

**Resolutions**  
**Syllabus**  
**Model Question Papers**  
**List of Paper Setters**

# GOVERNMENT COLLEGE (A) RAJAHMUNDRY

## DEPARTMENT OF GEOLOGY

### BOARD OF STUDIES MEETING: 18<sup>th</sup> November 2021

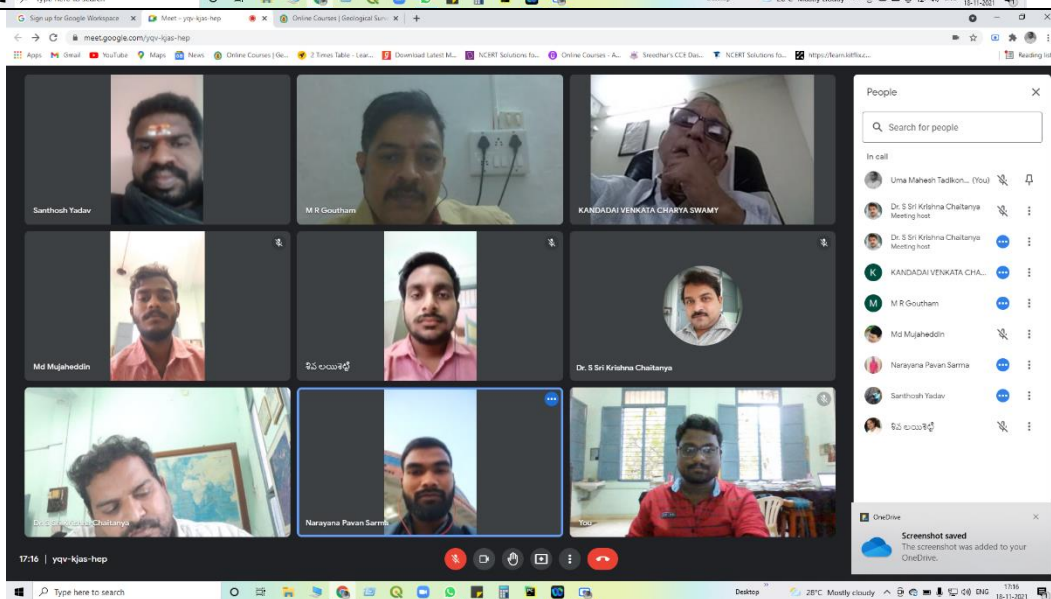
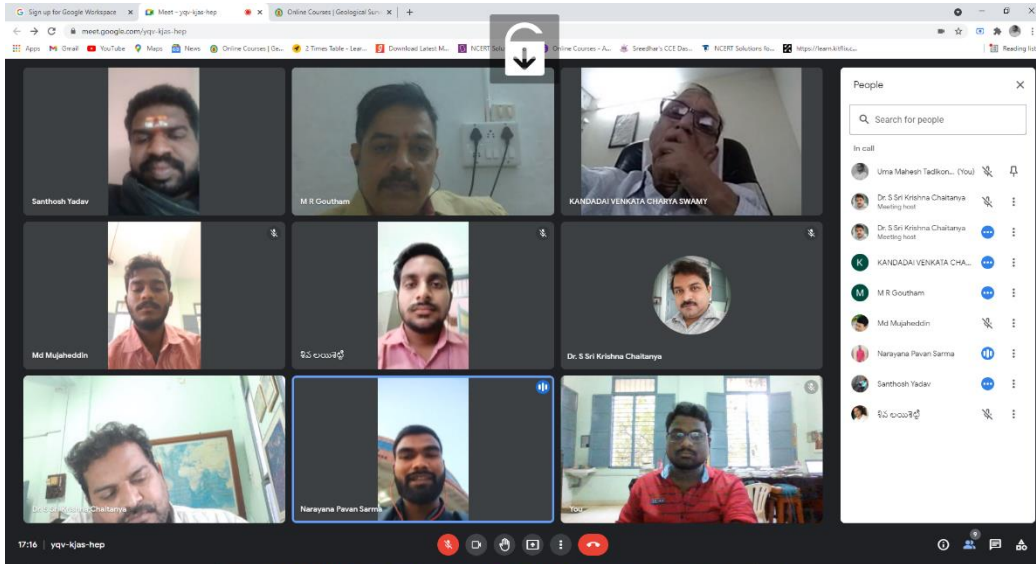
The Board of studies meeting of **DEPARTMENT OF GEOLOGY** for the odd semesters for AY 2021-22 was convened at 03.00 pm through video conferencing facility using **GOOGLE MEET** online on 18-11-2021 under the Chairmanship of **Dr. M R Goutham**, Head of the Department. The members present have deliberated at length on various aspects such as changes to be made in the Syllabi, Scheme of Evaluation and Blue print for both theory and practical courses, proposed departmental activities and their effective execution during the **I, III and V** semesters for the academic year 2021-22.

**The following members were present.**

Sl. No	Name and Address	Designation	Signature
1	Dr. M R Goutham, Assistant Professor, Head of the Department, Department of Geology, Government College(A), Rajahmundry, E G Dt., AP	Chairman	
2	Sri.N.Srinivas rao Lecturer in Geology, Government College(A), Rajahmundry.	Member	
2	Sri. S. Venkatesh Lecturer in Geology, Government College(A), Rajahmundry.	Member	
3	Sri. R.Anil Kumar Lecturer in Geology, Government College(A), Rajahmundry.	Member	
4	Sri. P.Devi priya Lecturer in Geology, Government College(A), Rajahmundry.	Member	
5	Sri. Ch.Abishek Lecturer in Geology, Government College(A), Rajahmundry.	Member	
6	Sri.S.Durga bhavani Lecturer in Geology, Government College(A), Rajahmundry.	Member	
7	Sri.B.Sai Krishna Lecturer in Geology, Government College(A), Rajahmundry.	Member	
8	Dr. K V Swamy Associate Professor, Department of Geology, Adikavi Nannaya University, Rajahmundry E G Dt., AP	University Nominee	
9	Dr. S S K Chaitanya HOD & Assistant Professor Department of Geology Sir C R Reddy College, Eluru, W G Dt., AP	Subject expert	

10	Sri K Santhosh HOD & Assistant Professor, Department of Geology, D N R College, Bhimavaram, W G Dt., AP	Subject expert	
12	Sri V Vijay Babu Deputy Director, A P State Ground Water Department, Eluru, W G Dt., AP	Industrial expert	
13	P.V. Sashirekha, III B.sc, M.G.C.	Student member	
14	K.Y.M.L.Supreethi Reddy, III B.Sc, MGCs.	Student member	
15	P.Ruthu, III B.Sc, MPG.	Student member	
16	Umar III B.Sc, GGCs.	Student member	

Meeting of **Board of Studies in Geology** was held on 18-11-2021 at 03:00 PM through Zoom Online Meeting.



## DEPARTMENT OF GEOLOGY

BOARD OF STUDIES MEETING ON SATURDAY, the 18<sup>TH</sup> November, 2021 at 03 .00 pm  
Academic year 2021-22

### AGENDA:

- Item No. 1. Action Taken Report (ATR) on previous Board of Studies resolutions
- Item No. 2. To approve syllabi and model question papers for all the courses in Geology for the AY 2021-22
- Item No. 3. To approve the additional curriculum for all the courses offered
- Item No. 4. To approve the Modification / Upgradation of syllabi up to 20% wherever necessary to suite the global competency
- Item No. 5. To design and approve the Course outcomes (COs) & Programme outcomes (POs) for Geology
- Item No. 6. Continuation of New Evaluation System from the academic year 2020-2021 admitted batch, *i.e.* External: Internal as 60:40 from 75:25 **(60Marks- External and 40Marks -Internal)**
- Item No. 7. To suggest panel of names to the Academic Council for appointment of examiners and paper setters and other experts.
- Item No. 8. To suggest methodologies for innovative methods of teaching
- Item No. 9. To approve the Department Activities for 2021-2022 academic year.
- Item No. 10. Proposals to organizing National/ State level Seminars / Workshops / Conferences / Training programmes conducting fieldwork etc., with topics and other details.
- Item No. 11. Proposals for organizing subject oriented community outreach programmes.
- Item No. 12. Conducting Value added and Certificate Courses.
- Item No. 13. To conduct Geological Field Trips **MANDATORY** for III B.Sc. Students.
- Item No. 14. Implementation of ICT enabled, experiential, problem solving and participative teaching learning methods for effective delivery of learning content for the students

- Item No. 15. Approval of the comprehensive academic plan of each faculty member denoting the topic to be completed in particular period along with Co-curricular activities planned like quiz, classroom seminar, Group Discussion, Assignments, etc.
- Item No. 16. Hands on training with industry tie up/ Internships for the III-year students
- Item No. 17. To discuss the topics for the students' study projects and to introduce the study projects for final year advanced learners
- Item No. 18. Coaching for Different Entrance exams to pursue higher studies for Final year UG students
- Item No. 19. Research activities planned for Attending Seminars / Workshops, Publication of Research Paper etc.
- Item No. 20. Faculty Development / Training Programmes by way of Conducting / Attending online.
- Item No. 21. Proposals to apply for different funding agencies both for faculty and students to arrange seminars/workshops/field trainings etc. and any other student centric activities
- Item No. 22. Institution of new medals / incentives / prizes etc., from alumni, philanthropists, parents, faculty etc., - Strategies to be recommended
- Item No. 22. Any other relevant with the permission of the chair.

## **DEPARTMENT OF GEOLOGY**

**BOARD OF STUDIES MEETING ON SATURDAY, THE 18<sup>TH</sup> November,  
2021 AT 03.00 PM**

### **MINUTES OF THE MEETING**

**Item No. 1. Action Taken Report (ATR) on previous Board of Studies resolutions**

**Discussion :** In Action Taken Report, HOD Dr. M.R.Goutham gave presentation in brief. The University Nominee Dr. K V Swamy asked about not to conduct field works. HOD Dr. M.R.Goutham explained the situation of

Pandemic of Covid-19 condition; conducted field trips with optimum precautions. (**Annexure - I**)

**Resolution:** It is resolved to accepted the action taken report submitted by the HOD.

**Item No. 2 To approve syllabi and model question papers for all the courses in Geology for the AY 2021-22**

**Discussion:** University Nominee Dr. K V Swamy asked whether it is purely CBCS pattern with revised guidelines or not?

**Resolution:** It is resolved to follow the guidelines given below:

1. The Choice Based Credit System (CBCS) for B.Sc. programme for the academic year 2020-2021, as it is in the previous academic year *i.e.*, 2019-2020 for V Semester.
2. For I and III semesters, remodified syllabus of Andhra Pradesh State Higher Education with New Framework
3. It is proposed to approve evaluation of the student's performance under Continuous Internal Assessment (CIA) and Semester End Examination (SEE) components at 40:60 ratio for the I & II B.Sc., Programme from the academic year 2020-21. The duration of the Semester End Examination is 3:00 hrs.
4. It is resolved to approve the syllabus for I, II and V semester of B.Sc., considering the syllabus based on feedback from stake holders and local needs of Industry for the academic year 2021-2022. And also resolved to follow the same model question papers for the academic year 2021-22, as per the CBCS pattern which were followed during 2016-17, 2017 -18 and 2018-19 for semester V. (**Annexure - II**)

**Item No. 3: To approve the additional curriculum for all the courses offered**

**Discussion:** Subject Expert K Santhosh asked about the Additional curriculum. The HOD of the Department explained about the additional curriculum for I, III, and V semesters with relevant justifications.

**Resolution:** It is resolved to add new additional curriculum to the courses in I and V semesters. Semester III syllabus is remodified from APSHE. (**Annexure - III**)

**Item No. 4: To approve the Modification / Upgradation of syllabi from 20% up to 40% wherever necessary to suite the global competency**

**Discussion:** The University Nominee Dr. K V Swamy asked whether the Syllabus modified with previous semesters. The HOD of the Department HOD Dr. M.R.Goutham explained that Semester I and V syllabus are modified upto 20% and Semester III syllabus is remodified the APSHE in New Framework.

Resolution: It is resolved to approve the Choice Based Credit System [CBCS], after APSCHE released the syllabus for 1<sup>st</sup> year, the Semester I syllabus will be modified according to the local need, availability of the lab equipment, it may be modified up to 40 % deviation, since the Autonomous system has such facility. (Annexure – IV)

**Item No. 5: To design and approve the Course outcomes (COs) & Programme outcomes (POs) for Geology**

Discussion: Subject Expert Dr. S S K Chaitanya asked about Course Codes for all the courses, labs, Value added courses and other Courses and suggested some modifications in Course Outcomes. The HOD of the Department Dr. M R Goutham explained about the Course codes.

Resolution: It is resolved to approved the Course Outcomes (COs) and Programme Outcomes (POs) of the subject. It is resolved to design the codes for Courses, labs, value added Courses and Certificate courses after discussion with IQAC committee of the College. (Annexure – V)

**Item No. 6. Continuation of New Evaluation System from the academic year 2021-2022 admitted batch, i.e. External: Internal as 60:40 from 75:25 (60Marks- External and 40Marks –Internal)**

Discussion: Subject Expert Dr. S S K Chaitanya asked the clarification about the new evaluation system for the academic year 2021-22. The HOD of the Department Dr. M R Goutham explained that the New Evaluation system for Semesters I & III and Old Evaluation System for Semester V will be implemented.

Resolution: i) It is resolved to evaluate the Student's performance under Continuous Internal Assessment (CIA) and Semester End Examinations components at 50:50 ration for the I & II III B.Sc., programme from the academic year 2020 – 21. The duration of the Semester End Examination is 3:00 hrs. and also resolved to approve the Standard Operating Procedure for CIA.

ii) It is resolved to evaluate the student's performance under Continues Internal Assessment (CIA) and Semester End Examination components at 25 : 75 ratio for the III B.Sc. Programme for the academic year 2021- 2022. The duration of the Semester End Examination is 3.00 hrs.

iii) It is resolved to continue the scheme of evaluation for practical examination for I, III and V semester for a maximum of 50 marks as internal examination. (Annexure – VI)

**Item No. 7. To suggest panel of names to the Academic Council for appointment of examiners and paper setters and other experts.**



Discussion: The University Nominee Dr. K V Swamy suggested that names for examiners and paper setters and other experts are minimum 6 numbers.

Resolution: The Board considered and approved the panel of names to the Academic Council for appointment of examiners and paper setters and other experts prepared by the department. **(Annexure - VII)**

**Item No. 8. To suggest methodologies for innovative methods of teaching**

Discussion: Subject Expert proposed innovative methods to enhance more Student Centric classroom activities.

Resolution: It is resolved to adopt innovative teaching methods with using tools like 3D models, Audio Visual classes (CD/DVD's), Television mode, Power Point Projection, e-classes, online assessments, quizzes with using advanced apps etc. It is resolved to adopt Learning outcomes-based approach to circular planning enhance the learning abilities with some innovative pedagogical approaches such as Student centric classroom activities, Peer Learning, Panel discussions, interviews with experts in subjects, preparation of demo projects.

**Item No. 9 To approve the Department Activities for 2021-2022 academic year.**

Discussion: After thorough discussion with BOS members, they suggest to conduct some departmental activities both Student centric activates and faculty centric activates to enhance their abilities in thinking, implementation, execution and leadership qualities.

Resolution: Approved the Tentative Plan of Departmental Activities prepared for 2021 - 2022 academic year **(Annexure-VIII)**.

**Item No. 10 Proposals to organizing National / State level Seminars /Workshops/Conferences/Training programmes conducting fieldwork etc., with topics and other details.**

Discussion: University Nominee Dr. K V Swamy suggested to conduct at least one Seminar/webinar/workshop with any NGO partner. The Board strongly recommend the Student Seminar organizing by the Geology Club.

Resolution : i) It is proposed approve to conduct Seminar (National / State level), Workshops / Guest Lectures / Invite talks for Students.

ii) It is resolved to approve to conduct Student Seminar in Geology by GEOLOGY CLUB.

**Item No. 11 Proposals for organizing subject oriented community outreach programmes.**

Discussion: The Subject Expert Sri K Santhosh and other members suggested to conduct community outreach programmes like giving hands on training on laboratory techniques for nearby high school students.

Resolution: It is resolved to conduct awareness programmes on Geology to make interest in school children to make they're in partnership in the national economic growth.

**Item No. 12 Conducting Value added and/or Certificate courses.**

Discussion: Board discussed about the syllabi of the proposed Value-Added Course and accepted. After having thorough discussions with the members of the BOS it is agreed to conduct Value added certificate courses for the II-year students in IV semester. University Nominee Dr. K V Swamy suggested to conduct a Value-added Course on Cartography.

Resolution: It is resolved to put forth before BOS the proposal of starting a Value-add Course in "Cartography" which is an introduction course to the Remote Sensing and GIS professional courses and helps to enhance the basic knowledge in map reading and preparation of thematic maps in the study of Physical Geology (Geomorphology), Structural Geology, Remote Sensing and GIS. **(Annexure - IX)**

**Item No. 13 To conduct Geological Field Trips MANDATORY for I, II and III B.Sc. Students.**

Discussion: After thorough discussion with BOS members, they suggest to conduct Geological Field Trips for I, II and III B.Sc. Students, because Geology is a field science and students have to learn more in hands in practice in field than laboratory. University Nominee Dr. K V Swamy suggested to take some help from Government department / Private organizations to organize field-oriented programmes for the present semester period. All the members agreed anonymously and HOD Dr. S S K Chaitanya in his reply, he will certainly take the help from government or Private organizations to conduct the field oriented programmes.

Resolution: It is resolved to make Geological field Trips compulsory for I, II and III B.Sc. students as per the norms in vogue as the Geology is the field-based science. And also resolved to take help from Government department / Private organizations to organize field-oriented programmes for the present semester period

**Item No. 14 Implementation of ICT enabled, experiential, problem solving and participative teaching learning methods for effective delivery of learning content for the students.**

Discussion: University Nominee Dr. K V Swamy and other members suggested to prepare e-content for all the courses.

Resolution: Resolved to prepare e-content of study material and ICT method of teaching.

**Item No. 15 Approval of the comprehensive academic plan of each faculty member denoting the topic to be completed in particular period along with Co-curricular activities planned like quiz, classroom seminar, Group Discussion, Assignments, etc.**

Discussion: After thorough discussion with BOS members, they suggest to conduct the co-curricular activities like Quiz, Classroom Seminar, Group discussion, Assignments, Charts, 3D models etc. with specific academic plan.

Resolution: It is resolved prepare the comprehensive academic plan submitted by each faculty member of the department.

**Item No. 16. Hands on training with industry tie up/ Internships for the III-year students**

Discussion: University Nominee Dr. K V Swamy asked about industry tie up / Internships for III year Students. Board discussed and accepted unanimously.

Resolution: It is resolved to make MoU with Remote Sensing & GIS based industry for giving training / internships for the III B.Sc. students at the end of VI semester to train the students with hands in training professionally.

**Item No. 17 To discuss the topics for the students' study projects and to introduce the study projects for final year advanced learners**

Discussion: Board discussed and accepted unanimously.

Resolution: It is resolved to discuss the topics for the students' study projects and to introduce the study projects for final year advanced learners.

**Item No. 18. Coaching for Different Entrance exams to pursue higher studies (Final year UG students)**

Discussion: The Industrial Expert Sri V Vijaya Babu suggested to take coaching classes for entrance and other competitive examinations from V semester onwards. HOD Dr. S S K Chaitanya giving reply for the suggestion that department is giving coaching to students for PG courses and will continue this semester also. Moreover will give coaching to other Competitive examinations with the help of CBC of the College.

Resolution: It is resolved to arrange coaching for the III B.Sc. students to face different entrance examinations to pursue higher studies.

**Item No. 19. Research activities planned for attending seminar/workshop, Publication of Research Paper etc.**

**Discussion:** University Nominee Dr. K V Swamy suggested that faculty can attend seminar / workshop, publication of Research paper etc.

**Resolution:** Resolved to encourage the faculty to actively involved in research on current trends in Environmental problems with geological approach.

**Item No. 20. Faculty Development / Training Programmes (Conducting/ Attending online)**

**Discussion:** The Subject experts suggested that each faculty should complete one NPTEL course per annum and the Board discussed and accepted unanimously.

**Resolution:** It is resolved to encourage the faculty to attend Faculty Development / Training Programme at least one per year, it may be online through SWAYAM portal of MHRD. Moreover, it is resolved to introduce MOOCs for II-year B.Sc. students.

**Item No. 21 Applying for different funding agencies both for faculty and students to arrange seminars/workshops/field trainings etc. and any other student centric activities**

**Discussion:** Board discussed and accepted unanimously.

**Resolution:** Resolved to encourage the faculty to apply for financial support from various funding agencies, for research work.

**Item No. 22. Institution of new medals/incentives/prizes etc., from alumni, philanthropists, parents, faculty etc., - Strategies to be recommended.**

**Discussion:** The subject experts suggested the department members to approach the old students who are well settled in various fields should start a medal or cash award to outstanding students..

**Resolution:** Resolved to institute New Medals / Incentives / Prizes for the meritorious students with the donations from the parents, philanthropists, alumni, faculty etc.

**Item No. 23. Any other relevant with the permission of the chair.**

**Resolution:** It is resolved to conduct celebrations for important days.

**Annexure – I**

**Department of Geology**

**Action Taken Report 2020-21**

Stake Holder	Suggestions	Action taken
Alumni	Conduct examinations in view of Pandemic	Online internal examinations conducted.
Employer	Include field exposure	Conducting field trips and incorporate in field surveys of private organizations
Faculty	To exchange of new ideas in latest techniques in teaching	Faculty exchange programme is arranged.
Parents	Better espouser of the students.	Online Training Programmes conducted
Students	Practical knowledge required	Study projects and short internships.

# GOVERNMENT COLLEGE (A) RAJAHMUNDRY

## Annexure - II

ALLOCATION OF CREDITS &  
Detailed Curriculum of **Geology** in B.Sc. Programmes for Semesters I, III & V

ALLOCATION OF CREDITS  
For the Courses offered during I, III, V Semesters

Sl. No.	Semester	Theory / Lab	Title of the Course	Course Code	Hrs./ week	Max. Marks	Mid Sem. Exam	Credits
1	I	Theory	<b>Course-I:</b> Physical Geology & Crystallography	GEO-1A	4	50*	50*	3
2		Lab-I	Physical Geology & Crystallography	GEOP101	2	50	--	1
3	III	Theory	<b>Course -III:</b> Igneous, Sedimentary & Metamorphic Petrology		4	50*	50*	3
4		Lab-III	Igneous, Sedimentary & Metamorphic Petrology		2	50	--	1
5	V	Theory	<b>Course-V:</b> Stratigraphy, Indian Geology & Paleontology		3	50	50	3
6		Lab -V	Paleontology		2	50	--	2
7		Theory	<b>Course-VI:</b> Economic Geology		3	50	50	3
8		Lab VI	Economic Geology		2	50	--	2

# SYLLABI

&

## Scheme of Evaluation

DEPARTMENT OF GEOLOGY  
B.Sc. FIRST YEAR - SEMESTER I

<b>Course Title</b>	<b>PHYSICAL GEOLOGY &amp; CRYSTALLOGRAPHY</b>
<b>Total Hours</b>	<b>60</b>
<b>Hours / Week</b>	<b>4</b>
<b>Code</b>	<b>GEO101</b>
<b>Course Type</b>	<b>Theory</b>
<b>Credits</b>	<b>3</b>
<b>Marks</b>	<b>50</b>

**General Objectives:**

Strengthens students' knowledge with respect to understanding the essentials of the structural dynamics of the earth. Studying the basics of crystallography helps in understanding and building the overall knowledge in rock forming minerals.

**Course Objectives:**

**The Learner will be:**

**No.**

**Course Objectives**

- 1 **Understand** the earth materials and the processes that develop and modify the composition, structure, and topography of the earth and causes and types of weathering and erosion
- 2 **Understand** different kinds of Glaciation, River and Groundwater, erosional features, landforms, deposits, and their relationship to climate.
- 3 **Understand** an overview of volcanoes, earthquakes, plate tectonics, geologic time, Wind and Seas action and structural geology.
- 4 **Understand** the various crystal Systems and Symmetry, miller indices through crystal models
- 5 **Understand** the different crystal systems with symmetry, forms and morphology

## Theory Syllabus

### **Unit -I**

(12 hours)

**General aspects:** Definition of geology - Basic assumptions of Geology - Its relationship with other sciences - Branches of geology - Aim and applications of geology.

**Earth as a planet:** its shape, size, and density - movement and then effects. Origin and age of the earth.

**Geological process:** Exogenic and endogenic. Definition of weathering - types of weathering of rocks - Physical, chemical and biological; Definition of erosion and denudation, cycle of erosion; erosion, transportation and deposition; agents of erosion.

**Additional Curriculum:** Solar system and its planets, Seas and Oceans, Meteorites and Asteroids

### **Unit-II**

(12 hours)

**Rivers:** Erosion, transportation and deposition of river (fluvial) cycle in different stages - Development of typical land forms by river erosion and deposition. V or V-Shaped valley. U-shaped valley. Waterfall alluvial form, meander, ox-bow lake-flood plain, natural plain, peneplain and deltas. Types of rivers.

**Groundwater:** Storage of ground water - porosity, permeability, aquifer, water table, zone of saturation, artesian well, spring, geysers - development of typical land form by erosion and deposition by groundwater [Karst topography] sinkhole, cavern, Stalactites and stalagmites.

**Glaciers:** Definition of a glacier - types of glaciers - development of typical land forms by glacial erosion and deposition - cirque, hanging valley, Rocks-monadnocks. Moraines, drumlins, kames, eskers and varves. Characteristic features of glaciated regions.

**Additional Curriculum:** Physiography of India, River system in India, Himalayan Glaciers in India.

### **Unit-III**

(12 hours)

**Seas:** offshore profile - land forms of sea - marine deposits and coral reefs. Lacustrine deposits. Atmospheric circulation, weather and climatic changes, land air, sea interaction. Earth's heat budget and global climatic changes.

**Wind:** Development of characteristic features by wind (arid cycle), erosion and deposition - pedestal rock - mushroom topography - Inselberg - Ventifacts - sand dunes.

**Earthquakes:** Cause, kinds of earthquake waves, and mode of propagation, intensity of earthquakes, Richters scale - seismograph and seismogram. Effects of earthquakes, earthquake zones - Interior of the earth based on seismic theory.

**Volcanoes:** origin, products of Volcanoes. Continental Drift & Plate tectonics: Theory of Plate tectonics - nature and origin of ocean floor.

**Additional Curriculum:** Oceanic currents & Coriolis force, Major Earthquakes in India. Active Volcanoes in India and Ring of Fire

### **Unit-IV**

(12 hours)



Definition of a **Crystal** - amorphous and crystalline states. Morphology of Crystals - face, edge, solid angle, interfacial angle. **Forms:** Simple, combination, closed and open forms. **Symmetry:** Plane, axis, centre. Crystallographic axes. Parameters, indices; crystallographic notation - parameter system of Weiss, index system of Miller. Classification of crystals into systems.

**Morphological study of the following classes of symmetry:**

- I. Cubic system – Galena type
- II. Tetragonal system - Zircon type

**Additional Curriculum:** Solid state chemistry principles with emphasis on lattice / unit cell structure.

**Unit-V**

(12 hours)

**Morphological study of the following classes of symmetry**

- III. Hexagonal system - Beryl type
- IV. Orthorhombic system - Barytes type
- V. Monoclinic system - Gypsum type
- VI. Triclinic system - Axinite type

**Twinning:** Definition of twinning, Laws of twinning and Types of twinning

**Additional Curriculum:** Contact Goniometer and Stereographic Projections

**Note: Tests given in the Additional Curriculum must be tested only through assignment and seminars**

Course Title	PHYSICAL GEOLOGY & CRYSTALLOGRAPHY		Semester: I
Code	GEOP-1A	Course Type	Practicals
Hours / Week	2	Total Hours	30
Credits	1	Marks	50

**Practical Syllabus**

- I
  1. Interpretation of morphometric data/drainage systems.
  2. Identification of geomorphological features in topographical maps.

II Study of symmetry, and form of the Normal classes of seven crystal systems of the following:

- I. Cubic system – Normal (Galena)
- II. Tetragonal system – Zircon type
- III. Hexagonal system – Beryl type
- IV. Orthorhombic system – Barites type
- V. Monoclinic system – Gypsum type
- VI. Triclinic system – Axinite type

**Course Outcomes:**

**The Learner will be able to:**

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	<b>Demonstrate and understand</b> to characterize the planet for the good development of the subject and understanding of Earth's genesis and make a time line	PSO 1	U
CO-2	<b>Recognize</b> different factors to govern the exogenic and endogenic processes of earth and can <b>recognize</b> the weathering, agents, rate of erosion and different land form	PSO 1	U

CO-3	<b>Recognize</b> the erosional and depositional land forms by geological action of Ground water and Seas; and can recognize the erosional, Transportational and depositional landforms by geological action of Rivers, Wind and Glaciers.	PSO 1	U, Ap
CO-4	<b>Estimate</b> the intensity of damage, prediction and methods of estimation by the dynamic action of Volcanoes, earthquakes, Tsunamis, Landslides and other Geological hazards and <b>recognize</b> the relationship between plate tectonics and magma originated rocks	PSO 1	U, Ap
CO-5	<b>Recognize</b> symmetry elements, crystal classes and morphology; and can <b>recognize</b> the difference between different crystal classes	PSO 2	Ap

**PO – Programme Outcomes; CO–Course Outcome; R – Remember; U–Understand; Ap – Apply; An – Analyse; E – Evaluate; C - Create**

**Text books:**

1. Holmes Principles of Physical Geology - D. L. Holmes
2. Physical Geology - E J Tarbuck & F K Lutgens
3. A book of Physical Geology - A K Datta
4. An Introduction to Crystallography - R. C. Phillips
5. Essential of Crystallography - E. Flint.

**References:**

1. Basic Physical Geology - E. S. Robinson
2. The evolving Earth: A text in Physical Geology - E. S. Sawkins. *et al*,
3. Physical Geology - B. F. Mallory & D.N. Gargo
4. A textbook of mineralogy - E. S. Dana & W. E. Ford

**I Degree Examinations-I Semester**  
Model question paper 2021-22

**Time: 3 Hrs.**

**Subject: Geology**

**Max.Marks:50**

**PAPER – I - PHYSICAL GEOLOGY & CRYSTALLOGRAPHY**

**Part – A**

**Answer any Four of the following.**

4 x 8 = 32 M

1. Define Geology. Describe the various branches of Geology

or

What is weathering? Describe the different types of weathering

2. Describe the Fluvial cycle of Erosion.

or

Describe the geological action of wind.

3. Write an essay on the Interior of the Earth?

or

Write an essay on Earthquake waves and their propagation?

4. What is a crystal? Write an essay on classification of crystals.

or

Describe the symmetry and forms of the Galena type of cubic system.

**Part – B**

**Answer any six of the following.**

6 x 3 = 18 M

5. Big Bang Theory
6. Soil Profile
7. Moraines
8. Coral Reefs
9. Parts of a volcano
10. Karst topography

11. Index System of Miller

12. Twinning

DEPARTMENT OF GEOLOGY  
**I Degree Examinations- I Semester**  
**Practical III** Model question paper- 2021-22

**Time : 2 Hrs.**

**Subject: Geology**

**Max. Marks: 50**

**PHYSICAL GEOLOGY & CRYSTALLOGRAPHY**

1. Write the symmetry elements and forms of the crystal models.

7x4=28

2. Draw and explain the given geomorphological model.

2x6=12

Record:

10

**Total:**

**50**



DEPARTMENT OF GEOLOGY  
B.Sc. SECOND YEAR - SEMESTER III

<b>Course Title</b>	<b>PETROLOGY (IGNEOUS, SEDIMENTARY &amp; METAMORPHIC)</b>
<b>Total Hours</b>	<b>60</b>
<b>Hours / Week</b>	<b>4</b>
<b>Code</b>	<b>GEO-114</b>
<b>Course Type</b>	<b>Theory</b>
<b>Credits</b>	<b>3</b>
<b>Marks</b>	<b>50</b>

**General Objectives:**

On completion of the course the students will have gained an understanding of the processes involved in the formation of Igneous, Sedimentary & Metamorphic rocks, their textures, structures, classifications and their importance. and sedimentary rocks, their textures, structures, classifications and their importance.

**Course Objectives:**

**The Learner will be:**

No.	Course Objectives
1	<b>Know</b> the difference between rocks & minerals
2	<b>Identify, describe and classify</b> rocks using hand specimens with physical and optical properties
3	<b>Recognize</b> the Structures and forms of Igneous, Sedimentary & Metamorphic rocks in field
4	<b>Differentiate</b> the rocks by using the classification of Igneous, Sedimentary & metamorphic rocks
5	<b>Determine and interpret</b> geochemistry of rocks

**Theory Syllabus**

**Unit-I** (12 hrs.)

**Nature and scope of petrology:** Definition of rock, Classification of rocks into Igneous, sedimentary and metamorphic. Distinguishing features of three types of rocks.

**IGNEOUS ROCKS: Forms** -Lava flows, Intrusions: Sills, Laccolith, Bysmalith, Lopolith, Batholith, Dykes, Ring dyke, Cone, Sheet and Volcanic neck Structures: Vesicular, Amygdaloidal, Block lava, Ropy lava, Pillow, Flow and sheet structures. Columnar and prismatic structures

**Textures** - Definition of **texture**, micro-structure, devitrification - Hypidiomorphic, panidiomorphic, porphyritic, poikilitic, ophitic, intergranular, intersertal, trachytic, graphic and micro-graphic textures

**Unit-II** (12 hrs.)

**Classification of Igneous rocks:** CIPW and Tyrrell's tabular classification.

Descriptive study of following rock types: Granite, Syenite, Diorite porphyry, Pegmatite, Gabbro, Pyroxenite, Dunite, Dolerite, Rhyolite, Trachyte, and Basalt. Granodiorite, Diorite, Nepheline syenite, Granite porphyry, Syenite porphyry.

**Composition and constitution of magma:** Crystallisation of Magma - Uni-component, binary system, eutectic and solid solutions.

**Origin of igneous rocks** - Bowen's reaction principle, Differentiation and Assimilation

**Unit-III** (12 hrs.)

**Sources of sediments** - mechanical and chemical weathering, modes of transportation, stratification. **Sedimentary structures**, Types of bedding, surface marks, deformed bedding, solution structures

**Classification of sedimentary rocks;** clastic - rudaceous, arenaceous, argillaceous, Non-clastic - Chemical deposits: calcareous, carbonaceous, evaporates

Organic deposits: Siliceous, Phosphatic, ferruginous, calcareous, carbonaceous.

Descriptive study of the following sedimentary rocks: Conglomerate, Breccia, Sandstone, Grit, Arkose, Shale and limestone. Laterite

**Unit - IV**

(12 hrs.)

Definition of **Metamorphism, agents** of metamorphism, types of metamorphism, **grades** and **zones** of metamorphism. Metamorphic minerals - stress and antistress minerals. **Structures of metamorphic rocks** - Cataclastic, maculose, schistose, granulose and gneissose. **Textures of metamorphic rocks**- crystalloblastic, xenoblastic.

**Unit-V**

(12 hrs.)

**Classification of metamorphic rocks** Cataclastic metamorphism of argillaceous and arenaceous rocks. Thermal metamorphism of argillaceous, arenaceous and calcareous rocks. Dynamo thermal metamorphism of argillaceous, arenaceous and igneous rocks. Plutonic metamorphism, metasomatism. Descriptive study of the following metamorphic rocks: Gneiss, Schist, Slate, Phyllite, Quartzite, Marble, Charnockite and Khondalite. Eclogite, Schroll rock.

*Note: Tests given in the Additional Curriculum must be tested only through assignment and seminars*

<b>Course Title</b>	<b>PETROLOGY (IGNEOUS, SEDIMENTARY &amp; METAMORPHIC)</b>		
<b>Code</b>	<b>GEOP-114</b>	<b>Course Type</b>	<b>Practicals</b>
<b>Hours / Week</b>	<b>2</b>	<b>Total Hours</b>	<b>30</b>
<b>Credits</b>	<b>1</b>	<b>Marks</b>	<b>50</b>

### Practical Syllabus

➤ **Megascopic and microscopic study of the following igneous rocks:**

**Dunite, Peridotite, Granite. Syenite, Diorite, Gabbro. Dolerite, Rhyolite, Basalt, Pegmatite,**

**Additional curriculum: Granodiorite, Diorite, Nepheline syenite, Granite porphyry, Syenite porphyry.**

➤ **Megascopic and microscopic study of the following sedimentary rocks:**

**Conglomerate, Breccia, Sandstone, Shale, Limestone and its varieties**

**Additional curriculum: Laterite**

➤ **Megascopic and microscopic study of the following Metamorphic rocks:** Schist, Gneiss, Quartzite, Marble, Charnockite and Khondalite.

**Additional curriculum:** Slate, Phyllite, Eclogite, Schroll rock.

**Course Outcomes:**

The Learner will be able to

<b>CO No.</b>	<b>Course Outcomes</b>	<b>PSOs Addressed</b>	<b>Cognitive Level</b>
CO-1	<b>Introduced</b> to the structure of the continental crust vs oceanic crust and their geodynamic. And <b>Appreciate</b> the modern concept of plate tectonics and its implications.	PSO 1	<b>U</b>
CO-2	<b>Learn</b> to identify, describe and classify rocks using hand specimens. And also <b>Recognize</b> the textures & structures of	PSO2	<b>U, Ap</b>

	Igneous rocks by using the microscope & field observations		
CO-3	And also <b>Recognize</b> the textures & structures of Sedimentary rocks by using the microscope & field observations	PSO 1	U
CO-4	<b>Understand</b> types of metamorphism, metamorphic agents, textures & structures and environments	PSO 2	An
CO-5	<b>Study</b> different types of metamorphic rocks by using the microscope & field observations	PSO 3	Ap, An

**PO – Programme Outcomes; CO-Course Outcome; R – Remember; U-Understand; Ap – Apply; An – Analyse; E – Evaluate; C – Creative**

**Text books:**

- |                            |                 |
|----------------------------|-----------------|
| 1. Principles of petrology | - G. W. Tyrrell |
| 2. Petrology               | - W. T. Huang   |
| 3. Metamorphic petrology   | - B Bhaskar Rao |

**References**

- |   |                                 |
|---|---------------------------------|
| 1. Petrology for students                     | - S. R. Ndckolds Knox, Chinnar  |
| 2. A Text book of sedimentary petrology       | - Verma & Prasad                |
| 3. Petrology of the sedimentary rocks         | - J.T. Greehsmith               |
| 4. Petrology of the sedimentary rocks         | - F. H. Hatch, Wells and Wells. |
| 5. Petrology of the igneous rocks             | - F. K Hatch, Wells and Wells.  |
| 6. Petrology of Igneous and Metamorphic rocks | - H y n d m a n                 |



**II Degree Examinations-III Semester**

Model question paper 2021-22

**Time: 3 Hrs.**

**Subject: Geology**

**Max. Marks: 50**

**PAPER – III - PETROLOGY (IGNEOUS, SEDIMENTARY & METAMORPHIC)**

**I. Answer any Four Questions without leaving any Part**

**4x8=32**

**PART- A**

1. Write an essay Classification of rocks.
2. Explain briefly the process of crystallization of binary magmas with eutectic proportion.
3. Write an essay on Tyrrell's classification of Igneous rocks.

**PART-B**

4. Write an essay on the Structures of Sedimentary rocks
5. Write an essay on Sedimentary Environments.

**PART-C**

6. What is Metamorphism? Describe the agents and types of Metamorphism.
7. Write an essay on the Structures and Textures of metamorphic rocks.
8. Describe the Plutonic metamorphism and its products

**II. Answer any six short answers of the following:**

**6x3=18**

9. Barysphere
10. Batholith.
11. Vesicular structure.
12. Grain size of Sedimentary rocks
13. Conglomerate and Breccia
14. Metamorphic facies.
15. Devitrification
16. Schistose structure.

**DEPARTMENT OF GEOLOGY**  
**II Degree Examinations- III Semester**  
**Practical III Model question paper- 2021-22**

**Time: 2 Hrs.**

**Subject: Geology**

**Max. Marks: 50**

**PETROLOGY (IGNEOUS, SEDIMENTARY & METAMORPHIC)**

- |   |            |
|---|------------|
| 1. Identify and describe the physical properties, mineralogical composition and mode of origin of the megascopic rocks          | 5 x 5 = 25 |
| 2. Identify and describe the physical properties, mineralogical composition and mode of origin of the microscopic rock sections | 3 x 5 = 15 |
| 3. Record   | 10         |
| <b>Total:</b>   | <b>50</b>  |

## DEPARTMENT OF GEOLOGY

### B.Sc. THIRD YEAR - SEMESTER V

<b>Course Title</b>	<b>STRATIGRAPHY, INDIAN GEOLOGY &amp; PALAEOLOGY</b>
<b>Total Hours</b>	<b>60</b>
<b>Hours / Week</b>	<b>4</b>
<b>Code</b>	<b>GEO-115</b>
<b>Course Type</b>	<b>Theory</b>
<b>Credits</b>	<b>3</b>
<b>Marks</b>	<b>50</b>

#### **General Objectives:**

The knowledge of the concepts in stratigraphy, correlation, and Palaeontology would enable the students to understand the changes that occurred in the history of the earth and relate them to their field observations and also, in understanding the framework of the stratigraphy of India

#### **Course Objectives:**

##### **The Learner will be:**

##### **No.**

##### **Course Objectives**

- 1 Discuss geologic time including relative and absolute dating and the techniques, principles, and laws involved
- 2 Application of stratigraphy in Indian geological formations
- 3 Differentiate the different geological formations with stratigraphic correlation and tectonic activity.
- 4 Knowledge gained from the age of the rocks within which fossils are found
- 5 Understand the correlation and fossil succession make to evaluate the to develop new ideas about evolution of life and ecology.

### **Theory Syllabus**

#### **Unit-I**

**Stratigraphy:** Definition of Stratigraphy. Principles of Stratigraphy. Nomenclature of Stratigraphy – Geochronologic units, Chronostratigraphic units, Biostratigraphic units and Lithostratigraphic units. Standard Geological Time Scale, Principles of correlation.

**Additional curriculum:** Physiographic divisions of India with their stratigraphic and structural characteristics. (for assignment, quiz etc.,)

#### **Unit II**

Physiographic divisions of India with their stratigraphic and structural characteristics. A brief study of type areas, distribution in India, lithology, fossil content and economic importance of the following geological groups of India – Dharwars, Puranas – Cuddapahs, Vindhya, Kurnools.

**Additional Curriculum:** brief study of A type areas, distribution in India, lithology, fossil content and economic importance of the following geological groups of India-, Nellore Schist Belt. (for assignment, quiz etc.,)

### **Unit-III**

Gondwana system. Triassic of Spiti, Jurassic of Kutch, Cretaceous of Trichinopoly, Deccan traps and their age, Siwaliks with vertebrate fossils. Geology of Andhra Pradesh. Stratigraphic contacts-boundaries between Archaean and Proterozoic and Cretaceous and tertiary boundaries.

**Additional Curriculum;** Eastern Ghat Mobile Belt. (for assignment, quiz etc.,)

### **Unit-IV**

Definition of Palaeontology, Branches of Palaeontology, conditions of fossilization, modes of preservation and uses of fossils. Geochronologic Units. Index Fossils.

Detailed study of morphology, classification and geological distribution of - Corals and Brachiopoda,

**Fossils:** Calceola, Zabhranthis, Terebratula, Spirifer, Rhynchonella, Products, Detailed study of morphology, classification and geological distribution of Mollusca (Gastropods, Cephalopoda and Lamellibranchia) Turritella, Natica, Physa, Conus, Pecten. Gryphaea, Arca, Cardita, Nautilus. Ammonoids, Ceratites, Bellemnites.

**Additional curriculum :** Detailed study of morphology, classification and geological distribution of - **Corals**. (for assignment, quiz etc.,)

### **Unit- V**

Detailed study of morphology, classification and geological distribution of - Trilobita, Echinodermata, Graptolites and Plant fossils.

**Additional curriculum :** **Plant fossils**. (for assignment, quiz etc.,)

**Fossils:** Calymene, Paradoxide, Cidaris, Micraster, Hemiaster, Monograptus, Diplograptus, Glossopteris, Gangamopteris and Ptylophyllum Lepidodendron.

**Note: Tests given in the Additional Curriculum must be tested only through assignment and seminars**

<b>Course Title</b>	<b>STRATIGRAPHY, INDIAN GEOLOGY &amp; PALAEOLOGY</b>		
<b>Code</b>	<b>GEO-115p</b>	<b>Course Type</b>	<b>Practicals</b>
<b>Hours / Week</b>	<b>2</b>	<b>Total Hours</b>	<b>30</b>
<b>Credits</b>	<b>1</b>	<b>Marks</b>	<b>50</b>

### Practical Syllabus

- Drawing and description of invertebrate and plant fossils as per the list mentioned in the theory syllabus.
- Classification, morphology and geological distribution. Fossils:
  - Cidaris, Micraster, Hemiaster. Cerethium, Terebratula, spirifer, Rhynchonella, Turritella, Natica, Physa, Pecten, Gryphaea, Arca, Cardita, Nautilus, Ammonodis, Ceratites, Bellemnites, Calymene, Paradoxide. Corals. Plant fossils Glossopeteris, Gangamopteris and ptylophyllum.

#### Course Outcomes:

**The Learner will be able to:**

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	<b>Understand</b> about the geology by way in stratigraphy and distinguish the principles of stratigraphy and understand the structure of geological time scale & studies related to it	PSO 1	U
CO-2	Have a knowledge about the cratons & basins; and easily study difference in field and <b>correlate</b> International Geological Time Scale with Indian Stratigraphic Time Scale	PSO 2	U
CO-3	<b>Understand</b> about the Geology of India, <i>i.e.</i> , origin, age, type, place and distribution of Stratigraphic succession of India.	PSO 3	Ap
CO-4	<b>Define</b> and <b>understand</b> the terms and roles of Paleontologist and <b>understand</b> how the Paleontology helps in knowing the history of organic life on earth.	PSO 3	An
CO-5	<b>Acquire</b> skills of discovering and describing fossils and their taxonomic classification and <b>interpreting</b> paleoclimate and paleoenvironment conditions.	PSO 2	U

**PO – Programme Outcomes; CO-Course Outcome; R – Remember; U-Understand; Ap – Apply; An – Analyse; E – Evaluate; C - Create**

**Text books:**

- |  |                                 |
|--|---------------------------------|
| 1.Principles of stratigraphy                           | - Dunbars & Rodgers.            |
| 2. Fundamentals of Historical Geology and Stratigraphy | - Ravindra Kumar                |
| 3. Geology of India & Burma                            | - MS Krishna                    |
| 4. Geology of India (Vol. 1 & 2)                       | - R. Vydyanadhan & Ramakrishnan |
| 5. Invertebrate Palaeontology                          | - Henry Woods.                  |
| 6. An introduction to palaeontology                    | - Jain, P.C et.al.              |

**DEPARTMENT OF GEOLOGY**  
**III Degree Examinations-V Semester**  
Model question paper- 2021-22

**Time : 3 Hrs.**

**Subject: Geology Paper V**

**Max. Marks: 50**

**PAPER -V: PALEONTOLOGY, STRATIGRAPHY AND INDIAN GEOLOGY**

**I. Answer any Four Questions without leaving any Part** 4x8=32

**PART- A**

1. Write an essay on Echinoderms with a note on their geological and geographical distribution.
2. Describe the classification, morphological and geological distribution of Brachiopods.
3. Describe the classification, morphological and geological distribution of Trilobites.

**PART-B**

4. Write an essay on Gondwana system and add a note on its economic importance.
5. Write an essay on Cretaceous rocks of Tiruchrapally with a note on its fossil content.
6. Describe the principles of stratigraphy.

**II. Answer any six short answers of the following:** 6 x 3 = 18

7. Gangamopteris.
8. Brachial skeleton.
9. Hinge line of lamellibranches.
10. Siwalik Succession
11. Uttattur stage
12. Age of deccan traps.
13. Lameta and Bag beds.
14. Cuddapah succession.

**DEPARTMENT OF GEOLOGY**

LAB- V (Practicals)  
**PRACTICAL V - PALAEOLOGY**

Drawing and description of invertebrate and plant fossils as per the list mentioned in the theory syllabus.

Classification, morphology and geological distribution. Fossils:  
Cidaris, Micraster, Hemiaster. Cererium, Terebratula, spirifer, Rhynchonella, , Turritella,  
Natica, Physa, Pecten, Gryphaea, Arca, Cardita, Nautilus, Ammonodis, Ceratites, Bellemnites,  
Calymene, Paradoxide. Corals. Plant fossils glossopeteris, gangamopteris and ptylophyllum.

**DEPARTMENT OF GEOLOGY**

**III Degree Examinations –SEMESTER V**  
**Practical V Model question paper- 2021-22**

**Time : 3 Hrs.**

**Subject: Geology**  
**PALEONTOLOGY**

**Max. Marks: 50**

1. Identify the fossils and write their Classification, Morphological Characters and Geological Age. **8x4 = 32**
2. Draw a neat diagram of the fossils and write the Classification, morphological characters and geological age. **1x8= 08**

Record: 10

Total: 50

## DEPARTMENT OF GEOLOGY

### B.Sc. THIRD YEAR - SEMESTER V

Course Title	ECONOMIC GEOLOGY
Total Hours	60
Hours / Week	3
Code	GEO 105
Course Type	Theory
Credits	3
Marks	50

#### **General Objectives:**

On completion of the course the students will have gained an understanding of the processes involved in the formation of minerals with economic value, their occurrence, mechanism in formation, classifications and their importance.

#### **Course Objectives:**

##### **The Learner will be:**

- | No. | Course Objectives  |
|-----|--|
| 1   | Have knowledge on Economic geology which is the study of the formation and extraction of earth materials that have some economic potential in society. |
| 2   | Identify important ore-forming minerals, textures, and structures in hand sample and in the field.   |
| 3   | Compare the differences between mineral resources, reserves, and ores and their importance to society  |
| 4   | Get knowledge in finding ore deposits using geological, geophysical and geochemical knowledge  |
| 5   | Estimation of ore reserves, procedure to be adopted in sampling and mineral wealth of India and Andhra Pradesh   |

### **Theory Syllabus**

#### **Unit-I**

Definition of Economic geology, mineral resources and mineral deposits, importance of economic minerals and rocks, ore minerals, gangue minerals (gangue). Ore and industrial minerals. Classification of mineral deposits - Bateman's classification modified by Jensen. Processes of formation of mineral deposits; endogenetic and Exogenetic processes.

**Additional Curriculum:** Metallogenic epochs and provinces.(for assignment, quiz etc.,)



**Unit-II:**

Study of ore deposits of gold, copper, lead, zinc, aluminium, with respect to their mineralogy, uses mode of occurrence, origin and distribution in India.

*Additional Curriculum:* Precious and Semi-precious Stones. (for assignment, quiz)

**Unit-III:**

Iron, manganese, chromium, uranium and thorium, with respect to their mineralogy, uses mode of occurrence, origin and distribution in India.

**Unit-IV:**

Distribution of industrial minerals in India for the following industries: Abrasives, cement and Ceramic.

*Fossil fuels:* Coal - origin and types of coal - coal deposits of India.

*Additional Curriculum:* Building stones. (for assignment, quiz etc.,)

**Unit-V:**

Atomic minerals: Uranite, Pitchblende, Coffenite - Beach sands: Monazite, ilimenite; Rutile and Zircon and their use. Mineral resources of Andhra Pradesh.

*Additional Curriculum:* KG basin for Petroleum resources.(for assignment, quiz etc.,)

**Note: Tests given in the Additional Curriculum must be tested only through assignment and seminars**

Course Title	ECONOMIC GEOLOGY		
Code	GE06P-3A	Course Type	Practicals
Hours / Week	2	Total Hours	30
Credits	1	Marks	50

## Practical Syllabus

- Megascopic study, mode of occurrence, distribution in India and uses of the following economic minerals:
  - Haematite, Magnetite Pyrite, Pyrolusite, Psilomelane, Chalcopyrite, Malachite, Azurite, Bauxite, Chromite: Galena, Sphalerite, Magnesite, Gypsum, Asbestos, Steatite, Graphite, Monazite, Ilmenite, Zircon, Fluorite, Barytes, Corundum, Topaz, Calcite, Kaolinite, Kyanite, Sillimanite, Garnet and Mica.

**Course Outcomes:**

**The Learner will be able to:**

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	<b>Recognize</b> different geological process to form Ore deposits and Differentiate the Ore deposits of different metallic and non-metallic deposits	PSO 2	Ap
CO-2	<b>Identify</b> important Non-Ferrous and Native metal ore-forming minerals, textures, and structures in hand sample and in the field.	PSO 1	U
CO-3	<b>Identify</b> important Ferrous and Ferro-Alloy ore-forming minerals, textures, and stuctures in hand sample and in the field	PSO 1	U
CO-4	<b>Understand</b> the kinds and features of rock masses, mineral	PSO 2	Ap

	deposits, mineral fuels including coal and oil resources occur in India		
CO-5	<b>Understand</b> that radioactive minerals will play vital role in alternative energy generation. <b>Acquire</b> all knowledge and skills required for himself/herself becoming an Economic Mineralogist.	PSO 3	Ap

**PO – Programme Outcomes; CO–Course Outcome; R – Remember; U–Understand; Ap – Apply; An – Analyse; E – Evaluate; C – Create**

**Text Books:**

- |  |                             |
|--|-----------------------------|
| 1. Indian mineral resources                      | - S. Krishnaswamy           |
| 2. Introduction of India's economic Minerals     | - N. Lisharna, K. S. V. Ram |
| 3. Geology & mineral resources of Andhra Pradesh | - N. V. B. S. Dutt          |
| 4. Mineral Resources of Andhra Pradesh           | - Dr. P.K Ramam             |

**References:**

- |                                    |                          |
|------------------------------------|--------------------------|
| 1. Indian mineral year book (1997) | - Indian Bureau of Mines |
| 2. Fuel minerals                   | - A. K. Brown & Dey      |

**III Degree Examinations-V Semester**

Model question paper- 2021-22

**Time : 3 Hrs.**

**Subject: Geology Paper VI**

**Max. Marks: 50**

**PAPER-VI ECONOMIC GEOLOGY**

**I. Answer any Four Questions.**

4x8=32

1. Write an essay on classification of Mineral deposits.
2. Describe the process of formation of magmatic deposits.
3. Describe the oxidation and supergene enrichment process of formation of mineral deposits.
4. Describe the residual concentration process of formation of mineral deposits.
5. Write an essay on manganese deposits of India.
6. Write an essay on Copper deposits of India.
7. Describe the distribution of the minerals used in Ceramic industry.
8. Describe the origin and distribution of coal deposits in India.

**II. Answer any six short answers of the following:**

6x3=18

9. Contact metasomatism
10. Radioactive minerals
11. Bauxitisation
12. Fissure veins
13. Abrasive minerals
14. Radioactive minerals
15. Lead and Zinc ore minerals
16. Andhra Pradesh petroleum deposits

## DEPARTMENT OF GEOLOGY

### LAB- VI (Practicals) PRACTICAL VI - ECONOMIC GEOLOGY

Megascopic study, mode of occurrence, distribution in India and uses of the following economic minerals: haematite, magnetite Pyrite, Pyrolustie, Psilomelane, Chalcopyrite, malachite, Azurite, Bauxite, Chromite: Galena, Sphalrite, Magnesite, Gypsum, Asbestos, Steatite, Graphite, Monazite, 34lmenite, Zircon, Fluorite, Barytes, Corundum, Topaz, Calcite, Kaolinite, Kyanite, Sillimanite, Garnet and Mica

### III Degree Examinations –SEMESTER V Practical VI Model question paper- 2021-22

**Time : 3 Hrs.**

**Subject: Geology**

**Max. Marks: 50**

**ECONOMIC GEOLOGY**

1. Identify the Economic minerals and write important Physical Properties, Chemical Composition,  
Mode of occurrence, Geological distribution, Geographical distribution and uses.

**8x5 = 40**

**Record: 10**

**Total: 50**