no, 3.title, 4.joined date, 5.salary, 6.date of birth, 7.gender, 8.department.
14. Write a program for concatenation of two strings.
15. Write a program for length of a string

Reference books:

1. E. Balagurusway, “Programming in C”, Tata McGrwal Hill.
2. Dr.Nandini, “C Programming Laboratory”, S.Sidnal.

Virtual Lab Links:

1. https://cse02-iiith.vlabs.ac.in/
2. https://qrgo.page.link/CrFaj

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code **IT102**	**TITLE OF THE COURSE** **Computer Organization and Architecture**	**I B.Sc. (I Sem)**			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Basic functional units of a computer system	3	1	-	3

Course Objectives:

1. To analyze performance issues in processor and memory design of a digital computer.
2. To understand various data transfer techniques in digital computer
3. Processor performance improvement using instruction level parallelism Course

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Ability to understand basic structure of computer
CO2	Ability to understand control unit operations
CO3	Ability to understand the concept of cache mapping techniques.
CO4	Ability to understand the concept of I/O organization.
CO5	Ability to design memory organization that uses banks for different word size operations.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I

Digital Computers and Information: Computer Generations, Functional Units of a Digital Computer, Performance Issues of a computer.

Number Systems: Binary Numbers, Octal and Hexadecimal Numbers, Complements.

Decimal Codes: BCD Code &Alphanumeric Codes: ASCII Character Code, Parity Bit, gray code. Binary Logic and Gates: NAND,NOR, XOR gates.

UNIT –II

Boolean algebra, Standard forms: Sum of Products and Product of Sums, Map Simplification, Half Adder, Full Adder, Multiplexer and Decoder, Flip-Flops: SR Flip-Flop, D Flip-Flop, JK Flip-Flop, T Flip-Flop.

UNIT –III

Instruction Cycle, Types of Instructions, Instruction Format: Three Address Instructions, Two Address Instructions, One Address Instructions , Zero Address Instructions, RISC Instructions, Interrupts, Addressing Modes

UNIT –IV

Memory: Memory Hierarchy, RAM vs. ROM, DRAM, SRAM, Types of ROMs, Cache Memory, Virtual Memory, IO Device, DMA, IO Processor, Flynn's Classification of parallel Processors.

Text books:

1. Digital Logic & Computer Design**,** M. Morris Mano, PHI.
2. Computer System Architecture, M. Morris Mano, Prentice Hall of India Pvt. Ltd., Third Edition, Sept. 2008
3. "Computer System Architecture", John. P. Hayes.

Reference books:

1. Computer Architecture and Parallel Processing, Kai Hwang and Faye A. Briggs, McGraw Hill, International Edition1985.
2. Computer Architecture and Organization, William Stallings, PHI Pvt. Ltd., Eastern Economy Edition, Sixth Edition, 2003.

Web Links:

1. https://nptel.ac.in/courses/106/106/106106092/
2. http://www.nptelvideos.in/2012/11/computer-organization.html

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Chapter Name	Short Questions 5 Marks	Essay Questions 10 Marks	Marks allotted to the chapter
UNIT -I	**1**	**2**	**25**
UNIT -II	**1**	**2**	**25**
UNIT -III	**1**	**2**	**25**
UNIT -IV	**1**	**2**	**25**
Total No. of questions	**4**	**8**	
Total Marks Including choice			**100**

GOVERNMENT AUTONOMOUS COLLEGE, RAJAMAHENDRAVARAM

B.Sc. (Hons.) Information Technology

SYLLABUS (w.e.f 2020-2021 Admitted Batch)

IT102: Computer Organization and Architecture

SEMESTER – I

Time: 2 ½ Hrs **Max Marks: 50M**

SECTION- A

Answer any two Questions **2x5=10M**

1. What is gray code? Develop 3 bit gray code for 0 to 7
2. Explain JK Flip-Flop
3. Explain Instruction Cycle in detail
4. Explain how to access I/O devices in a system

SECTION- B

Answer ALL Questions **4 X 10 = 40 M**

5. A. Find the difference of (3250-72546)10 by using 10's complement. 5M
   B. Perform the following: i) 11010 – 1101
   ii) 101011 – 100110 by using 2's complement 5M

   (OR)
   C. Explain Functional Units of a Digital Computer 10M

6. A. Represent the Boolean function F= A + B'C in a sum of minterms. 3M
   1. Draw the circuit for 3 to 8 decoder and explain. 7M

   (OR)
   2. Convert a D flip flop into SR flip flop and JK flip flop? 10M

7. A. Explain the different types of addressing modes 10M

   (OR)
   B. What are zero address instructions? Explain with the help of an example 4M
   C. Explain about the RISC architecture. 6M

8. A. Explain cache memory and virtual memory 10M

   OR
   B. Explain the operation of DMA with neat diagram and also discuss about the DMA operating modes. 10M

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code **IT103**	**TITLE OF THE COURSE** **OBJECT ORIENTED PROGRAMMING USING JAVA**	I B.Sc. (II Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Able to start a command line shell.	3	1	-	3

Course Objectives:

1. To understand the basic concepts and fundamentals of platform independent object oriented language.
2. To demonstrate skills in writing programs using exception handling techniques and multithreading.
3. To teach the students the differences between C++ and Java programming.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Identify classes, objects, members of a class and relationships among them needed for a specific problem
CO2	To make the student learn an object oriented way of solving problems using java
CO3	Write Java application programs using OOP principles and proper program structuring
CO4	Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs.
CO5	To teach the students basics of JAVA programs and its execution

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I

Fundamentals of Object Oriented Programming: Introduction, Object Oriented paradigm, Basic Concepts of OOP, Benefits of OOP, Applications of OOP

Overview of JAVA Language: Introduction, Java Features, Simple java program structure, difference between C,C++ and Java, Java and Internet, Java tokens, Java Statements, Implementing a Java Program, Java Virtual Machine, Command line arguments

Constants, Variables and Data Types : Introduction, Constants, Variables, Data Types, Declaration of Variables, Giving Value to Variables, Scope of variables, symbolic Constants, Type casting, Getting Value of Variables, Standard Default values.

UNIT- II

OPERATORS AND EXPRESSIONS: Arithmetic operators, Relational operators, logical operators, Assignment Operators, Increment and decrement operators, Conditional operators, Bitwise operators, Special Operators, Arithmetic operators, Precedence of Arithmetic operators.

DECISION MAKING & BRANCHING: Introduction, Decision making with If statement, Simple if statement, If Else statement, Nesting of if else statements, the else if ladder, the switch statement, the conditional operator.

DECISION MAKING &LOOPING : Introduction, The While statement, the Do-While statement, the for statement, Jumps in loops

CLASSES, OBJECTS & METHODS: Introduction, Defining a class, Adding variables, Adding methods, Creating objects, Accessing class members, Constructors, Method overloading, static members, Nesting of methods, visibility controls

UNIT-III

INHERITANCE : Inheritance and Types of Inheritances, Extending a class, Overloading methods, Final variables and methods, Final classes, Abstract methods and classes.

ARRAYS, STRINGS AND VECTORS: Arrays, One-Dimensional Arrays, Creating an Array, Two-Dimensional Arrays, Strings, Vectors, Wrapper classes

INTERFACES: MULTIPLE INHERITANCE: Introduction, Defining interfaces, Extending interfaces, Implementing interfaces, Assessing interface variables

UNIT-IV

MULTITHREADED PROGRAMMING: Introduction, Creating Threads, Extending the Threads, Stopping and Blocking a Thread, Life cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization, Implementing the 'Runnable' Interface

MANAGING ERRORS AND EXCEPTIONS: Types of Errors: Compile-time errors, Run-time Errors, Exceptions, Exception handling, Multiple catch statements, Using finally statement.

Text books:

1. Herbert Schildt "Java - The Complete Reference", Tenth edition, Oracle Press
2. John R.Hubbard, Programming with Java, Second Edition, Schaum's outline Series, TMH (Unit I-Unit-II)
3. Deitel&Deitel. Java TM: How to Program, PHI(2007) (Unit V)

Reference books:

1. Object Oriented Programming Through Java by P.Radha Krishna, University Press (2008) (Unit III & Unit-IV)
2. E. Balagurusamy, Programming with JAVA, Mc Graw Hill Education.

Web Links:

1. https://nptel.ac.in/courses/106/105/106105191/
2. https://onlinecourses.nptel.ac.in/noc21_cs56/preview

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Chapter Name	Short Questions 5 Marks	Essay Questions 10 Marks	Marks allotted to the chapter
UNIT -I	**1**	**2**	**25**
UNIT -II	**1**	**2**	**25**
UNIT -III	**1**	**2**	**25**
UNIT -IV	**1**	**2**	**25**
Total No. of questions	**4**	**8**	
Total Marks Including choice			**100**

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A+" Grade)*

II B.Sc-IT(Hons.) :: SEMESTER – II
MODEL QUESTION PAPER (W.E.F 2020-2021**)**
IT103: OBJECT ORIENTED PROGRAMMINGUSING JAVA

Time: 2 ½ Hrs **Max Marks : 50M**

SECTION - I

Answer any **Two** of the following: **2X5M=10 M**

1. What is Java Virtual Machine
2. Difference between C and Java
3. Explain about Overloading methods? Give example program?
4. What are the difference between an Interface and a Class

SECTION –II

Answer **ALL** Questions: **4X10M=40 M**

5. (a) Explain the Basic concepts of OOP's?

(Or)

(b) Explain about Data types in Java

6. (a) Explain the different types of Operators in Java

(Or)

(b) Explain iterative statements in JAVA

7. (a) What is Inheritance? Describe the different types of Inheritance

(Or)

(b) Write a Java Program to multiply two Matrices

8. (a) Explain the Life Cycle of a Thread

(Or)

(b) Explain the concept of Exception handling mechanism in detail

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code **IT103P**	**TITLE OF THE COURSE** **JAVA PROGRAMMING LAB**	I B.Sc. (II Sem)			
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:	You should know basic C, C++.	0	0	3	2

Objectives:

1. To make the student learn an object oriented way of solving problems using java.
2. To teach the students basics of JAVA programs and its execution.
3. To teach the students the differences between C++ and Java programming.

List of Experiments/Syllabus:

1. Write a program to perform various String Operations
2. Write a program on class and object in java
3. Write a program to illustrate Function Overloading & Function Overriding methods in Java
4. Write a program to Illustrate the implementation of abstract class
5. Write a program to implement Exception handling
6. Write a program to create packages in Java
7. Write a program on interface in java
8. Write a program to Create Multiple Threads in Java
9. Write a program to write Applets to draw the various polygons
10. Write a program which illustrates the implementation of multiple Inheritance using interfaces in Java
11. Write a program to assign priorities to threads in java

Reference books:

1. Harvey M. Deitel, “Java in the Lab” , Paul J. Deitel · 2002.
2. E. Balagurusamy, Programming with JAVA, Mc Graw Hill Education.

Virtual Lab Links:

3. https://java-iitd.vlabs.ac.in/List%20of%20experiments.html
4. https://qrgo.page.link/ZD5c7

	Government College (Autonomous) Rajahmundry	Program & Semester I B.Sc. (II Sem)			
Course Code **IT104**	**TITLE OF THE COURSE** **SYSTEM ANALYSIS AND DESIGN**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Information systems	3	1	-	3

Course Objectives:

1. To understand the basic concepts and fundamentals of platform independent oops.
2. To demonstrate skills in writing programs using exception handling techniques and multithreading.
3. To teach the students the differences between C++ and Java programming

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Explain what systems are and how they are developed.
CO2	Explain the need and value of a formalized step-by-step approach to the analysis design, and implementation of computer information systems
CO3	Use tools and techniques for process and data modeling
CO4	Studying a system or its parts in order to identify its objectives
CO5	Problem solving technique that improves the system and ensures that all the components of the system work efficiently to accomplish their purpose.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT - I

Data and Information – Types of information: operational, tactical, strategic and statutory – why do we need information systems – management structure – requirements of information at different levels of management – functional allocation of management – requirements of information for various functions – qualities of information – small case study.

UNIT - II

Systems Analysis and Design Life Cycle: Requirements determination – requirements specifications – feasibility analysis – final specifications – hardware and software study – system design – system implementation – system evaluation – system modification. Role of systems analyst – attributes of a systems analyst – tools used in system analysis.

UNIT - III

Information gathering – strategies – methods – case study – documenting study – system requirements specification – from narratives of requirements to classification of requirements as strategic, tactical, operational and statutory. Example case study Feasibility analysis – deciding project goals – examining alternative solutions – cost – benefit analysis – quantifications of costs and benefits – payback period – system proposal preparation for managements – parts and documentation of a proposal – tools for prototype creation.

UNIT - IV

Tools for systems analysts – data flow diagrams – case study for use of DFD, good conventions – levelling of DFDs – levelling rules – logical and physical DFDs – software tools to create DFDs Specification oriented design vs. procedure oriented design, Data oriented systems design – entity relationship model – E-R diagrams.

Text books:

1. Arunesh Goyal, System Analysis and Design,PHI
2. "System Analysis and Design", Alan Dennis,6th Edition
3. Roberta M. Roth, Alan Dennis, Barbara Wixom, "System Analysis and Design".

Reference books:

1. "Analysis and Design of Information Systems", V.Rajaraman , Prentice Hall of India
2. "Systems Analysis and Design", K.E.Kendell and J.E.Kendell, Pearson Education

Web Links:

1. https://nptel.ac.in/courses/106/108/106108102/
2. https://nptel.ac.in/courses/106/108/106108103/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Chapter Name	Short Questions 5 Marks	Essay Questions 10 Marks	Marks allotted to the chapter
UNIT -I	1	2	25
UNIT -II	1	2	25
UNIT -III	1	2	25
UNIT -IV	1	2	25
Total No. of questions	4	8	
Total Marks Including choice			100

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

(*Accredited by NAAC "A+" Grade)*

I B.Sc. IT (Hons.)

MODEL QUESTION PAPER (W.E.F 2020-2021**)**

IT104:System Analysis and Design

SEMESTER – II

Time: 2 ½ Hrs. **Max Marks : 50 M**

SECTION - I

Answer any **Two** of the following: **2X5M=10 M**

1. Explain about types of information
2. Explain about role of system analyst
3. How to obtain alternative solutions to satisfy the goals?
4. What are Data Flow Diagrams (DFDs)? Explain

SECTION –II

Answer **ALL** Questions: **4X10M=40 M**

5. a). Explain the need of information at different levels of management.

   (Or)

   b). Explain the requirements of information for various functions.

6. a). What are the Steps involved in Life cycle of SAD (systems analysis and design).

   (Or)

   b). What are the tools used by systems analyst.

7. a). Draw case study for library management system.

   (Or)

   b). What is SRS and Explain the classification of Requirements

8. a). Briefly Explain about the DFD(Data Flow Design).

   (Or)

   b). Draw case study for use of DFD, take your own Example.

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. (III Sem)			
Course Code **IT105**	**TITLE OF THE COURSE** **Relational Database management System**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Store data in table format	3	1	-	3

Course Objectives:

1. Design database for large volumes
2. Develop database for large volumes
3. Varieties of data with optimized data processing techniques.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Design and model of data in database.
CO2	Store, Retrieve data in database.
CO3	Will be able to comprehend and evaluate the role of DBMS in IT.
CO4	Stores data in a row-based table structure which connects related data elements.
CO5	Functions that maintain the security, accuracy, integrity and consistency of the data.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT I:

Overview of Database Management System: Introduction, file-based system, Drawbacks of file-Based System ,Data and information, Database, Database management System, Objectives of DBMS, Evaluation of Database management System, Classification of Database Management System, DBMS Approach, advantages of DBMS, data models, Components and Interfaces of Database Management System. Database Architecture, Situations where DBMS is not necessary.

UNIT II:

Entity-Relationship Model: Introduction, the building blocks of an entity relationship diagram, classification of entity sets, attribute classification, relationship degree, relationship classification, reducing ER diagram to tables, enhanced entity-relationship model (EER model), generalization and specialization, **IS A** relationship and attribute inheritance, multiple inheritance, constraints on specialization and generalization, aggregation and composition, entity clusters, connection types, advantages of ER modeling.

UNIT III

Relational Model: Introduction, CODD Rules, relational data model, concept of key, relational integrity, relational algebra, relational algebra operations, advantages of relational algebra, limitations of relational algebra, relational calculus, tuple relational calculus, domain relational Calculus (DRC). Normal Forms: Introduction, Functional Dependencies, Normal Forms: I, II, III.

UNIT IV

Structured Query Language: Introduction, History of SQL Standard, Commands in SQL, Data Types in SQL, Data Definition Language, Selection Operation, Projection Operation, Aggregate functions, Data Manipulation Language, Table Modification Commands, Table Truncation, Imposition of Constraints, Join Operation, Set Operation, View, Sub Query, Embedded SQL**PL/SQL:** Introduction, Shortcoming in SQL, Structure of PL/SQL, PL/SQL Language Elements, Data Types, Operators Precedence, Control Structure, Steps to Create a PL/SQL, Program, Iterative Control, Cursors, Steps to create a Cursors, Procedure, Function, Packages, Exceptions Handling, Database Triggers, Types of Triggers.

Text books:

1. Database System Concepts" by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill, 2010, 9780073523323
2. S. Sumathi, Fundamentals for Relational Database Management System, S.Esakkirajan-Springer.
3. Database Management Systems, Dr. Rajiv Chopra, S Chand Publications.

Reference books:

1. Database Management Systems" by Raghu Ramakrishnan, McGrawhill, 2002(Unit-I,II).
2. Fundamentals of Relational Database Management Systems by S. Sumathi, S. Esakkirajan, Springer Publications for Unit-III, Unit-IV & Unit-V

Web Links:

1. https://nptel.ac.in/courses/106/106/106106093/
2. https://nptel.ac.in/courses/106/106/106106220/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Chapter Name	Short Questions 5 Marks	Essay Questions 10 Marks	Marks allotted to the chapter
UNIT -I	**1**	**2**	**25**
UNIT -II	**1**	**2**	**25**
UNIT -III	**1**	**2**	**25**
UNIT -IV	**1**	**2**	**25**
Total No. of questions	**4**	**8**	
Total Marks Including choice			**100**

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A+" Grade)*

II B.Sc.IT (Hons.) (W.E.F 2020-2021**)**
IT105:Relational Database management System
SEMESTER – III
MODEL QUESTION PAPER

Time: 3 Hrs **Max Marks: 60M**

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SECTION – I

Answer any **FIVE** of the following: **4X5=20 M**

1. What is file processing system? Explain its draw backs
2. What are different types of attributes in DBMS? Explain
3. Explain Join operations in relational algebra.
4. What is a cursor? Explain its types.

SECTION –II

Answer **ALL** questions **5X8=40 M**

5. a) Explain DBMS Architecture in detail.

   (Or)

   b) What is data model? Explain different data models in DBMS.

6. a) Explain about Extended Entity Relationship (EER) model.

   (Or)

   b) What is ER model? Explain its concepts

7. a) What is Normalization? Explain 1 NF, 2NF and 3NF with examples.

   (Or)

   b) List and explain Codd's relational database rules.

8. a) Discuss about nested and correlated nested queries with suitable examples.

   (Or)

   b) Explain procedures in PL/SQL

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. (III Sem)			
Course Code **IT105P**	**TITLE OF THE COURSE** **Relational Database Management Systems**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:	Tables (Relations),SQL	0	0	3	2

Objectives:

1. Working on existing database systems.
2. Designing of database.
3. Creating relational database, analysis of table design.

List of Experiments/Syllabus:

1. Draw ER diagrams for train services in a railway station.
2. Draw ER diagram for hospital administration.
3. Creation of college database and establish relationships between tables.
4. Write a view to extract details from two or more tables.
5. Write a stored procedure to process students results.
6. Write a program to demonstrate a function.
7. Write a program to demonstrate blocks, cursors & database triggers.
8. Write a program to demonstrate Joins.
9. Write a program to demonstrate of Aggregate functions.
10. Creation of Reports based on different queries.
11. Usage of file locking table locking, facilities in applications.

Reference books:

1. Database Management Systems, Dr. Rajiv Chopra, S Chand Publications.
2. Fundamentals of Relational Database Management Systems by S. Sumathi, S. Esakkirajan, Springer Publications.

Virtual Lab Links:

1. http://vlabs.iitb.ac.in/vlabs-dev/labs/dblab/labs/index.php
2. http://vlabs.iitb.ac.in/bootcamp/labs/dbms/exp8/exp/theory.php

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. (III Sem)			
Course Code **IT106**	**TITLE OF THE COURSE** **SOFTWARE ENGINEERING**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Analytical Thinking, problem-solving	3	1	-	3

Course Objectives:

1. Fundamental knowledge of software engineering
2. Strong communication and interpersonal skills
3. It should be feasible for the software to evolve to meet changing requirements.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Ability to gather and specify requirements of the software projects.
CO2	Ability to analyze software requirements with existing tools
CO3	Able to differentiate different testing methodologies
CO4	Able to understand and apply the basic project management practices in real life projects
CO5	Ability to work in a team as well as independently on software projects

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT-I

INTRODUCTION: Software Engineering Process paradigms - Project management - Process and Project Metrics – software estimation - Empirical estimation models - Planning - Risk analysis - Software project scheduling.

UNIT- II

REQUIREMENTS ANALYSIS: Requirement Engineering Processes – Feasibility Study – Problem of Requirements – Software Requirement Analysis – Analysis Concepts and Principles – Analysis Process – Analysis Model

UNIT- III

SOFTWARE DESIGN: Software design - Abstraction - Modularity - Software Architecture - Effective modular design - Cohesion and Coupling - Architectural design and Procedural design - Data flow oriented design.

USER INTERFACE DESIGN AND REAL TIME SYSTEMS: User interface design - Human factors - Human computer interaction - Human - Computer Interface design - Interface design - Interface standards.

UNIT- IV

SOFTWARE QUALITY AND TESTING: Software Quality Assurance - Quality metrics - Software Reliability - Software testing - Path testing – Control Structures testing - Black Box testing - Integration, Validation and system testing - Reverse Engineering and Re-engineering. CASE tools –projects management, tools - analysis and design tools – programming tools - integration and testing tool - Case studies.

Text books:

1. Roger Pressman S., "Software Engineering: A Practitioner's Approach", 7th Edition, McGraw Hill, 2010
2. Software Engineering, Rod Stephens, Wiley Publications.

Reference books:

1. Carlo Ghazi, Mehdi Jazayari, Dino Mandrioli, "Fundamentals of Software Engineering", Pearson Education, 2003 for Unit-I & Unit-II
2. Software Engineering Principles and Practice by Deepak Jain Oxford University Press for Unit-III, Unit-IV & Unit-II

Web Links:

1. https://nptel.ac.in/courses/106/105/106105087/
2. http://vlabs.iitkgp.ac.in/se/
3. https://nptel.ac.in/courses/106/105/106105182/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Chapter Name	Short Questions 5 Marks	Essay Questions 10 Marks	Marks allotted to the chapter
UNIT -I	**1**	**2**	**25**
UNIT -II	**1**	**2**	**25**
UNIT -III	**1**	**2**	**25**
UNIT -IV	**1**	**2**	**25**
Total No. of questions	**4**	**8**	
Total Marks Including choice			**100**

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A+" Grade)*

II B.Sc. IT (Hons.)
(W.E.F 2020-2021**)**
IT106: SOFTWARE ENGINEERING
SEMESTER – III
MODEL QUESTION PAPER

Time: 21/2 Hrs **Max Marks: 50M**

SECTION – I

Answer any **Two** of the following : **2X5 = 10 M**

1. Explain the process and project metrics.
2. Explain the golden rules used for user interface design
3. Explain metrics for software quality
4. Explain size oriented and function oriented functions

SECTION –II

Answer **ALL** questions **4x10=40 M**

5. a) Why it is important to manage project? Explain software management

(or)

b) Write about software planning and project scheduling

6. a) Explain the requirement engineering process with the help of a diagram and also explain the spiral model of requirements.

(or)

b) Describe the process of creating an analysis model and list out its elements

7. a) What is software architecture? Why it is so important? Explain structural partitioning

(or)

b) Explain the various user interface analysis and design models

8. a) How a user interface design is evaluated?

(or)

b) Explain about Verification and Validation Techniques?

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. (IV Sem)			
Course Code **IT121**	**TITLE OF THE COURSE** **OPERATING SYSTEMS**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Basic knowledge about multithreading.	3	1	-	3

Course Objectives:

1. Understand Operating System Architectural design and its services.
2. Specify objectives of modern operating systems and describe.
3. Understand and identify potential threats to operating systems and the security features designto guard against them.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Know Computer system resources and the role of operating system in resource managementwith algorithms
CO2	Understand Operating System Architectural design and its services
CO3	Gain knowledge of various types of operating systems including Unix and Android
CO4	Comprehend different approaches for memory management.
CO5	Describe the functions of a contemporary operating system.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT I

What is Operating System? History and Evolution of OS, Basic OS functions, Resource Abstraction, Types of Operating Systems– Multi programming Systems, Batch Systems, Time Sharing Systems; Operating Systems for Personal Computers, Workstations and Hand-held Devices, Process Control & Real time Systems

UNIT II

Processor and User Modes: Kernels, System Calls and System Programs, System View of the Process and Resources, Process Abstraction, Process Hierarchy, Threads, Threading Issues, Thread Libraries; Process Scheduling, Non-Preemptive and Preemptive Scheduling Algorithms.

UNIT III

Process Management: Deadlock, Deadlock Characterization, Necessary and Sufficient Conditions for Deadlock, Deadlock Handling Approaches: Deadlock Prevention, Deadlock Avoidance and Deadlock Detection and Recovery. Concurrent and Dependent Processes, Critical Section, Semaphores, Methods for Inter- process Communication; Process Synchronization, Classical Process Synchronization Problems: Producer-Consumer, Reader-Writer.

UNIT IV

Memory Management: Physical and Virtual Address Space; Memory Allocation Strategies–Fixedand -Variable Partitions, Paging, Segmentation, Virtual Memory.
File and I/O Management, OS security : Directory Structure, File Operations, File Allocation Methods, Device Management, Pipes, Buffer, Shared Memory, Security Policy Mechanism, Protection, Authentication and Internal Access Authorization Introduction to Android Operating System, Android Development Framework, Android Application Architecture, Android Process Management and File System, Small Application Development using Android Development Framework.

Text books:

1. Operating System Principles by Abraham Silberschatz, Peter Baer Galvin and GregGagne(7th Edition) Wiley India Edition
2. Operating Systems: Internals and Design Principles by Stallings (Pearson)
3. Remzi H. Arpaci-Dusseau,"Operating Systems", Andrea C. Arpaci-Dusseau

Reference books:

1. Operating Systems by J. Archer Harris (Author), Jyoti Singh (Author) (TMH).
2. Operating Systems Dhananjay M.Dhamdhere. McGraw-Hill Higher education.

Web Links:

1. https://nptel.ac.in/courses/106/106/106106144/
2. https://nptel.ac.in/courses/106/102/106102132/
3. https://nptel.ac.in/courses/106/108/106108101/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Chapter Name	Short Questions 4 Marks	Essay Questions 10 Marks	Marks allotted to the chapter
UNIT -I	**1**	**2**	**24**
UNIT -II	**1**	**2**	**24**
UNIT -III	**1**	**2**	**24**
UNIT -IV	**1**	**2**	**24**
Total No. of questions	**4**	**8**	
Total Marks Including choice			**96**

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

(*Accredited by NAAC "A$^+$" Grade)*

II - B.Sc IT(Hons)

(For Admitted Batch 2020-2021)

Model Question Paper

IT121 :: OPERATING SYSTEMS

SEMESTER – IV

Time: 2 ½ Hrs. **Max Marks: 50 M**

Section – A

Answer any 2 question **2X5 = 10M**

1. Write about Resource Abstraction.
2. Explain threading issues.
3. Discuss some necessary and sufficient conditions for deadlock.
4. Explain about Virtual memory.

Section - B

Answer following question **4X10 = 40M**

5. a) Explain various types of Operating Systems.

(OR)

b) What is Operating System? Explain functions of Operating System.

6. a) Explain in detail about Process Scheduling.

(OR)

b) Explain system view of the process and resources.

7. a) Explain about deadlock Detection and recovery.

(OR)

b) Discuss classical process synchronization problems.

8. a) Explain the following
   i) Segmentation
   ii) Fixed and variable partitions.

(OR)

b) Explain in detail about Demand-paging.

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. (IV Sem)			
Course Code **IT121P**	**TITLE OF THE COURSE** **OPERATING SYSTEM**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:	Memory Management	0	0	3	2

Objectives:

1. Experiment with Unix commands and shell programming
2. Choose the best CPU scheduling algorithm for a given problem instance
3. Identify the performance of various page replacement algorithms

List of Experiments/Syllabus:

1. Write a program to implement Round Robin CPU Scheduling algorithm.
2. Simulate SJF CPU Scheduling algorithm
3. Write a program the FCFS CPU Scheduling algorithm.
4. Write a program to Priority CPU Scheduling algorithm.
5. Simulate Sequential file allocation strategies.
6. Simulate Indexed file allocation strategies.
7. Simulate Linked file allocation strategies.
8. Simulate MVT and MFT memory management techniques.
9. Simulate Single level directory File organization techniques.
10. Simulate Two level File organization techniques.
11. Simulate Hierarchical File organization techniques.
12. Write a program for Bankers Algorithm for Dead Lock Avoidance.
13. Implement Bankers Algorithm Dead Lock Prevention.
14. Simulate all Page replacement algorithms.
    a) FIFO
    b) LRU
    c) LFU
16. Simulate Paging Techniques of memory management.

Reference books:

1. Operating System Principles by Abraham Silberschatz, Peter Baer Galvin and Greg Gagne(7th Edition) Wiley India Edition.
2. Operating Systems: Internals and Design Principles by Stallings (Pearson

Virtual Lab Links:

1. https://qrgo.page.link/DxUWD
2. https://qrgo.page.link/75D2v

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. (IV Sem)			
Course Code **IT122**	**TITLE OF THE COURSE** **COMPUTER NETWORKS**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Connections, Communications, and Services.	3	1	-	3

Course Objectives:

1. To provide fundamental concepts on data communication.
2. Introduction to the fundamental concepts of the design of computer networks..
3. To get familiarized with the basic protocols of computer networks.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Identify the different components in a Communication System and their respective roles.
CO2	Describe the technical issues related to the local Area Networks.
CO3	Identify the common technologies available in establishing LAN infrastructure.
CO4	How computer networks are organized with the concept of layered approach
CO5	How signals are used to transfer data between nodes.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT – I

Introduction: Uses of Computer Networks, Network Hardware, Network Software, Reference Models, Example Networks.

The Physical Layer: The Theoretical Basis for Data Communication, Guided Transmission Media, Wireless transmission, the public switched telephone network

UNIT – II

The Data Link Layer: Data Link Layer Design Issues, Error Detection and Correction, Sliding Window Protocols.

The Medium Access Control Sub-layer: The channel allocation problem, **Multiple Access Protocols**, **Ethernet,** Data Link Layer Switching.

UNIT – III

The Network Layer: Network Layer Design Issues, Routing Algorithms, Congestion control algorithms, Quality of Service. Internet Working, The Network Layer in the Internet

UNIT – IV

The Transport Layer: The Transport Service, Elements of Transport Protocols,Congestion Control Algorithms, The Internet Transport Protocols, The Internet Transport Protocols: TCP, Delay To learn Networks.

UNIT – V

The Application Layer: DNS – The Domain Name System, Electronic Mail, The World Wide Web, Real Time Audio & Video, Content Delivery & Peer-to-Peer.

Text books:

1. Andrew S. Tanenbaum, "Computer Networks", Fifth Edition, Pearson Education.
2. BhushanTrivedi, Computer Networks , Oxford University Press.
3. James F.Kurose, Keith W.Ross, "Computer Networking", Third Edition, Pearson Education.

Reference books:

1. BehrouzAForouzan,"DataCommunicationsandNetworking",FourthEdition,TMH (2007).
2. Kurose&Ross,"COMPUTERNETWORKS"–ATop-downapproachfeaturingthe Internet", Pearson Education – Alberto Leon –Garciak.

Web Links:

1. https://nptel.ac.in/courses/106/105/106105081/
2. https://nptel.ac.in/courses/106/106/106106091/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

(*Accredited by NAAC "A$^+$" Grade)*

II - B.Sc IT(Hons) :: Semester - IV

(For Admitted Batch 2019-2020)
Model Question Paper
IT122 :: COMPUTER NETWORKS

Time: 2 ½ Hrs **Max Marks :50M**

SECTION –A

Answer any TWO Questions **2 x 5M=10M**

1. Explain the uses of Computer Networks
2. Discuss about Wireless Transmission
3. Explain Sliding Window Protocols
4. Explain about Ethernet

SECTION –B

Answer ALL questions. **4 x 10M=40M**

1. (a) What is Computer Network? Explain its types give examples

(Or)

(b) Explain about Data Communication.

2. (a) Briefly explain the Error Detection and Correction

(Or)

(b) Explain how Multiple Access Protocols used in Networks

3. (a) Explain the various issues in Network Layer Design

(Or)

(b) How working Network Layer in the Internet

4. (a) What is Transport Protocols? Explain the Elements of Transport Protocols

(Or)

(b) Explain the Congestion Control Algorithms

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. (IV Sem)			
Course Code **IT123**	**TITLE OF THE COURSE** **Data Structures**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Algorithm analysis	3	1	-	3

Course Objectives:

1. To impart the basic concepts of data structures and algorithms.
2. To understand concepts about searching and sorting techniques.
3. To Understand basic concepts about stacks,queues,lists,trees and graphs.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Ability to analyze algorithms and algorithm correctness.
CO2	Ability to summarize searching and sorting techniques.
CO3	Ability to describe stack,queue and linked list operation.
CO4	Ability to have knowledge of tree and graphs concepts.
CO5	Solving problems with the help of fundamental data structures.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT – I

Concept of Abstract Data Types (ADTs): Data Types, Data Structures, Primitive and Non-primitive Data Structures, Linear and Non-Linear Data Structures. **Linear Lists:** ADT, Array and Linked representations, Pointers. **Arrays:** One Dimensional – Two Dimensional – Multi Dimensional Operations – Sparse Matrices. **Linked Lists:** Single Linked List, Double Linked List, Circular Linked List, applications.

UNIT- II

Stacks: Definition, ADT, Array and Linked representations, Implementations and Applications – Tower of Hanoi Problem**. Queues**: Definition, ADT, Array and Linked representations, Circular Queues, Dequeues, Priority Queues, Implementations and Applications

UNIT-III

Trees: Binary Tree, Definition, Properties, ADT, Array and Linked representations, Implementations and Applications. Binary Search Trees (BST) – Definition, ADT, Operations and Implementations, BST Applications. Threaded Binary Trees, Heap Trees, **B Trees, B+ Trees Indexing**

UNIT-IV

Graphs: Graph and its Representations, Graph Traversals: BFS, DFS, Connected Components, Basic Searching Techniques, Minimal Spanning Trees

Sorting and Searching: Selection, Insertion, Bubble, Merge, Quick, Hear Sort, Sequential and Binary Searching.

Text books:

1. Robert Lafore, Data Structures & Algorithms in Java, Second Edition, Pearson Education (2008)
2. Sahani S, Data Structures, Algorithms and Applications in JAVA, Mc-Graw-Hill, 2002
3. Samanta D, Classic Data Structures , Prentice-Hall of India, 2001.

Reference books:

1. Heilman G I, Data Structures and Algorithms with OOPs Tata McGraw-Hill, 2002 (chapters 1 and 14)
2. Tremably P, and Sorenson P G, Introduction to Data Structures with Applications, Tata McGraw -Hill

Web Links:

1. https://nptel.ac.in/courses/106/103/106103069/
2. https://nptel.ac.in/courses/106/102/106102064/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

(*Accredited by NAAC "A$^+$" Grade)*

II - B.Sc IT(Hons) :: Semester - IV

(For Admitted Batch 2019-2020)

Model Question Paper

IT123 :: DATA STRUCTURES

Time: 2 ½ Hrs **Max Marks :50M**

SECTION –A

Answer any TWO Questions **2 x 5M=10M**

1. What is data structure? Explain various data types
2. What is a Tree? How binary trees are represented in memory
3. Write the Applications of Depth First Search
4. Define Sorting. What are the advantages and disadvantages of Merge Sort

SECTION –B

Answer ALL questions. **4 x 10M=40M**

5. (a) What is circular linked list? Write a program to explain the concept of Circular Linked list

(Or)

(b) Write an algorithm and explain how to convert an infix expression into post fix expression using stack

6. (a) What is Deque? What are the different techniques used to represent Deque? Explain

(Or)

(b) What is a Binary tree? What are various traversing methods in Trees

7. (a) What is graph? Explain various representation of Graphs

(Or)

(b) What are the various ways to find minimal spanning tree? Explain

8. (a) What is searching? Explain Binary Search Algorithm with example

(Or)

(b) Explain Bubble sorting technique with example

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. (IV Sem)			
Course Code **IT123P**	**TITLE OF THE COURSE** **Data Structures**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:	Algorithm analysis	0	0	3	2

Objectives:

1. To impart the basic concepts of data structures and algorithms.
2. To understand concepts about searching and sorting techniques.
3. To Understand basic concepts about stacks,queues,lists,trees and graphs

List of Experiments/Syllabus:

1. Write a program to read 'N' numbers of elements into an array and also perform the following operation on an array
   - Add an element at the begging of an array
   - Insert an element at given index of array
   - Update a element using a values and index
   - Delete an existing element
2. Write a program using stacks to convert a given infix expression to postfix
3. Write Programs to implement the Stack operations using an array
4. Write Programs to implement the Stack operations using Liked List.
5. Write Programs to implement the Queue operations using an array.
6. Write Programs to implement the Queue operations using Liked List.
7. Write a program for Binary Search Tree Traversals
8. Write a program to search an item in a given list using the following Searching Algorithms. *Linear Search *Binary Search.
9. Write a program for implementation of the following Sorting Algorithms

   * Bubble Sort * Insertion Sort *Quick Sort
10. Write a program to find out shortest path between given Source Node and Destination Node in a given graph using Dijkstrar's algorithm
11. Write a program to implement Depth First Search graph traversals algorithm
12. Write a program to implement Breadth First Search graph traversals algorithm.

Reference books:

1. Robert Lafore, Data Structures&Algorithms in Java, 2nd Edition, Pearson Education.
2. Sahani S, Data Structures, Algorithms and Applications in JAVA, McGraw-Hill, 2001.

Virtual Lab Links:

1. https://qrgo.page.link/eeoHv
2. https://qrgo.page.link/zKAR1

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code **IT124**	**TITLE OF THE COURSE** **SOFTWARE TESTING & QUALITY ASSURANCE**	II B.Sc. (IV Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Software Estimation	3	1	-	3

Course Objectives:

1. To understand the software testing methodologies.
2. Flow graphs and path testing, transaction flows testing.
3. Data flow testing, domain testing and logic base testing.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Ability to write test cases for given software to test it before delivery to the customer.
CO2	Ability to apply the process of testing and various methodologies in testing for developed software.
CO3	To find errors, gaps, or missing requirements in comparison to the actual requirements.
CO4	you need to know that errors may appear in any phase of the life cycle.
CO5	Each testing technique helps to find a specific type of defect.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT - I

Introduction: - Purpose of testing, Dichotomies, model for testing, consequences of bugs, taxonomy of bugs.

Flow graphs and Path testing: - Basics concepts of path testing, predicates, path predicates and achievable paths, path sensitizing, path instrumentation, application of path testing.

UNIT - II

Transaction Flow Testing:- Transaction flows, transaction flow testing techniques.
Dataflow testing: - Basics of dataflow testing, strategies in dataflow testing, application of dataflow testing.

UNIT - III

Domain Testing:- Domains and paths, Nice & ugly domains, domain testing, domains and interfaces testing, domain and interface testing, domains and test ability.

UNIT-IV

Paths, Path products and Regular expressions:-Path products & path expression, reduction procedure, applications, regular expressions & flow anomaly detection. Logic Based **Testing:-** overview, decision tables, path expressions, kv charts, specifications.

Text books:

1. Software Testing techniques – Boris Beizer, Dreamtech, second edition.
2. Software Testing Tools – Dr.K.V.K.K.Prasad, Dreamtech.

Reference books:

1. The craft of software testing - Brian Marick, Pearson Education.
2. Software Testing,3rd edition,P.C. Jorgensen, Aurbach Publications (Dist.by SPD).
3. Software Testing, N.Chauhan, Oxford University Press.

Web Links:

1. https://nptel.ac.in/courses/106/105/106105150/
2. https://nptel.ac.in/courses/106/101/106101163/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Chapter Name	Short Questions 5 Marks	Essay Questions 10 Marks	Marks allotted to the chapter
UNIT -I	**1**	**2**	**25**
UNIT -II	**1**	**2**	**25**
UNIT -III	**1**	**2**	**25**
UNIT -IV	**1**	**2**	**25**
Total No. of questions	**4**	**8**	
Total Marks Including choice			**100**

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A+" Grade)*

II B.Sc.-IT (Hons) MODEL QUESTION PAPER (W.E.F 2020-2021**)**
IT124: Software Testing & Quality Assurance
SEMESTER – IV

Time: 2 ½ Hrs. **Max Marks: 50M**

SECTION - I

Answer any **Two** of the following: **2X5M=10 M**

1. Explain basic concepts of path testing
2. Explain application of dataflow testing
3. Explain about interfaces testing
4. Explain about log based testing

SECTION –II

Answer **ALL** Questions: **4X10M=40 M**

5. a) What are the consequences of bugs? To what extent can testing be used to validate that the program is fit for its purpose? Explain.

OR

b) What is the purpose of testing? Discuss about various testing dichotomies with examples.

6. a) Describe application, tools and effectiveness of data-flow testing.

OR

b) Discuss about transaction-flow structure.

7. a) Explain about testing one-dimensional domains.
b) Write about restrictions of domain testing.

OR

c) Define domain testing. Explain about nice domains in detail.

8. a) Explain about regular expressions and flow-anomaly detection.

OR

b) Describe the procedure for specification validation using KV charts.

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc -V Sem			
Course Code **IT109**	**TITLE OF THE COURSE** **PYTHON PROGRAMMING**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Basic knowledge of any programming language	3	1	-	3

Course Objectives:

1. Introduction to Scripting Language.
2. Exposure to various problems solving approaches of computer science.
3. Use Python to read and write files.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	The course is designed to provide Basic knowledge of Python
CO2	To learn and understand Python programming basics and paradigm
CO3	To learn and understand python looping, control statements and string manipulations
CO4	Design and implement GUI application and how to handle exceptions and files
CO5	Make database connectivity in python programming language.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT-I

Introduction: History of Python, Need of Python Programming, Applications Basics of Python Programming Using the REPL (Shell), Running Python Scripts, Variables, Assignment, Keywords, Input-Output, Indentation.

UNIT – II

Types, Operators and Expressions: Types - Integers, Strings, Booleans; Operators- Arithmetic Operators, Comparison (Relational) Operators, Assignment Operators, Logical Operators, Bitwise Operators.

UNIT - III

Membership Operators: Identity Operators, Expressions and order of evaluations Control Flow- if, if-elif-else, for, while, break, continue, pass.

UNIT – IV

Data Structures: Lists, Operations, Slicing, Methods, Tuples, Sets and Dictionaries.

Additional Inputs:
Data Structures:, Sequences and comprehensions

Text books:

1. Python Programming: A Modern Approach, VamsiKurama, Pearson
2. Learning Python, Mark Lutz, Orielly.
3. Olivier Hersent, David Boswarthick, and Omar Elloumi, — "The Internet of Things: Key Applications and Protocols", WileyPublications.

Reference books:

1. Think Python, Allen Downey, Green Tea Press
2. Core Python Programming, W.Chun, Pearson.
3. Introduction to Python, Kenneth A. Lambert, Cengage

Web Links:

1. https://nptel.ac.in/courses/106/106/106106182/
2. https://nptel.ac.in/courses/106/106/106106212/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Chapter Name	Short Questions 4 Marks	Essay Questions 10 Marks	Marks allotted to the chapter
UNIT -I	**1**	**2**	**24**
UNIT -II	**1**	**2**	**24**
UNIT -III	**1**	**2**	**24**
UNIT -IV	**1**	**2**	**24**
Total No. of questions	**4**	**8**	
Total Marks Including choice			**96**

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

(*Accredited by NAAC "A$^+$" Grade)*

III - B.Sc IT(Hons) :: Semester - V

(For Admitted Batch 2019-2020)

Model Question Paper

Paper : IT109 :: PYTHON PROGRAMMING

Model Question Paper

Time: 2 ½ Hrs. **Max. Marks: 50M**

SECTION-A

Answer any **TWO** questions from the Following: **2 X 5 = 10M**

1. Explain the basics for executing a python program using REPL(Shell) with an example.
2. Explain input and output function in python
3. Explain about different Relational operators in python with appropriate examples.
4. Explain about built-in functions of tuple

SECTION – B

Answer **ALL** questions from the Following: **4 X 10 = 40M**

5. a. i) Discuss bout variables and assignments.
   ii) Write the history of Python.

   (OR)

   b. Write in brief about any 8 keywords in Python.
6. a. Explain about following operators
   i. Arithmetic
   ii. Logical
   iii. Assignment
   iv. Bitwise

   (OR)

   b. What are the data types in python with appropriate examples?

7. a. Explain various decision making statements in python.

   (OR)

   b. What are the different Loops available in python? Explain with examples.
8. a. Explain about slicing in python

   (OR)

   B. Explain about the importance of lists in Python.

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. V Sem			
Course Code **IT109p**	**TITLE OF THE COURSE** **PYTHON PROGRAMMING**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:	Basic knowledge of any programming language	0	0	3	2

Objectives:

1. To write, test, and debug simple Python programs.
2. To implement Python programs with conditionals and loops.
3. Use functions for structuring Python programs.

List of Experiments/Syllabus:

1. Swap two numbers.
2. Find the square root of a number
3. Exponentiation (power of a number)
4. Find the maximum of a list of numbers
5. Programs that take command line arguments (word count)
6. Write a program to check whether the given number is Armstrong or not
7. Write a program to generate the Fibonacci sequence
8. Write a program to generate all the prime numbers between 1 and n, where n is a value supplied by the user
9. Write a program to perform various string operations
10. Various operations on lists, tuples and sets.

Reference books:

1. Python Programming: A Modern Approach, VamsiKurama, Pearson
2. Learning Python, Mark Lutz, Orielly.

Virtual Lab Links:

1. https://python-iitk.vlabs.ac.in/List%20of%20experiments.html
2. https://qrgo.page.link/hVwr3

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. (V Sem)			
Course Code **IT110**	**TITLE OF THE COURSE** **COMPUTER NETWORKS**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	TCP/IP protocol	3	1	-	3

Course Objectives:

1. To get familiarized with the basic protocols of computer networks.
2. To provide an introduction to the fundamental concepts on data communication.
3. Fundamental concepts on design of computer networks.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Should be able to do the analysis of data traffic on TCP/IP networks
CO2	Describe the technical issues related to the local Area Networks
CO3	Identify the common technologies available in establishing LAN infrastructure
CO4	Demonstrate an understanding of the TCP/IP model.
CO5	To be able to understand and configure IP addresses

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT – I

Introduction: Uses of Computer Networks, Network Hardware, Network Software, Reference Models, Example Networks.

The Physical Layer: The Theoretical Basis for Data Communication, Guided Transmission Media, Wireless transmission, the public switched telephone network.

UNIT – II

The Data Link Layer: Data Link Layer Design Issues, Error Detection and Correction, Sliding Window Protocols.

The Medium Access Control Sub-layer: The channel allocation problem, **Multiple Access Protocols**, **Ethernet,** Data Link Layer Switching.

UNIT – III

The Network Layer: Network Layer Design Issues, Routing Algorithms, Congestion control algorithms, Quality of Service. Internet Working, The Network Layer in the Internet

The Transport Layer: The Transport Service, Elements of Transport Protocols, Congestion Control Algorithms, The Internet Transport Protocols, The Internet Transport Protocols: TCP, Delay Tolearnt Networks.

UNIT – IV

The Application Layer: DNS – The Domain Name System, Electronic Mail, The World Wide Web, Real Time Audio & Video, Content Delivery & Peer-to-Peer.

Text books:

1. Andrew S. Tanenbaum, "Computer Networks", Fifth Edition, PearsonEducation.
2. BhushanTrivedi, Computer Networks , Oxford UniversityPress

Reference books:

1. James F.Kurose, Keith W.Ross, "Computer Networking", Third Edition, Pearson Education.
2. BehrouzAForouzan,"DataCommunicationsandNetworking",FourthEdition,TMH (2007).
3. Kurose&Ross,"***COMPUTERNETWORKS***"–ATop-downapproachfeaturingthe Internet", Pearson Education – Alberto Leon –Garciak

Web Links:

1. https://nptel.ac.in/courses/106/105/106105081/
2. https://nptel.ac.in/courses/106/106/106106091/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Chapter Name	Short Questions 4 Marks	Essay Questions 10 Marks	Marks allotted to the chapter
UNIT -I	**1**	**2**	**24**
UNIT -II	**1**	**2**	**24**
UNIT -III	**1**	**2**	**24**
UNIT -IV	**1**	**2**	**24**
Total No. of questions	**4**	**8**	
Total Marks Including choice			**96**

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

(*Accredited by NAAC "A$^+$" Grade)*

III - B.Sc IT(Hons) :: Semester - V

(For Admitted Batch 2019-2020)

Model Question Paper

IT110 :: COMPUTER NETWORKS

SEMESTER – V

Time: 2 ½ Hrs. **Max Marks: 50M**

SECTION – I

Answer any **TWO** of the following: **2X5=10 M**

1. Explain the uses of Computer Networks
2. Explain Sliding Window Protocols
3. Explain about Ethernet
4. How working internet in Network Layer

SECTION –II

Answer **ALL** the questions: 4**X 10=40 M**

5. a). What is Computer Network? Explain its types give examples

   (Or)

   b). Explain about Data Communication
6. a). Briefly explain the Error Detection and Correction

   (Or)

   b). Explain how Multiple Access Protocols used in Networks
7. a). Explain the various issues in Network Layer Design

   (Or)

   b). How working Network Layer in the Internet
8. a). What is Transport Protocols? Explain the Elements of Transport Protocols

   (Or)

   b). Explain the Congestion Control Algorithms

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. (V Sem)			
Course Code **IT112**	**TITLE OF THE COURSE** **FUNDAMENTALS OF IOT**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Various Protocols	3	1	-	3

Course Objectives:

1. To study fundamental concepts of IoT.
2. To understand roles of sensors in IoT
3. To Learn different protocols used for IoT design

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understand the various concepts, terminologies and architecture of IoT systems
CO2	Use sensors and actuators for design of IoT
CO3	Understand and apply various protocols for design of IoT systems
CO4	Use various techniques of data storage and analytics in IoT
CO5	Understand APIs to connect IoT related technologies

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT-I

Fundamentals of IoT: Introduction, Definitions & Characteristics of IoT, IoT Architectures, Physical & Logical Design of IoT, Enabling Technologies in IoT, History of IoT, About Things in IoT, The Identifiers in IoT, About the Internet in IoT, IoT frameworks, IoT and M2M.

UNIT-II

Sensors Networks : Definition, Types of Sensors, Types of Actuators, Examples and Working. **IoT Development Boards:** Arduino IDE and Board Types, RaspberriPi Development Kit, RFID Principles and components. **Wireless Sensor Networks:** History and Context, The node, Connecting nodes, Networking Nodes, WSN and IoT.

UNIT-III

Wireless Technologies for IoT: WPAN Technologies for IoT: IEEE 802.15.4, Zigbee, HART, NFC, Z-Wave, BLE, Bacnet, Modbus. **IP Based Protocols for IoT:** IPv6, 6LowPAN, RPL, REST, AMPQ, CoAP, MQTT.

Edge connectivity and protocols.

UNIT-IV

Data Handling& Analytics: Introduction, Bigdata, Types of data, Characteristics of Big data, Data handling Technologies, Flow of data, Data acquisition, Data Storage, Introduction to Hadoop. **Introduction to data Analytics**: Types of Data analytics, Local Analytics, Cloud analytics and applications.

Text books:

1. Hakima Chaouchi, — "The Internet of Things Connecting Objects to the Web" ISBN 978-1- 84821-140-7, Wiley Publications.
2. Olivier Hersent, David Boswarthick, and Omar Elloumi, — "The Internet of Things: Key Applications and Protocols", WileyPublications.

Reference books:

1. Daniel Minoli, — "Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications", ISBN: 978-1-118-47347-4, Willy Publications.

2. Pethuru Raj and Anupama C. Raman, "The Internet of Things: Enabling Technologies, Platforms, and Use Cases", CRC Press.

3. Keysight Technologies, "The Internet of Things: Enabling Technologies and Solutions for Design and Test", Application Note, 2016.

Web Links:

1. https://onlinecourses.nptel.ac.in/noc17_cs22/course
2. http://www.cse.wustl.edu/~jain/cse570-15/ftp/iot_prot/index.html

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Chapter Name	Short Questions 5 Marks	Essay Questions 10 Marks	Marks allotted to the chapter
UNIT -I	**1**	**2**	**25**
UNIT -II	**1**	**2**	**25**
UNIT -III	**1**	**2**	**25**
UNIT -IV	**1**	**2**	**25**
Total No. of questions	**4**	**8**	
Total Marks Including choice			**100**

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(Accredited by NAAC "A+" Grade)

III B.Sc.-IT (Hons) MODEL QUESTION PAPER (W.E.F 2020-2021**)**
IT112 :: Fundamentals of IoT
SEMESTER – V

Time: 2 ½ Hrs. **Max Marks: 50M**

SECTION - I

Answer any **Two** of the following: **2X5M=10 M**

1. Discuss the Characteristics of IoT
2. Write the Types of Sensors
3. Explain about IEEE 802.15.4
4. Write a short note Characteristics of Big data

SECTION –II

Answer **ALL** Questions: **4X10M=40 M**

5. a) Explain in detail Physical & Logical Design of IoT
   (Or)
   b) Discuss how Enabling Technologies in IoT

6. a) Explain the Arduino IDE and Board Types
   (Or)
   b) Describe the RFID Principles and components

7. a) Explain about WPAN Technologies for IoT
   (Or)
   b) write a note on IP Based Protocols for IoT IPv6

8. a) What is Bigdata? Explain Data handling Technologies
   (Or)
   b) What is data Analytics? Explain Types of Data analytics

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. V Sem			
Course Code **IT111**	**TITLE OF THE COURSE** **Operating Systems**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Scheduling and ynchronizations	3	1	-	3

Course Objectives:

1. To get familiarized with the basic protocols of computer networks.
2. To provide an introduction to the fundamental concepts on data communication.
3. Fundamental concepts on design of computer networks.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Identify the different components in a Communication System and their respective roles
CO2	Describe the technical issues related to the local Area Networks
CO3	Identify the common technologies available in establishing LAN infrastructure
CO4	Describe the general architecture of computers.
CO5	Describe process management, scheduling and synchronizations

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT I

What is Operating System? History and Evolution of OS, Basic OS functions, Resource Abstraction, Types of Operating Systems– Multi programming Systems, Batch Systems, Time Sharing Systems; Operating Systems for Personal Computers, Workstations and Hand-held Devices, Process Control & Real time Systems

UNIT II

Processor and User Modes, Kernels, System Calls and System Programs, System View of the Process and Resources, Process Abstraction, Process Hierarchy, Threads, Threading Issues, Thread Libraries; Process Scheduling, Non-Preemptive and Preemptive Scheduling Algorithms

UNIT III

Process Management: Deadlock, Deadlock Characterization, Necessary and Sufficient Conditions for Deadlock, Deadlock Handling Approaches: Deadlock Prevention, Deadlock

Avoidance and Deadlock Detection and Recovery. Concurrent and Dependent Processes, Critical Section, Semaphores, Methods for Inter- process Communication; Process Synchronization, Classical Process Synchronization Problems: Producer-Consumer, Reader-Writer

UNIT IV

Memory Management: Physical and Virtual Address Space; Memory Allocation Strategies– Fixedand -Variable Partitions, Paging, Segmentation, Virtual Memory.

File and I/O Management, OS security : Directory Structure, File Operations, File Allocation Methods, Device Management, Pipes, Buffer, Shared Memory, Security Policy Mechanism, Protection, Authentication and Internal Access Authorization Introduction to Android Operating System, Android Development Framework, Android Application Architecture, Android Process Management and File System, Small Application Development using Android Development Framework

Text books:

1. Operating System Principles by Abraham Silberschatz, Peter Baer Galvin and GregGagne (7th Edition) Wiley India Edition.
2. Operating Systems: Internals and Design Principles by Stallings (Pearson)

Reference books:

1. Operating Systems by J. Archer Harris (Author), Jyoti Singh (Author) (TMH)
2. Remzi H. Arpaci-Dusseau, Operating Systems,Andrea C. Arpaci-Dusseau
3. Operating Systems by Chopra Rajiv.

Web Links:

1. https://nptel.ac.in/courses/106/102/106102132/
2. https://nptel.ac.in/courses/106/105/106105214/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Chapter Name	Short Questions 4 Marks	Essay Questions 10 Marks	Marks allotted to the chapter
UNIT -I	**1**	**2**	**24**
UNIT -II	**1**	**2**	**24**
UNIT -III	**1**	**2**	**24**
UNIT -IV	**1**	**2**	**24**
Total No. of questions	**4**	**8**	
Total Marks Including choice			**96**

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

(*Accredited by NAAC "A$^+$" Grade)*

III - B.Sc IT(Hons) :: Semester - V
(For Admitted Batch 2019-2020)
Model Question Paper
IT111 :: OPERATING SYSTEMS

Time: 2 ½ Hrs. **Max Marks: 50 M**

Section – A

Answer any 2 question **2X5 = 10M**

1. Write about Resource Abstraction.
2. Explain threading issues.
3. Discuss some necessary and sufficient conditions for deadlock.
4. Explain about Virtual memory.

Section - B

Answer following question **4X10 = 40M**

5. a) Explain various types of Operating Systems.

(OR)

b) What is Operating System? Explain functions of Operating System.

6. a) Explain in detail about Process Scheduling.

(OR)

b) Explain system view of the process and resources.

7. a) Explain about deadlock Detection and recovery.

(OR)

b) Discuss classical process synchronization problems.

8. a) Explain the following
   i) Segmentation
   ii) Fixed and variable partitions.

(OR)

b) Explain in detail about Demand-paging.

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc.- V Sem			
Course Code **IT111P**	**TITLE OF THE COURSE** **OPERATING SYSTEMS**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:	Concepts of operating systems	0	0	3	2

Objectives:

1. To make the computer system convenient to use in an efficient manner
2. To hide the details of the hardware resources from the users.

List of Experiments/Syllabus: Operating Systems Lab using C/Java

1. Write a program to implement Round Robin CPU Scheduling algorithm
2. Simulate SJF CPU Scheduling algorithm
3. Write a program the FCFS CPU Scheduling algorithm
4. Write a program to Priority CPU Scheduling algorithm
5. Simulate Sequential file allocation strategies
6. Simulate Indexed file allocation strategies
7. Simulate Linked file allocation strategies
8. Simulate MVT and MFT memory management techniques
9. Simulate Single level directory File organization techniques
10. Simulate Two level File organization techniques
11. Simulate Hierarchical File organization techniques
12. Write a program for Bankers Algorithm for Dead Lock Avoidance
13. Implement Bankers Algorithm Dead Lock Prevention.
14. Simulate all Page replacement algorithms.
    a) FIFO
    b) LRU
    c) LFU
15. Simulate Paging Techniques of memory management

Reference books:

1. Operating Systems by Chopra Rajiv
2. Operating System Principles by Abraham Silberschatz, Peter Baer Galvin and GregGagne(7th Edition) Wiley India Edition

Virtual Lab Links:

1. https://qrgo.page.link/75D2v
2. https://qrgo.page.link/XS2i7

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. (V Sem)			
Course Code **IT113**	**TITLE OF THE COURSE** **DATA STRUCTURES**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Algorithms, Programming basics.	3	1	-	3

Course Objectives:

1. To impart the basic concepts of data structures and algorithms.
2. To understand concepts about searching and sorting techniques.
3. To Understand basic concepts about stacks,queues,lists,trees and graphs.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Ability to analyze algorithms and algorithm correctness.
CO2	Ability to summarize searching and sorting techniques.
CO3	Ability to describe stack,queue and linked list operation.
CO4	Ability to have knowledge of tree and graphs concepts.
CO5	Solving problems with the help of fundamental data structures.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT – I

Concept of Abstract Data Types (ADTs): Data Types, Data Structures, Primitive and Non-primitive Data Structures, Linear and Non-Linear Data Structures. **Linear Lists:** ADT, Array and Linked representations, Pointers. **Arrays:** One Dimensional – Two Dimensional – Multi Dimensional Operations – Sparse Matrices Linked Lists: Single Linked List, Double Linked List, Circular Linked List, applications.

UNIT- II

Stacks: Definition, ADT, Array and Linked representations, Implementations and Applications – **Tower of Hanoi Problem.**

Queues: Definition, ADT, Array and Linked representations, Circular Queues, Dequeues, Priority Queues, Implementations and Applications

UNIT-III

Trees: Binary Tree, Definition, Properties, ADT, Array and Linked representations, Implementations and Applications. Binary Search Trees (BST) – Definition, ADT, Operations and Implementations, BST Applications. Threaded Binary Trees, Heap Trees, **B Trees, B+ Trees Indexing**

UNIT-IV

Graphs: Graph and its Representations, Graph Traversals: BFS, DFS, Connected Components, Basic Searching Techniques, Minimal Spanning Trees

Sorting and Searching: Selection, Insertion, Bubble, Merge, Quick, Hear Sort, Sequential and Binary Searching.

Text books:

1. Robert Lafore, Data Structures & Algorithms in Java, Second Edition, Pearson Education (2008)
2. Sahani S, Data Structures, Algorithms and Applications in JAVA, Mc-Graw-Hill, 2002
3. Samanta D, Classic Data Structures , Prentice-Hall of India, 2001.

Reference books:

1. Heilman G I, Data Structures and Algorithms with Object-Oriented Programming Tata McGraw-Hill, 2002 (chapters 1 and 14)
2. Tremably P, and Sorenson P G, Introduction to Data Structures with Applications, Tata McGraw -Hill

Web Links:

1. https://nptel.ac.in/courses/106/103/106103069/
2. https://nptel.ac.in/courses/106/102/106102064/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

(*Accredited by NAAC "A$^+$" Grade)*

III - B.Sc IT(Hons) :: Semester - V

(For Admitted Batch 2019-2020)

Model Question Paper

Paper : IT113 :: DATA STRUCTURES

Time: 2 ½ Hrs **Max Marks :50M**

SECTION –A

Answer any TWO Questions **2 x 5M=10M**

1. What is data structure? Explain various data types
2. What is a Tree? How binary trees are represented in memory
3. Write the Applications of Depth First Search
4. Define Sorting. What are the advantages and disadvantages of Merge Sort

SECTION –B

Answer ALL questions. **4 x 10M=40M**

5. (a) What is circular linked list? Write a program to explain the concept of Circular Linked list

(Or)

(b) Write an algorithm and explain how to convert an infix expression into post fix expression using stack

6. (a) What is Deque? What are the different techniques used to represent Deque? Explain

(Or)

(b) What is a Binary tree? What are various traversing methods in Trees

7. (a) What is graph? Explain various representation of Graphs

(Or)

(b) What are the various ways to find minimal spanning tree? Explain

8. (a) What is searching? Explain Binary Search Algorithm with example

(Or)

(b) Explain Bubble sorting technique with example

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. (V Sem)			
Course Code **IT113P**	**TITLE OF THE COURSE** **Data Structures**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:	Data Types and Algorithms.	0	0	3	2

Objectives:

1. To impart the basic concepts of data structures and algorithms.
2. To understand concepts about searching and sorting techniques.
3. To Understand basic concepts about stacks,queues,lists,trees and graphs.

List of Experiments/Syllabus:

1. Write a program to read 'N' numbers of elements into an array and also perform the following operation on an array
   - Add an element at the begging of an array
   - Insert an element at given index of array
   - Update a element using a values and index
   - Delete an existing element
2. Write a program using stacks to convert a given infix expression to postfix
3. Write Programs to implement the Stack operations using an array
4. Write Programs to implement the Stack operations using Liked List.
5. Write Programs to implement the Queue operations using an array.
6. Write Programs to implement the Queue operations using Liked List.
7. Write a program for Binary Search Tree Traversals
8. Write a program to search an item in a given list using the following Searching Algorithms
   - Linear Search
   - Binary Search.
9. Write a program for implementation of the following Sorting Algorithms
   - Bubble Sort
   - Insertion Sort
   - Quick Sort
10. Write a program to find out shortest path between given Source Node and Destination Node in a given graph using Dijkstrar's algorithm
11. Write a program to implement Depth First Search graph traversals algorithm
12. Write a program to implement Breadth First Search graph traversals algorithm.

Reference books:

1. Robert Lafore, Data Structures & Algorithms in Java, Second Edition
2. Sahani S, Data Structures, Algorithms and Applications in JAVA, Mc-Graw-Hill

Virtual Lab Links:

1. https://qrgo.page.link/eeoHv
2. https://qrgo.page.link/zKAR1

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc.- VI Sem			
Course Code **IT114**	**TITLE OF THE COURSE** **INFORMATION SECURITY**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Network, Computer, Software	3	1	-	3

Course Objectives:

1. To provide knowledge on information security and cryptographic algorithms.
2. Problem-Solving Skills, An Understanding of Hacking
3. Knowledge of Security across various Platforms.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Identify the different components in a Communication System and their respective roles
CO2	Describe the technical issues related to the local Area Networks
CO3	Identify the common technologies available in establishing LAN infrastructure
CO4	To protect information assets against threats and vulnerabilities.
CO5	Taken together, threats and vulnerabilities constitute information risk.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT I

Introduction: Security, Attacks, Computer Criminals, Security Services, Security Mechanisms. **Cryptography:** Substitution ciphers, Transpositions Cipher, Confusion, diffusion, Symmetric, Asymmetric Encryption. DES Modes of DES, Uses of Encryption, Hash function, key exchange, Digital Signatures, Digital Certificates.

UNIT II

Program Security Secure programs, Non malicious Program errors, Malicious codes virus, Trap doors, Salami attacks, Covert channels, Control against program.

Threats: Protection in OS: Memory and Address Protection, Access control, File Protection, User Authentication.

UNIT III

Database Security: Requirements, Reliability, Integrity, Sensitive data, Inference, Multilevel Security.

Security in Networks: Threats in Networks, Security Controls, firewalls, Intrusion detection systems, Secure e-mails.

UNIT IV

Administrating Security: Security Planning, Risk Analysis, Organisational Security Policy, Physical Security. Ethical issues in Security: Protecting Programs and data. Information and law.

Text books:

1. C. P. Pfleeger, S. L. Pfleeger; Security in Computing, Prentice Hall of India, 2006
2. W. Stallings; Network Security Essentials: Applications and Standards, 4/E, 2010

Reference books:

1. The Basics of Information Security,2nd edition, Jason Andress,Syngress.
2. Information Security: Principles and Practices,Mark Stamp.
3. Computer and Information Security, John R. Vacca.

Web Links:

1. https://nptel.ac.in/courses/106/106/106106168/
2. https://nptel.ac.in/courses/106/106/106106107/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT – I	1	2
2	UNIT – II	1	2
3	UNIT – III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A+" Grade)*

III B.Sc. IT(Hons)
MODEL QUESTION PAPER (W.E.F 2019-2020)
IT 114: INFORMATION SECURITY
SEMESTER – VI

Time : 2 ½ Hrs. **Max Marks: 50 M**

SECTION – I

Answer any **TWO** of the following: **2X5=10 M**

1. Explain various attacks?.
2. Explain trap doors, covert channels?
3. Explain data base security requirements?
4. Explain physical security?

SECTION –II

Answer **ALL** the questions: 4**X 10=40 M**

5. a). Explain substitution ciphers, Transposition ciphers?
   (Or)
   b). Explain DES algorithm?

6. a). Explain control against program?
   (Or)
   b). Explain Protection in OS?

7. a).Explain Multilevel security?
   (or)
   b). Explain Firewall?

8. a). Explain ethical issues in security?
   (or)
   b)Explain organizational security policy?

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. (VI Sem)			
Course Code **117P**	**TITLE OF THE COURSE** **INFORMATION SECURITY**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:	Networking tools	0	0	3	2

Objectives:

1. Provide programming skills on usage of networking tools.
2. Provide programming skills on usage of cryptographic algorithms.
3. Knowledge of Security across various Platforms

List of Experiments/Syllabus: Operating Systems Lab using C/Java

1. Demonstrate the use of Network tools: ping, ipconfig, ifconfig, tracert, arp, netstat, whois
2. Use of Password cracking tools : John the Ripper, Ophcrack. Verify the strength of passwords using these tools.
3. Perform encryption and decryption of Caesar cipher. Write a script for performing these operations.
4. Perform encryption and decryption of a Rail fence cipher. Write a script for performing these operations.
5. Use nmap/zenmap to analyse a remote machine.
6. Use Burp proxy to capture and modify the message.
7. Demonstrate sending of a protected word document.
8. Demonstrate sending of a digitally signed document.
9. Demonstrate sending of a protected worksheet.
10. Demonstrate use of steganography tools.
11. Demonstrate use of gpg utility for signing and encrypting purposes

Reference books:

1. C. P. Pfleeger, S. L. Pfleeger; Security in Computing, Prentice Hall of India, 2006
2. W. Stallings; Network Security Essentials: Applications and Standards, 4/E, 2010

Virtual Lab Links:

1.
2.

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc.-VI Sem			
Course Code **IT115**	**TITLE OF THE COURSE** **COMPUTER GRAPHICS**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Concepts such as vectors, matrices and transformations	3	1	-	3

Course Objectives:

1. Provides knowledge on elements of computer graphics.
2. Fundamental techniques of computer graphics.
3. The course introduces the basic concepts of computer graphics

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Identify the different components in a Communication System and their respective roles
CO2	Describe the technical issues related to the local Area Networks
CO3	Identify the common technologies available in establishing LAN infrastructure
CO4	Extract scene with different clipping methods and its transformation to graphics display device
CO5	Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT I

Basic elements of Computer graphics: Applications of Computer Graphics. Architecture of Raster and Random scan display devices, input/output devices.

UNIT II

Fundamental Techniques in Graphics: Raster scan line, circle and ellipse drawing, thick primitives, Polygon filling, line and polygon clipping algorithms.

UNIT III

2D and 3D Geometric Transformations: 2D and 3D Viewing Transformations (Projections- Parallel and Perspective), Vanishing points.

Geometric Modeling: Representing curves & Surfaces.

UNIT IV

Visible Surface determination: Hidden surface elimination. Surface rendering Illumination and shading models. Basic color models and Computer Animation.

Text books:

1. J.D.Foley, A.Van Dan, Feiner, Hughes Computer Graphics Principles & Practice 2nd edition Publication Addison Wesley 1990.
2. D.Hearn, Baker: Computer Graphics, Prentice Hall of India 2008

Reference books:

1. D.F.Rogers Procedural Elements for Computer Graphics, McGraw Hill 1997.
2. D.F.Rogers, Adams Mathematical Elements for Computer Graphics, McGraw Hill 2nd edition 1989.

Web Links:

1. https://nptel.ac.in/courses/106/106/106106090/
2. https://nptel.ac.in/courses/106/102/106102063/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT – I	1	2
2	UNIT – II	1	2
3	UNIT – III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A+" Grade)*

III B.Sc. IT(Hons)
MODEL QUESTION PAPER (W.E.F 2019-2020)
IT 115: Computer Graphics
SEMESTER – VI

Time : 2 ½ Hrs. **Max Marks: 50 M**

SECTION – I

Answer any **TWO** of the following: **2X5=10 M**

1. Explain applications of computer graphics?
2. Explain polygon filling?
3. Explain curves?
4. Explain RGB colour model?

SECTION –II

Answer **ALL** the questions: 4**X 10=40 M**

5. a). Explain input output devices?
   (Or)
   b). Explain ramdom scan, raster scan?

6. a). Explain DDA line drawing algorithm with example?
   (Or)
   b). Explain circle algorihthm?

7. a).Explain parallel and perspective projection?
   (or)
   b). Explain 2D and 3D geometric transformation?

8. a). Explain shading model?
   (or)
   b)Explain hidden surface elimination method?

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc.(VI Sem)			
Course Code **IT115P**	**TITLE OF THE COURSE** **COMPUTER GRAPHICS**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:	Concepts such as vectors, matrices and transformations	0	0	3	2

Objectives:

1. Provide programming skills on usage of networking tools.
2. Provide programming skills on usage of cryptographic algorithms.
3. Identify the different components in a Communication System and their respective roles

List of Experiments/Syllabus:

1. Write a program to implement Bresenham‘s line drawing algorithm.
2. Write a program to implement mid-point circle drawing algorithm.
3. Write a program to clip a line using Cohen and Sutherland line clipping algorithm.
4. Write a program to clip a polygon using Sutherland Hodgeman algorithm.
5. Write a program to apply various 2D transformations on a 2D object (use homogenous coordinates).
6. Write a program to apply various 3D transformations on a 3D object and then apply parallel and perspective projection on it.
7. Write a program to draw Hermite/Bezier curve

Reference books:

1. D.Hearn, Baker: Computer Graphics, Prentice Hall of India 2008
2. D.F.Rogers Procedural Elements for Computer Graphics, McGraw Hill 1997

Virtual Lab Links:

1. https://qrgo.page.link/37KiC
2. https://cse18-iiith.vlabs.ac.in/

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. (VI Sem)			
Course Code **IT116**	**TITLE OF THE COURSE** **FOUNDATION OF DATA SCIENCES**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Business Applications	3	1	-	3

Course Objectives:

1. Modern scientific, engineering, and business applications are increasingly dependent on data.
2. Existing traditional data analysis technologies were not designed for the complexity of the modern world.
3. Data Science has emerged as a new, exciting, and fast-paced discipline that explores novel statistical, algorithmic.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Able to apply fundamental algorithmic ideas to process data.
CO2	Learn to apply hypotheses and data into action able predictions.
CO3	Document and transfer the results and effectively communicate
CO4	To find using visualization techniques.
CO5	Implementation challenges that emerge in processing, storing, and extracting knowledge from Big Data.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT I

Introduction to R: What is R? – Why R? – Advantages of R over Other Programming Languages - R Studio: R command Prompt, R script file, comments – Handling Packages in R: Installing a R Package, Few commands to get started: installed.packages(), package Description(), help(), find.package(), library() - Input and Output – Entering Data from keyboard – Printing fewer digits or more digits – Special Values functions : NA, Inf and– inf.

UNIT II

R Data Types: Vectors, Lists, Matrices, Arrays, Factors, Data Frame – R - Variables: Variable assignment, Data types of Variable, Finding Variable ls(), Deleting Variables - R Operators: Arithmetic Operators, Relational Operators, Logical Operator, Assignment Operators, Miscellaneous Operators - R Decision Making: if statement, if – else statement, if– else if statement, switch statement – R Loops: repeat loop, while loop, for loop - Loop control statement: break statement, next statement.

UNIT III

R-Function : function definition, Built in functions: mean(), paste(), sum(), min(), max(), seq(), user-defined function, calling a function, calling a function without an argument, calling a function with argument values - R-Strings – Manipulating Text in Data: substr(), strsplit(), paste(), grep(), toupper(), tolower() - R Vectors – Sequence vector, rep function, vector access, vector names, vector math, vector recycling, vector element sorting - R List Creating a List, List Tags and Values, Add/Delete Element to or from a List, Size of List, Merging Lists, Converting List to Vector - R Matrices – Accessing Elements of a Matrix, Matrix Computations: Addition, subtraction, Multiplication and Division- R Arrays: Naming Columns and Rows, Accessing Array Elements, Manipulating Array Elements, Calculation Across Array Elements - R Factors –creating factors, generating factor levels gl().

UNIT IV

Data Frames –Create Data Frame, Data Frame Access, Understanding Data in Data Frames: dim(), nrow(), ncol(), str(), Summary(), names(), head(), tail(), edit() functions - Extract Data from Data Frame, **Expand Data Frame**: Add Column, Add Row - Joining columns and rows in a Data frame rbind() and cbind() – Merging Data frames merge() – Melting and Casting data melt(), cast().

Loading and handling Data in R: Getting and Setting the Working Directory – getwd(), setwd(), dir() - **R-CSV Files -** Input as a CSV file, Reading a CSV File, Analyzing the CSV File: summary(), min(), max(), range(), mean(), median(), apply() - Writing into a CSV File –**R -Excel File** – Reading the Excel file.

Additional Modules:

Descriptive Statistics: Data Range, Frequencies, Mode, Mean and Median: Mean Applying

Trim Option, Applying NA Option, Median - Mode - Standard Deviation – Correlation - Spotting Problems in Data with Visualization: visually Checking Distributions for a single Variable - R –Pie Charts: Pie Chart title and Colors – Slice Percentages and Chart Legend, 3D Pie Chart – R Histograms – Density Plot - R – Bar Charts: Bar Chart Labels, Title and Colors.

Text books:

1. Sandip Rakshit, R Programming for Beginners, McGraw Hill Education (India), 2017, ISBN : 978-93-5260-455-5.

Reference books:

1. Seema Acharya, Data Analytics using R, McGrawHill Education (India), 2018, ISBN:978-93-5260-524-8.
2. Tutorials Point (I) simply easy learning, Online Tutorial Library (2018), *R Programming*, Retrieved from https://www.tutorialspoint.com/r/r_tutorial.pdf.
3. Andrie de Vries, Joris Meys, R for Dummies A Wiley Brand, 2nd Edition, John Wileyand Sons, Inc, 2015, ISBN: 978-1-119-05580-8

Web Links:

1. https://nptel.ac.in/courses/106/106/106106179/
2. https://onlinecourses.nptel.ac.in/noc21_cs69/preview

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A+" Grade)*

III B.Sc. IT(Hons)
MODEL QUESTION PAPER (W.E.F 2019-2020)
IT116: FOUNDATION OF DATA SCIENCE
SEMESTER – VI

Time: 2½ Hrs. **Max Marks: 50 M**

SECTION – I

Answer any **TWO** of the following: **2X5=10 M**

1. Explain the properties of No-SQL
2. Explain the Memorization Methods
3. Why is R important for data science
4. What is a block and block scanner in HDFS

SECTION –II

Answer **ALL** the questions: 4**X 10=40 M**

5. a) What are the different properties and characteristics of relational databases

   (**Or**)

   b) What is data science and explain the data science

6. a) Explain the Logistic Regression? Discuss the unsupervised methods

   (**Or**)

   b) What is meant by machine learning algorithm? Discuss the evaluating clustering Models

7. a) Explain the data frames with an example? Explain the Reading the data from files

   (Or)

   b) What is meant by R-Studio and explain the features of characteristics of R

8. a) How to Loading data into HDFS

   (Or)

   b) Define Hadoop and explain the characteristics of Hadoop

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc.(VI Sem)			
Course Code **IT116P**	**TITLE OF THE COURSE** **Foundations of Data Science**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:	Basic Coding	0	0	3	2

Objectives:

1. R is a well-developed, simple and effective programming language which includes conditionals, loops, user defined recursive functions and input and output facilities.
2. R has an effective data handling and storage facility, R provides a suite of operators for calculations on arrays, lists, vectors and matrices.

List of Experiments/Syllabus:

I. Installing R and R studio

II. Basic Operations in r
   1. Arithmetic Operations
   2. Comments and spacing
   3. Logical Operators - <, <=, >, >=, = , !=, &&, 1

III. 1. Getting data into R, Basic data manipulation
   2. Vectors, Materials, operation on vectors and matrices.

IV. 1. Basic Plotting
   2. Quantitative data
   3. Frequency plots
   4. Box plots
   5. Scatter plot
   6.Categorial data
   7. Bar charts
   8. Pie charts

V. Loops and functions
   1. if, if else, while, for break, next, repeat.
   2. Basic functions- Print(), exp( ), Log( ), sqrt( ), abs( ), sin( ), Cos( ), tan( ), factorial( ), rand ().

Reference books:

1. Christopher M. Bishop, "Pattern Recognition and Machine Learning" by Springer, 2007.
2. Mevin P. Murphy, "Machine Learning: A Probabilistic Perspective" by The MIT Press, 2012

Virtual Lab Links:

1.
2.

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. (VI Sem)			
Course Code **IT117**	**TITLE OF THE COURSE** **MACHINE LEARNING**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Statistics, Linear Algebra, Calculus, Probability, Programming Languages.	3	1	-	3

Course Objectives:

1. Provides knowledge on machine learning techniques.
2. To discover patterns in the user data.
3. Make predictions based on intricate patterns for answering business questions and solving business problems.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Able to apply fundamental algorithmic ideas to process data.
CO2	Learn to apply hypotheses and data into action able predictions.
CO3	Document and transfer the results and effectively communicate
CO4	To find using visualization techniques.
CO5	Implementation challenges that emerge in processing, storing, and extracting knowledge from Big Data.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT I

Introduction: Concept of Machine Learning, Applications of Machine Learning, Key elements of Machine Learning, Supervised vs. Unsupervised Learning, Statistical Learning: Bayesian Method, The Naive Bayes Classifier.

Software's for Machine Learning and Linear Algebra Overview : Plotting of Data, Vectorization, Matrices and Vectors: Addition, Multiplication, Transpose and Inverse using available tool such as MATLAB

UNIT II

Linear Regression: Prediction using Linear Regression, Gradient Descent, Linear 43

Regression with one variable, Linear Regression with multiple variables, Polynomial Regression, Feature Scaling/Selection.

UNIT III

Logistic Regression: Classification using Logistic Regression, Logistic Regression vs. Linear Regression, Logistic Regression with one variable and with multiple variables.

Regularization: Regularization and its utility: The problem of Overfitting, Application of Regularization in Linear and Logistic Regression, Regularization and Bias/Variance.

UNIT IV

Neural Networks: Introduction, Model Representation, Gradient Descent vs. Perceptron Training, Stochastic Gradient Descent, Multilayer Perceptrons, Multiclass Representation, Back-propagation Algorithm.

Text books:

1. Ethem Alpaydin, "Introduction to Machine Learning" 2nd Edition, The MIT Press, 2009.
2. Tom M. Mitchell, "Machine Learning", First Edition by Tata McGraw-Hill Education, 2013.

Reference books:

1. Christopher M. Bishop, "Pattern Recognition and Machine Learning" by Springer, 2007.
2. Mevin P. Murphy, "Machine Learning: A Probabilistic Perspective" by The MIT Press, 2012

Web Links:

1. https://nptel.ac.in/courses/106/105/106105152/
2. https://nptel.ac.in/courses/106/106/106106198/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A+" Grade)*

III B.Sc. IT(Hons)
MODEL QUESTION PAPER (W.E.F 2019-2020)
IT117: MACHINE LEARNING
SEMESTER – VI

Time: 2½ Hrs. **Max Marks: 50 M**

SECTION – I

Answer any **TWO** of the following: **2X5=10 M**

1. What are the Applications of Machine Learning.
2. Explain the Polynomial Regression
3. Logistic Regression vs. Linear Regression
4. What is Multiclass Representation

SECTION –II

Answer **ALL** the questions: 4**X 10=40 M**

5. a) Explain about Bayesian Method

   (**Or**)

   b) What are the Matrices and Vectors in Machine Learning.

6. a) Explain the Linear Regression with multiple variables

   (**Or**)

   b) What is machine learning algorithm? Discuss the Prediction using Linear Regression

7. a) Explain the Classification using Logistic Regression

   (Or)

   b) What are the Application of Regularization in Linear and Logistic Regression

8. a) How Neural Networks Works.

   (Or)

   b) Define Back propagation Algorithm

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc.(VI Sem)			
Course Code **IT117P**	**TITLE OF THE COURSE** **MACHINE LEARNING**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:	Programming Knowledge.	0	0	3	2

Objectives:

1. Provides programming knowledge in MABLAB/Octave or Python.
2. Students can create/use their own datasets.
3. Utilize datasets from online repositories like UCI Machine Learning Repository.

List of Experiments/Syllabus:

1. Perform elementary mathematical operations in Octave/MATLAB like addition, multiplication, division and exponentiation.

2. Perform elementary logical operations in Octave/MATLAB (like OR, AND, Checking for Equality, NOT, XOR).

3. Create, initialize and display simple variables and simple strings and use simple formatting for variable.

4. Create/Define single dimension / multi-dimension arrays, and arrays with specific values like array of all ones, all zeros, array with random values within a range, or a diagonal matrix.

5. Use command to compute the size of a matrix, size/length of a particular row/column, load data from a text file, store matrix data to a text file, finding out variables and their features in the current scope.

6. Perform basic operations on matrices (like addition, subtraction, multiplication) and 44 display specific rows or columns of the matrix.

7. Perform other matrix operations like converting matrix data to absolute values, taking the negative of matrix values, additing/removing rows/columns from a matrix, finding the maximum or minimum values in a matrix or in a row/column, and finding the sum of some/all elements in a matrix.

8. Create various type of plots/charts like histograms, plot based on sine/cosine function based on data from a matrix. Further label different axes in a plot and data in a plot.

9. Generate different subplots from a given plot and color plot data.

10. Use conditional statements and different type of loops based on simple example/s.

11. Perform vectorized implementation of simple matrix operation like finding the transpose of a matrix, adding, subtracting or multiplying two matrices.

12. Implement Linear Regression problem. For example, based on a dataset comprising of existing set of prices and area/size of the houses, predict the estimated price of a given house.

13. Based on multiple features/variables perform Linear Regression. For example, based on a number of additional features like number of bedrooms, servant room, number of balconies, number of houses of years a house has been built – predict the price of a house.

Reference books:

1. Christopher M. Bishop, "Pattern Recognition and Machine Learning" by Springer, 2007
2. Ethem Alpaydin, "Introduction to Machine Learning" 2nd Edition, The MIT Press, 2009

Virtual Lab Links:

1. http://archive.ics.uci.edu/ml/
2. https://qrgo.page.link/uzqkb

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. (VI Sem)			
Course Code **IT118**	**TITLE OF THE COURSE** **PHP and MYSQL**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Variables, Data Types, Operators….	3	1	-	3

Course Objectives:

1. Provides knowledge on machine learning techniques.
2. Analyze the basic structure of a PHP web application.
3. Able to install and maintain the web server, compile, and run a simple web application.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Able to apply fundamental algorithmic ideas to process data.
CO2	Learn to apply hypotheses and data into action able predictions.
CO3	Document and transfer the results and effectively communicate
CO4	To find using visualization techniques.
CO5	Implementation- processing, storing, and extracting knowledge from Big Data.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT I

Building blocks of PHP: Variables, Data Types, Operators and Expressions, Constants. **Flow Control Functions in PHP:** Switching Flow, Loops, Code Blocks and Browser Output.

Working with Functions: Defining Functions, Calling functions, returning the values from User-Defined Functions, Variable Scope, Saving State between Function calls with the Static statement, more about arguments.

UNIT-II

Working with Arrays: Arrays, Creating Arrays, Some Array-Related Functions. Working with Objects: Creating Objects, Object Instance.

Working with Strings, Dates and Time: Formatting Strings with PHP, Investigating Strings with PHP, Manipulating Strings with PHP, Using Date and Time Functions in PHP.

UNIT-III

Working with Forms: Creating Forms, Accessing Form - Input with User defined Arrays, Combining HTML and PHP code on a single Page, Using Hidden Fields to save state, Redirecting the user, Sending Mail on Form Submission, Working with File Uploads**.**

Working with Cookies and User Sessions: Introducing Cookies, Setting a Cookie with PHP, Session Function Overview, Starting a Session, Working with session variables, passing session IDs in the Query String, Destroying Sessions and Unsetting Variables, Using Sessions in an Environment with Registered Users.

UNIT-IV

Interacting with MySQL using PHP: MySQL Versus MySQLi Functions, Connecting to MySQL with PHP, Working with MySQL Data.

Creating an Online Address Book: Planning and Creating Database Tables, Creating Menu, Creating Record Addition Mechanism, Viewing Records, Creating the Record Deletion Mechanism, Adding Sub-entities to a Record.

Additional Input:

Working with Files and Directories: Including Files with include(), Validating Files, Creating and Deleting Files, Opening a File for Writing, Reading or Appending, Reading from Files, Writing or Appending to a File, Working with Directories, Open Pipes to and from Process Using popen (), Running Commands with exec(), Running Commands with system ( ) or pass-through ( ).

Working with Images: Understanding the Image-Creation Process, Necessary Modifications to PHP, Drawing a New Image, Getting Fancy with Pie Charts, Modifying Existing Images, Image Creation from User Input.

Text books:

1. Learning PHP & MYSQL, Michele E. Davis, Jon A. Phillips,2007.
2. PHP & MYSQL, Brett McLaughlin.
3. Beginning PHP & MYSQL, W Jason Gilmore.

Reference books:

1. Julie C. Meloni, PHP MySQL and Apache, SAMS Teach Yourself, Pearson Education (2007).
2. XueBai Michael Ekedahl, The Web Warrior Guide to Web Programming, Thomson.

Web Links:

1. https://nptel.ac.in/courses/106/106/106106093/
2. https://www.siteground.com/tutorials/php-mysql/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT-I	1	2
2	UNIT-II	1	2
3	UNIT-III	1	2
4	UNIT-IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A+" Grade)*

III B.Sc. IT(Hons)
MODEL QUESTION PAPER (W.E.F 2019-2020)
IT118: PHP and MYSQL
SEMESTER – VI

Time: 2½ Hrs. **Max Marks: 50M**

SECTION – A

Answer any **TWO** questions from the Following: **2 X 5 = 10M**

1. Discuss different operators available in PHP.
2. Write a script for login page with validation.
3. Discuss any five Date functions of PHP.
4. What is session? How variables are handled in the sessions?

SECTION – B

Answer **ALL** questions from the Following: **4 X 10 = 40M**

5. a) What is variable? Explain scope of variable.
   (OR)
   b) Write about different data types available in PHP.

6. a) Write about different operators in PHP.
   (OR)
   b) Explain about arrays in PHP.

7. a) Explain string functions in PHP.
   (OR)
   b) What is a form, how to create a form using PHP.

8. a) Creating, open and delete files in PHP.
   (OR)
   b) Explain Mysql and MySqli functions?

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc.(VI Sem)			
Course Code **IT118P**	**TITLE OF THE COURSE** **PHP& MYSQL LAB**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:	Programming Knowledge in Python	0	0	3	2

Objectives:

1. Provides programming knowledge in MABLAB/Octave or Python.
2. Students can create/use their own datasets.
3. Utilize datasets from online repositories like UCI Machine Learning Repository.

List of Experiments/Syllabus:

Cycle -1

An Enterprise wishes to maintain the details about his suppliers and other corresponding details.
For that he uses the following details.
Suppliers (sid: Integer, sname: string, address: string)
Parts (pid: Integer, pname: string, color: string)
Catalog (sid: integer, pid: integer, cost: real)
The catalog relation lists the prices charged for parts by suppliers.
Write the following queries in SQL:

1. Find the pnames of parts for which there is some supplier.
2. Find the snames of suppliers who supply every part.
3. Find the snames of supplier who supply every red part.
4. Find the pnames of parts supplied by London Supplier abd by no one else.
5. Find the sid's of suppliers who charge more for some part than the average cost of that part.
6. For each part, find the sname of the supplier who charges the most for that part.
7. Find the sid's of suppliers who supply only red parts.
8. Find the sid's of suppliers who supply a red and a green part.
9. Find the sid's of suppliers who supply a red or green part.
10. Find the total amount has to pay for that suppler by part located from London.

Cycle – 2

An organisation wishes to maintain the status about the working hours made by his employees.
For that he uses the following tables.
Emp (eid: integer, ename: string, age: integer, salary: real)
Works (eid: integer, did: integer, pct_time: integer)
Dept (did: integer, budget: real, managerid: integer)
An employee can work in more than one department; the pct_time field of the works relation shows the percentage of time that a given employee works in a given department.
Resolve the following queries.

1. Print the names and ages of each employee who works in both Hardware and Software departments.

2. For each department with more than 20 full time equivalent employees (i.e., where the part-time and full-time employees add up to at least that many full-time employees), print the did's together with the number of employees that work in that department.
3. Print the name of each employee whose salary exceeds the budget of all of the departments that he or she work in.
4. Find the managerid's of managers who manage only departments with budgets greater than 1,000,000.
5. Find the enames of managers who manage the departments with largest budget.
6. If a manager manages more than one department, he or she controls the sum of all the budgets for those departments. Find the managerid's of managers who control more than 5,000,000.
7. Find the managerid's of managers who control the highest amount.
8. Find the average manager salary.

PHP Lab Cycle

1. Write a PHP program to Display "Hello"
2. Write a PHP Program to display the today's date.
3. Write a PHP Program to read the employee details.
4. Write a PHP Program to display the
5. Write a PHP program to prepare the student marks list.
6. Write a PHP program to generate the multiplication of two matrices.
7. Write a PHP Application to perform demonstrate the college website.
8. Write a PHP application to add new Rows in a Table.
9. Write a PHP application to modify the Rows in a Table.
10. Write a PHP application to delete the Rows from a Table.
11. Write a PHP application to fetch the Rows in a Table.
12. Develop an PHP application to make following Operations
    i. Registration of Users.
    ii. Insert the details of the Users.
    iii. Modify the Details.
    iv. Transaction Maintenance.
        a) No of times Logged in
        b) Time Spent on each login.
        c) Restrict the user for three trials only.

Delete the user if he spent more than 100 Hrs of transaction

Reference books:

1. XueBai Michael Ekedahl, The Web Warrior Guide to Web Programming, Thomson.
2. Beginning PHP & MYSQL, W Jason Gilmore

Virtual Lab Links:

1.
2

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. (VI Sem)			
Course Code **IT119**	**TITLE OF THE COURSE** **ANDROID Programming**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Android applications.	3	1	-	3

Course Objectives:

1. Introduces android programming
2. Provides knowledge on development tools.
3. Familiarize yourself with the Android Development Environment

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Install and configure Android application development tools
CO2	Design and develop user Interfaces for the Android platform
CO3	Save state information across important operating system events
CO4	Apply Java programming concepts to Android application development
CO5	Recognizes the concept of application development for mobile devices

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT I

Introduction: History of Android, Introduction to Android Operating Systems, Android Development Tools, Android Architecture.

UNIT II

Overview of object oriented programming using Java: OOPs Concepts: Inheritance, Polymorphism, Interfaces, Abstract class, Threads, Overloading and Overriding, Java Virtual Machine.

UNIT III

Development Tools: Installing and using Eclipse with ADT plug-in, Installing Virtual machine for Android sandwich/Jelly bean (Emulator), configuring the installed tools, creating a android project – Hello Word, run on emulator, Deploy it on USB-connected Android

device.

UNIT IV

User Interface Architecture: Application context, intents, Activity life cycle, multiple screen sizes. **User Interface Design:** Form widgets, Text Fields, Layouts, Button control, toggle buttons, Spinners (Combo boxes), Images, Menu,Dialog. **Database:** Understanding of SQLite database, connecting with the database.

Text books:

1. Android Programming for beginners, John Horton
2. Richard Cornez, Android Programming Concepts, Trish Cornez
3. Android Application and Development, A Wiley Brand,2nd edition.

Reference books:

1. Android application development for java programmers. By James C. Sheusi. Publisher: Cengage Learning, 2013).
2. Erik Hellman Android Programming,Wiley.

Web Links:

1. http://www.developer.android.com
2. http://developer.android.com/about/versions/index.html
3. http://developer.android.com/training/basics/firstapp/index.html
4. http://docs.oracle.com/javase/tutorial/index.htm

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A+" Grade)*

III B.Sc. IT(Hons)
MODEL QUESTION PAPER (W.E.F 2019-2020)
IT119:: ANDROID Programming
SEMESTER – VI

Time: 2½ Hrs. **Max Marks: 50M**

SECTION – A

Answer any **TWO** questions from the Following: **2 X 5 = 10M**

1. Discuss Android Operating Systems.
2. Discuss Java Virtual Machine.
3. Explain about configuring the installed tools.
4. Explain Activity life cycle?

SECTION – B

Answer **ALL** questions from the Following: **4 X 10 = 40M**

5. a) Explain about Android Development Tools.

(OR)

b) Draw and Explain Android Architecture.

6. a) OOPs Concepts.

(OR)

b) Write about Overloading and Overriding, with example.

7. a) creating a android project – Hello Word, run on emulator.

(OR)

b) Installing and using Eclipse with ADT plug-in.

8. a) Draw and Explain User Interface Architecture.

(OR)

b) Explain about SQLite database?

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc.(VI Sem)			
Course Code **IT119P**	**TITLE OF THE COURSE** **ANDROID Lab**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:	Virtual Devices.	0	0	3	2

Objectives:

1. Set up Android Studio.
2. Create a new Android application.
3. Create an Android Virtual Device and start the Android Emulator.

List of Experiments/Syllabus:

1. Create ―Hello World‖ application. That will display ―Hello World‖ in the middle of the screen in the emulator. Also display ―Hello World‖ in the middle of the screen in the Android Phone.
2. Create an application with login module. (Check username and password).
3. Create spinner with strings taken from resource folder (res >> value folder) and on changing the spinner value, Image will change.
4. Create a menu with 5 options and and selected option should appear in text box.
5. Create a list of all courses in your college and on selecting a particular course teacher- 53 in-charge of that course should appear at the bottom of the screen.
6. Create an application with three option buttons, on selecting a button colour of the screen will change.
7. Create and Login application as above. On successful login, pop up the message.
8. Create an application to Create, Insert, update, Delete and retrieve operation on the database

Reference books:

1. Android Programming for beginners, John Horton
2. Richard Cornez, Android Programming Concepts, Trish Cornez

Virtual Lab Links:

1. https://qrgo.page.link/vG5wT
2. http://docs.oracle.com/javase/tutorial/index.htm

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc.(VI Sem)			
Course Code **IT120**	**TITLE OF THE COURSE** **PROJECT WORK**				
Teaching	Hours Allocated: 60	L	T	P	C
Pre-requisites:	Familiar with Coding.	0	0	3	2

Follow SDLC process for real time applications and develop real time application project:

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories.

The project is of 2 hours/week for one (semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding, and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:
Title
Objectives
Input and output
Details of modules and process logic Limitations of the project
Tools/platforms, Languages to be used Scope of future application

The Project work should be either an individual one or a group of not more than three members and submit a project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examinations.

B.Com (Computer Applications)
(E.M & T.M)

B.Com. Computer Applications (EM & TM)

Courses for the Academic Year 2020-2021

B.Com. PROGRAMME – COURSE STRUCTURE OF COMPUTER APPLICATIONS UNDER CBCS PATTERN

S.No.	Semester	Course Code	Title of the Course (Paper)	Max Marks (SEE)	Marks in CIA	TOTAL	Hrs/ Week			C
							L	T	P	
1	Sem-I	CAP168	Information Technology	50	50	100	5	1	-	5
2	Sem-II	CAP169	E-commerce and Web Designing	50	50	100	5	1	-	5
3	Sem-III	CAP170	Programming with C &C++	50	50	100	5	1	-	5
4	Sem-IV	CAP171	Data Base Management System	50	50	100	5	1	-	5

Courses for the Academic Year 2019-2020

B.Com. PROGRAMME – COURSE STRUCTURE OF COMPUTER APPLICATIONS

S.No.	Semester	Course Code	Title of the Course (Paper)	Max Marks (SEE)	Marks in CIA	TOTAL	Hrs/ Week			C
							L	T	P	
1	Sem-V	CAP155	Data Base Management System	50	50	100	5	1	-	5
2		CAP156	E-Commerce	50	50	100	5	1	-	5
3		CAP153	Computer Accounting with Tally	50	50	100	5	1	-	5
4	Sem-VI	CAP160	Web Technology	50	50	100	5	1	-	5
5		CAP161	PHP & MySQL	50	50	100	5	1	-	5
6		CAP162	Project Work	50	50	100	5	1	-	5
7	Sem-VI	CAP160	Web Technology	50	50	100	5	1	-	5
8		CAP161	PHP & MySQL	50	50	100	5	1	-	5
9		CAP162	Project Work	50	50	100	5	1	-	5
10	Sem-VI	CAP150	Computer Applications in Banking	50	50	100	5	1	-	5
11		CAP149	Acc. Software Applications	50	50	100	5	1	-	5
12		CAP162	Project Work	50	50	100	5	1	-	5

	Government College (Autonomous) Rajahmundry	Program & Semester I B.Com (CA) (I Sem)			
Course Code CAP168	**TITLE OF THE COURSE** **Information Technology**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		5	1	-	5

Course Objectives:

To acquire basic knowledge in Information Technology and its applications in the areas of business.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understand basic concepts and terminology of information technology.
CO2	Have a basic understanding of personal computers and their operations.
CO3	Be able to create own PPTS.
CO4	Demonstrate the working of formulas in Excel
CO5	Create form letters in mail merge

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT–I

INTRODUCTION: Introduction to computers - Generations of computers – An overview of computer system - Types of computers - Input & Output Devices. Hardware: Basic components of a computer system - Control unit – ALU - Input/output functions - Memory – RAM – ROM – EPROM - PROM and Other types of memory.

OPERATING SYSTEM (OS): Meaning - Definition & Functions - Types of OS - DOS Commands (internal & external). **Windows:** Using the Start Menu –Control Panel – Using multiple windows – Customizing the Desktop – Windows accessories (Preferably latest version of windows or Linux Ubuntu).

UNIT–II

WORD PROCESSING: Application of word processing - Menus & Tool Bars - Word processor – Creating – Entering - Saving & printing the document - Editing & Formatting Text - Mail Merge and Macros (Preferably latest version of MS Word or Libre Office Writer).

UNIT–III

SPREAD SHEET: Application of work sheet/spread sheet - Menus & Tool bars - Creating a worksheet - Entering and editing of numbers - Cell referencing - Worksheet to analyse data with graphs & Charts. Advanced tools: Functions – Formulae – Formatting numbers - Macros – Sorting-Filtering - Validation &Consolidation of Data (Preferably latest version of MS Excel or Libre Office Calc)

UNIT–IV

POWER POINT PRESENTATION: Application of Power Point Presentation – Menus & Tool bars – Creating presentations – Adding - Editing and deleting slides - Templates and manually creating presentation– Slide show – Saving - Opening and closing a Presentation –Types of slides - Slide Views - Formatting – Insertion of Objects and Charts in slides - Custom Animation and Transition (Preferably latest version of MS Power Point presentation - Libre Office Impress). Internet & Browsing: Services available on internet – WWW – ISP – Browsers. Multimedia: Application of multimedia – Images – Graphics-Audio and Video – IT security.

Textbooks:

1. Introduction to Computers: Peter Norton, McGraw Hill.
2. Fundamentals of Information Technology: Dr. NVN Chary, Kalyani Publishers.
3. Computer Fundamental: AnithaGoel, Pearson.

Reference books:

1. Information Technology Applications for Business: Dr. S. Sudalaimuthu, Himalaya
2. Introduction to Information Technology: ITL ESL, Pearson.
3. Introduction to Information Technology: V. Rajaraman, PHI.

Web Links:

1. https://support.microsoft.com/en-us/training

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate [Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(Accredited by NAAC "A+" Grade)
DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS
I B.Com. Computer Applications SYLLABUS (W.E.F 2020-2021)
INFORMATION TECHNOLOGY
MODEL QUESTION PAPER (W.E.F 2020-2021)
SEMESTER – I

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer any **Two** of the following: **2X5M=10 M**

1. Explain types of Computers
2. Write the advantages of Word Processing
3. What is cell reference? Explain its types
4. Explain about Application of Multimedia

SECTION –II

Answer **ALL** Questions: **4X10M=40 M**

5. a). Define Computer? Explain the Basic components of Computer System

   (Or)

   b). Define Operating System? Explain the various Functions of Operating System

6. a). What is Word Processing? Explain the features of Word Processing

   (Or)

   b). Explain the process of Mail Merge in Word Processing

7. a). Explain in detail various Functions in Spread Sheet

   (Or)

   b).What is Macro? Explain how to create and Record a Macro in Spread Sheet

8. a) Explain creation of power point presentation in detail.

   (Or)

   b) Explain different parts of power point window

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CAP169	**TITLE OF THE COURSE** **E-commerce and Web Designing**	I B.Com (CA). (*II Sem*)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		5	1	-	5

Course Objectives:

1. The business development can be done through the e-commerce being the primary and the basic object.
2. Learn the language of the the HTML, XML and CSS

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Analyse the impact of E-commerce on business models and strategy.
CO2	Describe the major types of E-commerce.
CO3	Identify the key security threats in the E-commerce environment.
CO4	Be able to use the HTML,XML languages
CO5	Runs the page he/she has designed using HTML, XML codes

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT–I

E-Commerce: Introduction, Definition, Benefits of E-Commerce, Impact of E-Commerce on business models, Traditional Commerce Vs E-Commerce, Advantages and Disadvantages of E-Commerce, Electronic Commerce and the trade cycle.

Electronic Market: Usage, Advantages and Disadvantages and its future.
Electronic Data Interchange (EDI): Introduction, Benefits, Trade Cycle and Example. Internet Commerce: Introduction, Internet Trade Cycle and example, Internet Security: Secure Transaction, Privacy issues, computer crimes and its type, Security Issues: Security threats like damage to data, loss of data and unauthorized use of data, Security Procedure: Firewall, Encryption, Password, Access Control List, and digital certificate

UNIT–II

Creating Static Web Pages with HTML: Introduction, Designing web site, Advantages and Disadvantages of HTML, Flow of Web Information, Role of Web Browser and Web Server, Process of Web Publishing,

**Creating a Simple Static Web Page: About HTML, Basic elements: <html>, <head>, <title>, <p>, <br>, <h1> to <h6>, <ol>, <ul>, <li>, <dl>, <pre>, <marquee>, <hr>, Physical and Logical tags Path: Relative and Absolute path, Comments, Special Characters, Text Formatting tags, **

Adding Links, Images, Background and Table : Hyperlinks <a href …>, Cerating links to web pages and URLs, Creating links within the same page, various types of URLs that can be used in links, Image tag and their related attributes, Inline images, Links to (external) images, Using Inline images, Using images as hyperlinks, Popular images formats for internetand HTML. Tables: Basic table tags and their related attributes.

UNIT–III

Frames and Embedding Multimedia: Frames, Image Map and Web Font Creator : Frames and their creation, the <Frame> and <Frameset> tags, Fram linking, Floating or Inline Frames, Image Maps <map> and <area> tags, Client – Side and Server – Side image maps. Form designs, Form Controls, Text controls, password fields, radio buttons, checkboxes, reset and submit buttons, form control selection, option processing and textarea. Embedding Multimedia: Introduction, Embedding Multimedia, Inserting sound/audio formats, video file formats

UNIT–IV

Cascading Style Sheets (CSS) and XML: CSS: Defining style sheets, features, adding style to document, linking to a single sheet, Embedding style sheet, Using inline style, Style sheet properties, Font properties, Color and Backgournd properties, Text properties, Box properties.

XML: Introduction, The syntax of XML, XML document structure, document type definition: Elements, attributes, entities, namespaces and xml-schemas

Textbooks:

1. Electronic Commerce : Greenstein and Feinman (TMH)
2. E-Commerce : Bhushan Dean – S. Chand
3. Web Publishing : MonicD’souza and J D’souza

Referencebooks:

1. Complete HTML : BPB
2. XML : Xavier (TMH)

WebLinks:

1. https://nptel.ac.in/courses/110/105/110105083/
2. https://nptel.ac.in/courses/106/105/106105084/

CO-POMapping:

(1: Slight [Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

(*Accredited by NAAC "A+" Grade)*

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

I B.Com. Computer Applications SYLLABUS (W.E.F 2020-2021)

E-commerce and Web Designing

MODEL QUESTION PAPER (W.E.F 2020-2021)

SEMESTER – II

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer any Two of the following: 2X5M=10 M

1. Write the benefits of e-commerce
2. Explain about anchor tag with an example.
3. Explain about frames
4. Explain features of CSS

SECTION –II

Answer ALL Questions: 4X10M=40 M

5. a). Define E-Commerce? Explain the Advantages and Disadvantages of E-Commerce

(Or)

b). Explain in detail EDI?

6. a). What is HTML? Explain the Advantages and Disadvantages of HTML

(Or)

b).Explain how creating a simple Web Page using HTML Tags

7. a). Explain in detail Frames in HTML

(Or)

b). Discuss Embedding Multimedia in HTML

8. a). Define Style Sheets? Explain features of Style Sheets

(Or)

b).Explain about document type definition in XML.

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CAP170	**TITLE OF THE COURSE** **Programming with C & C++**	II B.Com (CA). (III Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		5	1	-	5

Course Objectives:

To learn the fundamental programming concepts and methodologies which are essential to building good C/C++ programs.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Develop programming skills.
CO2	Analyze how C++ improves C with object-oriented features
CO3	Critically examines, using data and figures (Analysis and Evaluation).
CO4	Working in 'Outside Syllabus Area' under a Co-curricular Activity(Creativity) Planning of structure and content, writing, updating and modifying computer programs for user solutions
CO5	Exploring C programming and Design C++ classes for code reuse (Practical skills***).

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT–I

Introduction to C: Introduction – Structure of C Program – Writing the first C Program – File used in C Program – Compiling and Executing C Programs – Using Comments – Keywords – Identifiers – Basic Data Types in C – Variables – Constants – I/O Statements in C- Operators in C- Programming Examples.

UNIT–II

Decision Control and Looping Statements: Introduction to Decision Control Statements– Conditional Branching Statements – Iterative Statements – Nested Loops – Break and Continue Statement – Goto Statement

UNIT–III

Arrays: Introduction – Declaration of Arrays – Accessing elements of the Array – Storing Values in Array– Operations on Arrays – one dimensional, two dimensional and multi-dimensional arrays.

UNIT–IV

Principles of Object Oriented Programming: Procedure Oriented Programming, Object Oriented Programming, Basic concepts of Object Oriented Programming, Applications of C++, A simple C++ Program, An example with Class, Structure of C++ Program, Inheritance and types of Inheritance.

Additional Input:

Strings and Functions: Declaration and Initialization of String Variables - String Handling Functions - Defining Functions - Function Call - Call By Value, Call By Reference – Recursion.

Textbooks:

1. Mastering C by K R Venugopal and Sudeep R Prasad, McGraw Hill.
2. Expert C Programming: Deep Secrets Kindle Edition Peter van der Linden.
3. The C++ Programming Language BjarneStroustrup.

Reference books:

1. Let Us C Yashavant Kanetkar.
2. C++ Primer Stanley B. Lippmann, JoseeLajoie, Barbara E. Moo

Web Links:

1. https://nptel.ac.in/courses/106/104/106104128/
2. https://nptel.ac.in/courses/106/105/106105151/

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

(*Accredited by NAAC "A" Grade)*

II - B.Com (Computer Applications) EM &TM :: Semester - III

(For Admitted Batch 2020-21)

Paper : CAP169 :: Programming with C &C++

MODEL QUESTION PAPER

Time: 2 ½ hours **Max. Marks: 50**

SECTION-A

Answer any **TWO** questions from the Following: 2 x 5M=10M

1. Write the Structure of C program
2. Write about Break and Continue Statement
3. Explain about Array?
4. Write the Structure of C++ Program

SECTION – B

Answer **ALL** questions. 4 x 10M=40M

5. a) Write about Data Types C Language with suitable examples

   (or)

   b) Explain about Operators in C Language

6. a) Write about If and Switch Statement with examples

   (or)

   b) Write about types of Loops in C Language with Flow Charts and example syntax.

7. a) Write about Array Declaration and Initialization in C?

   (or)

   b) Write a C program for Addition of two arrays

8. a) Explain about basic concepts of OOP?

   (or)

   b) Explain about different types of Inheritances

* * *

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CAP171	**TITLE OF THE COURSE** **Data Base Management System**	II B.Com (CA). (IV Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		5	1	-	5

Course Objectives:

Design & develop database for large volumes & varieties of data with optimized data processing techniques.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understand the role of a database management system in an organization.
CO2	Understand basic database concepts, including the structure and operation of the relational data model.
CO3	Understand and successfully apply logical database design principles, including ER diagrams and database normalization
CO4	Construct simple and moderately advanced database queries using Structured Query Language
CO5	Perform PL/SQL programming using concept of Cursor Management, Error Handling, Packages

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT–I

Overview of Database Management System: Introduction to data, information, database, database management systems, file-based system, Drawbacks of file-Based System, database approach, Classification of Database Management Systems, advantages of database approach, Various Data Models, Components of Database Management System, three schema architecture of data base, costs and risks of database approach.

UNIT–II

Entity-Relationship Model: Introduction, the building blocks of an entity relationship diagram, classification of entity sets, attribute classification, relationship degree, relationship classification,

reducing ER diagram to tables, enhanced entity-relationship model (EER model), generalization and specialization, IS A relationship and attribute inheritance, multiple inheritance, constraints on specialization and generalization, advantages of ER modeling.

UNIT–III

Relational Model: Introduction, CODD Rules, relational data model, concept of key, relational integrity, relational algebra, relational algebra operations, advantages of relational algebra, limitations of relational algebra, relational calculus, tuple relational calculus, domain relational Calculus (DRC), Functional dependencies and normal forms upto 3rd normal form.

UNIT–IV

Structured Query Language: Introduction, History of SQL Standard, Commands in SQL, Data Types in SQL, Data Definition Language, Selection Operation, Projection Operation, Aggregate functions, Data Manipulation Language, Table Modification Commands, Join Operation, Set Operations, View, Sub Query.

Additional Input

PL/SQL: Introduction, Shortcomings of SQL, Structure of PL/SQL, PL/SQL Language Elements, Data Types, Operators Precedence, Control Structure, Steps to Create a PL/SQL, Program, Iterative Control, Procedure, Function, Database Triggers, Types of Triggers.

Text books:

1. Database System Concepts by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGraw-Hill
2. Database Management Systems by Raghu Ramakrishnan, McGrawhill

Reference books:

1. Principles of Database Systems by J. D. Ullman
2. Fundamentals of Database Systems by R. Elmasri and S. Navathe
3. SQL: The Ultimate Beginners Guide by Steve Tale.

Web Links:

https://nptel.ac.in/courses/106/105/106105175/

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A$^+$" Grade)*
II - B.Com (Computer Applications) EM &TM :: Semester - IV
(For Admitted Batch 2020-21)

Paper : CAP170 :: DATA BASE MANAGEMENT SYSTEMS
Model Question Paper

Time: 2 ½ hours **Max. Marks: 50**

SECTION-A

Answer any **TWO** questions from the Following: 2 X 5M=10M

1. Explain disadvantages of file processing system
2. What are the advantages of Relational algebra? Explain
3. Explain about various attribute classification.
4. Explain the selection command with an example

SECTION – B

Answer **ALL** questions. 4 X 10M=40M

5. a). With a neat diagram, explain the architecture of a DBMS

   (Or)

   b). Explain about Data Models

6. a). Explain about Specialization and Generalization in EER model

   (Or)

   b). What is ER-Modeling? Write advantages and disadvantages of ER-Modelling

7. a). What is Functional Dependency? Explain difference between 3NF and BCNF

   (Or)

   b). What is relational model? Write about key features of relational model.

8. a). What is SQL? Explain different types of commands in SQL

   (Or)

   b). What is Nested Queries? How to create them? Discuss it with relevant example

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CAP155	**TITLE OF THE COURSE** **Data Base Management System**	IIIB.Com (CA). (V Sem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		5	1	-	5

Course Objectives:

Design & develop database for large volumes & varieties of data with optimized data processing techniques.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Design and model of data in database.
CO2	Store, Retrieve data in database using SQL.
CO3	Create Cursors and Triggers using PL/SQL.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT–I

Overview of Database Management System: Introduction, Data and Information, Database, Database Management System, Objectives of DBMS, Evolution of Database Management Systems, Classification of Database Management System.

UNIT–II

File-Based System, Drawbacks of File-Based System, DBMS Approach, Advantages of DBMS, Data Models, Components of Database System, Database Architecture.

UNIT–III

Entity–Relationship Model: Introduction, The Building Blocks of an Entity–Relationship, Classification of Entity Sets , Attribute Classification, Relationship Degree, Relationship Classification, Generalization and Specialization, aggregation and composition, CODD'S Rules, Relational Data Model, Concept of Relational Integrity.

UNIT–IV

Structured Query Language: Introduction, History of SQL Standard, Commands inSQL, Data types in SQL, Data Definition Language (DDL), Selection Operation Projection Operation, Aggregate Functions, Data Manipulation Language, Table Modification, Table Truncation, Imposition of Constraints, Set Operations.

Additional Input:

PL/SQL: Introduction, Structure of PL/SQL, PL/SQL Language Elements,DataTypes,Control Structure, Steps to Create a PL/SQL Program, Iterative Control,Cursors, Steps to Create a Cursor, Procedure, Functions.

Additional Inputs:

Packages, Exceptions Handling, Database Triggers, Types of Triggers.

Textbooks:

1. Paneerselvam: Database Management Systems, PHI.
2. David Kruglinski, Osborne, Data Management System McGraw Hill Publication.
3. Shgirley Neal and Kenneth LC Trunik Database Management Systems in Business – PHI.
4. Godeon C. EVEREST, Database Management – McGraw Hill Book Company.

Reference books:

1. MARTIN, Database Management – Prentice Hall of India, New Delhi.
2. Bipin C. Desai, “An Introduction to Database Systems”, Galgotia Publications.
3. Korth, Database Management systems.
4. Navathe, Database Management systems.
5. S. Sumathi, S. Esakkirajan, Fundamentals of Relational Database Management Systems

Web Links:

1. https://nptel.ac.in/courses/106/105/106105175/

CO-PO Mapping:

(1: Slight [Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

ORACLE LAB

1. Creation of college database and establish relationships between tables
2. Write a view to extract details from two or more tables
3. Write a stored procedure to process students results
4. Demonstration of a function
5. Demonstration of blocks, cursors & database triggers.
6. Demonstration of a Joins
7. Demonstration of a Aggregate functions
8. Creation of Reports based on different queries
9. Usage of file locking table locking, facilities in applications.

PL/SQL

1. Write a PL/SQL code block that will accept an account number from the user and debit an amount of Rs. 2000 from the account if the account has a minimum balance of 500 after the amount is debited. The Process is tofired on the Accounts table.
2. Write a PL/SQL code block to calculate the area of the circle for a value of radius varying from 3 to 7. Store the radius and the corresponding values of calculated area in a table Areas.

   Areas – radius, area.
3. Write a PL/SQL block of code for inverting a number 5639 or 9365.
4. Write a PL/SQL block of code to achieve the following: if the price of Product ‘p00001’ is less than 4000, then change the price to 4000. The Price change s to be recorded in the old_price_table along with Product_no and the date on which the price was last changed. Tables involved: product_master- product_no, sell_price.

   Old_price_table- product_no,date_change, Old_price

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A$^+$" Grade)*
III B.COM (Computer Applications) EM &TM :: SEMESTER – V
(For Admitted Batch 2019-20)

Paper : CAP155 :: DATABASE MANAGEMENT SYSTEM

Model Question Paper

Time: 2½Hrs **Max. Marks: 50**

SECTION – A

Answer any **TWO** questions from the Following: **2 X 5 = 10M**

1. What are the disadvantages of file processing system?
2. Advantages of Relational Algebra?
3. List and explain SQL data types?
4. Explain about Generalization and Specialization?

SECTION – B

Answer **ALL** questions from the Following: **4 X 10 = 40M**

5. a) Explain Architecture of DBMS with neat diagram.

(OR)

b) Explain about Data Models.

6. a) What is ER-Modelling? Write advantages and disadvantages of ER-Modelling.

(OR)

b) Explain basic building block of ER Modelling.

7. a) What is relational Model? Write about Key features of R-Models.

(OR)

b) Explain about EFCODD relational database rules.

8. a) What is SQL? Different types of commands in SQL.

(OR)

b) Explain different types of join and set operators in SQL?

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CAP156	**TITLE OF THE COURSE** **E-Commerce**	III B.Com (CA). (VSem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		5	1	-	5

Course Objectives:

The **objectives** of the **course** are to introduce the concept **of electronic commerce**, and to understand how electronic **commerce** is affecting business enterprises, governments, consumers and people in general. Acquaint students with a fundamental understanding of the environment and strategies in the New Economy.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Recognize the impact of Information and Communication technologies, especially of the Internet in business operations
CO2	Recognize the fundamental principles of e-Business and e- Commerce
CO3	Distinguish the role of Management in the context of e - Business and e -Commerce
CO4	Explain the added value, risks and barriers in the adoption of e -Business and e-Commerce
CO5	Use tools and services of the internet in the development of a virtual e - commerce site

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT–I

Introduction to E-Commerce: Scope, Definition, e-Commerce and the Trade Cycle,Electronic Markets, Electronic Data Interchange, Internet Commerce. Business Strategy in an Electronic Age: Supply Chains, Porter's Value Chain Model, Inter Organizational Value Chains, Competitive Strategy, First Mover Advantage - Sustainable Competitive Advantage, Competitive Advantage using E-Commerce - Business Strategy.

UNIT–II

Business-to-Business Electronic Commerce: Characteristics of B2B EC, Models of B2BEC,

Procurement Management by using the Buyer's Internal Market place, Just in Time Delivery, Other B2B Models, Auctions and Services from traditional to Internet Based EDI, Integration with Back-end Information System, Role of Software Agents for B2B EC, Electronic marketing in B2B, Solutions of B2B EC, Managerial Issues, Electronic Data Interchange (EDI), EDI: Nuts and Bolts, EDI and Business.

UNIT–III

Internet and Extranet : Automotive Network Exchange, Largest Extranet, Architecture of the Internet, Intranet and Extranet, Intranet software, Applications of Intranets, Intranet Application Case Studies, Considerations in Intranet Deployment, Extranets, Structures of Extranets, Extranet products and services, Applications of Extranets, Business Models of Extranet Applications, Managerial Issues. Electronic Payment Systems: Issues and Challenges.

UNIT–IV

Public Policy: From Legal Issues to Privacy : Legal Incidents, Ethical and Other Public Policy Issues, Protecting Privacy, Protecting Intellectual Property, Free speech, Internet Indecency and Censorship, Taxation and Encryption Policies, Other Legal Issues: Contracts, Gambling and More, Consumer and Seller Protection in EC.

Additional Input:

Infrastructure For EC : Network of Networks, Internet Protocols, Web- Basedclient/Server, Internet Security, Selling on the Web, Chatting on the Web, Multimedia delivery, Analyzing Web Visits, Managerial Issues, Equipment required for establishing EC Sites – Problems in Operation – Future of EC.

Textbooks:

1. David Whiteley, "E-Commerce", Tata McGraw Hill, 2000.
2. E Business by ParagKulakarni and SunithaJahirabadkar from Oxford University Press.
3. E Business by Jonathan Reynolds from Oxford University Press.
4. Eframi Turban, Jae Lee, David King, K. Michael Chung, "Electronic Commerce", Pearson Education, 2000.

Reference books:

1. R. Kalakota and A. B. Whinston, Frontiers of Electronic Commerce, Addison Wesley.
2. David Kosiur, Understanding Electronic Commerce, Microsoft Press.
3. Soka, From EDI to Electronic Commerce, McGraw Hill.

Web Links:

https://nptel.ac.in/courses/110/105/110105083/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate [Medium]; 3: Substantial [High], '-': No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A$^+$" Grade)*

III - B.Com (Computer Applications) EM &TM :: Semester - V
(For Admitted Batch 2019-20)

Paper : CAP156 ::E-COMMERCE

MODEL QUESTION PAPER

Time: 2½ Hrs Max Marks: 50

SECTION – A

Answer any **TWO** questions from the Following: **2 X 5 = 10M**

1. Electronic Marketing in B2B.

2. Electronic Payment Systems.

3. Business Strategies.

4. Internet Based EDI.

SECTION – B

Answer **ALL** questions from the Following: **4 X 10 = 40M**

5. a) What is e-Commerce? Explain advantages and disadvantages of e-commerce.

(OR)

b) Explain characteristics of B2B e-Commerce?

6. a) Explain about EDI and its nuts and bolts.

(OR)

b) Explain the role of software agents for B2B e-Commerce.

7. a) Explain architecture of internet, intranet and extranet?

(OR)

b) Electronic payment systems: issues and challenges.

8. a) What is online payment system? Explain in detail. Also discuss the various risks associated with it.

(OR)

b) Explain internet protocols.

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CAP153	**TITLE OF THE COURSE** **Computer Accouting With Tally**	III B.Com (CA). (VSem)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		5	1	-	5

Course Objectives:

This course is designed to impart knowledge regarding concepts of Financial Accounting Tally is an accounting package which is used for learning to maintain accounts.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	As this course is useful for Commerce students to get placements in different offices as well as companies in Accounts departments
CO2	
CO3	
CO4	
CO5	

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT–I

Introduction to Tally: Introduction, Software versions of Tally, Terminology related to Accounts credit & Debit, Journal, Ledger, Voucher, Group etc. Difference between Manual Accounting and Accounting Packages.Features and advantages of Tally.

UNIT–II

Introduction of Tally Software, Creation of a company, Gateway of Tally, Accounts Information, Groups, pre defined Groups, Creation of New Groups, Creation of sub Group.

UNIT–III

Ledgers, Ledger Creation – Single and multiple Ledgers, Displaying & altering Ledgers, configure Ledger, Stock Ledger, Ledgers and their Group Allocation.

UNIT–IV

Vouchers –types of vouchers – recording of vouchers – entry of payment voucher, Receipt voucher, sales voucher, purchase voucher, Journal Voucher, Contra Voucher, Debit & Credit Note. Creating New Voucher types, customizing the Existing voucher types, Alternation of Voucher, Deletion of Voucher.

Additional Input:

Final Accounts: Customizing the final accounts – Profit and Loss Account, Balance Sheet.Key board shortcuts in Tally. Generating the Reports from Tally, Trial Balance, Account Books, Sales, Purchase, Journal Registers, Statement of Accounts, Day Book, List of Accounts.

Additional Inputs:

Tally with GST

Textbooks:

1. K. Kiran Kumar, Tally ERP9.
2. Tally 9 In Simple Steps, Kogent solutions Inc., John Wiley & Sons, 2008.
3. NarmataAgarwal, Financial Accounting on Computers Using Tally, Dreamtech Press, 2000.
4. Tally 9.0, Google eBook, Computer World.

Referencebooks:

1. Vikas Gupta, Comdex Computer and Financial Accounting with Tally 9.0, 2007.
2. Tally ERP 9 Made Simple Basic Financial Accounting, BPB Publisher.
3. Avichi Krishnan, Tally ERP 9 for Real Time Accounting, Book Ganga.

WebLinks:

https://tallysolutions.com/accounting/accounting-system/

CO-POMapping:

(1:Slight[Low]; 2:Moderate [Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

TALLY LAB Work:

1. Create, Modify, Delete Company and Group Company
2. Create, Modify, Delete Accounting Groups and sub Groups
3. Create, Modify, Delete Single Ledger and Multiple Ledgers and their Group Allocation
4. Create, Modify, Delete voucher types
5. Take a simple problem for usage of different accounting vouchers
6. Prepare a final account for ABC Company using below given sample data.

1. Create a Company as "ABC Company " in Tally with inventory management.
2. Pass the following Entries :-

    (i). XYZ started "ABC Company" by bringing Capital Rs.3,00,000/- Cash.

    (ii) He deposited Rs.1,00,000/- cash at ICICI bank.

    (iii) He paid electricity bill for Rs.1,200/- by cash.

    (iv) He withdrawn Rs.10,000/- cash for his personal use.

    (v) He purchased the following item from Computer Lab. Ltd. on credit with 4% Vat rate.

    (a) Computer - 10 Nos. - @20000/- each

    (vi) He sold the following item to PranavSimha Traders in cash with 4% Vat rate.

    (a) Computer - 5 Nos. - @27500/- each

    (vii) He received Rs.6,000/- as commission from Raj by cash.

    (viii) He paid House Rent for Rs.5,000/- by cash.

    (ix) He withdrawn Rs.25,000/- cash from ICICI Bank.

    (x) He purchased furniture for Rs. 25,000/- by cash for office use.
3. Show the Trial Balance and Balance Sheet of "Sekhar Industries Ltd."
4. Show the Vat Computation report of the above company.
5. Show the Cash Book & Bank Book of the company.
6. Show the Day Book.
7. Backup and restore the company data.

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A$^+$" Grade)*
III B.Com (Computer Applications) EM &TM :: Semester – V
(For Admitted Batch 2019-20)

Paper : CAP153 :: COMPUTER ACCOUNTING WITH TALLY

MODEL QUESTION PAPER

Time: 2 ½Hrs **Max. Marks: 50**

SECTION – A

Answer any **TWO** Questions. All questions carry equal Marks. **2 X 10= 10 M**

1. What is meant by Computerized Accounting? Write various versions of Tally.
2. How to displaying & altering Ledgers?
3. Explain how to Alter and deleting of vouchers.
4. Write the advantages of Computerized Accounting.

SECTION – B

Answer **ALL** Questions from the Following: **4 X 10 = 40M**

5. a) Give differences between Manual Accounting and Computerized Accounting.

(OR)

b) Explain the Features and Advantages of Tally.

6. a) Explain how to Create a Company in Tally with an Example.

(OR)

b) List out various pre-defined groups and Explain Predefined Groups in Tally.

7. a) What are default Ledgers and explain how to create single ledger in Tally?

(OR)

b) Explain how to create Multiple Ledgers in Tally.

.

8. a) Write various types of Accounting Vouchers available in Tally.

(OR)

b) How to prepare subsidiary books with the help of computers?

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CAP160	**TITLE OF THE COURSE** **Computer Web Technology**	III B.Com (CA). (VI Sem) **Cluster-I(a)**			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		5	1	-	5

Course Objectives:

To provide knowledge on web architecture, web services, client side and server side scripting technologies to focus on the development of web-based information systems and web services
To provide skills to design interactive and dynamic web sites.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Create static webpages using HTML.
CO2	Create style sheets using CSS.
CO3	Create DTD using XML.
CO4	Provide web services over the Internet using WSDL.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT–I

HTML: Basic HTML, Document body, Text, Hyperlinks, Lists, Tables, images, Multimedia objects, Frames, Forms, HTML document heading details.

UNIT–II

Cascading Style Sheets: Introduction, Levels of style sheets: inline, internal, external. Style specification formats, selector forms, property- value forms, font properties.
Cascading Style Sheets: List properties, colour properties, Alignment of text, Box model, Background images, the **** and ** ** tags

UNIT–III

XML: Introduction, The syntax of XML, XML document structure, document type definition: Elements, attributes, entities, namespaces and xml-schemas.

UNIT–IV

XSLT, document object model, Web Services: Web Services Description Language (WSDL),Simple Object Access Protocol (SOAP),Universal Description, Discovery and Integration (UDDI).

Textbooks:

1. Harvey M. Deitel and Paul J. Deitel, "Internet & World Wide Web How to Program", 4/e, Pearson Education.
2. Robert W . Sebesta "Programming world wide web" 7th edition, Pearson Education.

Student Activities:

1. **Prepare a web site for your college, 2. Prepare your personal website**

Reference books:

1. Uttam Kumar Roy, Web Technologies from Oxford University Press

Web Links:

1. https://nptel.ac.in/courses/106/105/106105084/

CO-PO Mapping:

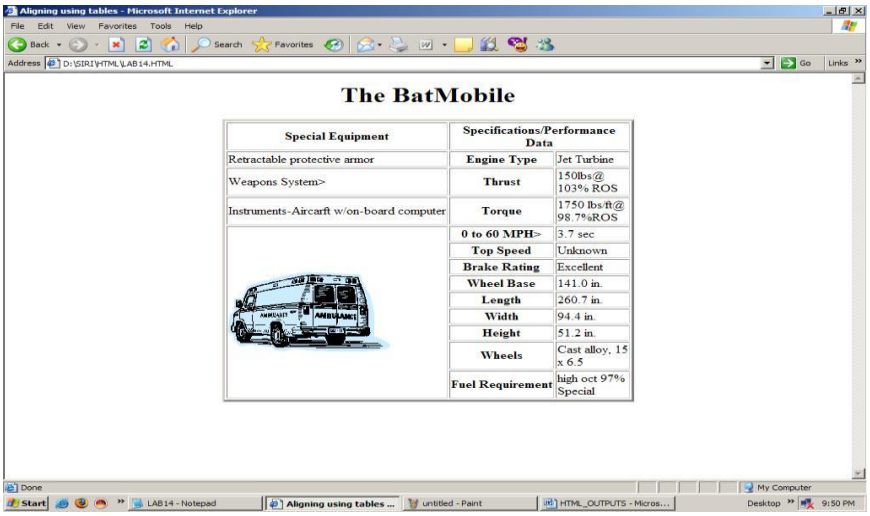
(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

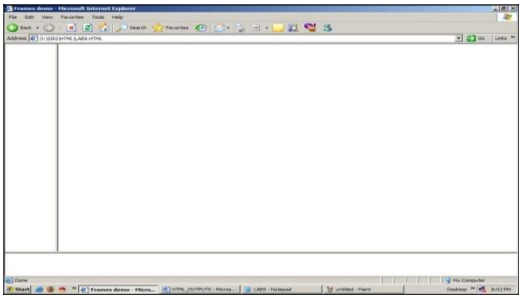
WEB TECHNOLOGIES LAB PRACTIAL

1. Write a HTML program illustrating text formatting.
2. Illustrate font variations in your HTML code.
3. Prepare a sample code to illustrate links between different sections of the page.
4. Create a simple HTML program to illustrate three types of lists.
5. Embed a calendar object in your web page.
6. Create an applet that accepts two numbers and perform all the arithmetic operations on them.
7. Create nested table to store your curriculum.
8. Create a form that accepts the information from the subscriber of a mailing system.
9. Design the page as follows:

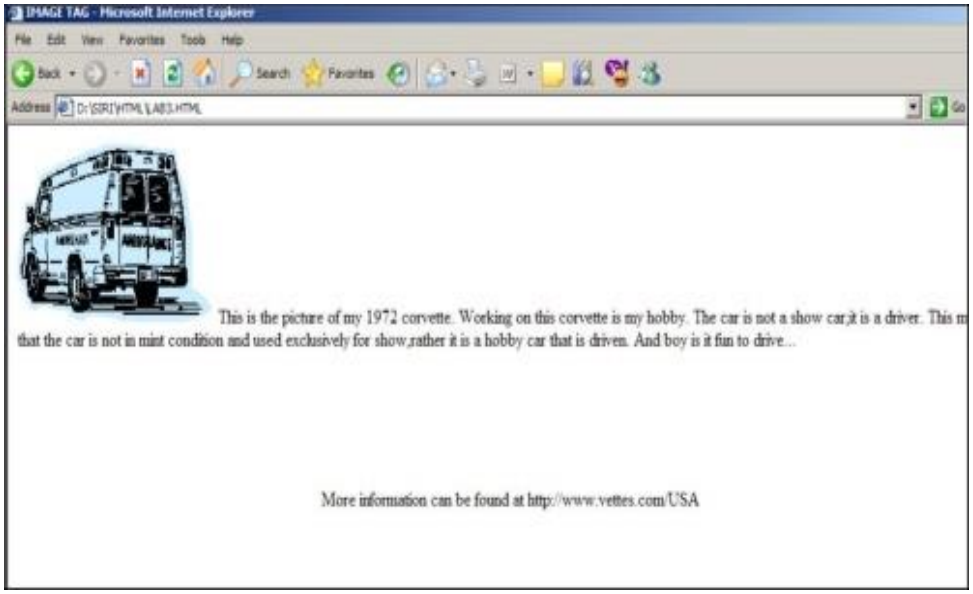


11. using “table” tag, align the images as follows:

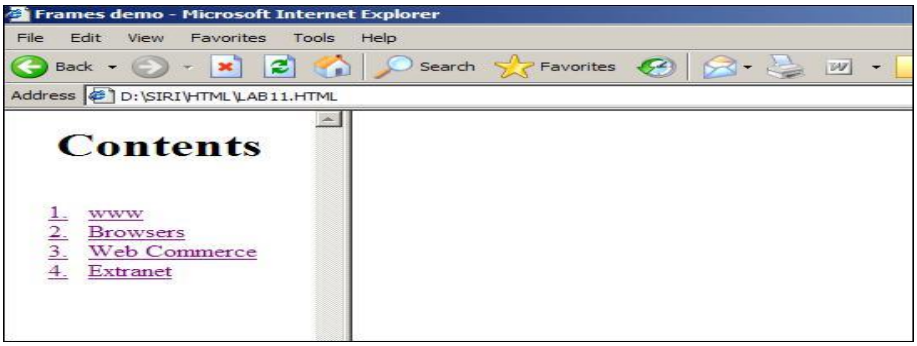
12. Divide the web page as follows:



13. Design the page as follows:



14. Illustrate the horizontal rulers in your page.
15. Create a help file as follows:



16. Create a form using form tags(assume the form and fields).
17. Create a webpage containing your bio-data(assume the form and fields).
18. Write a html program including style sheets.
19. Write a html program to layers of information in web page.
20. Create a static webpage.

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
III - B.Com (Computer Applications) EM &TM ::Semester - VI
(From the Admitted Batch of 2019-20)
MODEL PAPER
Paper: CAP160– WEB TECHNOLOGY Cluster-I(a)

Time: 2½ Hrs. **Max Marks: 50 M**

SECTION – I

Answer any **TWO** of the following: **2 X5=10 M**

1. What is hyperlink? Explain about anchor tag
2. Explain different font properties in CSS
3. Explain text alignment properties in CSS
4. What are the different XSLT elements?

SECTION –II

Answer **ALL** the questions: 4 **X 10=40 M**

5. a). Explain how Forms are created with an example.

   (Or)

   b). Explain three types of lists in html with examples.

6. a). Explain Inline, internal and external CSS with examples.

   (Or)

   b). Explain different types of selectors in CSS

7. a). With the neat block diagram explain the CSS Box Model.

   (or)

   b). i. Explain about CSS background images

   ii. Explain about and tags

8. a). What is Document Type Definition (DTD)? Explain how a DTD is created with an example.

   (or)

   b). Explain the concept of XML Schema.

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CAP161	**TITLE OF THE COURSE** **PHP & MySQL**	III B.Com (CA). (VI Sem) Cluster-I(b)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		5	1	-	5

Course Objectives:

1. To introduce the concept of PHP and to give basic Knowledge of PHP.
2. Understand basic concepts of how a database stores retrieve and manipulate information via tables using MySQL.
3. Review of some sample PHP projects interacting with MySQL.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Introduction to web development with PHP
CO2	How to code a PHP application
CO3	Introduction to relational databases and MySQL
CO4	How to use PHP with a MySQL database
CO5	How to use the MVC pattern to organize your code How to test and debug a PHP application

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT–I

Installation and Configuring of MySQL, Apache and PHP:
The Building blocks of PHP: Variables, Data Types, Operators and Expressions, Constants.
Flow Control Functions in PHP: Switching Flow, Loops, Code Blocks and BrowserOutput.
Working with Functions: Defining Functions, Calling functions, returning the values from User-Defined Functions, Variable Scope, Saving State between Function calls with the Static statement, more about arguments.

UNIT–II

Working with Arrays: Arrays, Creating Arrays, Some Array-Related Functions.
Working with Objects: Creating Objects, Object Instance.
Working with Strings, Dates and Time: Formatting Strings with PHP, Investigating Strings with PHP, Manipulating Strings with PHP, Using Date and Time Functions in PHP.

UNIT–III

Working with Forms: Creating Forms, Accessing Form - Input with User defined Arrays, Combining HTML and PHP code on a single Page, Using Hidden Fields to save state, Redirecting the user, Sending Mail on Form Submission, Working with File Uploads**.**
Working with Cookies and User Sessions: Introducing Cookies, Setting a Cookie with PHP, Session Function Overview, Starting a Session, Working with session variables, passing session IDs in the Query String, Destroying Sessions and Unsettling Variables, Using Sessions in an Environment with Registered Users. **Working with Files**

UNIT–IV

Introduction to MySQL and Interfacing with Databases through PHP
Understanding the Database Design Process: The Importance of Good Database Design, Types of Table Relationships, and Understanding Normalization.
Learning basic SQL Commands: Learning the MySQL Data types, Learning the Table Creation Syntax, Using Insert Command, Using SELECT Command, Using WHERE in your Queries, Selecting from Multiple Tables, Using the UPDATE command to modify records, Using RELACE Command, Using the DELETE Command, Frequently used string functions in MySQL, Using Date and Time Functions in MySQL.

Additional Input:

Interacting with MySQL using PHP: MySQL Versus MySQL Functions, Connecting to MySQL with PHP, Working with MySQL Data. **Creating an Online Address Book:** Planning and Creating Database Tables, Creating Menu, Creating Record Addition Mechanism, Viewing Records, Creating the Record Deletion Mechanism, Adding Sub-entities to a Record.

Additional Inputs:

Word Press: **Introduction to WordPress, servers like wamp, bitnamietc, installing and configuring WordPress, understanding admin panel, working with posts and pages, using editor**

Textbooks:

1. Julie C. Meloni, PHP MySQL and Apache, SAMS Teach Yourself, Pearson Education (2007).
2. XueBai Michael Ekedahl, The Web Warrior Guide to Web Programming, Thomson (2006)

Reference books:

1. XueBai Michael Ekedahl, The Web Warrior Guide to Web Programming, Thomson (2006)

Web Links:

1. https://onlinecourses.swayam2.ac.in/aic20_sp32/preview
2. http://www.nptelvideos.com/php/php_video_tutorials.php

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Student activity:

1. **Creation of a webpage using Word Press**
2. **Creation of student database of the college**

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

PHP and MySQL LAB PRACTICALS

MySQL Lab Cycle -1

An Enterprise wishes to maintain the details about his suppliers and other corresponding details. For that he uses the following details.

Suppliers (sid: Integer, sname: string, address: string)

Parts (pid: Integer, pname: string, color: string)
Catalog (sid: integer, pid: integer, cost: real)

The catalog relation lists the prices charged for parts by suppliers.

Write the following queries in SQL.

1. Find the pnames of parts for which there is some supplier.
2. Find the snames of suppliers who supply every part.
3. Find the snames of supplier who supply every red part.
4. Find the pnames of parts supplied by London Supplier abd by no one else.

5. Find the sid's of suppliers who charge more for some part than the average cost of that part.

6. For each part, find the sname of the supplier who charges the most for that part.
7. Find the sid's of suppliers who supply only red parts.
8. Find the sid's of suppliers who supply a red and a green part.
9. Find the sid's of suppliers who supply a red or green part.
10. Find the total amount has to pay for that suppler by part located from London.

Cycle – 2

An organisation wishes to maintain the status about the working hours made by his employees. For that he uses the following tables.

Emp (eid: integer, ename: string, age: integer, salary: real)
Works (eid: integer, did: integer, pct_time: integer)
Dept (did: integer, budget: real, managerid: integer)

An employee can work in more than one department; the pct_time field of the works relation shows the percentage of time that a given employee works in a given department.

Resolve the following queries.

1. Print the names and ages of each employee who works in both Hardware and Software departments.

2. For each department with more than 20 full time equivalent employees (i.e., where the part-time and full-time employees add up to at least that many full-time employees), print the did's together with the number of employees that work in that department.

3. Print the name of each employee whose salary exceeds the budget of all of the departments that he or she work in.

4. Find the managerid's of managers who manage only departments with budgets greater than 1,000,000.

5. Find the enames of managers who manage the departments with largest budget.

6. If a manager manages more than one department, he or she controls the sum of all the budgets for those departments. Find the managerid's of managers who control more than 5,000,000.

7. Find the managerid's of managers who control the highest amount.
8. Find the average manager salary.

PHP Lab Cycle

1. Write a PHP program to Display "Hello"
2. Write a PHP Program to display the today's date.
3. Write a PHP Program to read the employee details.
4. Write a PHP Program to display the Fibonacci series.
5. Write a PHP program to prepare the student marks list.
6. Write a PHP program to generate the multiplication of two matrices.
7. Write a PHP Application to perform demonstrate the college website.
8. Write a PHP application to add new Rows in a Table.
9. Write a PHP application to modify the Rows in a Table.
10. Write a PHP application to delete the Rows from a Table.
11. Write a PHP application to fetch the Rows in a Table.
12. Develop an PHP application to make following Operations
    - i. Registration of Users.
    - ii. Insert the details of the Users.
    - iii. Modify the Details.
    - iv. Transaction Maintenance.
        a) No of times Logged in
        b) Time Spent on each login.
        c) Restrict the user for three trials only.
        d) Delete the user if he spent more than 100 Hrs of transaction.

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

III - B.Com (Computer Applications)EM&TM :: Semester - VI
(From the Admitted Batch of 2019-20)
MODEL PAPER
Paper :CAP161 – PHP and MySQL :: Cluster-I(b)

Time: 2½ hrs **Max Marks: 50**

SECTION – A

Answer any **TWO** questions from the Following: 2 X 5 = 10M

1. Write a PHP Script to list data in the table?
2. Discuss any five Date functions of php.
3. What are Cookies? Explain how Cookies are Set, View and Del.
4. What is session? How variables are handled in the sessions?

SECTION – B

Answer **ALL** questions from the Following: 4 X 10 = 40M

5. a) What is variable? Explain scope of variable.

   (OR)

   b) Write about different data types available in PHP.

6. a) Write about different operators in PHP.

   (OR)

   b) Explain about arrays in PHP.

7. a) Explain string functions in PHP.

   (OR)

   b) What is a form, how to create a form using PHP.

8. a) Creating, open and delete files in PHP.

   (OR)

   b) Explain Mysql and MySqli functions?

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CAP177	**TITLE OF THE COURSE** **Project**	III B.Com (CA) (VI Sem) Cluster-I(c)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:				-	5

Max.Marks: 100

Follow SDLC process for real time applications and develop real time application project

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories. The project is of 5 hours/week for one (semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding, and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic
- Limitations of the project
- Tools/platforms, Languages to be used
- Scope of future application

The Project work should be either an individual one or a group of not more than three members and submit a project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examinations.

Details Marks Distribution

Project Work	Project Presentation	Project Note Book	Viva-voce	Total Marks
25	30	20	25	**100**

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CAP164	**TITLE OF THE COURSE** **Multimedia Technology**	III B.Com (CA) (VI Sem) Cluster-II(a)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		5	1	-	5

Course Objectives:

Adobe Photoshop is a complex graphics and image editing software and paint program. Chances are, you've heard of Photoshop frequently in the past even if this will be the very first time that you use the program. Adobe's Photoshop program has become a mainstay with graphics designers, professional photographers, and even hobbyists to edit graphics as well as create and manipulate images. Its fun to use, and it can turn the most amateur photographer to a professional with just a few clicks of the mouse.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Identify and describe the major functions of Photoshop CS4
CO2	Work and manipulate images
CO3	Resize and Crop images
CO4	Work with basic selections
CO5	Create, edit, delete and manage Layers

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT–I

Multimedia-Graphics: Graphic Programs-Introduction to Photoshop- ADOBE PHOTOSHOP CS4: About Photoshop, Navigating Photoshop, Menus and panels, Opening new files, Opening existing files.

Getting Started with Photoshop: Exploring the Toolbox, the New CS4 Applications Bar & the Options Bar, Exploring Panels & Menus, Creating & Viewing a New Document, Customizing the Interface, Setting Preferences.

UNIT–II

Working With Images: Zooming & Panning an Image, Working with Multiple Images, Rulers, Guides & Grids, Undoing Steps with History, Adjusting Color with the New Adjustments Panel, The New Masks Panel &VibranceColor Correction Command, The New Note Tool & the Save for Web & Devices Interface, The New Auto-Blend & Auto-Align Layers Commands, The New 3D Commands.

UNIT–III

Resizing & Cropping Images: Understanding Pixels & Resolution, the Image Size Command, Interpolation Options, Resizing for Print & Web, Cropping & Straightening an Image, Adjusting Canvas Size & Canvas Rotation.

Working With Basic Selections: Selecting with the Elliptical Marquee Tool, Using the Magic Wand & Free Transform Tool, Selecting with the Regular & Polygonal Lasso Tools, Combining Selections, Using the Magnetic Lasso Tool, Using the Quick Selection Tool & Refine Edge, Modifying Selections.

UNIT–IV

Getting Started With Layers: Understanding the Background Layer, Creating, Selecting, Linking & Deleting Layers, Locking & Merging Layers, Copying Layers, Using Perspective & Layer Styles, Filling & Grouping Layers, Introduction to Blending Modes, Blending Modes, Opacity & Fill, Creating & Modifying Text.

Painting in Photoshop: Using the Brush Tool, Working with Colors& Swatches, Creating & Using Gradients, Creating & Working with Brushes, Using the Pencil & Eraser Tools, Painting with Selections.

Additional Input:

Photo Retouching: The Red Eye Tool, The Clone Stamp Tool, The Patch Tool & the Healing Brush Tool, The Spot Healing Brush Tool, The Color Replacement Tool, The Toning & Focus Tools, Painting with History.

Textbooks:

1. Adobe Photoshop CS5: Digital Classroom

Reference books:

1. Jennifer Smith and the AGI CreativeTeam

Web Links:

1. https://nptel.ac.in/courses/117/105/117105083/

CO-PO Mapping:

(1: Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY
III - B.Com (Computer Applications) EM &TM ::Semester – VI
(w.e.f. 2019-20)

Paper: CAP164 – MULTIMEDIA TECHNOLOGY-Cluster-II(a)
MODEL QUESTION PAPER

Time: 2½Hrs **Marks:50**

SECTION – I

Answer any TWO Questions **2 x 5 = 10M**

1. Explain Zooming and Panning an image in Photoshop.
2. What is the use of Magnetic Lasso Tool?
3. Explain creating and using of Gradients?
4. Explain working with colours and swatches?

SECTION – III

Answer All Questions **4 x 10 = 40M**

5. a. Write about Photoshop. Explain Menus and Panels in Adobe Photoshop.

(OR)

b. Explain

i. The New Auto-Blend & Auto-Align Layers Commands

ii. The New 3DCommands.

6. a. Explain new Masks Panel &VibranceColour Correction Command.

(OR)

b. Explain working with Multiple Images, Rulers, and Guides &Grids.

7. Explain

a. Pixels Resolution

b. the Image Size Command

c. Resizing for Print &Web

(OR)

Explain

a. Cropping & Straightening an Image b. Adjusting Canvas Size & Canvas Rotation.

8. a. Explain red eye tool and Clone stamp tool.

(OR)

b. Explain Color replacement tool, toning and focus tools.

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CAP165	**TITLE OF THE COURSE** **PROGRAMMING IN VISUAL BASIC**	III B.Com (CA) (VI Sem) Cluster-II(b)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		5	1	-	5

Course Objectives:

A This course represents concepts of .NET framework and VB.NET programming

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understand the basic structure of vb.net programming
CO2	Different data types
CO3	Build forms using drag and drop toolbar
CO4	Able to create and design Menus.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT–I

a. **NET Framework**-The Visual Basic.NET IDE-Properties-Solution Explorer-Menu bar-Tool Bar.
b. Data types-Numbers, Strings, Dates, Boolean, Storing variables-Representing values, converting values, Methods
c. Arrays, Initializing Arrays with values, enumerations-Using Enumerations-Constants-Using Constants, Structure -Building Structures adding Properties to structure

UNIT–II

a. **Decision making** –If statement, Else statement multiple alternatives with else if, nested IF, comparison operators, string comparison, select case
b. **Loops**-The For... Next Loop, For Each Loop, Do..Loop, Loops, Nested Loops.

UNIT–III

a. MessageBoxDialogBox, CreatingMenus-DesigningMenus, Addingtoolbarsandcontrols, Coding Menus

b. Multiple Forms

UNIT–IV

a. Dialog Controls: Open Dialog control
b. Save Dialog Control, Font Dialog Control
c. Color Dialog Control , Print Dialog Control

Additional Input:

a) Accessing Databases:- Data Access component- OLE DB connection, Data Set, OLE DB Data Adapter, OLE Db command, Data View, Data Building-Data Grid control, **The Data SourceProperty,The Data member Property**

Textbooks:

1. Introduction to Visual basic.NET-NIIT Prentice Hall of India 2005

Reference books:

1. BeginningVB.NET2003-2004Edition-Thearonwillis, Jonathan Crosland, Richard Blair.

WebLinks:

1. https://www.nptelvideos.com/visualbasic_net/?pn=0

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate [Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY
III - B.Com (Computer Applications) EM &TM :: Semester - VI
Paper: CAP165:: PROGRAMMING IN VISUAL BASIC :: Cluster-II(b)
SYLLABUS PAPER (w.e.f. 2019-20)

Time: 2½ Hrs. **Marks: 50**

Section –I

Answer any TWO questions **2 x 5= 10M**

1. Write about any 5 toolbox controls?
2. Write Select..Case with syntax and example?
3. Write about Nested loops?
4. Explain working with multiple forms?

Section –II

Answer All questions **4 x 10 =40M**

5. A. What is IDE? Write about Visual Basic.NET Framework.

OR

B. What are the Data types supported by VB.NET? Explain variable declaration with syntax?

6. A. Write the decision makingstatementsinVB.NET with syntax and example?

OR

B. Explain working of looping statements in VB.NET with syntax and example?

7. A. Explain about Message Dialog Box in detail.

OR

B. Explain Creation of menus, adding tool bars and other controls with a suitable example.

8. A. Explain the following Dialog boxes

a). Font Dialog Control b) Open Dialog Control

OR

B. Explain the following Dialog boxes

a) Save Dialog Box b) Color Dialog Control

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CAP150	**TITLE OF THE COURSE** **Project**	III B.Com (CA) (VI Sem) Cluster-II(c)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		5	1	-	5

Follow SDLC process for real time applications and develop real time application project

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories. The project is of 5 hours/week for one (semester VI) semester duration and a student is expected to do planning, analysing, designing, coding, and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic
- Limitations of the project
- Tools/platforms, Languages to be used
- Scope of future application

The Project work should be either an individual one or a group of not more than three members and submit a project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examinations.

Details Marks Distribution

Project Work	Project Presentation	Project Note Book	Viva-voce	Total Marks
25	30	20	25	**100**

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CAP150	**TITLE OF THE COURSE** **Computer Applications In Banking**	III B.Com (CA) (VI Sem) Cluster-III(a)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		5	1	-	5

Course Objectives:

To provide an opportunity to know the application of information technology and mechanization in Banking Industry in India

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Demonstrate the various Security aspects in Banking
CO2	Apply the e-commerce in Banking
CO3	To familiarize the students with the basic concepts and practice of banking
CO4	Uses in foreign exchanges, documentation handling systems Cheque sorting and balancing systems.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development			Employability			Entrepreneurship	

Syllabus:

UNIT–I

Introduction: Computers and Commercial world - Principles of Computer science with reference to banking operations - Different approaches to mechanization - Security information systems - Audit of computerized banking systems.

UNIT–II

Banking reconciliation: approaches to bank computerization computer in banks and Indian experiment - Process for withdrawing cash Teller machines at Bank counters - ATMs in India, - Electronic Commerce the emerging trends - Internet as a Network Infrastructure - Business of internet commercialization, electronic Commerce and WWW consumer Oriented Electronic commerce, Electronic Payment Systems - Advertising and Marketing on the internet, Software agents - Working of Credit Cards and Debit Cards in India.

UNIT–III

Home Banking: Telephone banking - Computerized corporate banking - Electronic funds transfer, importance of cheques clearing, Magnetic Ink Character Recognition MICR - Optical Mark Recognition (OMR) - Computer output to Microphone (COM) - Facsimile transformation.

UNIT–IV

Inter Branch Reconciliation: Uses in foreign exchanges, documentation handling systems Cheque sorting and balancing systems (MICR arid OCK, etc.)' -Document storage and retrieval systems (Micro films, etc.) - Documentation transmission systems (Fax etc.)

Additional Input:

Cash management systems in banks: investment management Systems - Statistical analysis transmission - Magnetic Stripe.

Textbooks:

1. Sony and Agarwal: Computers and Banking.
2. Indian Institute of Bankers study material on 'Introduction to Computers in Banking Industry

Reference books:

1. Ravi Kalakota&Andrev B. Winston: Frontiers of Electronic Commerce Addison Wesley Publications.

Web Links:

2.
3.

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
III - B.Com (Computer Applications) EM & TM::Semester - VI
(From the Admitted Batch of 2019-20)

Paper: CAP150 :: COMPUTER APPLICATIONS IN BANKING :: Cluster-III(a)

Time: 2 ½ Hrs. **MODEL QUESTION PAPER** **Max: 50Marks**

SECTION – A

Answer any **TWO** Questions. All questions carry equal Marks. **2 X 5 = 10 M**

1. What are the different approaches to mechanization in banking?
2. Explain LAN, WAN, MAN.
3. What is Telephone banking?
4. What is computerized corporate banking?

SECTION – B

Answer **ALL** Questions from the Following: **4 X 10 = 40M**

5. a) What are the features of audit of computerized banking systems?

   (Or)

   b). Elucidate the emerging trends in electronic commerce.

6. a) State the features and functions of Optional Mark Reorganization (OMR) and computer output to Microphone (COM).

   (Or)

   b). Explain documentation transmission systems (FAX).

7. a) Discuss the significance and process of inter branch reconciliation.

   (Or)

   b) Analysis the computerized cash management systems in banks.

8. a) Explain some of the online system applications in brief.

   (Or)

   b) Explain briefly about cash management systems in computerized Banking Systems.

	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CAP149	**TITLE OF THE COURSE** **Accounting Software Applications**	III B.Com (CA) (VI Sem) Cluster-III(b)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		5	1	-	5

Course Objectives:

This program is designed to provide the student with an effective working knowledge of the various accounting principles and accounting practices. The student will develop the skills necessary to communicate in a business environment utilizing Generally Accepted Accounting Principles (GAAP), double entry accounting, accounts receivable, and accounts payable management, reconciling, budgeting, cost accounting, and compiling and analyzing reports. This program also provides training for those people who need accounting for effective business operations such as owners, managers, or employees.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Compose financial data into an acceptable business format.
CO2	Develop the data used for making financial decisions.
CO3	Apply financial analysis to personal decisions.
CO4	Evaluate the effect of financial decisions on the community.
CO5	Evaluate the effect of financial decisions on the community.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT–I

Accounting Software Package – concepts a scope features of good software package – selection of a software package (theory only)

UNIT–II

Accounting application of spread sheet – Budgeting preparation of a cash budget – preparation of production budget – preparation of flexible budget – Budgetary control report through spread sheet (theory & practical)

UNIT–III

Spread sheet application in decision making pricing decision – special order pricing – product addition and deletion – make or buy decision – decision on plant shutdown (theory & practical)

UNIT–IV

Spreadsheet applications in capital budgeting discounted cash method of evaluating investment proposals – Internal rate of return – net present value method – using probability to quantity risk adjusted IRR and NPV compotation of Excel Work sheet. (Theory & practical)

Textbooks:

1. DC information systems for a/c and management concepts applications and technology.

Reference books:

Web Links:

CO-PO Mapping:

(1: Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
III - B.Com (Computer Applications) EM &TM ::Semester - VI
(From the Admitted Batch of 2019-20)

Paper: CAP149:: ACCOUNTING SOFTWARE APPLICATIONS :: Cluster-III(B)

Time: 2½ hours **MODEL QUESTION PAPER** **Max: 50Marks**

SECTION – A

Answer any **TWO**Questions. All questions carry equal Marks. **2 X 5= 10 M**

1. How can you change the name of an existing ledger with a new name in tally?
2. Explain the advantages & limitations of spread sheet.
3. How do you prepare production budget through Excel?
4. How do you take budgetary reports on Excel?

SECTION – B

Answer **ALL** Questions from the Following: **4 X 10 = 40M**

5. a) Define accounting software package & explain its concept & scope?

   (Or)

   b) Distinguish between manual accounting system & computer a/c system.

6. a) Explain various steps involved for Balance sheet preparation in Excel.

   (Or)

   b) Explain various financial functions available in Excel to support accounting applications.

7. a) What is cash budget? How do you prepare cash budget by applying accounting applications of spreadsheet.

   (Or)

   b) How do you calculate cash budget through Excel?

8. a) What is production budget? How do you prepare production budget through excel sheet.

   (Or)

   b) What is Flexible Budget? How do you prepare Flexible budget through excel.

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	Government College (Autonomous) Rajahmundry	Program & Semester			
Course Code CAP162	**TITLE OF THE COURSE** **Project**	III B.Com (CA) (VI Sem) Cluster-III(c)			
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		5	1	-	5

Course Objectives:

Follow SDLC process for real time applications and develop real time application project

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories. The project is of 5 hours/week for one (semester VI) semester duration and a student is expected to do planning, analysing, designing, coding, and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logics
- Limitations of the project
- Tools/platforms, Languages to be used
- Scope of future application

The Project work should be either an individual one or a group of not more than three members and submit a project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examinations.

Details Marks Distribution

Project Work	Project Presentation	Project Note Book	Viva-voce	Total Marks
25	30	20	25	**100**

B.A (Computer Applications)
(E.M)

	Government College (Autonomous) Rajahmundry	Program &Semester I B.A. (I Sem)			
CourseCode CAP169	**TITLE OF THE COURSE Information Technology**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		3	1	-	3

Course Objectives:

1. To acquire basic knowledge in Information Technology and its applications in the areas of business.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Describe the fundamental hardware components that make up a computer's hardware and the role of each of these components.
CO2	Understand the difference between an operating system and an application program, and what each is used for in a computer.
CO3	Use technology ethically, safely, securely, and legally.
CO4	Use systems development, word-processing, spread sheet, and presentation software to solve basic information systems problems.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT-I

INTRODUCTION: Introduction to computers - Generations of computers – An overview of computer system - Types of computers - Input & Output Devices. Hardware: Basic components of a computer system - Control unit – ALU - Input/output functions - Memory – RAM – ROM – EPROM - PROM and Other types of memory.

OPERATING SYSTEM (OS): Meaning - Definition & Functions - Types of OS - DOS Commands (internal & external). **Windows:** Using the Start Menu –Control Panel – Using

multiple windows – Customizing the Desktop – Windows accessories (Preferably latest version of windows or Linux Ubuntu).

UNIT-II

WORD PROCESSING: Application of word processing - Menus & Tool Bars - Word processor – Creating – Entering - Saving & printing the document - Editing & Formatting Text - Mail Merge and Macros (Preferably latest version of MS Word or Libre Office Writer).

UNIT-III

SPREAD SHEET: Application of work sheet/spread sheet - Menus & Tool bars - Creating a worksheet - Entering and editing of numbers - Cell referencing - Worksheet to analyse data with graphs & Charts. Advanced tools: Functions – Formulae – Formatting numbers - Macros – Sorting- Filtering - Validation &Consolidation of Data (Preferably latest version of MS Excel or Libre Office Calc)

UNIT-IV

POWER POINT PRESENTATION: Application of Power Point Presentation – Menus & Tool bars – Creating presentations – Adding - Editing and deleting slides - Templates and manually creating presentation– Slide show – Saving - Opening and closing a Presentation –Types of slides - Slide Views - Formatting – Insertion of Objects and Charts in slides - Custom Animation and Transition (Preferably latest version of MS Power Point presentation - Libre Office Impress). Internet & Browsing: Services available on internet – WWW – ISP – Browsers. Multimedia: Application of multimedia – Images – Graphics- Audio and Video – IT security.

Text books:

1. Introduction to Computers: Peter Norton, McGraw Hill.
2. Fundamentals of Information Technology: Dr. NVN Chary, Kalyani Publishers.
3. Computer Fundamental: Anitha Goel, Pearson.

Referencebooks:

1. Information Technology Applications for Business: Dr. S. Sudalaimuthu, Himalaya
2. Introduction to Information Technology: ITL ESL, Pearson.
3. Introduction to Information Technology: V. Rajaraman, PHI.

Web Links:

1. https://nptel.ac.in/careers.html

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(Accredited by NAAC "A+" Grade)
DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS
I B.A. Computer Applications SYLLABUS (W.E.F 2020-2021)

INFORMATION TECHNOLOGY

MODEL QUESTION PAPER (W.E.F 2020-2021)
SEMESTER – I

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer any **Two** of the following: **2X5M=10 M**

1. Explain types of Computers
2. Write the advantages of Word Processing
3. What is cell reference? Explain its types
4. Explain about Application of Multimedia

SECTION –II

Answer **ALL** Questions: **4X10M=40 M**

5.
   a) Define Computer? Explain the Basic components of Computer System
   (Or)
   b) Define Operating System? Explain the various Functions of Operating System

6.
   a) What is Word Processing? Explain the features of Word Processing
   (Or)
   b) Explain the process of Mail Merge in Word Processing

7.
   a) Explain in detail various Functions in Spread Sheet
   (Or)
   b) What is Macro? Explain how to create and Record a Macro in Spread Sheet

8.
   a) Explain creation of power point presentation in detail.
   (Or)
   b) Explain different parts of power point window

	Government College (Autonomous) Rajahmundry	Program & Semester I B.A. (I Sem)			
CourseCode Geo169P	**TITLE OF THE COURSE Information Technology**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:		0	0	3	2

Objectives

To acquire basic knowledge in Information Technology and its applications in the areas of business

List of Experiments/Syllabus:

1. Working with Menus & Tool Bars in Word processing
2. Creating Word processor document
3. Create Entering - Saving & printing the document
4. Create Editing & Formatting Text in document
5. Create Mail Merge and Macros in Word
6. Working with Menus & Tool bars in Spread sheet
7. Creating a worksheet in spread sheet
8. Working with Cell referencing in spread sheet
9. Worksheet to analyse data with graphs & Charts in spread sheet
10. Advanced tools: Functions – Formulae – Formatting numbers - Macros – Sorting- Filtering
11. Working with Menus & Tool bars in Power Point Presentation
12. Creating presentations in Power Point Presentation
13. Working with Adding - Editing and deleting slides in Power Point Presentation
14. Templates and manually creating presentation
15. Slide show – Saving - Opening and closing a Presentation –Types of slides - Slide Views - Formatting –Insertion of Objects and Charts in slides - Custom Animation and Transition

Referencebooks:

1. Introduction to Computers: Peter Norton, McGraw Hill.
2. Fundamentals of Information Technology: Dr. NVN Chary, Kalyani Publishers.

Virtual Lab Links:

	Government College (Autonomous) Rajahmundry	Program & Semester I B.A. (II Sem)			
CourseCode CAP170	**TITLE OF THE COURSE** **Fundamental Of Programming and C Language**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		3	1	-	3

Course Objectives:

This course is designed to understand programming fundamentals of language. To gain knowledge on using programming structure and its elements.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Know how to implement Logics in programming fundamentals of language
CO2	Know how to use if-else construct, Loops
CO3	implement Functions, Recursion, Arrays,
CO4	Implement to Strings.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT -I

Introduction to C: Why Programming Languages? – Assembly Languages- High Level Languages- Machine Level Languages- Flow Chart- Algorithm- Program development Steps- Introduction to C. Historical development of C, sample C program, Constants, variables, and Data Types..

UNIT -II

Operators and expressions:– arithmetic, unary, relational, logical, assignment, the conditional operator etc., Arithmetic expressions. Managing input and output Operations: Reading, writing, formatted I/O

UNIT -III

Decision making and Branching: Introduction, If, If – Else, Nested-If, Else if Ladder, Switch statement.

UNIT -IV

Looping: While, Do-While, for, Break, continue- Strings-
Arrays: Introduction to Arrays, 1d and 2d Arrays.

Text books:

1. Programming in ANSI C by –E Balaguruswami-2nd Edition
2. "LET US C" yashwantkanetkar.
3. Programming in C Pradeep Day and Manas Ghosh

Referencebooks:

1. Spirit of C by Henry Mullesh and Herbert and L Cooper

WebLinks:

1. https://nptel.ac.in/courses/106/104/106104128/

CO-POMapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Chapter Name	Short Questions 5 Marks	Essay Questions 10 Marks	Marks allotted to the chapter
UNIT -I	1	2	25
UNIT -II	1	2	25
UNIT -III	1	2	25
UNIT -IV	1	2	25
Total No. of questions	4	8	
Total Marks Including choice			100

GOVERNMENT AUTONOMOUS COLLEGE, RAJAMAHENDRAVARAM

B.A. COMPUTER APPLICATIONS

SYLLABUS (w.e.f 2020-2021 Admitted Batch)

FUNDAMENTAL OF PROGRAMMING AND C LANGUAGE

SEMESTER - III

Time: 2 ½ Hrs **Max Marks: 50M**

(Model Question Paper)

SECTION - I

Answer Any TWO of the following Questions **(5 X 2 = 10 M)**

1. Explain about various Data types in C
2. Write about conditional operator?
3. What is meant by Programming Languages?
4. Explain about If else.

SECTION-II

Answer all Questions **(4 X 10 = 40 M)**

5.
   a) What is Flowchart? Explain various symbols used in Flowchart?
   OR
   b) Explain the structure of 'C' program?
6.
   a) Explain about various operators in C with examples?
   OR
   b) Explain about different Data types available in C- language?
7.
   a) Distinguish between while and do-while with examples?
   OR
   b) Discuss about different If –statements in 'C' language?
8.
   a) Explain about for statement in C-language?
   OR
   b) What is Array? Explain various types of Arrays?

	Government College (Autonomous) Rajahmundry	Program & Semester I B.A. (II Sem)			
CourseCode CAP170P	**TITLE OF THE COURSE** **Fundamental Of Programming And C Language**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:		0	0	3	2

Objectives:

List of Experiments/Syllabus:

1. Write a program to check whether the given number is Armstrong or not.
2. Write a program to find the sum of individual digits of a positive integer.
3. Write a program to generate the first n terms of the Fibonacci sequence.
4. Write a program to find both the largest and smallest number in a list of integer values
5. Write a program to demonstrate refection of parameters in swapping of two integer values using
6. Call by Value&Call by Address
7. Write a program that uses functions to add two matrices.
8. Write a program to calculate factorial of given integer value using recursive functions
9. Write a program for multiplication of two N X N matrices.
10. Write a program to perform various string operations.
11. Write a program to search an element in a given list of values.
12. Write a program to sort a given list of integers in ascending order.

Referencebooks:

1. Programming in ANSI C by –E Balaguruswami-2nd Edition

Virtual LabLinks:

http://ps-iiith.vlabs.ac.in/Introduction.html?domain=Computer%20Science

	Government College (Autonomous) Rajahmundry	Program & Semester II B.A. (III Sem)			
CourseCode CAP120	**TITLE OF THE COURSE Office Automation Tool**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		3	1	-	3

Course Objectives:

1. Office tools course would enable the students in crafting professional word documents; excel spread sheets, power point presentations using the Microsoft suite of office tools.
2. To familiarize the students in preparation of documents and presentations with office automation tools.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	By learning the course, the students will be able
CO2	To perform documentation
CO3	To perform presentation skills
CO4	To perform accounting operations
CO5	

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I

MS-Excel: features of Ms-Excel, Parts of MS-Excel window, entering and editing data inworksheet, number formatting in excel, different cell references, how to enter and edit formula in excel, auto fill and custom fill, printing options.

UNIT –II

Formatting options: Different formatting options, change row height, formulae andfunctions, **Functions:** Meaning and advantages of functions, different types of functions available in Excel.

UNIT –III

Charts: Different types of charts, Parts of chart, chart creation using wizard, chartoperations, data maps, graphs, data sorting, filtering. Excel sub totals, scenarios, what-if analysis **Macro:** Meaning and advantages of Macros, creation, editing and deletion of macros - Creating amacro, how to run, how to delete a macro.

UNIT –IV

MS Access: Creating a Simple Database and Tables: Features of Ms-Access, Creating a Database, Parts of Access. **Tables:** table creation using design view, table wizard, data sheet view, import table, link table. **Forms:** The Form Wizard, design view, columnar, tabular, data sheet, chart wizard. **Printing Reports:** Form and Database Printing.

Additional Inputs:

Relational Databases: Flat Versus Relational, Types of Relationships, Viewing Relationships, Defining and Redefining Relationships, Creating and Deleting Relationships.

Text books:

1. Ron Mansfield, Working in Microsoft Office, Tata McGraw Hill(2008)
2. EdBott, Woody Leonhard, Using Microsoft Office 2007, Pearson Education(2007)

Reference books:

1. Sanjay Saxsena, Microsoft Office, 4.Microsoft Office, BPB Publications.

Web Links:

1.
2.

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

(*Accredited by NAAC "A+" Grade)*

II - B.A (Computer Applications)EM::Semester - III

(For Admitted Batch 2020-21)

Paper : CAP120::OFFICE AUTOMATION TOOLS

MODEL QUESTION PAPER

Time: 2 ½ hours **Max. Marks: 50**

SECTION-A

Answer any **TWO** of the following questions **2 x 5M=10M**

1. Write about cell, cell address and cell referencing?
2. What are the advantages of functions?
3. Write about parts of chart?
4. Write about Data Types and properties?

SECTION – B

Answer **ALL** questions. **4 x 10M=40M**

5.
   a) Write about features of Ms-Excel?

   (Or)

   b) Write about the Ms-Excel and explain the parts of Ms-Excel window?

6.
   a) Explain the formatting features in Excel?

   (Or)

   b) List various functions in Excel and Explain.

7.
   a) Explain about different types of Charts?

   (Or)

   b) How to create a Macro and Run it. Explain how to delete a Macro with an example?

8.
   a) Explain about features of Ms-Access?

   Or)

   b) Explain about table creation using design view?

	Government College (Autonomous) Rajahmundry	Program & Semester II B.A. (III Sem)			
CourseCode CAP120P	**TITLE OF THE COURSE** **Office Automation Tools**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:		0	0	3	2

Objectives:

List of Experiments/Syllabus:

1. Creating a new worksheet – selecting cells – Mouse and Keyboard navigation
2. Entering and editing Text – Text boxes and Text notes – undoing and operating actions
3. Entering and formatting numbers
4. Entering and Editing Formulas
5. Referencing Cells – order of evaluation in formulas
6. Lookup Tables
7. Rearranging worksheets
8. Formatting – changing column widths and row heights – changing fonts and sizes
9. Alignment – Changing colors and shades – Inserting and Removing Page Breaks
10. Mathematical Equations
11. Create a pay details of employee
12. Calculate student mar details
13. Generating Reports Through Access

Reference books:

1. Ron Mansfield, Working in Microsoft Office, Tata McGraw Hill(2008)

Virtual Lab Links:

	Government College (Autonomous) Rajahmundry	Program & Semester II B.A. (IV Sem)			
CourseCode CAP167	**TITLE OF THE COURSE Python Programming**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		3	1	-	3

Course Objectives:

1. To learn and understand Python programming basics and paradigm.
2. To learn and understand python looping, control statements and string manipulations.
3. Students should be made familiar with the concepts of GUI controls and designing GUI applications.
4. To learn and know the concepts of file handling, exception handling and database connectivity.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Define and demonstrate the use of built-in data structures “lists” and “dictionary”.
CO2	Design and implement a program to solve a real world problem.
CO3	Design and implement GUI application and how to handle exceptions and files.
CO4	Make database connectivity in python programming language.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I

Introduction: History of Python, Need of Python Programming, Applications Basics of Python Programming Using the REPL (Shell), Running Python Scripts, Variables, Assignment, Keywords, Input-Output, Indentation

UNIT – II

Types, Operators and Expressions: Types - Integers, Strings, Booleans; Operators- Arithmetic Operators, Comparison (Relational) Operators, Assignment Operators, Logical Operators, Bitwise Operators

UNIT - III

Membership Operators, Identity Operators, Expressions and order of evaluations Control Flow- if, if-elif-else, for, while, break, continue, pass

UNIT – IV

Data Structures: Lists, Operations, Slicing, Methods, Tuples, Sets and Dictionaries.

Additional Inputs:
Data Structures:, Sequences and comprehensions.

Text books:

1. Python Programming: A Modern Approach, VamsiKurama, Pearson
2. Learning Python, Mark Lutz, Orielly.

Reference books:

1. Think Python, Allen Downey, Green Tea Press
2. Core Python Programming, W.Chun, Pearson.
3. Introduction to Python, Kenneth A. Lambert, Cengage.

Web Links:

1. https://nptel.ac.in/courses/106/106/106106182/

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

(*Accredited by NAAC "A+" Grade)*

II - B.A (Computer Applications)EM::Semester - III

(For Admitted Batch 2020-21)

Paper : CAP167 :: PYTHON PROGRAMMING

MODEL QUESTION PAPER

Time: 2 ½ hours **Max. Marks: 50**

SECTION-A

Answer any **TWO** of the following questions **2 x 5M=10M**

1. Explain the basics for executing a python program using REPL (Shell) with an example.
2. Explain about different Relational operators in python with appropriate examples.
3. List different conditional statements in python with appropriate examples.
4. Explain about built-in functions of tuple

SECTION – B

Answer **ALL** questions from the Following: 5 X 8 = 40M

5.

a) Discuss bout variables and assignments.
b) Write the history of Python.

(OR)

c) Write in brief about any 8 keywords in Python.

6.

a) Explain about following operators
   i. Arithmetic
   ii. Logical
   iii. Assignment
   iv. Bitwise

(OR)

b) What are the data types in python with appropriate examples?

7.

a) Explain various decision making statements in python.

(OR)

b) What are the different Loops available in python? Explain with examples.

8.

a) Explain about the importance of lists in Python.

(OR)

b) Explain about comprehensions in python

	Government College (Autonomous) Rajahmundry	Program & Semester II B.A (IV Sem)			
CourseCode CAP167P	**TITLE OF THE COURSE Python Programming**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:		0	0	3	2

Objectives:

1. To write, test, and debug simple Python programs.
2. To implement Python programs with conditionals and loops.
3. Use functions for structuring Python programs.
4. Represent compound data using Python lists, tuples, dictionaries.
5. Read and write data from/to files in Python.

List of Experiments/Syllabus:

1. Swap two numbers.
2. Find the square root of a number
3. Exponentiation (power of a number)
4. Find the maximum of a list of numbers
5. Programs that take command line arguments (word count)
6. Write a program to check whether the given number is Armstrong or not
7. Write a program to generate the Fibonacci sequence
8. Write a program to generate all the prime numbers between 1 and n, where n is a value supplied by the user
9. Write a program to perform various string operations
10. Various operations on lists, tuples and sets.Referencebooks:

1. Python Programming: A Modern Approach, VamsiKurama, Pearson
2. Learning Python, Mark Lutz, Orielly.

Virtual Lab Links:

http://vlabs.iitb.ac.in/vlabs-dev/labs/python-basics/index.html

	Government College (Autonomous) Rajahmundry	Program & Semester II B.A. (IV Sem)			
CourseCode **CAP 168**	**TITLE OF THE COURSE Database Management Systems**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		3	-	-	3

Course Objectives:

1. To understand the different issues involved in the design and implementation of a database system.
2. To study the physical and logical database designs, database modeling, and relational models.
3. To understand and use SQL to query, update, and manage a database.
4. To develop an understanding of essential DBMS concepts such as: transaction processing, integrity, concurrency, and recovery in databases.
5. To design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Demonstrate an understanding of the relational data model.
CO2	Transform an information model into a relational database schema and to use a data definition language and/or utilities to implement the schema using a DBMS.
CO3	Formulate, using relational algebra, solutions to a broad range of query problems.
CO4	Formulate, using SQL, solutions to a broad range of query and data update problems

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT – I

Introduction to Database systems: Overview, A historical Perspective, File systems versus DBMS, Advantages of DBMS.Describing and Storing Data in DBMS: Relational Model, Levels of Abstraction, DataIndependence.Queries in DBMS, Transaction Management. Structure of DBMS, People dealing Databases.

UNIT – II

Models: Data Model Definition, Types of data models, Entity Relationship Model: ER Model, Entities, Attributes and Entity Sets, Relationships and relationship sets, features: Key Constraints Normal Forms: Introduction, Functional Dependencies, Normal Forms: I, II, III.

UNIT – III

Relational Model: Introduction. Integrity constraints over relations: Key, Foreign Key and General Constraints; Enforcing Integrity Constraints, Querying Relational Data. Relational Algebra: Selection, Projection, Set Operations, Renaming, Joins, Division.

UNIT – IV

Transaction Management & Concurrency Control: ACID Properties, Serializability. Lock-Based Protocol, Time stamp Based Protocols.

Additional Input:

SQL Queries: DDL commands, DML commands, DCL commands, TCLcommands, Data constraints, data types, sub-queries, joins, Set operators, aggregate functions.

Text books:

1. Data Base Management Systems: Raghu Ramakrishna, Johannes Gehrke McGraw Hill Edition.
2. Database Management Systems: Majumdar, Pritimoy Bhattacharya

Reference books:

1. Database Management Systems: C.J. Date
2. Database Management Systems: H.F.Korth

WebLinks:

1. https://nptel.ac.in/courses/106/105/106105175/

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT – I	1	2
2	UNIT – II	1	2
3	UNIT – III	1	2
4	UNIT – IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

(*Accredited by NAAC "A+" Grade)*

II B.A COMPUTER APPLICATIONS
(W.E.F 2019-2020)
CAP 168: DATABASE MANAGEMENT SYSTEMS
SEMESTER – IV

MODEL QUESTION PAPER

Time: 2½ Hrs **Max Marks: 50M**

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SECTION – I

Answer any **TWO** of the following: **2 X5=10 M**

1. What are the Advantages of DBMS.?
2. Explain about Data independency?
3. Explain about Concurrency control?
4. Explain about Select statement in SQL.

SECTION –II

Answer **ALL** questions **4 X 10=40 M**

5.
   a) State the differences between file system and database management system?
   (OR)
   b) Explain DBMS Architecture in detail.

6.
   a) What is Data Model? Explain about Relational Data Model in detail.
   (OR)
   b) What is Normalization? Explain 1 NF, II NF and III NF with examples..

7.
   a) Explain about Relational Algebra, and explain different Operators available in it.
   (OR)
   b) What is Transaction? Why Concurrency Control is needed for Transactions?

8.
   a) Define Query. Explain all the DDL, DML, DCL commands in SQL.
   (OR)
   b) Write about different joins in SQL?.

	Government College (Autonomous) Rajahmundry	Program & Semester II B.A. (IV Sem)			
CourseCode **CAP 168P**	**TITLE OF THE COURSE Database Management Systems**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:		0	0	3	2

Objectives:

List of Experiments/Syllabus:

1. Draw ER diagrams for train services in a railway station
2. Draw ER diagram for hospital administration
3. Creation of college database and establish relationships between tables
4. Write a view to extract details from two or more tables
5. Write a stored procedure to process students results
6. Write a program to demonstrate a function
7. Write a program to demonstrate blocks, cursors & database triggers.
8. Write a program to demonstrate Joins
9. Write a program to demonstrate of Aggregate functions
10. Creation of Reports based on different queries
11. Usage of file locking table locking, facilities in applications

Reference books:

1. Data Base Management Systems: Raghu Ramakrishna, Johannes Gehrke McGraw Hill Edition.
2. Database Management Systems: Majumdar, Pritimoy Bhattacharya

Virtual Lab Links:

http://vlabs.iitb.ac.in/vlabs-dev/labs/dblab/index.php

	Government College (Autonomous) Rajahmundry	Program & Semester III B.A. (V Sem)			
CourseCode **CAP 155**	**TITLE OF THE COURSE Database Management Systems**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		3	1	-	3

Course Objectives:

1. To understand the different issues involved in the design and implementation of a database system.
2. To study the physical and logical database designs, database modeling, and relational models.
3. To understand and use SQL to query, update, and manage a database.
4. To develop an understanding of essential DBMS concepts such as: transaction processing, integrity, concurrency, and recovery in databases.
5. To design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Demonstrate an understanding of the relational data model.
CO2	Transform an information model into a relational database schema and to use a data definition language and/or utilities to implement the schema using a DBMS.
CO3	Formulate, using relational algebra, solutions to a broad range of query problems.
CO4	Formulate, using SQL, solutions to a broad range of query and data update problems

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT – I

Introduction to Database systems: Overview, A historical Perspective, File systems versus DBMS, Advantages of DBMS.Describing and Storing Data in DBMS: Relational Model, Levels of Abstraction, DataIndependence.Queries in DBMS, Transaction Management. Structure of DBMS, People dealing Databases.

UNIT – II

Models: Data Model Definition, Types of data models, Entity Relationship Model: ER Model, Entities, Attributes and Entity Sets, Relationships and relationship sets, features: Key Constraints Normal Forms: Introduction, Functional Dependencies, Normal Forms: I, II, III.

UNIT – III

Relational Model: Introduction. Integrity constraints over relations: Key, Foreign Key and General Constraints; Enforcing Integrity Constraints, Querying Relational Data. Relational Algebra: Selection, Projection, Set Operations, Renaming, Joins, Division.

UNIT – IV

Transaction Management & Concurrency Control: ACID Properties, Serializability. Lock-Based Protocol, Time stamp Based Protocols.

Additional Input:

SQL Queries: DDL commands, DML commands, DCL commands, TCLcommands, Data constraints, data types, sub-queries, joins, Set operators, aggregate functions.

Text books:

3. Data Base Management Systems: Raghu Ramakrishna, Johannes Gehrke McGraw Hill Edition.
4. Database Management Systems: Majumdar, Pritimoy Bhattacharya

Reference books:

3. Database Management Systems: C.J. Date
4. Database Management Systems: H.F.Korth

WebLinks:

2. https://nptel.ac.in/courses/106/105/106105175/

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

(*Accredited by NAAC "A+" Grade)*

III B.A COMPUTER APPLICATIONS
(W.E.F 2019-2020)
PAPER – V:CAP 115: DATABASE MANAGEMENT SYSTEMS
SEMESTER – V

MODEL QUESTION PAPER

Time: 2½ Hrs **Max Marks: 50M**

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SECTION – I

Answer any **TWO** of the following: **2 X5=10 M**

1. What are the Advantages of DBMS.?
2. Explain about Data independency?
3. Explain about Concurrency control?
4. Explain about Select statement in SQL.

SECTION –II

Answer **ALL** questions **4 X 10=40 M**

5.
   c) State the differences between file system and database management system?
   (OR)
   d) Explain DBMS Architecture in detail.

6.
   c) What is Data Model? Explain about Relational Data Model in detail.
   (OR)
   d) What is Normalization? Explain 1 NF, II NF and III NF with examples..

7.
   c) Explain about Relational Algebra, and explain different Operators available in it.
   (OR)
   d) What is Transaction? Why Concurrency Control is needed for Transactions?

8.
   c) Define Query. Explain all the DDL, DML, DCL commands in SQL.
   (OR)
   d) Write about different joins in SQL?.

	Government College (Autonomous) Rajahmundry	Program & Semester III B.A. (V Sem)			
CourseCode **CAP 155P**	**TITLE OF THE COURSE Database Management Systems**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:		0	0	3	2

Objectives:

List of Experiments/Syllabus:

12. Draw ER diagrams for train services in a railway station
13. Draw ER diagram for hospital administration
14. Creation of college database and establish relationships between tables
15. Write a view to extract details from two or more tables
16. Write a stored procedure to process students results
17. Write a program to demonstrate a function
18. Write a program to demonstrate blocks, cursors & database triggers.
19. Write a program to demonstrate Joins
20. Write a program to demonstrate of Aggregate functions
21. Creation of Reports based on different queries
22. Usage of file locking table locking, facilities in applications

Reference books:

3. Data Base Management Systems: Raghu Ramakrishna, Johannes Gehrke McGraw Hill Edition.
4. Database Management Systems: Majumdar, Pritimoy Bhattacharya

Virtual Lab Links:

http://vlabs.iitb.ac.in/vlabs-dev/labs/dblab/index.php

	Government College (Autonomous) Rajahmundry	Program & Semester III B.A. (V Sem)			
CourseCode CAP131	**TITLE OF THE COURSE Software Engineering**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		3	-	-	3

Course Objectives:

1. To introduce the students with basic principles of Software Engineering
2. To learn the Software Engineering concepts, methodologies and best practices
3. To train the students on Software Engineering principles and approach used in Industry

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Learn basic principles of Software Engineering.
CO2	Understand Software Engineering concepts, methodologies and best practices.
CO3	Learn Software Engineering principles and approach used in industry.
CO4	Able to understand and apply the basic project management practices in real life projects
CO5	Ability to work in a team as well as independently on software projects

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I

INTRODUCTION: Software Engineering Process paradigms - Project management - Process and Project Metrics – software estimation - Empirical estimation models - Planning - Risk analysis - Software project scheduling.

UNIT –II

REQUIREMENTS ANALYSIS: Requirement Engineering Processes – Feasibility Study – Problem of Requirements – Software Requirement Analysis – Analysis Concepts and Principles – Analysis Process – Analysis Model

UNIT –III

SOFTWARE DESIGN: Software design - Abstraction - Modularity - Software Architecture - Effective modular design - Cohesion and Coupling - Architectural design and Procedural design - Data flow oriented design.

UNIT –IV

USER INTERFACE DESIGN AND REAL TIME SYSTEMS: User interface design - Human factors - Human computer interaction - Human - Computer Interface design - Interface design - Interface standards.

Additional Input:

SOFTWARE QUALITY AND TESTING: Software Quality Assurance - Quality metrics - Software Reliability - Software testing - Path testing – Control Structures testing - Black Box testing - Integration, Validation and system testing - Reverse Engineering and Re-engineering.

CASE tools –projects management, tools - analysis and design tools – programming tools - integration and testing tool - Case studies.

Text books:

1. Roger Pressman S., “Software Engineering: A Practitioner's Approach”, 7th Edition, McGraw Hill, 2010

Reference books:

1. Carlo Ghazi, Mehdi Jazayari, Dino Mandrioli, “Fundamentals of Software Engineering”, Pearson Education, 2003 for Unit-I & Unit-II

2. Software Engineering Principles and Practice by Deepak Jain Oxford University Press for Unit-III, Unit-IV

Web Links:

1. https://nptel.ac.in/courses/106/105/106105182/

CO-POMapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(Accredited by NAAC "A+" Grade)
III B.A COMPUTER APPLICATIONS
(W.E.F 2019-2020)
PAPER – VI: CAP 131::SOFTWARE ENGINEERG
SEMESTER – V
MODEL QUESTION PAPER

Time: 2½ Hrs **Max Marks: 50M**

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SECTION – I

Answer any **TWO** of the following : **2 X5=10 M**

1. Explain the process and project metrics.
2. Explain various decomposition techniques
3. Explain the golden rules used for user interface design
4. Explain metrics for software quality

SECTION –II

Answer **ALL** questions **4 X 10=40 M**

5.
   a) Why it is important to manage project? Explain software management

   (or)

   b) Write about software planning and project scheduling

6.
   a) Explain the requirement engineering process with the help of a diagram and also explain the spiral model of requirements.

   (or)

   b) Describe the process of creating an analysis model and list out its elements

7.
   a) Explain about the Software Architecture Design

   (or)

   b) Explain in detail different elements on design model

8.
   a) What is software architecture? Why it is so important? Explain structural partitioning

   (or)

   b) Explain the various user interface analysis and design models

	Government College (Autonomous) Rajahmundry	Program & Semester III B.A. (V Sem)			
CourseCode **CAP 131P**	**TITLE OF THE COURSE SoftwareEngineering**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:		0	0	3	2

Objectives:

List of Experiments/Syllabus:

1. Studying various phases of Water-Fall Model.
2. Prepare SRS for Banking or On line book store domain problem
3. Using COCOMO model estimate effort for Banking or on line book store domain problem.
4. Calculate effort using FP oriented estimation model
5. Analyze the Risk related to the project and prepare RMMM plan.
6. Develop Time-line chart and project table using PERT or CPM project scheduling methods.
7. Draw E-R diagram, DFD, CFD and STD for the project.
8. Design of the test cases.
9. Prepare FTR. Version control and change control for software configuration item.

Reference books:

1. Roger Pressman S., “Software Engineering: A Practitioner's Approach”, 7th Edition, McGraw Hill, 2010

Virtual Lab Links:

http://vlabs.iitkgp.ernet.in/se/

	Government College (Autonomous) Rajahmundry	Program & Semester III B.A. (VI Sem)			
CourseCode CAP123	**TITLE OF THE COURSE** **Web Technologies**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		3	-	-	3

Course Objectives:

1. To design and deploy web application using servlets.
2. To design and deploy web application using JSPs.
3. To design and deploy web application using PHP

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Design and deploy web application using servlets.
CO2	Design and deploy web application using JSPs.
CO3	Design and deploy web application using PHP.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT – I

HTML: Basic HTML, Document body, Text, Hyperlinks, Lists, Tables, images, Multimedia objects, Frames, Forms, HTML document heading details.

UNIT – II

Cascading Style Sheets: Introduction, Levels of style sheets: inline, internal, external. Style specification formats, selector forms, property- value forms, font properties.

Cascading Style Sheets: List properties, colour properties, Alignment of text, Box model, Background images, the **** and ** ** tags

UNIT – III

XML: Introduction, The syntax of XML, XML document structure, document type definition: Elements, attributes, entities, namespaces and xml-schemas.

UNIT – IV

XSLT, document object model, Web Services: Web Services Description Language (WSDL),Simple Object Access Protocol (SOAP),Universal Description, Discovery and Integration (UDDI).

Text books:

1. Harvey M. Deitel and Paul J. Deitel, **"Internet & World Wide Web How to Program", 4/e,** Pearson Education.
2. Robert W . Sebesta "**Programming world wide web**" 7th edition, Pearson Education.

Reference books:

1. Uttam Kumar Roy, Web Technologies from Oxford University Press.

Web Links:

1. https://nptel.ac.in/courses/106/105/106105084/

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

(*Accredited by NAAC "A+" Grade)*

III B.A, Computer Applications, VI Semester

MODEL QUESTION PAPER (W.E.F 2019-2020)

PAPER – VII: ELECTIVE –A :WEB TECHNOLOGIES

Time :2½ Hrs. **Max Marks :50 M**

SECTION – I

Answer any **TWO** of the following: **2 X 5=10 M**

1. What is hyperlink? Explain about anchor tag
2. Explain different font properties in CSS
3. Explain text alignment properties in CSS
4. What are the different XSLT elements?

SECTION –II

Answer **ALL** the questions: **4 X 10=40 M**

5.
   a) Explain how Forms are created with an example.
   (Or)
   b) Explain three types of lists in html with examples.

6.
   a) Explain Inline, internal and external CSS with examples.
   (Or)
   b) Explain different types of selectors in CSS

7.
   a) With the neat block diagram explain the CSS Box Model.
   (Or)
   b) i. Explain about CSS background images
   ii. Explain about and tags

8.
   a) What is Document Type Definition (DTD)? Explain how a DTD is created with an example.
   (Or)
   b) Explain the concept of XML Schema.

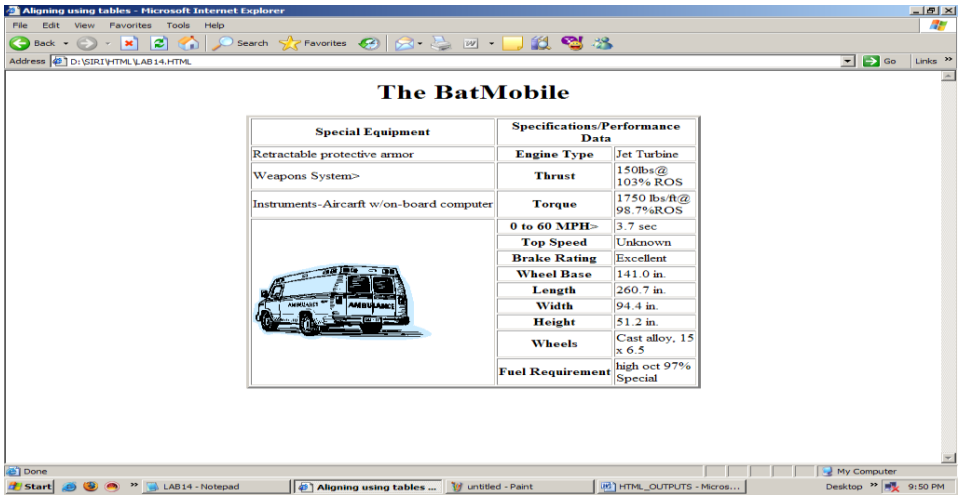
	Government College (Autonomous) Rajahmundry	Program & Semester III B.A. (VI Sem)			
CourseCode CAP123P	**TITLE OF THE COURSE Web Technologies**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:		0	0	3	2

Objectives:

The objective of this course is to provide skills in designing static web pages.

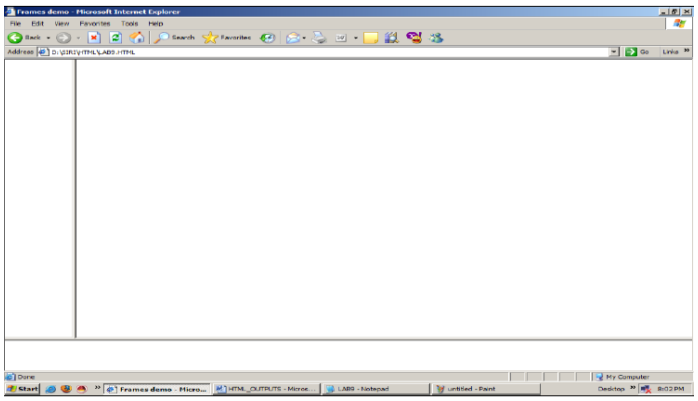
List of Experiments/Syllabus:

1. Write a HTML program illustrating text formatting.
2. Illustrate font variations in your HTML code.
3. Prepare a sample code to illustrate links between different sections of the page.
4. Create a simple HTML program to illustrate three types of lists.
5. Embed a real player in your web page.
6. Embed a calendar object in your web page.
7. Create an applet that accepts two numbers and perform all the arithmetic operations on them.
8. Create nested table to store your curriculum.
9. Create a form that accepts the information from the subscriber of a mailing system.
10. Design the page as follows:

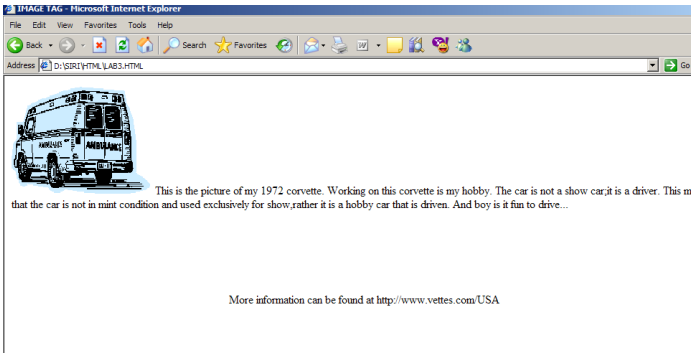


11. Using “table” tag, align the images as follows:

12. Divide the web page as follows:

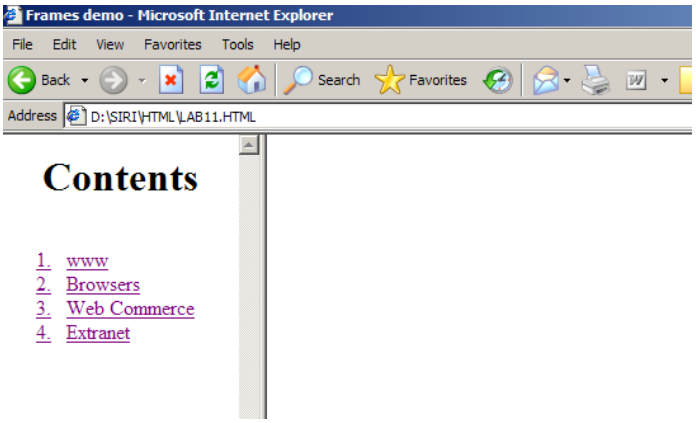


13. Design the page as follows:



14. Illustrate the horizontal rulers in your page.

15. Create a help file as follows:



16. Create a form using form tags(assume the form and fields).

17. Create a webpage containing your biodata(assume the form and fields).

18. Write a html program including style sheets.
19. Write a html program to include audio or video into webpage.
20. Write a html program to layers of information in web page.
21. Create a static webpage.

Reference books:

1. Robert W . Sebesta "**Programming world wide web**" 7th edition, Pearson Education.

Virtual Lab Links:

http://vlabs.iitb.ac.in/vlabs-dev/vlab_bootcamp/bootcamp/bots_with_dots/index.html

	Government College (Autonomous) Rajahmundry	Program & Semester III B.A. (VI Sem)			
CourseCode CAP124	**TITLE OF THE COURSE Operating Systems**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		3	-	-	3

Course Objectives:

1. To understand the basics of computer architecture and operating system.
2. To study resource management activities operating system.
3. To acquire knowledge about OS design issues.
4. To learn and understand operating system policies and mechanisms

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Describe the general architecture of computers.
CO2	Describe process management, scheduling and synchronizations.
CO3	Understand and analyze theory and implementation of processes, memory management, physical and virtual memory, scheduling, file management and security

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT - I

Operating System Introduction: Operating Systems Objectives and functions, Computer System Architecture, OS Structure, OS Operations, Evolution of Operating Systems - Simple Batch, Multi programmed, time shared, Parallel, Distributed Systems, Real-Time Systems, Operating System services.

UNIT – II

Process and CPU Scheduling - Process concepts - The Process, Process State, Process Control Block, Threads, Process Scheduling - Scheduling Queues, Schedulers, Context Switch, Pre-emptive Scheduling, Dispatcher, Scheduling Criteria, Scheduling algorithms,. Process Coordination - Process Synchronization, The Critical section Problem, Synchronization Hardware, Semaphores, and Classic Problems of Synchronization, Monitors.

UNIT - III

Memory Management and Virtual Memory - Logical & physical Address Space, Swapping, Contiguous Allocation, Paging, Structure of Page Table. Segmentation, Segmentation with Paging, Virtual Memory, Demand Paging, Performance of Demanding Paging, Page Replacement Page Replacement Algorithms, Allocation of Frames.

UNIT - IV

File System Interface - The Concept of a File, Access methods, Directory Structure, File System Mounting, File Sharing, Protection, File System Structure, Mass Storage Structure - Overview of Mass Storage Structure, Disk Structure, Disk Attachment, Disk Scheduling.

Additional Input:

Deadlocks - System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery from Deadlock.

Text books:

1. Operating System Principles, Abraham Silberchatz, Peter B. Galvin, Greg Gagne 8th Edition, Wiley Student Edition.

Reference books:

1. Principles of Operating Systems by NareshChauhan, OXFORD University Press
2. Modern Operating Systems, Andrew S Tanenbaum 3rd Edition PHI.
3. Operating Systems A concept - based Approach, 2nd Edition, D. M. Dhamdhere, TMH.
4. Principles of Operating Systems, B. L. Stuart, Cengage learning, India Edition.
5. Operating Systems, A. S. Godbole, 2nd Edition, TMH.

Web Links:

1. https://nptel.ac.in/courses/106/105/106105214/

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A+" Grade)*

III B.A COMPUTER APPLICATIONS
MODEL QUESTION PAPER (W.E.F 2018-2019)
PAPER – VII: Elective – B: OPERATING SYSTEMS
SEMESTER – VI

Time: 2½ Hrs. **Max Marks: 50 M**

SECTION – I

Answer any **TWO** of the following: **2 X5=10 M**

1. Discuss about segmentation
2. Discuss about critical-section problem
3. Explain about Semaphores
4. Discuss in detail about the process control block

SECTION –II

Answer **All** the questions **4 X 10=40 M**

5.
   a) Discuss the functions and objectives of OS

   (Or)

   b) Explain in detail about time shared and Distributed systems

6.
   a) Explain in detail about FCFS and SJF algorithms with examples

   (Or)

   b) Explain in detail about Semaphores

7.
   a) Explain about Contiguous memory Allocations

   (Or)

   b) Explain the steps in handling a page fault

8.
   a) Explain in detail about FCFS and SCAN disk scheduling algorithms

   (Or)

   b) Explain in detail about file attributes and file operations

	Government College (Autonomous) Rajahmundry	Program & Semester III B.A. (VI Sem)			
CourseCode CAP124P	**TITLE OF THE COURSE** **Operating Systems**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:	C Programming	0	0	3	2

Objectives:

List of Experiments/Syllabus:

1. Usage of following commands
   Ls,pwd,tty,cat,who,who am I,rm, mkdir,rmdir,touch,cd.
2. Usage of following commands
   Cal,cat(append),cat(concatenate),mv,cp,man,date.
3. Usage of following commands
   Chmod,grep,tput(clear,highlight),bc.
4. Write a shell script to check if the number entered at the command line is Prime or not.
5. Write a shell script to modify “cal” command to display calendars of the specified months.
6. Write a shell script to modify “cal” command to display calendars of the specified range of months.
7. Write a shell script to accept a login name. If not a valid login name display message “entered login name is invalid”
8. Write a shell script to display date in the mm/dd/yy format.
9. To implement the FCFS Algorithm.
10. To implement the shortest job First Algorithm.
11. To implement the priority algorithm.
12. To implement the round robin Algorithm.
13. To implement the FIFO page replacement algorithm
14. To implement the LRU page replacement Algorithm.
15. To implement the First-Fit, Best-Fit, Worst-Fit Algorithm.
16. Simulate Page Replacement Algorithms FIFO

17. Simulate Page Replacement Algorithms LRU
18. Simulate Page Replacement Algorithms OPTIMAL

Reference books:

1. Principles of Operating Systems by NareshChauhan, OXFORD University Press

Virtual Lab Links:

http://vlabs.iitb.ac.in/vlabs-dev/vlab_bootcamp/bootcamp/CRUX/index.html

	Government College (Autonomous) Rajahmundry	Program & Semester III B.A. (VI Sem)			
CourseCode CAP168	**TITLE OF THE COURSE JavaScript**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:	Java Programming	3	-	-	3

Course Objectives:

1. Explain separation of concerns and identify the three layers of the web.
2. Use operators, variables, arrays, control structures, functions and objects in JavaScript.
3. Map HTML using the DOM - Document Object Model.
4. Identify popular JavaScript Libraries.
5. Create dynamic styles.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understands the constructs in Java Scipts
CO2	Map HTML using the DOM - Document Object Model.
CO3	Create dynamic styles.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development			Employability			Entrepreneurship	

Syllabus:

UNIT – I

Introduction to JavaScript: Over view of JavaScript, Object Orientation and JavaScript, General Syntactic Characteristics, Primitives, Operations, and Expressions, Screen Output and Keyboard Input.

UNIT – II

Decision Making Statements: if, if..else, if..else if ..else , switch, Iterative Statements: for, while, do while. Break, continue, JavaScript Objects: Math, Date.

UNIT – III

Strings and string methods, Arrays and array methods, functions: Function declaration, function definition, parameter passing, function call, scope rules, constructors.

UNIT – IV

JavaScript and XHTML Documents : The JavaScript Execution Environment, The Document Object Model, Element Access in JavaScript, Events and Event Handling, Handling Events from Body Elements, Handling Events from Button Elements, Handling Events from Text Box and Password Elements, The DOM 2 Event Model, The navigator Object, DOM Tree Traversal and Modification

Additional Input:

Dynamic Documents with JavaScript: Introduction, Positioning Elements, Moving Elements, Element Visibility, Changing colours and Fonts, Dynamic Content, Stacking Elements, Locating the Mouse Cursor, Reacting to a Mouse Click, Slow Movement of Elements, Dragging and Dropping Elements

Text books:

1. Robert W . Sebesta "Programming world wide web" 7th edition, Pearson Education.
2. Harvey M. Deitel and Paul J. Deitel, **"Internet & World Wide Web How to Program", 4/e,** Pearson Education.

Reference books:

1. JavaScript Pocket Reference, 3rd Editionby David Flanagan
2. JavaScript: The Complete Reference Paperback – 1 July 2017by Thomas Powell (Author), Fritz Schneider (Author)

Web Links:

1. https://nptel.ac.in/courses/106/105/106105084/

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

(*Accredited by NAAC "A+" Grade)*

III-BA COMPUTER APPLCIATIONS
MODEL QUESTION PAPER (W.E.F 2019-2020)
PAPER – VIII: CLUSTER-A1: JavaScript
SEMESTER – VI

Time :2½ Hrs. **Max Marks :50 M**

SECTION – I

Answer any **TWO** of the following: **2 X 5=10 M**

1. Explain JavaScript break and continue statements with examples.
2. List and explain any 5 methods available in Math object
3. explain how JavaScript objects are created with an example
4. Explain alert, confirm and prompt dialog boxes with examples

SECTION –II

Answer **ALL** the questions: 4 **X 10=40 M**

5.
   a) Explain primitive data types in JavaScript

   (or)

   b) Explain operators in Java Script

6.
   a) Explain decision control statements in JavaScript

   (or)

   b) Explain iterative statements in JavaScript

7.
   a) Write about various string manipulations in JavaScript.

   (or)

   b) How to declare functions in JavaScript? Write a JavaScript to find the sum of 'n' even numbers and display the result

8.
   a) Explain about JavaScript event handling

   (Or)

   b) Explain about document object model

	Government College (Autonomous) Rajahmundry	Program & Semester III B.A. (VI Sem)			
CourseCode CAP168P	**TITLE OF THE COURSE** Java Script				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:		0	0	3	2

Objectives:

List of Experiments/Syllabus:

1. Create one java script in which swap two variable values.(with and without using third variable) e.g. a=10 , b=15 then out put should be a=15 and b=10
2. Write a function to find the sum of two numbers in Java Script
3. Write a program to implement factorial of a given number using java script.
4. Write a program to find roots of a quadratic equation using java script.
5. Write a program to check whether a given number is prime or not using java script.
6. Write a JavaScript program to compute the GCD of 2 numbers using function.
7. Write a java script to find the second largest number in an array.
8. Write a JavaScript program to illustrate a subroutine
9. Write a program to search an element in an array of size “n” using JavaScript.
10. Design basic calculator using JavaScript
11. Design a registration form and validate its field by using JavaScript.
12. Design a login form and validate its field by using JavaScript.

Reference books:

1. Harvey M. Deitel and Paul J. Deitel, **“Internet & World Wide Web How to Program”, 4/e,** Pearson Education.

Virtual Lab Links:

http://vlabs.iitb.ac.in/vlabs-dev/labs/javascript/index.php

	Government College (Autonomous) Rajahmundry	Program & Semester III B.A. (VI Sem)			
CourseCode CAP127	**TITLE OF THE COURSE PHP & MYSQL**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		3	-	-	3

Course Objectives:

1. To study designing the web pages.
2. To study formatting and validating web pages.
3. To study designing web sites and deploying web sites on web servers

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Design web pages.
CO2	Format and validate web pages.
CO3	Design web sites and deploy it on web servers

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development			Employability			Entrepreneurship	

Syllabus:

UNIT-I

Building blocks of PHP: Variables, Data Types, Operators and Expressions, Constants. **Flow Control Functions in PHP:** Switching Flow, Loops, Code Blocks and Browser Output. **Working with Functions:** Defining Functions, Calling functions, returning the values from User-Defined Functions, Variable Scope, Saving State between Function calls with the Static statement, more about arguments.

UNIT-II

Working with Arrays: Arrays, Creating Arrays, Some Array-Related Functions. **Working with Objects:** Creating Objects, Object Instance. **Working with Strings, Dates and Time:** Formatting Strings with PHP, Investigating Strings with PHP, Manipulating Strings withPHP, Using Date and Time Functions in PHP.

UNIT-III

Working with Forms: Creating Forms, Accessing Form - Input with User defined Arrays, Combining HTML and PHP code on a single Page, Using Hidden Fields to save state, Redirecting the user, Sending Mail on Form Submission, Working with File Uploads**.**

Working with Cookies and User Sessions: Introducing Cookies, Setting a Cookie with PHP, Session Function Overview, Starting a Session, Working with session variables, passing session IDs in the Query String, Destroying Sessions and Unsettling Variables, Using Sessions in an Environment with Registered Users.

UNIT-IV

Working with Files and Directories: Including Files with include(), Validating Files, Creating and Deleting Files, Opening a File for Writing, Reading or Appending, Reading from Files, Writing or Appending to a File, Working with Directories, Open Pipes to and from Process Using popen (), Running Commands with exec(), Running Commands with system ( ) or pass thru ( ).

Working with Images: Understanding the Image-Creation Process, Necessary Modifications to PHP, Drawing a New Image, Getting Fancy with Pie Charts, Modifying Existing Images, Image Creation from User Input.

Additional Input:

Interacting with MySQL using PHP: MySQL Versus MySQLi Functions, Connecting to MySQL with PHP, Working with MySQL Data.

Creating an Online Address Book: Planning and Creating Database Tables, Creating Menu, Creating Record Addition Mechanism, Viewing Records, Creating the Record Deletion Mechanism, Adding Sub-entities to a Record.

Text books:

1. Julie C. Meloni, PHP MySQL and Apache, SAMS Teach Yourself, Pearson Education (2007).
2. XueBai Michael Ekedahl, The Web Warrior Guide to Web Programming, Thomso(2006)

Reference books:

1. "Beginning PHP and MySQL From Novice to Professional" by W Jason Gilmore
2. . "PHP: A Beginner's Guide" by Vikram Vaswani

Web Links:

1. https://nptel.ac.in/courses/106/106/106106093/

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM
(*Accredited by NAAC "A+" Grade)*

III B.A COMPUTER APPLICATIONS
MODEL QUESTION PAPER (W.E.F 2019-2020)
PAPER – VIII : CLUSTER – A2 :PHP and MYSQL
SEMESTER – VI

Time :2½ Hrs. **Max Marks :50M**

SECTION – A

Answer any **TWO** questions from the Following: **2 X 5 = 10M**

1. Write a PHP Script to list data in the table?
2. Write a script for login page with validation.
3. Discuss any five Date functions of PHP.
4. What is session? How variables are handled in the sessions?

SECTION – B

Answer **ALL** questions from the Following: **4 X 10 = 40M**

5.
   a) What is variable? Explain scope of variable.

   (OR)

   b) Write about different data types available in PHP.

6.
   a) Write about different operators in PHP.

   (OR)

   b) Explain about arrays in PHP.

7.
   a) Explain string functions in PHP.

   (OR)

   b) What is a form, how to create a form using PHP.

8.
   a) Creating, open and delete files in PHP.

   (OR)

   b) Explain Modifying Existing Images?

	Government College (Autonomous) Rajahmundry	Program & Semester III B.A. (VI Sem)			
CourseCode CAP127	**TITLE OF THE COURSE PHP & MYSQL**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:		0	0	3	2

Objectives:

List of Experiments/Syllabus:

1. Write a PHP program to Display "Hello"
2. Write a PHP Program to display the today's date.
3. Write a PHP Program to read the employee details.
4. Write a PHP Program to display the
5. Write a PHP program to prepare the student marks list.
6. Write a PHP program to generate the multiplication of two matrices.
7. Write a PHP Application to perform demonstrate the college website.
8. Write a PHP application to add new Rows in a Table.
9. Write a PHP application to modify the Rows in a Table.
10. Write a PHP application to delete the Rows from a Table.
11. Write a PHP application to fetch the Rows in a Table.
12. Develop an PHP application to make following Operations
13. Registration of Users.
14. Insert the details of the Users.
15. Modify the Details.
16. Transaction Maintenance.
17. No of times Logged in
18. Time Spent on each login.
19. Restrict the user for three trials only.

20. Delete the user if he spent more than 100 Hrs of transaction.

Reference books:

1. Julie C. Meloni, PHP MySQL and Apache, SAMS Teach Yourself, Pearson Education (2007).

Virtual Lab Links:

http://vlabs.iitb.ac.in/vlabs-dev/labs/phplab/labs/mysql-database-pvg/theory.html

	Government College (Autonomous) Rajahmundry	Program & Semester III B.A. (VI Sem)			
CourseCode CAP162	**TITLE OF THE COURSE Project Work**				
Teaching	Hours Allocated: 60	L	T	P	C
Pre-requisites:		5	1	-	5

Course Objectives:

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Determining if you met your business objectives
CO2	Learning lessons for future projects and identifying areas for improvement
CO3	Providing an overall purpose for your project
CO4	Discovering ways for meeting the needs of your clients
CO5	Helping make sure all parts of the project serve the end goal

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Follow SDLC process for real time applications and develop real time application project

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories.

The project is of 5 hours/week for one (semester VI) semester duration and a student is expected to do planning, analysing, designing, coding, and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

Title

Objectives

Input and output

Details of modules and process logic Limitations of the project tools/platforms, Languages to be used Scope of future application

The Project work should be either an individual one or a group of not more than three members and submit a project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examinations

Text books:

Reference books:

Web Links:

1.
2.

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

	Government College (Autonomous) Rajahmundry	Program & Semester III B.A. (VI Sem)			
CourseCode **CAP164**	**TITLE OF THE COURSE Multimedia Technology**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		3	-	-	3

Course Objectives:

Objective of this course is to enhances the skills in multimedia technology through photoshop

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Define multimedia to potential clients.
CO2	Identify and describe the function of the general skill sets in the multimedia industry.
CO3	Identify the basic components of a multimedia project.
CO4	Identify the basic hardware and software requirements for multimedia development and playback.

Course with focus on employability / entrepreneurnceship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT I

Multimedia-Graphics: Graphic Programs-Introduction to Photoshop- ADOBE PHOTOSHOP CS4: About Photoshop, Navigating Photoshop, Menus and panels, Opening new files, Opening existing files.

Getting Started with Photoshop: Exploring the Toolbox, the New CS4 Applications Bar & the Options Bar, Exploring Panels & Menus, Creating & Viewing a New Document, Customizing the Interface, Setting Preferences.

UNIT II

Working With Images: Zooming & Panning an Image, Working with Multiple Images, Rulers, Guides & Grids, Undoing Steps with History, Adjusting Color with the New Adjustments Panel, The New Masks Panel &VibranceColor Correction Command, The New Note Tool & the Save for Web & Devices Interface, The New Auto-Blend & Auto-Align Layers Commands, The New 3D Commands.

UNIT III

Resizing & Cropping Images: Understanding Pixels & Resolution, the Image Size Command, Interpolation Options, Resizing for Print & Web, Cropping & Straightening an Image, Adjusting Canvas Size & Canvas Rotation.

Working With Basic Selections: Selecting with the Elliptical Marquee Tool, Using the Magic Wand & Free Transform Tool, Selecting with the Regular & Polygonal Lasso Tools, Combining Selections, Using the Magnetic Lasso Tool, Using the Quick Selection Tool & Refine Edge, Modifying Selections.

UNIT IV

Getting Started With Layers: Understanding the Background Layer, Creating, Selecting, Linking & Deleting Layers, Locking & Merging Layers, Copying Layers, Using Perspective & Layer Styles, Filling & Grouping Layers, Introduction to Blending Modes, Blending Modes, Opacity & Fill, Creating & Modifying Text.

Painting in Photoshop: Using the Brush Tool, Working with Colors& Swatches, Creating & Using Gradients, Creating & Working with Brushes, Using the Pencil & Eraser Tools, Painting with Selections.

Additional Input:
Photo Retouching: The Red Eye Tool, The Clone Stamp Tool, The Patch Tool & the Healing Brush Tool, The Spot Healing Brush Tool, The Color Replacement Tool, The Toning & Focus Tools, Painting with History.

Text books:

1. Adobe Photoshop CS5: DigitalClassroom
2. Jennifer Smith and the AGI CreativeTeam

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Reference books:

1. Adobe Photoshop CC Classroom in a Bookby Faulkner Andrew and Chavez Conrad | 26 February 2017

Web Links:

1. https://www.w3schools.in/category/photoshop/

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY
III - B.A (Computer Applications) EM:Semester – VI
(w.e.f. 2019-2020)

Paper :CAP164– CLUSTER-B1 :MULTIMEDIA TECHNOLOGY
MODEL QUESTION PAPER

Time:2½hrs **Marks:50**

SECTION – I

Answer any TWO Questions **2 x 5 = 10M**

1. How can you adjust Colour with the new adjustment Panel?
2. What is the use of Magnetic Lasso Tool?
3. How can you modify selections in Photoshop?
4. Explain creating and using of Gradients?

SECTION – II

Answer All Questions **4 x 10 = 40M**

5.
   a) Write about Photoshop. Explain Menus and Panels in Adobe Photoshop.

   (OR)

   b) Explain
      i. The New Auto-Blend & Auto-Align Layers Commands
      ii. The New 3DCommands.

6.
   a) Explain new Masks Panel &VibranceColour Correction Command.

   (OR)

   b) Explain working with Multiple Images, Rulers, and Guides &Grids.

7.
   a) Explain
      i. Pixels Resolution
      ii. the Image Size Command
      iii. Resizing for Print &Web

   (OR)

   b) Explain
      i. Cropping & StraighteninganImage
      ii. Adjusting Canvas Size & Canvas Rotation.

8.
   a) Explain red eye tool and Clone stamp tool.

   (OR)

   b) Explain color replacement tool, toning and focus tools.

	Government College (Autonomous) Rajahmundry	Program & Semester III B.A. (VI Sem)			
CourseCode **CAP164P**	**TITLE OF THE COURSE** **Multimedia Technology**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:		0	0	3	2

Objectives:

List of Experiments/Syllabus:

1. Write a program to justify a text entered by the user on both left and right hand side.forexample the test " An architect may have a graphics program to draw an entire building but be interested in only ground floor",can be justified in 30 columns.An architect may have a graphics programs draw an entire building but interested in ground floor.
2. Study the notes of a piano and stimulate them using the keyboard and store them in file
3. Write a program to read a paragraph and store it to a file name suggested by the author
4. Devise a routine to produce the animation effect of a square transforming to a triangle and then to a circle.
5. Write a program to show a bitmap image on your computer screen.
6. Create a web page for a clothing company which contains all the details of that company and at least five links to other web pages.
7. Write a program by which we can split mpeg video into smaller pieces for the purpose of sending it over the web or by small capacity floppy diskettes and then joining them at the destination.
8. Write a program to simulate the game of pool table
9. Write a program to simulate the game mine sweeper
10. Write a program to play "wave" or "midi" format sound files

Reference books:

1. Adobe Photoshop CS5: DigitalClassroom

Virtual Lab Links:

https://labs.adobe.com/

	Government College (Autonomous) Rajahmundry	Program & Semester III B.A. (VI Sem)			
CourseCode CAP165	**TITLE OF THE COURSE Programming In Vb.Net**				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites:		3	-	-	3

Course Objectives:

This Course presents concepts of.NET frame work and VB.NET programming

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understand the basic structure of vb.net programming
CO2	Different data types
CO3	Build forms using drag and drop toolbar
CO4	Able to create and design Menus

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development			Employability			Entrepreneurship	

Syllabus:

UNIT -I

NET Framework-The Visual Basic.NET IDE-Properties-Solution Explorer-Menu bar-Tool Bar.
Data types-Numbers, Strings, Dates, Boolean, Storing variables-Representing values, converting values, Methods
Arrays, Initializing Arrays with values, enumerations-Using Enumerations-Constants-Using Constants, Structure -Building Structures adding Properties to structure

UNIT -II

Decision making –If statement, Else statement multiple alternatives with else if, nested IF, comparison operators, string comparison, select case
Loops-The For... Next Loop, For Each Loop, Do..Loop, Loops, Nested Loops.

UNIT -III

Message Box Dialog Box, Creating Menus-Designing Menus, Adding tool bars and controls, Coding Menus.Multiple Forms

Unit -IV

Dialog Controls: Open Dialog controlSave Dialog Control, Font Dialog Control
Color Dialog Control , Print Dialog Control

Additional Input:

Accessing Databases:- Data Access component- OLE DB connection, Data Set, OLE DB Data Adapter, OLE Db command, Data View, Data Building-Data Grid control, The Data Source Property, The Data member Property, Data Base programming with SQLServer.

Text books:

1. Introduction to Visual basic.NET-NIIT Prentice Hall of India 2005
2. BeginningVB.NET2003-2004Edition-Thearonwillis,Jonathan Crossland, Richard Blair.

Reference books:

1. "Programming in Visual Basic" by McBride
2. "Programming in Visual Basic. Net" by Julia Case Bradley and Anita Millspaugh

Web Links:

1. https://www.tutorialspoint.com/vb.net/index.htm

CO-PO Mapping:

(1:Slight[Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print			
S.No.	**UNIT**	**Short 5 M**	**Essay 10 M**
1	UNIT - I	1	2
2	UNIT - II	1	2
3	UNIT - III	1	2
4	UNIT - IV	1	2

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY
III - B.A (Computer Applications) EM ::Semester - VI

Paper :CAP165 :: Cluster – B2:PROGRAMMING IN VISUAL BASIC
SYLLABUS PAPER (w.e.f. 2019-2020)

Time: 2½ Hrs. **Marks: 50**

Section –I

Answer any TWO questions **2X5= 10M**

1. Explain Arrays declaration and setting initial values?
2. Write Select..Case with syntax and example?
3. Write about Nested loops?
4. Explain working with multiple forms?

Section –II

Answer All questions **4 X10 =40M**

5.
   a) What is IDE? Write about Visual Basic.NETFramework.

   OR

   b) What are the Data types supported by VB.NET? Explain variable declaration with syntax?

6.
   a) Write the decision makingstatementsinVB.NET with syntax and example?

   OR

   b) Explain working of looping statements in VB.NET with syntax and example?

7.
   a) Explain about Message Dialog Box in detail.

   OR

   b) Explain Creation of menus, adding tool bars and other controls with a suitable example.

8.

a) Explain the following Dialog boxes
   i. Font Dialog Control
   ii. Open Dialog Control

(OR)

b) Explain the following Dialog boxes
   iii. Save Dialog Box b)
   iv. Color Dialog Control

	Government College (Autonomous) Rajahmundry	Program & Semester III B.A. (VI Sem)			
CourseCode CAP165	**TITLE OF THE COURSE Programming In Vb.Net**				
Teaching	Hours Allocated: 60 (**Lab**)	L	T	P	C
Pre-requisites:		0	0	3	2

Objectives:

List of Experiments/Syllabus:

1. To Develop VB application to calculate given two numbers and display the result using arithmetic operations
2. To Develop VB application for copying the elements from one list to another list and Vice-Versa
3. To Develop VB application to search an item from list of items using Binary Search
4. To Develop VB application to display the profile of a valid user conditions
   a). Check the User with Password
   b). Display his profile
5. To Develop VB application to calculate Fahrenheit Temperature to CelsiusTemperature using Scroll Bars
6. To Develop VB application to calculate Roots of a Quadratic Equation usingSelect Statement
7. To Develop VB application to change the form back ground colors using Sliders
8. To Develop VB application to display the publisher details using Data andDBGrid
9. To Develop VB application to make survey on different age groups (age groupsmay be 25-34, 35-44, 45-54, and >=55) and Display the Number of people on aparticular age group
10. To Develop a simple calculator by using VB application and Display
11. To Develop a student marks list using VB application
    i). Read any Five Subjects marks

ii). For Qualifying min marks are 40%

iii).For pass average is 50%

iv).For First Class percentage>=60

v). For Second Class percentage is between 40 and 59

vi). For Third Class percentage is 40 vii). Min pass is<50 then Result is Fail

12. To Develop VB application to sort the list of given n Numbers
13. To Develop VB application to display the Directory List Box, Drive List Box andFiles List Box
14. To Develop VB application to Popup Menu and change the colors in a particularShape
15. To Develop VB application to Dialog Boxes

Reference books:

Virtual Lab Links:

	Government College (Autonomous) Rajahmundry	Program & Semester III B.A. (VI Sem)			
CourseCode CAP162	**TITLE OF THE COURSE Project Work**				
Teaching	Hours Allocated: 60	L	T	P	C
Pre-requisites:		5	1	-	5

Course Objectives:

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Determining if you met your business objectives
CO2	Learning lessons for future projects and identifying areas for improvement
CO3	Providing an overall purpose for your project
CO4	Discovering ways for meeting the needs of your clients
CO5	Helping make sure all parts of the project serve the end goal

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Follow SDLC process for real time applications and develop real time application project

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories.

The project is of 5 hours/week for one (semester VI) semester duration and a student is expected to do planning, analysing, designing, coding, and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

Title

Objectives

Input and output

Details of modules and process logic Limitations of the project tools/platforms, Languages to be used Scope of future application

The Project work should be either an individual one or a group of not more than three members and submit a project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examinations

Certificate Courses

GOVERNMENT COLLEGE (AUTONOMOUS)
Rajahmundry
Certificate Courses (CCC104)

Graphic Design through Desktop Publishing (DTP)

Course Objective

The objective of the course is to provide the participants understanding of the techniques essential to build their career in desktop publishing using suitable hardware and software tools. This course offers a range of topics of immediate relevance to industry and makes the participants exactly suitable for DTP Industry.

SYLLABUS

UNIT I

Basics of Desktop Publishing: what is DTP? – Letterpress Printing – Wooden Types and Metal Types, Hot Metal Types, Printing Photographs - Offset Printing- Gravure – Hardware requirements – Software Requirements – DTP Operator's Arsenal – TestEditors, word Processors, Vector Illustration Applications or drawing Applications, Bitmap Image Editing Application, Page Layout applications - Scanning –Printing –Monitor – briefly Input and Output Devices – Vector graphics and Raster graphics .

UNIT II

Fonts – Font Styles, Serif and Sans Serif, Dimensions of font , Fixed pitch fonts nad proportional spaced fonts, scaling tracking, kerning, leading and ligatures, fonts in your computer, vector fonts and bitmapped fonts - character level and Paragraph level formatting – Drop Caps – Hyphenations – Alignments –Indentation – Single side and Double Side Documents –Headers and Footers – Selecting the text and graphics – Graphic file formats – screen colors (RGB) and Printer colors (CMYK) –Spot colors and Process Colors – Color Separtions – Color Half-tone images - Generic Process of Desktop Publishing.

UNIT III

Corel DRAW10: Starting CorelDraw – Create, Save, close and open the drawing – Cartesian Coordinates – Creating text file – Basic terms – Page and Pasteboard - standard tool bar – Handling Shapes using Property bar – Rotating objects – Lines and Arrows – Page and Document setup – Rulers, Guidelines and grid – Using Docker Windows – Using Text – Printing a Drawing - Arranging of Objects – Cliparts and Bitmaps – Fun with the Artistic Media tool - Colour plates.

UNIT – IV

PhotoShop7: Introduction – Parts of Page shop window - Open, Save, Close and Create a Image – Using Toolbox – Tool Options bar – Using layers – Layers palette, adding new layer, Hiding layer, Renaming layer, Remove layer, Merge layer, copy and paste with image – Fascinating colors – Color models, Color Picker, Color palette, Swatches Palette, ICC – Inserting text in images – printing images – filters to improve images .

UNIT – V

Page Maker7: Introduction of Page Maker- starting of Page Maker – Creating a new publication in Page Maker – Dialog Boxes Document and setup and Save Publication – Close the publication – Text Blocks- drawing a textBlock by Dragging the Mouse cursor, Empty Text block by a Mouse Click, Fitting text Blocks on a page, Inserting pages while placing Text – Handling Pages – Inserting, Deleting and go to the desired pages – using the Toolbox – Using the ToolBars – Importing text & Pictures – wrapping text around the pictures – Character level formatting – Opening Multiple Publication windows – Using story editor- Using Styles – Pre-defined styles, new style – Using the Document Master Pages – Sample Publication.

TEXT BOOK

1. Rapidex DTP Course by Shirish Chavan, Unicorn Books Pvt. Ltd., Edition 2005

REFERENCE BOOK

2. DeskTop Publishing English Edition By Ashish Joshi, Jigisha Raval, Pragnesh Patel**,** Computer world Publications,
3. Adobe Photoshop CC Classroom in a Book – Adobe creative team, Adobe press
4. Adobe PageMaker 7.0 Classroom in a Book – Adobe creative team, Adobe press
5. CorelDraw X8: The official guide – Gary David Bouton

Assessment Scheme

Internal Assessment	50 Marks
External Exam	50 Marks

Internal Exam Scheme

Practical Assessment	30 Marks
Record	10 Marks
Viva-Voce	10 Marks

GOVERNMENT COLLEGE (AUTONOMOUS)
Rajahmundry
Graphic Design through Desktop Publishing (DTP)

2 - HOURS **MODEL PAPER** **50-MARKS**

Answer All the Following: **5 x 10 = 50M**

1. **a) Write about any five features of desktop publishing.**

   డెస్క్టప్పబ్లిషింగ్యొక్కఏఐదులక్షణాలగురించివ్రాయండి.

   OR

   b) Explain how to use various fonts in DTP.

   DTP లోవివిధఫాంట్లనుఎలాఉపయోగించాలోవివరించండి.

2. **. a) How do you design business cards and letter heads in PageMaker?**

   మీరు PageMaker లోవ్యాపారకార్డులుమరియులెటర్హెడ్లనుఎలారూపకల్పన చేస్తారు?

   OR

   b) How to create master page in PageMaker.

   PageMaker లోమాస్టర్పేజీనిఎలాసృష్టించాలి.

3. **a) Write about Photoshop. Explain Menus and Panels in Adobe Photoshop.**

   Photoshop గురించివ్రాయండి. Adobe Photoshop

   లోమెనూలుమరియుప్యానెల్లను

   వివరించండి. **OR**

   b) Describe various tools available in Photoshop.

   Photoshop లోలభించేవివిధఉపకరణాలను(tools) వివరించండి.

4. **a) Explain the elements of toolbox seen in DTP PageMaker.**

   DTP PageMaker లోకనిపించేటూల్బాక్సుయొక్కఅంశాలనువివరించండి.

   OR

   b) Write a note on fitting text to path in Corel draw.

Corel draw లోమార్గానికిసరిపోయేవచనంలోగమనికనువ్రాయండి.

5 **a) Features of CorelDraw.**

CorelDraw యొక్కలక్షణాలు.

OR

b) What are the advantages of PageMaker?

PageMaker **యొక్కప్రయోజనాలుఏమిటి**?

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GOVERNMENT COLLEGE (AUTONOMOUS)
Rajahmundry
Certificate Courses (CCC105)

Office Automation

Course Objective

To help the students to understand how to format, edit, and print text documents and prepare for desktop publishing.

- Students will be able to create various documents newsletters, brochures, making document using photographs, charts, presentation, documents, drawings and other graphic images.
- To work with the worksheet and presentation software.

SYLLABUS

UNIT I:

MS word: Word Processing – Features-Advantages and Applications- Parts of Word Window-Toolbar-Creating, Saving, Closing, Opening and Editing of a Document-Moving and Coping a Text-Formatting of Text and Paragraph- Bullets and Numbering-Find and Replace - Insertion of objects-Headers and Footers- Page Formatting- Auto Correct- Spelling and Grammar- Mail Merge- Macros.

UNIT II:

MS Excel:

Features – Spread Sheet-Workbook – Cell-Parts of a window-Saving, Closing, Opening of a Work Book – Editing – Advantages – Formulas- Types of Function- Templates – Macros – Sorting- Charts – Filtering – Consolidation – Grouping- Pivot Table.

UNIT III:

MS Power point: Introduction – Starting – Parts-Creating of Tables- Create Presentation – Templates- Auto Content Wizard-Slide Show-Editing of Presentation-Inserting Objects and charts.

UNIT IV:

MS Access: Orientation to Microsoft Access - Create a Simple Access Database - Working with Table Data - Modify Table Data - Sort and Filter Records - Querying a Database - Create Basic Queries - Sort and Filter Data in a Query - Perform Calculations in a Query - Create Basic Access

Forms - Work with Data on Access Forms - Create a Report - Add Controls to a Report - Format Reports.

Assessment Scheme

Internal Assessment	50 Marks
External Exam	50 Marks

Internal Exam Scheme

Practical Assessment	30 Marks
Record	10 Marks
Viva-Voce	10 Marks

GOVERNMENT COLLEGE (AUTONOMOUS): RAJAHMUNDRY
DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS
II-YEAR :: MS-OFFICE CERTIFICATE COURSE

Time: 2Hrs **MODEL PAPER** **Marks: 50**

Answer any 5 Questions: **5 x 10 = 50M**

1. **Explain different parts of MS-Word-2010 window, with the help of a diagram.**

   MS-Word-2010 విండోలోని వివిధ భాగాలను రేఖాచిత్రం సహాయంతో వివరించండి.

2. **Explain the features of MS – Word.**

   MS – Word యొక్క లక్షణాలను వివరించండి.

3. **Write steps about mail-merge in MS-Word.**

   MS-Word లో మెయిల్-మర్జ్ గురించిన దశలను వ్రాయండి.

4. **Explain the various parts of the MS-Excel window with the help of the diagram.**

   రేఖాచిత్రంసహాయంతోMS-Excel విండోయొక్కవివిధభాగాలనువివరించండి.

5. **Explain important features of MS-Excel**

   MS-Excel యొక్కముఖ్యమైనలక్షణాలనువివరించండి

6. **Define function? Explain various categories of functions with examples.**

   ఫంక్షన్‌నునిర్వచించాలా? వివిధవర్గాలవిధులనుఉదాహరణలతోవివరించండి.

7. **What is Chart? Explain different types of charts available in Excel.**

   చార్ట్‌అంటేఏమిటి?

   ఎక్సెల్లోఅందుబాటులోఉన్నవివిధరకాలచార్టులనువివరించండి.

8. **Features of MS-PowerPoint.**

   MS-PowerPoint ఫీచర్లు.

9. **Write about how to create PowerPoint presentation by using a Template.**

   టెంప్లేట్ ఉపయోగించి పవర్‌పాయింట్ ప్రెజెంటేషన్ ఎలా సృష్టించాలో రాయండి.

10. **Write about slide Transition and Custom Animation in PowerPoint presentation.**

    పవర్ పాయింట్ ప్రజెంటేషన్‌లో స్లయిడ్ ట్రాన్సిషన్ మరియు కస్టమ్ యానిమేషన్ గురించి రాయండి.

* * *

GOVERNMENT COLLEGE (AUTONOMOUS)
Rajahmundry
Certificate Courses (CCC106)

Computer Hardware and Networking

Course Objective

To impart the skills needed to assemble a PC, PC troubleshooting, installation of system/application software. Student can prepare cables for LAN, assign IP's to machines.

SYLLABUS

Unit-1
Introduction of Hardware and Software/components of computer. Computer Hardware - Central Processing Unit - Input Devices - Output Devices - Storage Devices Network System - Types of Networks Computer Software - System Software - Application Software Motherboards - Types of Motherboards - Designs of the Motherboard Chipsets - North and South Bridge Concept of Microprocessor - Embedded Applications - 8-bit Designs - 12-bit designs - 16-bit designs - 32-bit Designs - 64-bit designs in Personal Computers Latest Chipsets and Microprocessors available in Market Basics and Types of Floppy drive/HDD/DVD/RAM etc. Floppy Drive - Hard Disk Drive (HDD) - Digital Video Disk (DVD) - RAM Switching-Mode Power Supply (SMPS)
Unit-II
Handling & Holding sensitive equipments, Installing Motherboards, Choosing Cabinet &Cooling considerations, Installing CPU. Assembling - Safety Tips for Assembling Components Required to Assemble a Computer Handling and Holding Sensitive Equipments Step 1: Prepare Your Workspace Step 2: Choosing Computer Cabinet and Cooling Considerations Step 3: Installing Motherboards Step 4: Install The Processor (CPU) Step 5: Install The CPU Heat Sink Step 6: Install The Memory Modules (Ram Memory) Step 7: Place The Motherboard Into The Case Step 8: Connect the Power Supply Step 9: Install the Graphics/Video Card Step 10: Connect the Keyboard, Mouse and Monitor Step 11: Install the Drives Step 12 : Install the Add-In Cards Step 13: Turn the Computer On Step 14: Install the Operating System (OS) Step 15: Update Drivers Step 16: Install Anti-Virus Software and Setup a Network/Internet Connection

Step 17: Install other Software

Knowing ports, wires attached in the pc. Knowing SATA slots, IDE Slots

Ports -Port Number

Computer Wires - Plugging in the Case Fans - Wiring the Front Panel Components - Plugging in the Motherboard Power Connectors

SATA Slots - SATA Power Cable

IDE Slots

Unit-III

CMOS. Setting BIOS configurations.

Concept of BIOS and CMOS - POST - Transferring Control to the Operating System with the Bootstrap Loader

Setting BIOS Configurations - Standard CMOS Configuration - Automatic Configuration of BIOS/CMOS Settings - Advanced CMOS Configuration - Advanced Chipset/Chipset Features Configuration - Power Management Configuration - PnP (Plug-and-Play) Configuration Screen - Peripherals Setup - Security/Passwords - Saving and Recording BIOS/CMOS Settings

Installation of OS (Linux/Windows) and application/utility software, Handling Viruses

Basics of Linux - Installation of Linux - Before Installation - Hardware. - Hardware Compatibility Lists - Server Design - Dual-Booting Issues - Installing Red Hat Linux - Creating a Boot Disk - Starting the Installation - Welcome of Red Hat Linux

Basics of Windows 7 - Installation of Windows 7/10 - Boot-up your PC form the Windows DVD - Select Language, Time, Currency and Keyboard - Install button - License Terms Aggrement - Installation Method Selection - Installation Location Selection - Creating User Name and Computer Name - Password Setting - Product Key Installation - Choosing the form of Installation - Time Settings and Network Settings - Defining your PC location - Finalizing Settings - Opening the desktop

Application/Utility Software

Handling Viruses

Unit-IV

Networking Basics: Different Wires, Hubs, Connectors. Punching/Crimping Tools. Switches, I/O Sockets

Different Wires - Twisted Pair (Copper Conductors) - Coaxial Cable - Optical Fiber Cable

Hubs - Working of Network Hub - Types of Hub - Benefits of Hubs

Connectors - Types of Connectors

Punching/Crimping Tools - Punching Tools - Crimping Tools

Switches - Types of Switches

I/O Sockets - Point-to-Point Communication - Libraries - Interface Types - Addresses and Ports

Creation of Cross Wires and Direct Cables - Requirements for Creating Cross Wires and Direct Cables - Creating Cross over Cable - Creating a Direct or Straight through cable

IP Protocols - IP Addresses - IPv4 Addressing - Dotted Decimal Notation - Classification of IPv4 Addresses - Subnetting for IP Addresses

Setting up a Computer on LAN

Assessment Scheme

Internal Assessment	50 Marks
External Exam	50 Marks

Internal Exam Scheme

Practical Assessment	30 Marks
Record	10 Marks
Viva-Voce	10 Marks

GOVERNMENT COLLEGE (AUTONOMOUS): RAJAHMUNDRY
DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS
II-YEAR :: MS-OFFICE CERTIFICATE COURSE

Time: 2Hrs **MODEL PAPER** **Marks: 50**

Answer any 5 Questions from given 10 Questions **5 x 10 = 50M**

1. **Q1**
2. **Q2**
3. **Q3**
4. **Q4**
5. **Q5**
6. **Q6**
7. **Q7**
8. **Q8**
9. **Q9**
10. **Q10**

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