DEPARTMENT OF GEOLOGY

COURSE CURRICULUM & MARKING SCHEME

SKILL ENHANCEMENT COURSES

SESSION: 2024-25

Govt. V.Y.T. PG Autonomous College, Durg (C.G.)

DEPARTMENT OF GEOLOGY
GOVT. V.Y.T. PG AUTONOMOUS COLLEGE, DURG (C.G.)
2024 – 2025
Skill Enhancement Course (SEC-1) Course Code- GL

Course Outcome

After the completion of this course, the student will be able to

1. Explain various types of maps and scales
2. Describe map projections
3. Identify and discuss features on topographic maps
4. Explain the shape of contour pattern
5. Interpret topographic maps and identify landforms on topographic map

Topographic Map Skills

Session 2024-2025

No. of Credits – 01 Credits **Max. Marks – 25**

- Maps: Classification and types.
- Coordinate systems: Polar and rectangular.
- Survey of India topographical maps: Reference scheme of old and open series.
- Information on a topographic map.

Learning Resources:

A Guide to Field Geology by N.W. Gokhale, CBS Publishers , New Delhi. 2009.

Field Geology by Frederic H. Lahee. McGraw-Hill Book Company, 1961

https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/earthsciences/pdf/topo101/pdf/mapping_basics_e.pdf

Chairperson /H.O.D	Subject Expert	Subject Expert	Subject Expert
Senior Professor of Science Faculty	Departmental members	Alumnus	Student

DEPARTMENT OF GEOLOGY
GOVT. V.Y.T. PG AUTONOMOUS COLLEGE, DURG (C.G.)
2024 – 2025

Practicals

No. of Credits – 01 Credits **Max. Marks – 25**

- Natural features and cultural features on topographic maps.
- Topographic Map and Contour Lines. Contour patterns, Rule of Vs and its significance.
- Measurement of distance on topographic maps.
- Interpretation of topographic maps.

Question Paper Format and Distribution of Marks for Under Graduate Examination

1. The question paper will consist of 10 questions and any 5 will have to be attempted.

Chairperson /H.O.D | Subject Expert | Subject Expert | Subject Expert

Senior Professor of Science Faculty | Departmental members | Alumnus | Student

DEPARTMENT OF GEOLOGY
GOVT. V.Y.T. PG AUTONOMOUS COLLEGE, DURG (C.G.)
2024 – 2025
Skill Enhancement Course (SEC-2) Course Code- GLSEC-02

Course Outcome

After the completion of this course, the student will be able to

1. Explain the meaning of attitude of rock bed.
2. Describe the construction and workings of Clinometer compass.
3. Describe the construction and workings of Brunton compass.
4. Measure the attitude of rock beds using clinometer and Brunton compass.
5. Calculate value of true dip when two values of apparent dip are given.

Attitude and its measurement

Session 2024-2025

No. of Credits – 01 Credits **Max. Marks – 25**

- Basic concepts of attitude of rock beds
- Dip: True dip and apparent dip, strike, plunge and pitch.
- Clinometer compass construction and working.
- Brunton compass construction and working.

Chairperson /H.O.D | Subject Expert | Subject Expert | Subject Expert

Senior Professor of Science Faculty | Departmental members | Alumnus | Student

DEPARTMENT OF GEOLOGY
GOVT. V.Y.T. PG AUTONOMOUS COLLEGE, DURG (C.G.)
2024 – 2025

Practical

No. of Credits – 01 Credits **Max. Marks – 25**

- Measurement of attitude of rock beds using clinometer compass.
- Measurement of attitude of rock beds using Brunton compass.
- Calculation of true dip using geometrical method on the basis of two values of apparent dip.

Question Paper Format and Distribution of Marks for Under Graduate Examination

1. The question paper will consist of 10 questions and any 5 will have to be attempted.

Chairperson /H.O.D | Subject Expert | Subject Expert | Subject Expert

Senior Professor of Science Faculty | Departmental members | Alumnus | Student

DEPARTMENT OF GEOLOGY

COURSE CURRICULUM & MARKING SCHEME

VALUE ADDED COURSE

SESSION: 2024-25

Govt. V.Y.T. PG Autonomous College, Durg (C.G.)

VALUE ADDED COURSE: PROFICIENCY IN GEOLOGICAL SKILLS

COURSE CODE: VGL01

The main objective of Value-Added Course is to supplementthe curriculum to make students better prepared to meet industry demandsas well as develop their own interests and aptitudes. This course will help students stand apart from the rest in the job market byadding further value to their resume.

The main objectives of the Value-Added Course are:

A. To provide students an understanding of the expectations of industry.
B. To improve employability skills of students.
C. To bridge the skill gaps and make students industry ready.

COURSE OUTCOME:

After successful completion of this value-added course, the student will be able to

1. Identify rocks and minerals in hand specimen and thin section
2. Measure the attitude of linear and planer features of rock beds
3. Prepare geological map and geological cross section
4. Collect samples and determine the location of sample
5. Take good quality field photographs

Unit 1

1. Physical properties of minerals
2. Optical properties of minerals
3. Petrological microscope construction and working
4. Identification of minerals in hand specimen
5. Identification of minerals in thin section

Unit 2

1. Classification of igneous sedimentary and metamorphic rocks
2. Structure structures and mineral composition of igneous rocks identification of igneous rocks in hand specimen in thin section
3. Structure structures and mineral composition of sedimentary rocks identification of sedimentary rocks in hand specimen and thin section
4. Structures textures and mineral composition of metamorphic rocks identification of metamorphic rocks in hand specimen and thin section

5. Top and bottom criteria

Unit 3

1. Outcrops dip and strike
2. Measurement of depends type using climatic compass and Brunton compass
3. Folds, faults, joints and unconformities basic terminology and classification
4. Lineation foliation basic terminology and classification
5. Identification of geological structures on map and in field

Unit 4

1. Toposheet: Fundamentals and application in geological studies
2. Geological mapping techniques: An overview
3. Preparation of geological map and geological cross section
4. Use of global positioning system in geological studies
5. Sampling and photography in geological studies

Duration

The duration of value added course is 30 hours with a combination 18hours (60%) of theory and 12 hours (40%) of practical. However, thecombination of theory and practical shall be decided by the course teacher with the approval of the Head of the Department.

Attendance

Each faculty handling a course shall be responsible for the maintenance of Attendance and Assessment Record for candidates who have registered for the course.The Record shall contain details of the students' attendance, marks obtained in the Continuous Internal Assessment (CIA) Tests, Assignments and Seminars. In addition, the Record shall also contain the organisation of lesson plan of the Course Instructor.The record shall be submitted to the Head of the Department once a month for monitoring the attendance and syllabus coverage.At the end of the semester, the record shall be duly signed by the Course Instructor and the Head of the Department and placed in safe custody for any futureverification.The Course Instructor shall intimate to the Head of the Department at least seven calendar days before the last instruction day in the semester about the attendance particulars of all students.Each student shall have a minimum of 75% attendance in all the courses of the particular semester failing which he or she will not be permitted to write the End-Semester Examination.

Evaluation

The value added course shall carry 100 marks with 25% Continuous Assessment and 75% End Semester assessment.

Continuous Internal Assessment (CIA)

The CIA shall be a combination of a variety of tools such as class test,assignment, seminars, and viva-voce that would be suitable to the course.The internal assessment shall be done based on the performance inthe two Continuous Internal Assessment Tests, Seminar and Assignment. The break-up of marks shall be as follows:

Marks Distribution	
Test-I & Test-II	15
Seminar	5
Assignment	5
Total	25

Continuous Internal Assessment Tests

Two Assessment Tests shall be conducted preferably one in the middle and the other at the end of the course by the Department concerned.CIA Test-I will cover the syllabus of the first two units while CIA Test - II will cover the last three units.The duration of assessment is one hour each. The pattern of question paper will be decided by the respective faculty.For the CIA Tests, theassessment will be done by the Course Teacher.A student cannot repeat the CIA Test-I and CIA Test-II. However, if for any valid reason the student could not attend the test, the prerogativeof arranging a special test lies with the teacher in consultation with the Head of the Department.

Examinations

The End Semester Examinations for the ODD semester will normally be conducted in November and for the EVEN semester in May. A candidate who does not pass the examination shall be permitted to reappear in such course(s) that will be held in the subsequent semester/year. The End Semester Examination will be of three hours duration and will cover the entire syllabus of the course.The Question Papers will be framed to test different levels of learning based on Bloom's taxonomy viz. Knowledge,Comprehension,Application, Analysis, Synthesis and Evaluation/Creativity.

Assessment of Value-added Courses

Assessment of VACs shall be internal.Two CIA Tests shall be conducted during the semester by theDepartment(s) offering VAC and evaluated by the course

teacher.The End Semester Examination shall be valued by the internal examiner appointed by the Controller of Examination on the recommendation of the Head of the Department.

Passing Requirement and Grading

The passing requirement for value added courses shall be 50% of the marks prescribed for the course. While a minimum of 40% marks in End Semester Examination is essential, and there is no passing minimum for CIA Tests.

A student is declared to have passed the course if he/she secures notless than 40% marks in the End Semester Examination and not less than50% marks in aggregate taking CIA and End Semester Examination marks together.

A candidate who has not secured a minimum of 50% of marks in acourse (CIA + End Semester) shall reappear for the course in the next semester/year.The grades obtained in VACs will not be included for calculating the GPA.The percentage of marks obtained by a candidate in a course will be indicated in a letter grade.Evaluation of the performance of the student will be rated as shown inthe Table.

LetterGrade	Marks %
S	90 and above
A	80-89
B	70-79
C	60-69
D	55-59
E	50-54
RA	Less than 50
W	Withdrawn from the examination

Awarding Certificate

Learners can get a certificate after they have registered for, written the exam and successfully passed. The students who have successfullycompleted the Value Added Course shall be issuedwith a Certificateduly signed by the Authorized signatories along with thesemester mark sheet.Apart from the VAC specific guide lines, the general regulations like endsemester question paper pattern prescribed for any other course in aprogramme shall be followed.

Chairperson /H.O.D.Subject Expert | Subject Expert | Subject Expert

Senior Professor of Science Faculty | Departmental members Alumnus | Student

VALUE ADDED COURSE

INTRODUCTION TO GOOGLE EARTH

The main objective of Value-Added Course is to supplement the curriculum to make students better prepared to meet industry demands as well as develop their own interests and aptitudes. This course will help students stand apart from the rest in the job market by adding further value to their resume.

The main objectives of the Value-Added Course are:

D. To provide students an understanding of the expectations of industry.
E. To improve employability skills of students.
F. To bridge the skill gaps and make students industry ready.

Earth Engine Explorer (EE Explorer) is a lightweight geospatial image data viewer with access to a large set of global and regional datasets available in the Earth Engine Data Catalog. It allows for quick viewing of data with the ability to zoom and pan anywhere on Earth, adjust visualization settings, and layer data to inspect change over time.Google Earth Engine is a cloud-based platform for planetary-scale geospatial analysis that brings Google's massive computational capabilities to bear on a variety of high-impact societal issues including deforestation, drought, disaster, disease, food security, water management, climate monitoring and environmental protection. It is unique in the field as an integrated platform designed to empower not only traditional remote sensing scientists, but also a much wider audience that lacks the technical capacity needed to utilize traditional supercomputers or large-scale commodity cloud computing resources.

Google Earth Engine is a geospatial processing service. With Earth Engine, we can perform geospatial processing at scale, powered by Google Cloud Platform.

The purpose of Google Earth is to:

- Provide an interactive platform for geospatial algorithm development at scale
- Enable high-impact, data-driven science
- Make substantive progress on global challenges that involve large geospatial datasets

This course will cover the use of the EE Explorer application, including: (1) how to find data in the Data Catalog ,(2) adding data to the Workspace, (3)explanation of interface features,(4) how to tailor data visualization

The goals of this course are to enable students to use EE Explorer, inspire them to discover and view new data, and provide a starting point to imagine how you might expand their exploration using the other more powerful Earth Engine platformtools to answer questions about the current state and ongoing changes affecting the Earth.

COURSE OUTCOME:

After successful completion of this value-added course, the student will be able to

6. Mark location on Google Earth images.
7. Digitize using Google Earth images
8. Import, export and save Image data
9. Study the spatiotemporal aspects of changes in Google Earth images
10. Take good quality field photographs

SYLLABUS

UNIT-I

Remote Sensing fundamentals

UNIT-II

A broad overview of Google Earth and its interface

UNIT- III

Use of Google Earth in geological studies

UNIT - IV

Using "Google Earth Pro" for

- Marking location
- Making polygon
- Making linear feature
- Saving .kml and .kmz file
- Importing image data
- Georeferencing Toposheet or geological map

- Digitization point, line and polygon feature
- Creating print data

DURATION

The duration of value added course is 30 hours with a combination 18hours (60%) of theory and 12 hours (40%) of practical. However, the combination of theory and practical shall be decided by the course teacher with the approval of the Head of the Department.

ATTENDANCE

Each faculty handling a course shall be responsible for the maintenance of Attendance and Assessment Record for candidates who have registered for the course. The Record shall contain details of the students' attendance, marks obtained in the Continuous Internal Assessment (CIA) Tests, Assignments and Seminars. In addition, the Record shall also contain the organisation of lesson plan of the Course Instructor. The record shall be submitted to the Head of the Department once a month for monitoring the attendance and syllabus coverage.

At the end of the semester, the record shall be duly signed by the Course Instructor and the Head of the Department and placed in safe custody for any future verification. The Course Instructor shall intimate to the Head of the Department at least seven calendar days before the last instruction day in the semester about the attendance particulars of all students. Each student shall have a minimum of 75% attendance in all the courses of the particular semester failing which he or she will not be permitted to write the End-Semester Examination.

EVALUATION

The value added course shall carry 100 marks with 25% Continuous Assessment and 75% End Semester assessment.

CONTINUOUS INTERNAL ASSESSMENT (CIA)

The CIA shall be a combination of a variety of tools such as class test, assignment, seminars, and viva-voce that would be suitable to the course. The internal assessment shall be done based on the performance in the two Continuous Internal Assessment Tests, Seminar and Assignment. The break-up of marks shall be as follows:

CONTINUOUS INTERNAL ASSESSMENT TESTS

Two Assessment Tests shall be conducted preferably one in the middle and the other at the end of the course by the Department concerned. CIA Test-I will cover the syllabus of the first two units while CIA Test - II will cover the last three units. The duration of assessment is one hour each. The pattern of question

paper will be decided by the respective faculty. For the CIA Tests, the assessment will be done by the Course Teacher. A student cannot repeat the CIA Test-I and CIA Test-II. However, if for any valid reason the student could not attend the test, the prerogative of arranging a special test lies with the teacher in consultation with the Head of the Department.

EXAMINATIONS

The End Semester Examinations for the ODD semester will normally be conducted in November and for the EVEN semester in May. A candidate who does not pass the examination shall be permitted to reappear in such course(s) that will be held in the subsequent semester/year. The End Semester Examination will be of three hours duration and will cover the entire syllabus of the course. The Question Papers will be framed to test different levels of learning based on Bloom's taxonomy viz. Knowledge,Comprehension, Application, Analysis, Synthesis and Evaluation/Creativity.

ASSESSMENT OF VALUE-ADDED COURSES

Assessment of VACs shall be internal. Two CIA Tests shall be conducted during the semester by the Department(s) offering VAC and evaluated by the course teacher. The End Semester Examination shall be valued by the internal examiner appointed by the Controller of Examination on the recommendation of the Head of the Department.

PASSING REQUIREMENT AND GRADING

The passing requirement for value added courses shall be 50% of the marks prescribed for the course. While a minimum of 40% marks in End Semester Examination is essential, and there is no passing minimum for CIA Tests. A student is declared to have passed the course if he/she secures not less than 40% marks in the End Semester Examination and not less than50% marks in aggregate taking CIA and End Semester Examination marks together.

A candidate who has not secured a minimum of 50% of marks in a course (CIA + End Semester) shall reappear for the course in the next semester/year. The grades obtained in VACs will not be included for calculating the GPA. The percentage of marks obtained by a candidate in a course will be indicated in a letter grade.

Evaluation of the performance of the student will be rated as shown in the Table.

Letter Grade	Marks %
S	90 and above
A	80-89
B	70-79
C	60-69
D	55-59
E	50-54
RA	Less than 50
W	Withdrawn from the examination

AWARDING CERTIFICATE

Learners can get a certificate after they have registered for, written the exam and successfully passed. The students who have successfully completed the Value Added Course shall be issued with a Certificate duly signed by the Authorized signatories along with the semester mark sheet. Apart from the VAC specific guide lines, the general regulations like end semester question paper pattern prescribed for any other course in a programme shall be followed.

Chairperson /H.O.D. Subject Expert Subject Expert Subject Expert

Senior Professor of Science Faculty Departmental members Alumnus Student