DEPARTMENT OF GEOLOGY

COURSE CURRICULUM & MARKING SCHEME

B.Sc. III, IV, V, VI Semester

GEOLOGY

(Based on Choice Based Credit System)

SESSION : 2024-25

ESTD : 1958

GOVT. V.Y.T. PG AUTONOMOUS COLLEGE, DURG, 491001 (C.G.)

(Former Name – Govt. Arts & Science College, Durg)

NAAC Accredited Grade A+, College with CPE - Phase III (UGC), STAR COLLEGE (DBT)

Phone : 0788-2212030

Website - www.govtsciencecollegedurg.ac.in, Email – autonomousdurg2013@gmail.com

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE, DURG(C.G.)

FOUR YEAR UNDERGRADUATE PROGRAM

DEPARTMENT OF GEOLOGY

COURSE CURRICULUM 2024-25

DSC			DSE			GEC		
Sem.	**Code**	**Title**	**Sem.**	**Code**	**Title**	**Sem.**	**Code**	**Title**
I	GESC-01T	Fundamentals of Geology	-	-	-	I	GEGE-01	Fundamentals of Geology
	GESC-01P	Fundamentals of Geology					GEGE-01P	Fundamentals of Geology Lab Course
II	GESC-02T	Essentials of Geology	-	-	-	II	GEGE-02	Essentials of Geology
	GESC-02P	Essentials of Geology					GEGE-02P	Essentials of Geology Lab Course
III	BGL- 301	Petrology	III	BGL-302	Elements of Geology	III	GLSEC-01	Topographic map skills
	BGLL-301	Petrology Lab Course		BGLL-302	Elements of Geology Lab Course		GLSEC-01P	Topographic map skills Lab Course
IV	BGL-401	Structural Geology	IV	BGL-402	Fuel Geology	IV	GLSEC-02	Attitude and its measurement
	BGLL-401	Structural Geology Lab Course		BGLL-402	Fuel Geology Lab Course		GLSEC-02P	Attitude and its measurement Lab Course
V	BGL-501	Stratigraphy	V	BGL-502	Palaeontology	V	BGL-503	Geologyand Mineral Resources of Chhattisgarh
	BGLL-501	Stratigraphy Lab Course		BGLL-502	Palaeontology Lab Course		BGLL-503	Geology and MineralResources of Chhattisgarh Lab Course
VI	BGL -601	Economic Geology	VI	BGL-602	Applied Geology	VI	BGL-603	Photogeology and Remote Sensing
	BGLL-601	Economic Geology Lab Course		BGLL-602	Applied Geology Lab Course		BGLL-603	Photogeology and Remote Sensing Lab Course

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

Senior Professor of Science Faculty Departmental members Alumnus Student

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OF GEOLOGY
COURSE CURRICULUM 2024-25

PART A: INTRODUCTION			
Program: B.Sc.		**Class: Semester – III**	**Session:2024-2025**
1	**Course Code**	**BGL301**	
2	**Course Title**	**PETROLOGY**	
3	**Course Type**	**DSC**	
4	**Course Learning Outcome (CLO)**	**This Course will enable the students to:** 1. Discuss about the formation of Igneous rocks, their texture and structures 2. Explain about forms and classification of igneous rocks 3. Identify, describe and classify sedimentary rocks using hand specimens 4. Describe the formation of sedimentary rocks, their textures and structures 5. Explain about the formation of Metamorphic rocks, their texture and structure 6. Identify and classify various types of metamorphic rocks. 7. Explain the concept of metamorphic facies, ACF, AKF and AFM diagrams	
5	**Credit Value**	**3Credits**	**1 credit =15 Hours – Learning and Observation**
6	**Total Marks**	**Maximum Marks :100**	**Minimum Passing Marks:40**

PART B: CONTENT OF THE COURSE

Total no. of Teaching/ Learning Periods = 45 Periods (45 Hours)

Unit	**Topics (COURSE CONTENTS)**	**No. of Periods**
I	Magma: definition, origin & composition. Bowen's reaction series, magmatic differentiation & assimilation.Introduction to crystallisation of Unicomponent (Silica), Bicomponent (albile-anorthile and diposide-anorthite) and tricomponent magma (diopside-albilte-anorthite). Texture, structures & forms of igneous rocks. Classification of igneous rocks: Mineralogical, chemical &Tabular classification.	9
II	Brief idea of formation of igneous rocks in relation to plate Tectonics. Introduction to petrology of Acid igneous rocks.Introduction to petrology of Alkaline igneous rocks. Introduction to petrology of Basic igneous rock. Introduction to petrology of Ultrabasic igneous rocks.	9
III	Origin, transportation & deposition of sediments. Sedimentary depositional environments ; Aeolian, fluvial, coastal and abyssal environment.Introduction to sedimentary facies. Lithification & Digenesis.Textures & structures of sedimentary rocks.Brief idea of formation of sedimentary rocks in relation to plate Tectonics	9
IV	Classification of sedimentary rocks: Clastic, non-clastic and biogenic rocks. Petrographic description of Breccia, Conglomerate, sandstone, shale, siltstone and limestone. Metamorphism: Definition, agents, facies & grades. Textures, structures & classification of metamorphic rocks.Phase rule in metamorphism. Elementary idea about Paragenetic diagrams & projective analysis.	9
V	A.C.F & A.K.F. diagrams. Progressive metamorphism of Argillaceous rocks and thermal metamorphism of impure limestone.Progressive metamorphism of basic igneous rocks. Petrographic description of slate, phyllite, schist, gneiss, marble, quartzite, amphibolite, Khondalite, Gondite, Kodurite&Charnockite. Introduction to Paired Metamorphic Belts	**9**

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

Senior Professor of Science Faculty Departmental members Alumnus Student

PART C - LEARNING RESOURCES

Text Books, Reference Books, Other Resources

TEXT BOOKS Recommended :

1) षैलिकी के सिद्धान्त– डॉ. अंबिका प्रसाद अग्रवाल
(2) षैलिकी के सिद्धान्त– ए. जी. झिंगरन
(3) Principles of Petrology-G.W. Tyrell
(4) Petrology-H.William, F.J. Turner & E.M. Gilbert
(5) Petrology of Igneous & Metamorphic rocks of India- S.C. Chattarjee
(6) A text book of Sedimentary Petrology -Verma & Prasad
(7) Metamorphism & Metamorphic rocks of India- S.Ray
(8) Sedimentary rocks -F.J. Pettijohn
(9) Introduction of Sedimentology - S.Sengupta
(10) Sedimentary environment -H.G. Readings

Reference Books

Igneous and Metamorphic petrology: J.D Winter

Online Resources: (e- Resources/ e- Books/ e- Learning Portals)

1. https://epgp.inflibnet.ac.in/Home
2. https://archive.org/details/in.ernet.dli.2015.233340/page/n15/mode/2up
3. https://egyankosh.ac.in/
4. https://sites.google.com/ignou.ac.in/bscgeology
5. SWAYAM-https://swayam.gov.in/explorer?searchtext
6. Nationaldigitallibraryhttps://ndl.iitkgp.ac.in
7. e-PGpathshala(MHRD)portal,https://egpg.inflibnet.ac.in

PART D: ASSESSMENT AND EVALUATION

Suggested Continuous Evaluation Methods:

Maximum Marks:	**100 Marks**
Continuous Comprehensive Evaluation (CCE):	**20 Marks**
Semester End Exam (SEE):	**80 Marks**

Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Internal Test of 20 Marks each and Assignment of 20 Marks

Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D)from each Unit**	
	Question - A & B: (Compulsory) Very short answer type (02 each)	04 x 5 = 20 Marks
	Question - C: Short answer type question	05 x 5 = 25 Marks
	Question -D: Long answer type question	07 x 5 = 35 Marks
	Total = 80 Marks	

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

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

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OF GEOLOGY
COURSE CURRICULUM 2024-25

Lab Course

PART A: INTRODUCTION				
Program: B.Sc.		**Class:** **Semester - III**		**Session:2024-2025**
1	**Course Code**	**BGLL-301**		
2	**Course Title**	**PETROLOGY LAB-COURSE**		
3	**Course Type**	Practical		
4	**Course Learning Outcome (CLO)**	**This Course will enable the students to:** 1. Identify igneous, sedimentary and metamorphic rocks in hand specimen. 2. Describe microscopic properties of igneous, sedimentary and metamorphic rocks. 3. Discuss structures and textures of igneous, sedimentary and metamorphic rocks. 4. Draw ACF, AKF and AFM diagrams.		
5	**Credit Value**	**1Credit**	**1 credit =15 Hours – Learning and Observation**	
6	**Total Marks**	**Maximum Marks: 50**		**Minimum Passing Marks:20**

PART B: CONTENT OF THE COURSE	
S.No.	**List of Experiments**
01	Study of igneous, sedimentary and metamorphic rocks in hand specimen
02	Study of microscopic properties of igneous, sedimentary and metamorphic rocks
03	Study of structures of igneous, sedimentary and metamorphic rocks.
04	Study of textures of igneous, sedimentary and metamorphic rocks.
05	PlottingACF, AKF and AFM diagrams

PART C - LEARNING RESOURCES

Text Books, Reference Books, Other Resources

TEXT BOOKS Recommended:

1) षैलिकी के सिद्धान्त– डॉ. अंबिका प्रसाद अग्रवाल
(2) षैलिकी के सिद्धान्त– ए. जी. झिंगरन
(3) Principles of Petrology-G.W. Tyrell
(4) Petrology-H.William, F.J. Turner & E.M. Gilbert
(5) Petrology of Igneous & Metamorphic rocks of India- S.C. Chattarjee
(6) A text book of Sedimentary Petrology -Verma & Prasad
(7) Metamorphism & Metamorphic rocks of India- S.Ray
(8) Sedimentary rocks -F.J. Pettijohn
(9) Introduction of Sedimentology - S.Sengupta
(10) Sedimentary environment -H.G. Readings

Online Resources: (e- Resources/ e- Books/ e- Learning Portals)

1. https://epgp.inflibnet.ac.in/Home
2. https://archive.org/details/in.ernet.dli.2015.233340/page/n15/mode/2up
3. https://egyankosh.ac.in/
4. https://sites.google.com/ignou.ac.in/bscgeology
5. SWAYAM-https://swayam.gov.in/explorer?searchtext
6. Nationaldigitallibraryhttps://ndl.iitkgp.ac.in
7. e-PGpathshala(MHRD)portal,https://egpg.inflibnet.ac.in

PART D: ASSESSMENT AND EVALUATION

Suggested Continuous Evaluation Methods:
Maximum Marks: 50 Marks
(Will include Internal assessment, Lab records and End Semester Viva/Voce and performance)

Semester End Exam (SEE)	**Laboratory performance: As per Dept. (LOCF)**

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

Senior Professor of Science Faculty Departmental members Alumnus Student

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OFGEOLOGY
COURSE CURRICULUM 2024-25

PART A: INTRODUCTION			
Program: B.Sc.		Class: Semester - III	Session:2024-2025
1	Course Code	BGL302	
2	Course Title	Elements of Geology	
3	Course Type	DSE-	
4	Course Learning Outcome (CLO)	This Course will enable the students to: 1. Explain the scope and importance of geology 2. Describe earth surface processes. 3. Discuss the Earth's spheres. Describe the process of mountain building and ice age. Explain the important ores and demarcate their distributions in India. Discuss various coal fields and oilfields in India. 4. Evaluate the principles of Stratigraphy and Geological Time scale 5. Explain the fundamental concept of fossils and their preservation.	
5	Credit Value	3Credits	1 credit =15 Hours – Learning and Observation
6	Total Marks	Maximum Marks :100	Minimum Passing Marks:40

PART B: CONTENT OF THE COURSE		
Total no. of Teaching/ Learning Periods = 45 Periods (45 Hours)		
Unit	Topics (COURSE CONTENTS)	No. of Periods
I	Introduction to Geology and its relation to other branches of science.Scope and subdisciplines of Geology, importance of Geology, Geology in daily life.Earth Surface Processes: Significance of geological processes.Endogenetic processes and exogenetic Processes.Mass wasting.	9
II	Earth's Spheres: Hydrosphere, Atmosphere, Biosphere, Lithosphere.Lithosphere: Materials of the Earth's Crust: Rocks and Minerals.Classification of rocks and minerals. Rock cycle.Hydrosphere: Water cycle, Ocean Floor and Relief Features.Convections in the Earth's mantle; Earth's Magnetic field.	9
III	Mountain building and its causes; Evidences of mountain building processes; Classification ofMountains.Mountain building and plate tectonics.Origin and evolution of Himalaya.Classification of the Himalayan Mountain range.Global climate change, Ice age: causes of ice age.	9
IV	Ore Geology: Ores, gangue and industrial minerals; Tenor, grade and specifications. Resources and reserves; classification of reserves.Distribution of iron, copper, manganese and gold deposits in India.Distribution of coal fields in India.Distribution of petroleum fields in India.	9
V	Stratigraphy: Definition, basic principles of stratigraphy.Geological time scale. Physiographic and tectonic divisions of India.Introduction to Palaeontology: Definition, fossils and index fossils.Mode of preservation and significance of fossils.	9

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

Senior Professor of Science Faculty Departmental members Alumnus Student

PART C - LEARNING RESOURCES

Text Books, Reference Books, Other Resources

TEXT BOOKSRecommended :

Principle of Engieneering Geology – K. M.Bangar

Textbook of Physical Geology - G. B. Mahapatra. CBS Publishers and Distributers, India. Text Book of Geology- P. K. Mukherjee. World Press Private Ltd.

Textbook of Geology - G. B. Mahapatra. CBS Publishers and Distributers, India.

Reference Books

Palaeontology – Evolution and animal distribution- Jain,P.C., and Anantharaman, M.S., Vishal Publications.

Fundamentals of Historical Geology and Stratigraphy of India.RavindraKumar, Wiley Eastern Ltd.

Economic Geology Economic Mineral Deposits- Umeshwar Prasad. CBS Publishers and Distributers, India.

Geomorphology- Savindra Singh. Prayag Pustak Bhavan, Allahabad.

Principles of Physical Geology- Holmes, A. Doris L Holmes. VanNostrandReinhold.

Online Resources: (e- Resources/ e- Books/ e- Learning Portals)

https://opengeology.org/textbook/
https://opentextbc.ca/geology/
https://egyankosh.ac.in/

PART D: ASSESSMENT AND EVALUATION

Suggested Continuous Evaluation Methods:

Maximum Marks:	**100 Marks**
Continuous Comprehensive Evaluation (CCE):	**20 Marks**
Semester End Exam (SEE):	**80 Marks**

Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Internal Test of 20 Marks each and Assignment of 20 Marks

Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D)from each Unit**	
	Question - A & B: (Compulsory) Very short answer type (02 each)	04 x 5 = 20 Marks
	Question - C: Short answer type question	05 x 5 = 25 Marks
	Question -D: Long answer type question	07 x 5 = 35 Marks
	Total = 80 Marks	

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FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OF GEOLOGY
COURSE CURRICULUM 2024-25

Lab Course

PART A: INTRODUCTION				
Program: B.Sc.		**Class:**	**Semester - III**	**Session:2024-2025**
1	**Course Code**	**BGLC-302**		
2	**Course Title**	**ELEMENTS OF GEOLOGY LAB COURSE**		
3	**Course Type**	Practical		
4	**Course Learning Outcome (CLO)**	**This Course will enable the students to:** 1. Demarcate coal fields in the map of India and Chhattisgarh. 2. Demarcate oilfields in the map of India. 3. Identify minerals in hand specimen and mention their uses. 4. Identify rocks in hand specimen and mention their uses. 5. Delineate major mountain ranges in outline map of India. 6. Plot various localities of Iron ore, Copper ore, Manganese ore and Gold deposits in outline map of India. 7. Plot physiographic and tectonic divisions on outline map of India.		
5	**Credit Value**	**1Credit**	**1 credit =15 Hours – Learning and Observation**	
6	**Total Marks**	**Maximum Marks: 50**		**Minimum Passing Marks:20**

PART B: CONTENT OF THE COURSE	
S.No.	**List of Experiments**
1	Identification of economic minerals in hand specimens.
2	Demarcation of major mountain ranges in map outline of India.
3	Delineation of various parts of Himalayan Mountain range.
4	Demarcation of various localities showing Iron ore, Copper ore, Manganese ore and gold deposits in outline map of India.
5	Demarcation of coal fields and petroleum fields in map of India.
6	Demarcation of physiographic and tectonic divisions of India.

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

Senior Professor of Science Faculty Departmental members Alumnus Student

PART C - LEARNING RESOURCES
Text Books, Reference Books, Other Resources

TEXT BOOKS Recommended

Textbook of Physical Geology - G. B. Mahapatra. CBS Publishers and Distributers, India.Text Book of Geology- P.K.Mukherjee. World Press Private Ltd.
Textbook of Geology - G. B. Mahapatra. CBS Publishers and Distributers, India.
Geology: Principles and Practical Manual – R. Guhey. New India Publishing Agency
Principle of Engieneering Geology - K. M.Bangar

Reference Books

Fundamentals of Historical Geology and Stratigraphy of India. Ravindra Kumar, Wiley Eastern Ltd.
Economic Geology Economic Mineral Deposits- Umeshwar Prasad. CBS Publishers and Distributers, India.
Geomorphology- Savindra Singh. PrayagPustak Bhavan, Allahabad.

Online Resources: (e- Resources/ e- Books/ e- Learning Portals)

https://opengeology.org/textbook/
https://opentextbc.ca/geology/
https://egyankosh.ac.in/

PART D: ASSESSMENT AND EVALUATION	
Suggested Continuous Evaluation Methods: **Maximum Marks: 50 Marks** **(Will include Internal assessment, Lab records and End Semester Viva/Voce and performance)**	
Semester End Exam (SEE)	**Laboratory performance: As per Dept. (LOCF)**

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

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FOUR YEAR UNDERGRADUATE PROGRAM

DEPARTMENT OF GEOLOGY

COURSE CURRICULUM 2024-25

PART A: INTRODUCTION				
Program: B.Sc.		Class: Semester - IV		Session:2024-2025
1	Course Code	BGL401		
2	Course Title	STRUCTURAL GEOLOGY		
3	Course Type	DSC		
4	Course Learning Outcome (CLO)	This Course will enable the students to: 1. Demonstrate the use of clinometer compass and Brunton compass in measurement of attitude of rock bed. 2.Explain about parts of fold and classify various folds 3. Recognize and classify the faults in the field and on geological map 4. Identify and classify Unconformities 5. Discuss about various types of Joints 6. Explain various types of foliations and lineations 7. Identify the top and bottom of rock beds in a series of rocks		
5	Credit Value	3Credits	1 credit =15 Hours – Learning and Observation	
6	Total Marks	Maximum Marks :100		Minimum Passing Marks:40

PART B: CONTENT OF THE COURSE		
Total no. of Teaching/ Learning Periods = 45 Periods (45 Hours)		
Unit	Topics (COURSE CONTENTS)	No. of Periods
I	Structural Geology: Definition and scope. Study of outcrops. Identification of bedding. Dip and strike: definition & measurement. Effects of Dip and slope on outcrops: Rule of 'Vs'. Clinometer and Brunton compass: Understanding and use in measuring attitude of rock. Unconformity: Definition & types. Outlier and inlier. Overlap & offlap. Recogntion of unconformity.	9
II	Fold: Definition and morphology. Geometric and genetic classification of folds. Recognition of folds in the field and on geological maps. Effect of folds on outcrops. Elementary idea of mechanics of folding.	9
III	Fault: Definition and morphology. Geometric and genetic classification of faults. Recognition of faults in the field and on geological maps. Effect of faults on outcrops. Elementary idea of mechanics of faulting.	9
IV	Joint: Definition, geometric & genetic classification of joints. Significance of joints. Foliation: terminology, kinds, origin and relation to major structures. Lineation: terminology, Kinds, origin and relation to major structures. Plutons; tectonics & emplacement. Recognition of top and bottom of beds.	9
V	Concept of rock deformation. Stress and Stress Ellipsoids. Tectonic framework of India. Contours: Definition, patterns. Introduction to geological maps and their interpretation. Stereographic projection & it use in Structural geology.	9

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

Senior Professor of Science Faculty Departmental members Alumnus Student

PART C - LEARNING RESOURCES

Text Books, Reference Books, Other Resources

TEXT BOOKS Recommended :

(1) संरचनात्मक भूविज्ञान –डॉ. डी. के. श्रीवास्तव
(2) भूवैज्ञानिक संरचनाएँ –डॉ. भरत सिंह राठौर
(3) प्रायोगिक भूविज्ञान (भाग–2) –आर. पी. मांजरेकर
(4) Structural Geology. M.P. Billings.
(5) Theory of Structural Geology; Gokhale, N.W. CBS
(6) Exercises on Geological maps and dip-Strike: Gokhale, N.W. CBS.
(7)Geological maps- Chiplonkar and Pawar.

Reference Books

Outlineof structural Geology. E.S. Hills.
Structural Geology- Hobbs. Means and Williams.

Online Resources: (e- Resources/ e- Books/ e- Learning Portals)

https://egyankosh.ac.in/
https://open.umn.edu/opentextbooks/textbooks/899

PART D: ASSESSMENT AND EVALUATION

Suggested Continuous Evaluation Methods:

Maximum Marks:	**100 Marks**
Continuous Comprehensive Evaluation (CCE):	**20 Marks**
Semester End Exam (SEE):	**80 Marks**

Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Internal Test of 20 Marks each and Assignment of 20 Marks

Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D)from each Unit**	
	Question - A & B: (Compulsory) Very short answer type (02 each)	04 x 5 = 20 Marks
	Question - C: Short answer type question	05 x 5 = 25 Marks
	Question -D: Long answer type question	07 x 5 = 35 Marks
	Total = 80 Marks	

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

Senior Professor of Science Faculty Departmental members Alumnus Student

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FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OF GEOLOGY
COURSE CURRICULUM 2024-25

Lab Course

PART A: INTRODUCTION				
Program: B.Sc.		Class: Semester - IV		Session:2024-2025
1	Course Code	BGL-401		
2	Course Title	STRUCTURAL GEOLOGY LAB-COURSE		
3	Course Type	Practical		
4	Course Learning Outcome (CLO)	This Course will enable the students to: 1. Analyze the contour maps. 2. Complete the outcrop in a three-point problem. 3. Compute the thickness of the outcrops. 4. Identify the true and apparent dip through trigonometrical calculation and graphical method. 5. Construct geological cross section from given geological map and discuss its geological history. 6. Measure attitude of rockusingClinometer and Brunton compass.		
5	Credit Value	1Credit	1 credit =15 Hours – Learning and Observation	
6	Total Marks	Maximum Marks: 50		Minimum Passing Marks:20

PART B: CONTENT OF THE COURSE	
S.No.	List of Experiments
01	Study of geological maps and calculation of dip of rock beds.
02	Study of geological structures like folds, faults and unconformities on geological map.
03	Study of geological structures in block models, hand specimens and photographs.
04	Construction of geological cross section from given geological map.
05	Measurement of attitude of rock using Clinometer and Brunton compass.

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

Senior Professor of Science Faculty Departmental members Alumnus Student

PART C - LEARNING RESOURCES

Text Books, Reference Books, Other Resources

TEXT BOOKS Recommended:

(1) संरचनात्मक भूविज्ञान –डॉ. डी. के. श्रीवास्तव
(2) भूवैज्ञानिक संरचनाएँ –डॉ. भरत सिंह राठौर
(3) प्रायोगिक भूविज्ञान (भाग–2) –आर. पी. मांजरेकर
(4) Structural Geology. M.P. Billings.
(5) Theory of Structural Geology; Gokhale, N.W. CBS
(6) Exercises on Geological maps and dip-Strike: Gokhale, N.W. CBS.
(7)Geological maps- Chiplonkar and Pawar.

Reference Books

Outlineof structural Geology. E.S. Hills.
Structural Geology- Hobbs. Means and Williams.

Online Resources: (e- Resources/ e- Books/ e- Learning Portals)

https://egyankosh.ac.in/handle/123456789/53279

PART D: ASSESSMENT AND EVALUATION

Suggested Continuous Evaluation Methods:

Maximum Marks: 50 Marks

(Will include Internal assessment, Lab records and End Semester Viva/Voce and performance)

Semester End Exam (SEE)	Laboratory performance: As per Dept. (LOCF)

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

Senior Professor of Science Faculty Departmental members Alumnus Student

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG

FOUR YEAR UNDERGRADUATE PROGRAM

DEPARTMENT OFGEOLOGY

COURSE CURRICULUM 2024-25

PART A: INTRODUCTION			
Program: B.Sc.		Class: Semester - IV	Session:2024-2025
1	Course Code	BGL402	
2	Course Title	Fuel Geology	
3	Course Type	DSE	
4	Course Learning Outcome (CLO)	This Course will enable the students to: 1. Describe origin, mode of occurrence and distribution of coal in India and Chhattisgarh. 2. Explain the fundamental concept of maturation of coal bed methane. 3. Classify kerogen into various types. 4. Explain origin, mode of occurrence and distribution of petroleum in India and World. 5. Discuss origin, mode of occurrence and distribution of radioactive minerals in India.	
5	Credit Value	3Credits	1 credit =15 Hours – Learning and Observation
6	Total Marks	Maximum Marks :100	Minimum Passing Marks:40

PART B: CONTENT OF THE COURSE

Total no. of Teaching/ Learning Periods = 45 Periods (45 Hours)

Unit	Topics (COURSE CONTENTS)	No. of Periods
I	Definition and origin of coal. Rank of coal. Peat lignite, bituminous and anthracite. Grade and type of coal. Chemical characterization of coal: proximate and ultimate analyses. Macroscopic ingredients and microscopic constituents. concept of maceral and microlith.	09
II	Coal gasification and coal hydrogenation. Coal carbonization (coke manufacture). Geographical distribution of coal deposits in India. Geological distribution of coal deposits in India.	09
III	Problems of coal industry in India.Role of geologist in coal industry. Coal bed methane: a new energy resource. maturation of coal and generation of methane coal beds.Transformation of organic matter into kerogen. Classification of kerogen.	09
IV	Origin, nature and migration of oil and gas. Composition of petroleum and its different fractions. Characteristics of reservoir rocks and traps (structural, stratigraphic and combination). Oil bearing basins of India. Geological and Geographical distribution of oilfields in India.	09
V	Mode of occurrence and association of atomic minerals in nature. Atomic minerals as source of energy. Methods of prospecting of atomic minerals. Nuclear power stations of the country and future prospects. Atomic fuels and environmental hazards.	09

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

Senior Professor of Science Faculty Departmental members Alumnus Student

PART C - LEARNING RESOURCES

Text Books, Reference Books, Other Resources

TEXT BOOKS Recommended :

Principle of Engieneering Geology – K. M. Bangar

Text Book of Geology- P.K. Mukherjee. World Press Private Ltd.

Text Book of Geology - G. B. Mahapatra. CBS Publishers and Distributers, India.

Economic Geology Economic Mineral Deposits- Umeshwar Prasad. CBS Publishers and Distributers, India.

Principles of Nuclear Geology. Aswathanarayana. U. BalkemaPublisher.

Reference Books

Textbook of Coal (Indian Context).Chandra, D., Singh, R.M. and Singh, M.P., Tara Book Agency, Varanasi.

Introduction to Petroleum Geology. Holson and Tiratsoo,E.N.Gulf. Publ. Houston, Texas.Elements of Petroleum Geology.Selley, R.C. Academic Press.

Radioactivity in Geology. Principles and Applications.Durrance, E.M. Ellis Hoorwool.

Reference Books

Geology of Petroleum. Levorsen, A. I.CBS Publishers & Distributors.

Online Resources: (e- Resources/ e- Books/ e- Learning Portals)

https://ocw.tudelft.nl/courses/petroleum-geology/subjects/1-intro-to-petro-geo/

PART D: ASSESSMENT AND EVALUATION

Suggested Continuous Evaluation Methods:

Maximum Marks:	**100 Marks**
Continuous Comprehensive Evaluation (CCE):	**20 Marks**
Semester End Exam (SEE):	**80 Marks**

Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Internal Test of 20 Marks each and Assignment of 20 Marks

Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D)from each Unit**	
	Question - A & B: (Compulsory) Very short answer type (02 each)	04 x 5 = 20 Marks
	Question - C: Short answer type question	05 x 5 = 25 Marks
	Question -D: Long answer type question	07 x 5 = 35 Marks
	Total = 80 Marks	

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

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

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OF GEOLOGY
COURSE CURRICULUM 2024-25

Lab Course

PART A: INTRODUCTION				
Program: B.Sc.		Class:	Semester - IV	Session:2024-2025
1	Course Code	BGLL-402		
2	Course Title	FUEL GEOLOGY LAB COURSE		
3	Course Type	Practical		
4	Course Learning Outcome (CLO)	This Course will enable the students to: 1. Identify various types of coal. 2. Distinguish macroscopic constituents of coal. 3. Demarcate coal fields in the map of India and Chhattisgarh. 4. Demarcate oilfields in the world map and map of India. 5. Demarcate the occurrences of atomic minerals on the map of India. 6. Demarcate Nuclear power stations in India. 7. Delineate barren zone in a geological map.		
5	Credit Value	1Credit	1 credit =15 Hours – Learning and Observation	
6	Total Marks	Maximum Marks: 50		Minimum Passing Marks:20

PART B: CONTENT OF THE COURSE	
S.No.	List of Experiments
1.	Megascopic characterization of banded coals. Proximate analysis of coal.
2.	Completion of outcrops in the given map and calculation of coal reserves.
3.	Demarcation of coal fields in map of India.
4.	Demarcation of oilfields in map of India.
5.	Demarcation of oilfields in map of World.
6.	Demarcation of Atomic mineral deposits in India.
7.	Demarcation of Nuclear power station in India.
8.	Identification of barren zone in a geological map.

PART C - LEARNING RESOURCES

Text Books, Reference Books, Other Resources

TEXT BOOKS Recommended:

Principle of Engieneering Geology – K. M. Bangar
Text Book of Geology- P.K. Mukherjee. World Press Private Ltd.
Text Book of Geology - G. B. Mahapatra. CBS Publishers and Distributers, India.
Economic Geology Economic Mineral Deposits- Umeshwar Prasad. CBS Publishers and Distributers, India.

Online Resources: (e- Resources/ e- Books/ e- Learning Portals)

https://ocw.tudelft.nl/courses/petroleum-geology/subjects/1-intro-to-petro-geo/

PART D: ASSESSMENT AND EVALUATION

Suggested Continuous Evaluation Methods:

Maximum Marks: 50 Marks

(Will include Internal assessment, Lab records and End Semester Viva/Voce and performance)

Semester End Exam (SEE)	Laboratory performance: As per Dept. (LOCF)

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

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

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OF GEOLOGY
COURSE CURRICULUM 2024-25

PART A: INTRODUCTION				
Program: B.Sc.		Class: Semester - V		Session:2024-2025
1	Course Code	BGL-501		
2	Course Title	Stratigraphy		
3	Course Type	DSC		
4	Course Learning Outcome (CLO)	This Course will enable the students to: 1. Understand the geologic time scale and place important geologic events in a temporal framework. 2. Explain the principles of stratigraphy and various types of stratigraphic units. 3. Describe the distribution, classification and economic importance of Archaean and proterozoic rocks of India. 4. Describe the distribution, classification and economic importance of Palaeozoic rocks of India. 5. Describe the distribution, classification and economic importance of Mesozoic rocks of India.		
5	Credit Value	3Credits	1 credit =15 Hours – Learning and Observation	
6	Total Marks	Maximum Marks :75		Minimum Passing Marks:30

PART B: CONTENT OF THE COURSE

Total no. of Teaching/ Learning Periods = 45 Periods (45 Hours)

Unit	Topics (COURSE CONTENTS)	No. of Periods
I	**Introductory idea about:** Principles of stratigraphy: Geological time scale. Basic concept of lithostratigraphic, chronostratigraphic &biostratigraphic units. Structural & physical subdivision and characteristic features of Indian subcontinent. Stratigraphic correlation.	9
II	**Introductory idea about:** Distribution, classification & economic importance of Archaeozoic rocks of South India, Central India, Bastar , Rajasthan, Bundelkhand and Singhbhum region.	9
III	**Introductory idea about:**Distribution, Stratigraphy & Economic Importance of rocks of Cuddapah Supergroup, Vindhyan Supergroup, Chhattisgarh Supergroup, Indravati Group, Delhi Supergroup and their equivalent formations.	9
IV	**Introductory idea about:**Stratigraphy, Palaeoclimate, Geographical distribution & economic aspects of Gondwana Supergroup.Stratigraphy, Distribution & age of Deccan Traps. Stratigraphy, Distribution & fossil contents of Bagh &Lameta Bed.Distribution, Stratigraphy &Palaeontology of Salt Range group of rocks.	9
V	**Introductory idea about:**Stratigraphy, Distribution, Fossil content of Triassic rocks of Spiti valley and Cretaceous rocks of Tiruchirapalli, Stratigraphy, Distribution, Fossil content & Economic importance of Jurassic rocks of Kutch-Region.Distribution, Stratigraphy, Economic importance of Tertiary rocks of AssamRegion.Distribution, Stratigraphy &vertebrate palaeontological importance of Siwalik group of rocks.	9

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

Senior Professor of Science Faculty Departmental members Alumnus Student

PART C - LEARNING RESOURCES		
Text Books, Reference Books, Other Resources		
TEXT BOOKS Recommended: 01. Boggs Sam Jr., 1995: Principles of Sedimentology and Stratigraphy. Prentice Hall. 02. Kumar, Ravindra,1985 : Fundamentals of Historical Geology and Stratigraphy of India. Wiley Eastern Ltd. 03. Naqvi, S.M. and Rogers, J.J.W,1987: Precambrian Geology of India. Oxford University Press. **Reference Books:** Geology of India volume I and II – M. Ramakrishnan and R. Vaidyanathan **Online Resources: (e- Resources/ e- Books/ e- Learning Portals)** https://egyankosh.ac.in/		
PART D: ASSESSMENT AND EVALUATION		
Suggested Continuous Evaluation Methods: **Maximum Marks:** **75 Marks** **Continuous Comprehensive Evaluation (CCE):** **15Marks** **Semester End Exam (SEE):** **60 Marks**		
Internal Assessment: Continuous Comprehensive Evaluation(CCE)	Internal Test of 15 Marks andAssignment of 15 Marks	
Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D)from each Unit** Question - A & B: (Compulsory) Very short answer type (01each) Question - C: Short answer type question Question -D: Long answer type question **Total = 60 Marks**	02 x 5 = 10 Marks 03 x 5 = 15 Marks 07 x 5 = 35 Marks

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

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

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OF GEOLOGY
COURSE CURRICULUM 2024-25

Lab Course

PART A: INTRODUCTION				
Program: B.Sc.		**Class:**	**Semester - V**	**Session:2024-2025**
1	**Course Code**	BGL-501		
2	**Course Title**	Stratigraphy labcourse		
3	**Course Type**	Practical		
4	**Course Learning Outcome (CLO)**	On completion of Course, the students will be able to 1. Prepare the geologic time scale and place important geologic events in a temporal framework. 2. Correlatevarious ofrock formations of India. 3. Plot the distributionof Archaean and proterozoic rocks on outline map of India. 4. Plot the distribution of Palaeozoic rocks on the outline map of India. 5. Plot the distribution of Mesozoic rocks, Deccan trap and Siwalik rocks on the outline map of India.		
5	**Credit Value**	**1Credit**	**1 credit =15 Hours – Learning and Observation**	
6	**Total Marks**	**Maximum Marks :25**		**Minimum Passing Marks:10**

PART B: CONTENT OF THE COURSE	
S.No.	**List of Experiments**
1	Preparation of the geologic time scale and place important geologic events in a temporal framework.
2	Correlation ofvarious rock formations of India.
3	Plotting the distribution of Archaean and proterozoic rocks on outline map of India.
4	Plotting the distribution of Palaeozoic rocks on the outline map of India.
5	Plotting the distribution of Mesozoic rocks, Deccan trap and Siwalik rocks on the outline map of India.

PART C - LEARNING RESOURCES
Text Books, Reference Books, Other Resources
TEXT BOOKS Recommended Kumar, Ravindra,1985 : Fundamentals of Historical Geology and Stratigraphy of India. Wiley Eastern Ltd. Naqvi, S.M. and Rogers, J.J.W,1987: Precambrian Geology of India. Oxford University Press**Online** **Resources: (e- Resources/ e- Books/ e- Learning Portals)**https://egyankosh.ac.in/

PART D: ASSESSMENT AND EVALUATION	
Suggested Continuous Evaluation Methods: **Maximum Marks: 25 Marks** **(Will include Internal assessment, Lab records and End Semester Viva/Voce and performance)**	
Semester End Exam (SEE)	**Laboratory performance: As per Dept. (LOCF)**

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

Senior Professor of Science Faculty Departmental members Alumnus Student

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FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OF GEOLOGY
COURSE CURRICULUM 2024-25

PART A: INTRODUCTION				
Program: B.Sc.		**Class: Semester - V**		**Session:2024-2025**
1	**Course Code**	**BGL-502**		
2	**Course Title**	**Palaeontology**		
3	**Course Type**	**DSE**		
4	**Course Learning Outcome (CLO)**	**This Course will enable the students to:** 1. Understand the modes of preservation of fossils. 2. Describe morphology and geological distribution of Brachiopods, Lamellibranches, Trilobites, Gastropods, Graptolites and Echinoids. 3. Explain morphological characters of plant fossils and their significance 4. Discuss various applications of Palaeontology. 5. Understand the fundamental concepts of Micropalaeontology.		
5	**Credit Value**	**3Credits**	**1 credit =15 Hours – Learning and Observation**	
6	**Total Marks**	**Maximum Marks :75**		**Minimum Passing Marks:30**

PART B: CONTENT OF THE COURSE

Total no. of Teaching/ Learning Periods = 45 Periods (45 Hours)

Unit	**Topics (COURSE CONTENTS)**	**No. of Periods**
I	Definition and scope of Palaeontology: Fossils- definition, Essentials for fossilization, modes of fossilization.Uses of fossils; Index fossils & their significance.Application of Palaeontology in the study of Stratigraphy, Palaeoecology and Palaeogeography.	9
II	Elementary idea aboutmorphology & geological distribution of Brachiopoda Lamellibranchia , Trilobite and Graptolite fossils.	9
III	Elementary idea about morphology & geological distribution of Gastropoda, Cephalopoda and Echinoidea fossils.	9
IV	Elementary idea about morphology & geologic distribution of Foraminifera, Anthozoa and Graptolite fossils.	9
V	Elementary idea about Micropalaeontology & its significance. Study of plant fossils & their significance.	9

PART C - LEARNING RESOURCES

Text Books, Reference Books, Other Resources

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

Senior Professor of Science Faculty Departmental members Alumnus Student

TEXT BOOKS Recommended:

01. Clarkson, E.N.K.,1998: Invertebrate Palaeontology and Evolution. IV Ed. Blackwell.

02. 02. Jain,P.C., and Anantharaman, M.S., 1996 : Palaeontology – Evolution and animal distribution. Vishal Publications.

03. Prothero, D.R., 1998: Bringing fossils to life- An Introduction to Palaeobiology. McGrawHill.

04. Stearn, C.W. and Carrol, R.L., 1989: Palaeontology- the record of life. John Wiley.

05. Henry Woods: Palaeontology Invertebrate. CBS Publishers.

06. Twenhofel and Shrock : Principles of Invertebrate Paleontology. CBS Publishers

Reference Books:

Treatise on Invertebrate Paleontology, edited by R. C. Moore, 24 volumes. Published by the Geological Society of America and University of Kansas Press

Online Resources: (e- Resources/ e- Books/ e- Learning Portals)

1. https://egyankosh.ac.in/

PART D: ASSESSMENT AND EVALUATION

Suggested Continuous Evaluation Methods:	
Maximum Marks:	**75 Marks**
Continuous Comprehensive Evaluation (CCE):	**15Marks**
Semester End Exam (SEE):	**60 Marks**
Internal Assessment: Continuous Comprehensive Evaluation(CCE)	Internal Test of 15 Marks andAssignment of 15 Marks
Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D)from each Unit** Question - A & B: (Compulsory) Very short answer type (01each) 02 x 5 = 10 Marks Question - C: Short answer type question 03 x 5 = 15 Marks Question -D: Long answer type question 07 x 5 = 35 Marks **Total = 60 Marks**

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

Senior Professor of Science Faculty Departmental members Alumnus Student

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OF GEOLOGY
COURSE CURRICULUM 2024-25

Lab Course

PART A: INTRODUCTION				
Program: B.Sc.		**Class:**	**Semester - V**	**Session:2024-2025**
1	**Course Code**	BGL-502		
2	**Course Title**	Palaeontology Labcourse		
3	**Course Type**	Practical		
4	**Course Learning Outcome (CLO)**	On completion of Course, the students will be able 1. Identify various Brachiopoda and Lamellibranchia fossils on the basis of their morphological characters 2. Identify various Trilobite and Graptolite fossils on the basis of their morphological characters 3. Identify various Cephalopoda and Echinoidea fossils on the basis of their morphological characters 4. Identify various Gastropoda fossils on the basis of their morphological characters 5. Identify various plant fossils on the basis of their morphological characters		
5	**Credit Value**	**1Credit**	**1 credit =15 Hours – Learning and Observation**	
6	**Total Marks**	**Maximum Marks :25**		**Minimum Passing Marks:10**

PART B: CONTENT OF THE COURSE	
S.No.	**List of Experiments**
1	Study of morphological characters of Brachiopoda and Lamellibranchia fossils
2	Study of morphological characters of Trilobite and Graptolite fossils
3	Study of morphological characters of Cephalopoda and Echinoidea fossils.
4	Study of morphological characters of & geological distribution of Gastropoda fossils
5	Study of morphological characters of plant fossils

PART C - LEARNING RESOURCES

Text Books, Reference Books, Other Resources

Text Books Recommended:

Jain,P.C., and Anantharaman, M.S., 1996 : Palaeontology – Evolution and animal distribution. Vishal Publications.

K. Subramani. Palaeontology Practical Manual. Vishal Publications .

Henry Woods: Palaeontology Invertebrate. CBS Publishers.

Twenhofel and Shrock : Principles of Invertebrate Paleontology. CBS Publishers

Online Resources: (e- Resources/ e- Books/ e- Learning Portals)

https://egyankosh.ac.in/

PART D: ASSESSMENT AND EVALUATION

Suggested Continuous Evaluation Methods:

Maximum Marks: 25 Marks

(Will include Internal assessment, Lab records and End Semester Viva/Voce and performance)

Semester End Exam (SEE)	**Laboratory performance: As per Dept. (LOCF)**

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

Senior Professor of Science Faculty Departmental members Alumnus Student

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG

FOUR YEAR UNDERGRADUATE PROGRAM

DEPARTMENT OF GEOLOGY

COURSE CURRICULUM 2024-25

PART A: INTRODUCTION				
Program: B.Sc.		**Class: Semester - V**		**Session:2024-2025**
1	**Course Code**	**BGL503**		
2	**Course Title**	Geology and Mineral Resources of Chhattisgarh		
3	**Course Type**	DSE		
4	**Course Learning Outcome (CLO)**	This Course will enable the students to: 1. Understand the distribution of geological formationsof Chhattisgarh state 2. Describe the mode of occurrence of mineral deposits in Chhattisgarh state 3. Discuss about the scope for mineral based industries in Chhattisgarh 4. Demarcate the geological formations in the map of Chhattisgarh 5. Demarcate the distribution of mineral deposits in the map of Chhattisgarh		
5	**Credit Value**	**3Credits**	**1 credit =15 Hours – Learning and Observation**	
6	**Total Marks**	**Maximum Marks :75**		**Minimum Passing Marks:30**

PART B: CONTENT OF THE COURSE

Total no. of Teaching/ Learning Periods = 45 Periods (45 Hours)

Unit	**Topics (COURSE CONTENTS)**	**No. of Periods**
I	Summary of Geological formations of Chhattisgarh. Geological map of Chhattisgarh. Archaeozoic formations of Chhattisgarh: Sukma and Bengpal Groups, Bhopalpatnam Granulite Belt, Bailadila Group, Kotri- Dongargarh Belt. Sonakhan Group, Abujhmar Group, Khairagarh Group, Nandgaon Group, Kanker Granite and Dongargarh Granite.	**9**
II	Chhattisgarh Supergroup, Indravati Group, Rock formations of Gondwana Supergroup, Umaria and Manendragarh marine beds, Deccan Trap	9
III	Geology, mineralogy and salient features of Iron ore deposits of Chhattisgarh. Bauxite deposits of Chhattisgarh. Tin deposits of Chhattisgarh, Radioactive minerals and REE in Chhattisgarh	9
IV	Geology, mineralogy and salient features of limestone and dolomite deposits of Chhattisgarh, coal deposits of Chhattisgarh, mica deposits of Chhattisgarh, precious and semiprecious minerals in Chhattisgarh, fertilizer minerals in Chhattisgarh	9
V	Mineral specifications and mineral based industries in Chhattisgarh : Steel industry, Coal industry, Cement industry, Precious and Semi-precious stone industry, Fertilizer industry, Dimension stone and construction material industry.	**9**

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

Senior Professor of Science Faculty Departmental members Alumnus Studen

PART C - LEARNING RESOURCES

Text Books, Reference Books, Other Resources

Text Books Recommended:

Economic mineral deposits of India- Umeshwar Prasad.

Ore-deposit of India- Gokhale & Rao

Geology and Mineral Resources of Chhattisgarh: Geological Survey of India, Miscellaneous Publication No. 30.

Reference Books:

Geology and Mineral Resources of Chhattisgarh H. M. Ramachandra and Avisekh Ghosh. Geological Society of India,

Online Resources: (e- Resources/ e- Books/ e- Learning Portals)

https://www.researchgate.net/publication/362705237_Mineral_Resources_of_Chhattisgarh_-A_Perspective

PART D: ASSESSMENT AND EVALUATION

Suggested Continuous Evaluation Methods:	
Maximum Marks:	**75 Marks**
Continuous Comprehensive Evaluation (CCE):	**15Marks**
Semester End Exam (SEE):	**60 Marks**
Internal Assessment: Continuous Comprehensive Evaluation(CCE)	Internal Test of 15 Marks andAssignment of 15 Marks

Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D)from each Unit**	
	Question - A & B: (Compulsory) Very short answer type (01each)	02 x 5 = 10 Marks
	Question - C: Short answer type question	03 x 5 = 15 Marks
	Question -D: Long answer type question	07 x 5 = 35 Marks
	Total = 60 Marks	

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

Senior Professor of Science Faculty Departmental members Alumnus Student

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG

FOUR YEAR UNDERGRADUATE PROGRAM

DEPARTMENT OF GEOLOGY

COURSE CURRICULUM 2024-25

Lab Course

PART A: INTRODUCTION				
Program: B.Sc.		**Class:**	**Semester - V**	**Session:2024-2025**
1	**Course Code**	**BGL-503**		
2	**Course Title**	Geology and Mineral Resources of ChhattisgarhLabcourse		
3	**Course Type**	Practical		
4	**Course Learning Outcome (CLO)**	This Course will enable the students to: 1. Demarcategeological formations on the outline map of Chhattisgarh 2. Demarcate various mineral deposits on the outline map of Chhattisgarh 3. List out major and minor minerals occurring in Chhattisgarh 4. Discuss the specifications of minerals used in various mineral based industries		
5	**Credit Value**	**1Credit**	**1 credit =15 Hours – Learning and Observation**	
6	**Total Marks**	**Maximum Marks :25**		**Minimum Passing Marks:10**

PART B: CONTENT OF THE COURSE	
S.No.	**List of Experiments**
1	Study of geological map of Chhattisgarh and plotting of various formations in outline map of Chhattisgarh
2	Plotting of various metallic mineral deposits in the map of Chhattisgarh
3	Plotting of Coal deposits& gem mineral occurrences in outline map of Chhattisgarh
4	Preparation of List of major and minor minerals and tabulation of their reserves inChhattisgarh
5	Preparation of charts of specification of minerals used in Cement industry, Ferro-alloy industry, Steel industry, Aluminium based industry, Ceramic and fertilizer industry

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

Senior Professor of Science Faculty Departmental members Alumnus Student

PART C - LEARNING RESOURCES
Text Books, Reference Books, Other Resources
TEXT BOOKS Recommended: Drury, S.A., 1987: Image interpretation in Geology. Allen and Unwin. Lillesand, T.M. and Kieffer, R.W., 1987: Remote Sensing and Image Interpretation. John Wiley. Pandey, S.N., 1987: Principles and Applications of Photogeology. Wiley Eastern. New Delhi. Gupta, R.P., 1990: Remote Sensing Geology. Springer Verlag **Reference Books:** Miller, V.C., 1961: Photogeology. McGraw Hill. Sabbins, F.F., 1985: Remote Sensing- Principles and Applications. Freeman **Online Resources: (e- Resources/ e- Books/ e- Learning Portals)** https://natural-resources.canada.ca/maps-tools-and-publications/satellite-imagery-elevation-data-and-air-photos/tutorial-fundamentals-remote-sensing/9309

PART D: ASSESSMENT AND EVALUATION	
Suggested Continuous Evaluation Methods: **Maximum Marks: 25 Marks** **(Will include Internal assessment, Lab records and End Semester Viva/Voce and performance)**	
Semester End Exam (SEE)	**Laboratory performance: As per Dept. (LOCF)**

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

Senior Professor of Science Faculty Departmental members Alumnus Student

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OFGEOLOGY
COURSE CURRICULUM 2024-25

PART A: INTRODUCTION				
Program: B.Sc.		**Class: Semester - VI**		**Session:2024-2025**
1	**Course Code**	BGL-601		
2	**Course Title**	ECONOMIC GEOLOGY		
3	**Course Type**	DSC		
4	**Course Learning Outcome (CLO)**	This Course will enable the students to: 1. Explain about the formation of mineral deposits 2. Demonstrate the distribution of mineral resources. 3. Discuss the Classification of the mineral deposits 4. Outline the various mineral resources of India 5. Understand about the origin, occurrence and properties of Coal 6. Discuss the age and occurrences of the coal 7. Explain about the petrography of Coal 8. Outline the origin and occurrences of the Petroleum		
5	**Credit Value**	**3Credits**	**1 credit =15 Hours – Learning and Observation**	
6	**Total Marks**	**Maximum Marks :75**		**Minimum Passing Marks:30**

PART B: CONTENT OF THE COURSE		
Total no. of Teaching/ Learning Periods = 45 Periods (45 Hours)		
Unit	**Topics (COURSE CONTENTS)**	**No. of Periods**
I	Economic Geology introduction & its perspectives; Global mineral deposit & resource. Distribution of mineral deposits in time & space. Classification of mineral deposits. Geological thermometers.Magmatic & Hydrothermal processes of mineral formation.	9
II	Weathering products & Residual deposits. Oxidation & supergene sulphide enrichment processes. Sedimentary processes of ore formation. Placer deposits.	9
III	Geological and Geographical distribution, mode of occurrence and mineralogy of Iron, Manganese, Chromium,Copper, Lead, Zinc, Gold and Aluminium ore deposits of India.	9
IV	Refractory and Fertilizer minerals. Minerals used in cement & chemical industries.Coal deposits: Origin, Definition & stratigraphy. Fundamentals of coal petrography. Peat, Lignite, Bituminous & Anthracite. Indian coal deposits.	9
V	Origin of Natural-hydrocarbons, migration & accumulation. Types of oil traps; Structural, stratigraphic and composite. Offshore & Onshore oil deposits of India.Radioactive minerals: Mineralogy, Prospecting techniques, Geological & Geographical distribution of radioative-minerals.	9

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

Senior Professor of Science Faculty Departmental members Alumnus Student

PART C - LEARNING RESOURCES

Text Books, Reference Books, Other Resources

Text Books Recommended:

((1) आर्थिकभूविज्ञान–कृष्णगोपालव्यास
(2) आर्थिक एवंव्यावहारिकभूविज्ञान–आर.पी. मांजरेकर
(3) प्रायोगिकभूविज्ञान भाग–3–गुप्ता, पुनवटकर
(4) Economic mineral deposits of India- Umeshwar Prasad.
(5) Economic mineral deposits- A.Bateman
(6) Ore-deposit of India- Gokhale & Rao

Reference Books:

India's Mineral Resource- S. Krishnaswami

Online Resources: (e- Resources/ e- Books/ e- Learning Portals)

https //egyankosh.ac.in

PART D: ASSESSMENT AND EVALUATION

Suggested Continuous Evaluation Methods:

Maximum Marks:	**75 Marks**
Continuous Comprehensive Evaluation (CCE):	**15Marks**
Semester End Exam (SEE):	**60 Marks**

Internal Assessment: Continuous Comprehensive Evaluation(CCE)	Internal Test of 15 Marks andAssignment of 15 Marks
Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D)from each Unit** Question - A & B: (Compulsory) Very short answer type (01each) 02 x 5 = 10 Marks Question - C: Short answer type question 03 x 5 = 15 Marks Question -D: Long answer type question 07 x 5 = 35 Marks **Total = 60 Marks**

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

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

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OF GEOLOGY
COURSE CURRICULUM 2024-25
Lab Course

PART A: INTRODUCTION				
Program: B.Sc.		**Class:**	**Semester - VI**	**Session:2024-2025**
1	**Course Code**	BGL-601		
2	**Course Title**	Economic Geology Labcourse		
3	**Course Type**	Practical		
4	**Course Learning Outcome (CLO)**	On completion of Course, the students will be able 1. Identify ore forming minerals in hand specimen. 2. Identify nonmetallic minerals of economic importance in hand specimen. 3. Demarcate ore deposits and economic mineral deposits in Outline map of India. 4. Demarcate coal fields in outline map of India. 5.Demarcate petroleum fields in outline map of India. 6. Demarcate radioactive mineral deposits in outline map of India.		
5	**Credit Value**	**1Credit**	**1 credit =15 Hours – Learning and Observation**	
6	**Total Marks**	**Maximum Marks :25**		**Minimum Passing Marks:10**

PART B: CONTENT OF THE COURSE	
S.No.	**List of Experiments**
1	Study of important metallic and nonmetallic minerals on the basis of physical properties.
2	Distribution of important metallic deposits within outline map of India.
3	Plotting of various non metallic mineral deposits on the outline map of India.
4	Plotting of various coal fields and petroleum field on the outline map of India.
5	Plotting of various radioactive mineral deposits on the outline map of India.

PART C - LEARNING RESOURCES
Text Books, Reference Books, Other Resources
TEXT BOOKS Recommended: प्रायोगिकभूविज्ञान भाग–3–गुप्ता, पुनवटकर Economic mineral deposits of India- Umeshwar Prasad. Ore-deposit of India- Gokhale & Rao **Online Resources: (e- Resources/ e- Books/ e- Learning Portals)** https //egyankosh.ac.in

PART D: ASSESSMENT AND EVALUATION	
Suggested Continuous Evaluation Methods: **Maximum Marks:** **25 Marks** **(Will include Internal assessment, Lab records and End Semester Viva/Voce and performance)**	
Semester End Exam (SEE)	**Laboratory performance: As per Dept. (LOCF)**

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

Senior Professor of Science Faculty Departmental members Alumnus Student

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OFGEOLOGY
COURSE CURRICULUM 2024-25

PART A: INTRODUCTION				
Program: B.Sc.		**Class: Semester - VI**		**Session: 2024-2025**
1	**Course Code**	**BGL-602**		
2	**Course Title**	**APPLIED GEOLOGY**		
3	**Course Type**	**DSE**		
4	**Course Learning Outcome (CLO)**	**This Course will enable the students to:** 1. Understand the basics of Environmental Geology. 2. Evaluate the impact of human activities on soil, groundwater and other natural resources. 3. Describe about the basic principles of Geophysics and its application. 4. Explain the various geological methods of Mineral exploration. 5. Describe geophysical methods of mineral exploration. 6. Understand the methods of groundwater exploration. 7. Outline the basics of engineering geology and its applications. 8.Understand the occurrence and availability of groundwater resources and the role of the hydrologic cycle.		
5	**Credit Value**	**3Credits**	**1 credit =15 Hours – Learning and Observation**	
6	**Total Marks**	**Maximum Marks :75**		**Minimum Passing Marks:30**

PART B: CONTENT OF THE COURSE

Total no. of Teaching/ Learning Periods = 45 Periods (45 Hours)

Unit	**Topics (COURSE CONTENTS)**	**No. of Periods**
I	Definition and scope of Environmental Geology. Fundamental concepts of Environmental Geology. Introductory ideas about natural disaster: Flood, Tsunami, Earthquake, Volcanism, Landslides; their causes and mitigation.	**9**
II	Definition and scope of Hydrogeology. Hydrologic cycle. Mode of occurrence of ground water, quality of ground water. Definition and limitation of Darcy's law. Hydrologic properties of rocks. Classification of Aquifers. Ground water provinces of India.	9
III	Engineering Geology & its importance, Engineering properties of rocks. Dams: classification and elements of Dams. Geological conditions for construction of large Dams. Elements of tunnels. Geological conditions for construction of large Tunnels. Geological conditions for construction of Roads and Bridges Problems and remedies in Dams Tunnels, Roads and Bridges.	9
IV	Elementary idea about prospecting and exploration of mineral deposits. Introduction to Surface methods of prospecting and exploration. Introduction to subsurface methods of prospecting and exploration. Drilling: Definition and types. Sampling: Definition and types.	9
V	Elementary idea about principle of Geophysical prospecting techniques: Gravity, Electrical & Magnetic methods. Aerial and seismic prospecting methods. Environmental impact of over exploitation of mineral resources. Principles of mineral economics. National mineral policy.	9

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

Senior Professor of Science Faculty Departmental members Alumnus Student

PART C - LEARNING RESOURCES

Text Books, Reference Books, Other Resources

TEXT BOOKS Recommended:

(1) भौमजल विज्ञान– एल.के. रिछारिया

(2) आर्थिक एवं व्यावहारिकभूविज्ञान–आर.पी. मांजरेकर

(3) प्रारंभिक खनिकी–बी.क`. सिंह

(4) प्रायोगिक भूविज्ञान भाग–3–गुप्ता, पुनवटकर एवं रघुवंशी

(5) Principles of Engineering Geology & Geotechniques- Krynine & Judd.

(6) Geophysical methods in Geology- P.V. Sharma.

(7) Environmental Geology- K.S. Valdiya (1987).

(8) Principle of Engineering Geology – K.M. Bangar.

(9) Engineering and General Geology – Parbin Singh.

Reference Books:

(1) Groundwater Hydrology- D.K. Todd.

(2) Courses in Mining Geology- R.N.P. Arogyaswami.

(3) Ground water- Assessment, Development & Management- K.R. Karanth.

Online Resources: (e- Resources/ e- Books/ e- Learning Portals)

https://egyankosh.ac.in/

PART D: ASSESSMENT AND EVALUATION

Suggested Continuous Evaluation Methods:	
Maximum Marks:	**75 Marks**
Continuous Comprehensive Evaluation (CCE):	**15Marks**
Semester End Exam (SEE):	**60 Marks**
Internal Assessment: Continuous Comprehensive Evaluation(CCE)	Internal Test of 15 Marks andAssignment of 15 Marks
Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D)from each Unit** Question - A & B: (Compulsory) Very short answer type (01each) 02 x 5 = 10 Marks Question - C: Short answer type question 03 x 5 = 15 Marks Question -D: Long answer type question 07 x 5 = 35 Marks **Total = 60 Marks**

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

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

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OF GEOLOGY
COURSE CURRICULUM 2024-25

Lab Course

PART A: INTRODUCTION				
Program: B.Sc.		Class:	Semester - VI	Session:2024-2025
1	Course Code	BGLL602		
2	Course Title	Applied Geology		
3	Course Type	Practical		
4	Course Learning Outcome (CLO)	On completion of Course, the students will be able 1. Demarcate the seismic zones in outline map of India. 2. Demarcate the Earthquake and volcanic belts of the world. 3. Identify and classify the rocks on the basis of their engineering and hydrogeological properties. 4. Suggests about ideal dam, tunnel and road site selection. 5. Calculate hydraulic conductivity, porosity and permeability.		
5	Credit Value	1Credit	1 credit =15 Hours – Learning and Observation	
6	Total Marks	Maximum Marks :25		Minimum Passing Marks:10

PART B: CONTENT OF THE COURSE	
S.No.	List of Experiments
1	Demarcation of the seismic zones in outline map of India.
2	Demarcation of the Earthquake and volcanic belts of the world.
3	Identification and classification of the rocks on the basis of their engineering properties.
4	Identification and classification of the basis of their hydrogeological properties.
5	Problems related to dam, tunnel and road site selection.
6	Calculation of hydraulic conductivity, porosity and permeability.

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

Senior Professor of Science Faculty Departmental members Alumnus Student

PART C - LEARNING RESOURCES	
Text Books, Reference Books, Other Resources	
TEXT BOOKS Recommended: (1) भौमजल विज्ञान– एल.के. रिछारिया (2) आर्थिक एवं व्यावहारिकभूविज्ञान–आर.पी. मांजरेकर (3) प्रारंभिक खनिकी–बी.क`. सिंह (4) प्रायोगिक भूविज्ञान भाग–3–गुप्ता, पुनवटकर एवं रघुवंशी (5) Principles of Engineering Geology & Geotechniques- Krynine & Judd. (6) Geophysical methods in Geology- P.V. Sharma. (7) Environmental Geology- K.S. Valdiya (1987). (8) Principle of Engineering Geology – K.M. Bangar. (9) Engineering and General Geology – Parbin Singh. **Reference Books:** (1) Groundwater Hydrology- D.K. Todd. (2) Courses in Mining Geology- R.N.P. Arogyaswami. (3) Ground water- Assessment, Development & Management- K.R. Karanth. **Online Resources: (e- Resources/ e- Books/ e- Learning Portals)** https://egyankosh.ac.in/	
PART D: ASSESSMENT AND EVALUATION	
Suggested Continuous Evaluation Methods: **Maximum Marks: 25 Marks** **(Will include Internal assessment, Lab records and End Semester Viva/Voce and performance)**	
Semester End Exam (SEE)	**Laboratory performance: As per Dept. (LOCF)**

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

Senior Professor of Science Faculty Departmental members Alumnus Student

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FOUR YEAR UNDERGRADUATE PROGRAM

DEPARTMENT OF GEOLOGY

COURSE CURRICULUM 2024-25

PART A: INTRODUCTION				
Program: B.Sc.		Class: Semester - VI		Session:2024-2025
1	Course Code	BGL603		
2	Course Title	Photogeology and Remote Sensing		
3	Course Type	DSE		
4	Course Learning Outcome (CLO)	**This Course will enable the students to:** 1. Explain basic principles of photogeology and aerial photography. 2. Understand basic concepts of electromagnetic radiation, its interaction with the earth's surface and atmosphere. 3. Understand resolution properties to interpret, process and evaluate remotely sensed images. 4. Explain about the GIS principles and applications. 5. Interpret geological features on aerial photographs.		
5	Credit Value	3Credits	1 credit =15 Hours – Learning and Observation	
6	Total Marks	Maximum Marks :75		Minimum Passing Marks:30

PART B: CONTENT OF THE COURSE

Total no. of Teaching/ Learning Periods = 45 Periods (45 Hours)

Unit	Topics (COURSE CONTENTS)	No. of Periods
I	Types and geometry of aerial photograph, tilt and relief distortion. Elements of photogrammetry, stereoscopy, stereovision, flight planning. Recognition of photo-elements and terrain elements like tone, texture, pattern, shape, size.	9
II	Photo-interpretation of structural and landform elements, tectonic features, features of glacial, fluvial, coastal, aeolian and denudation landforms. Electromagnetic energy, electromagnetic spectrum, image characteristics.	9
III	Space missions, Indian Remote Sensing Satellites. Remote Sensing: data source, platforms and sensors. Acquisition of remote sensing data.Remote Sensing data products, geometric and radiometric corrections, thermal and microwave remote sensing. Digital Image Processing	9
IV	Remote Sensing techniques in Geosciences: Visual Interpretation of satellite images. Techniques of image interpretation using spectral, special and temporal information. Signature of the natural objects..	9
V	Interpretation of lithology: rock types, discrimination of igneous, sedimentary and metamorphic terrain Application of Remote Sensing techniques in Geology	9

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

Senior Professor of Science Faculty Departmental members Alumnus Studen

PART C - LEARNING RESOURCES
Text Books, Reference Books, Other Resources

Text Books Recommended:

Drury, S.A., 1987: Image interpretation in Geology. Allen and Unwin.

Lillesand, T.M. and Kieffer, R.W., 1987: Remote Sensing and Image Interpretation. John Wiley.

Pandey, S.N., 1987: Principles and Applications of Photogeology. Wiley Eastern. New Delhi.

Gupta, R.P., 1990: Remote Sensing Geology. Springer Verlag

Reference Books:

Miller, V.C., 1961: Photogeology. McGraw Hill.

Sabbins, F.F., 1985: Remote Sensing- Principles and Applications. Freeman

Online Resources: (e- Resources/ e- Books/ e- Learning Portals)

https://natural-resources.canada.ca/maps-tools-and-publications/satellite-imagery-elevation-data-and-air-photos/tutorial-fundamentals-remote-sensing/9309

PART D: ASSESSMENT AND EVALUATION		
Suggested Continuous Evaluation Methods:		
Maximum Marks:	**75 Marks**	
Continuous Comprehensive Evaluation (CCE):	**15Marks**	
Semester End Exam (SEE):	**60 Marks**	
Internal Assessment: Continuous Comprehensive Evaluation(CCE)	Internal Test of 15 Marks andAssignment of 15 Marks	
Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D)from each Unit**	
	Question - A & B: (Compulsory) Very short answer type (01each)	02 x 5 = 10 Marks
	Question - C: Short answer type question	03 x 5 = 15 Marks
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	Total = 60 Marks	

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DEPARTMENT OF GEOLOGY

COURSE CURRICULUM 2024-25

Lab Course

PART A: INTRODUCTION				
Program: B.Sc.		**Class:**	**Semester - VI**	**Session:2024-2025**
1	**Course Code**	**BGLL-603**		
2	**Course Title**	Photogeology and Remote sensing Labcourse		
3	**Course Type**	Practical		
4	**Course Learning Outcome (CLO)**	This Course will enable the students to: 1. Identify terrain elements present on aerial photographs 2. Identify terrain elements present on satellite imageries 3. Visually interpret satellite imageries. 4. Apply the principles of remote sensing for solving various geological problems		
5	**Credit Value**	**1Credit**	**1 credit =15 Hours – Learning and Observation**	
6	**Total Marks**	**Maximum Marks :25**		**Minimum Passing Marks:10**

PART B: CONTENT OF THE COURSE	
S.No.	**List of Experiments**
1	Study of aerial photographs using pocket and mirror stereoscope.
2	Study of terrain elements present on aerial photographs and satellite imageries
3	Visual interpretation of satellite imageries.
4	Use of G.P.S.
5	Using "Google Earth Pro, Practical exercises related to • Marking location • Marking polygon • Marking linear feature • Saving .kml and .kmz file

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

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PART C - LEARNING RESOURCES
Text Books, Reference Books, Other Resources
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PART D: ASSESSMENT AND EVALUATION	
Suggested Continuous Evaluation Methods: **Maximum Marks: 25 Marks** **(Will include Internal assessment, Lab records and End Semester Viva/Voce and performance)**	
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Chairperson /H.O.D Subject Expert Subject Expert Subject Expert

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