

**Department of Applied Geology
School of Engineering & Technology**

**Curriculum Framework
B.Sc. Geology
Based on
National Education Policy-2020
Date of BoS:12/09/2022**



**Doctor Harisingh Gour Vishwavidyalaya, Sagar
(A Central University)
Sagar-Madhya Pradesh 470003**

Dr. Harisingh Gour Vishwavidyalaya, Sagar
Department of Applied geology

Syllabus - M. Tech. (Applied Geology) 2022-23

I Semester

Course no.	Course Name	L	T	P	C
GEO CC 131	Geomorphology	4	0	0	4
GEO CC 132	Crystallography & Mineral Optics	4	0	0	4
GEO CC 133	Mineralogy	4	0	0	4
GEO CC 134	Practical- Crystallography Mineral Optics & Mineralogy	0	0	2	2
GEO CC 135	Structural Geology	4	0	0	4
GEO CC 136	Practical- Structural Geology	0	0	2	2
GEO CC 137	Practical- Topographical Surveying	0	0	4	4
GEO SE 131	Seminar	0	2	0	2
L= Lecture, T= Tutorial, P= Practical, C= Credits		Total Credits			26

MOOC: Crystallography & Mineralogy offered by the University. Course Coordinator: Prof. Harel Thomas, available on SWAYAM Platform.

II Semester

Course no.	Course Name	L	T/F	P	C
GEO CC 231	Applied Micropaleontology	4	0	0	4
GEO CC 232	Practical Applied Micropaleontology	0	0	2	2
GEO CC 233	Stratigraphy -I (Precambrian)	4	0	0	4
GEO CC 234	Stratigraphy- II (Phanerozoic)	4	0	0	4
GEO CC 235	Geological Field Work & Mapping	0	12	0	12
GEO SE 231	Seminar	0	2	0	2
OE		2	0	0	2
L= Lecture, T= Tutorial, P= Practical, C= Credits, F= Field Work		Total Credits			30

GEO OE 231	Mineral Resources	2	0	0	2
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5. Structure of the Programme:

Curriculum Framework
Syllabus – B.Sc. (Geology) 2022-23
L-5 (I & II Semester)

I-Semester

Level / Semester	Nature of Course	Courses Code	Course Title	MM	L	T	P	C
L-5 I Semester	Discipline Specific: Major	GEO-DSM-111	Geomorphology & Geodynamics	100	4	0	0	4
	Discipline Specific: Major	GEO-DSM-112	Geomorphology Practical	100	0	0	2	2
	Discipline Specific: Major	DSM-113	Other Department	100	6	0	0	6
	Ability Enhancement Course (Either in I or II Sem)	GEO-AEC-111	Geomorphology Field Training and Report Writing (within campus)	100	2	0	0	2
	Skill Enhancement Course (Either in I or II Sem)	GE0-SEC-111	Seminar/ Field Work	100	2	0	0	2
	Value Enhancement Course	VEC-111	Other Department					Qualifying
Total Credits								20

Note: Student can choose either AEC or SEC in one semester

Level / Semester	Nature of Course	Courses Code	Course Title	MM	L	T	P	C
L-5 I Semester	Multi-Disciplinary: Major	GEO-MDM-111	Toposheet, GPS and Compass Reading	100	6	0	0	6

II-Semester

Level / Semester	Nature of Course	Courses Code	Course Title	MM	L	T	P	C
L-5 II Semester	Discipline Specific: Major	GEO-DSM-211	Mineralogy, Mineral Optics & Crystallography	100	4	0	0	4
	Discipline Specific: Major	GEO-DSM-212	Mineralogy, Mineral Optics & Crystallography Practical	100	0	0	2	2
	Discipline Specific: Major	DSM-213	Other Department	100	6	0	0	6
	Ability Enhancement Course (AEC) (Either in I or II Sem)	GEO-AEC-211	Geomorphology Field Training and Report Writing (within campus)	100	2	0	0	2
	Skill Enhancement Course (SEC) (Either in I or II Sem)	GE0-SEC-211	Seminar/ Field Work / Report writing	100	2	0	0	2
	Value Enhancement Course (VEC)	VEC-211	Other Department					Qualifying
Total Credits								20
Exit with Certificate								

*** Note: Student can choose either AEC or SEC in one semester**

***Note: UG-MOOC - Crystallography & Mineralogy offered by the University, Course Coordinator - Prof. H Thomas available on SWAYAM Platform.**

Level / Semester	Nature of Course	Courses Code	Course Title	MM	L	T	P	C
L-5 II Semester	Multi-Disciplinary: Major	GEO-MDM-211	Rock forming & Gem Minerals	100	6	0	0	6

- The Syllabus of VI Semester in M.Tech. Includes a Programme of 3 weeks duration (12 credits under Discipline Specific: Major-2) attachment with Atomic Mineral Division (AMD), Geological Survey of India (GSI), Coal India and Oil and Natural Gas Commission (ONGC).
- Modern tools of teaching: Class room teachings are supported by Modern Tools of teaching such as PowerPoint, Video Lectures etc. Department has one smart classroom with 15 terminals for students..
- Popular lectures: Students are encouraged to participate and attend various subjects related regular popular lectures training virtual organized by Atomic Mineral Division (AMD), Geological Survey of India (GSI).
- Faculty of Applied Geology Offered 08 UG-MOOCs and 01 PG- MOOC for SWAYAM platform which are running regularly since November, 2016 onwards. Among them few courses are very popular within and outside India, especially Petrology and Metamorphic Petrology & Thermodynamics.

PG-MOOC – Metamorphic Petrology & Thermodynamics

Course Coordinator - Prof. Harel Thomas

- To emphasize on need-based syllabus to enable the students for economic independence.
- To cater to the educational needs of the society with an inclusive approach.

After completion of the Programme the learner will be able to:

- Serve the Nation as Geologist / Government officers in (GSI, ONGC, AMD, DGM and NMDC).
- They should be able to join national/multinational to work as geologist in India / abroad
- They should be able to work as consultant Geologist. .

4. Programme Learning Outcomes:

The programme learning outcomes are attained by learners through the essential learning's acquired on completion of selected courses of study within a programme. The outcomes and attributes described in qualification descriptors are attained by students through learning acquired on completion of a programme of study.

5. Structure of the Programme

Postgraduate Curriculum Framework Syllabus - M. Tech. (Applied Geology) 2022-23

L-8

I & II Semester

I- Semester

Year/Semester	Nature of Course	Courses	Credits
L-8	Discipline Specific: Major	GEO-DSM-131 Structure Geology	04
	Discipline Specific: Major	GEO-DSM-132 Structure Geology Practical	02
	Discipline Specific: Major	GEO-DSM-133 Mineralogy & Mineral Optics	04
	Discipline Specific: Major	GEO-DSM-134 Mineral, Mineral Optics & Crystallography Practical	02
I - Semester	Multi - Disciplinary: Major	GEO-MDM-131 Geomorphology	04
	Multi - Disciplinary: Major	GEO-MDM-132 Crystallography	02
	Skill Enhancement Course	GEO-SEC-131 Topographical Surveying	04
	Skill Enhancement Course	GEO-SEC-132 Seminar	02
Total Credits			24

MOOC: Crystallography & Mineralogy offered by the University. Course Coordinator: Prof. Harel Thomas, available on SWAYAM Platform.

II Semester

Year/Semester	Nature of Course	Courses	Credits
L-8 II Semester	Discipline Specific: Major	GEO-DSM-231 Applied Micropaleontology	04
	Discipline Specific: Major	GEO-DSM-232 Applied Micropaleontology Practical	02
	Discipline Specific: Major	GEO-DSM-233 Stratigraphy- (Phanerozoic)	04
	Discipline Specific: Major	GEO-MDM-234 Stratigraphy-(Precambrian)	04
	Multi - Disciplinary: Major	GEO-MDM-231 Geological Field Work, Geological Report & Viva - Voce	12
	Skill Enhancement Course	GEO-SEC- 231 Seminar	02
	Skill Enhancement Course	GEO-SEC - 232 Mineral Resources	02
	Total Credits		
Exit with M.Tech Applied Geology Certificate			

Note: Student can choose either GEO-231 or 232 in one Semester

L-9

III & IV Semester

III- Semester

Year/ Semester	Nature of Course	Courses	Credits
L - 9 III Semester	Discipline Specific: Major	GEO-DSM-331 Igneous Petrology	04
	Discipline Specific: Major	GEO-DSM-332 Igneous Petrology Practical	02
	Discipline Specific: Major	GEO-DSM-333 Ore Geology	04
	Discipline Specific: Major	GEO-MDM-334 Economic & Ore Geology Practical	02
	Multi - Disciplinary: Major	GEO-MDM-331 Sedimentology	04
	Multi - Disciplinary: Major	GEO-MDM-332 Sedimentology Practical	02
	Skill Enhancement Course	GEO-SEC-331 Industrial Minerals	03
	Skill Enhancement Course	GEO-SEC-332 Seminar	02
Total Credits			23

IV – Semester

Year/Semester	Nature of Course	Courses	Credits
L - 10 IV Semester	Discipline Specific: Major	GEO-DSM-431 Metamorphic Petrology & Thermodynamics	04
	Discipline Specific: Major	GEO-DSM-432 Metamorphic Petrology & Thermodynamics Practical	02
	Discipline Specific: Major	GEO-DSM-433 Geochemistry	04
	Discipline Specific: Major	GEO-MDM-434 Geochemistry Practical	02
	Multi-Disciplinary: Major	GEO-MDM-431 Geodynamics & Tectonics	04
	Multi-Disciplinary: Major	GEO-MDM-432 Economic Geology, Petrology Tour & Viva-Voce	10
	Skill Enhancement Course	GEO-SEC-431 Fuel Geology (Coal, Petroleum & Atomic)	02
	Skill Enhancement Course	GEO-SEC-432 Seminar	02
Total Credits			30
Exit with M.Tech Applied Geology Diploma			

PG-MOOC: Metamorphic Petrology & Thermodynamics offered by the University. Course Coordinator: Prof. Harel Thomas, available on SWAYAM Platform.

MOOC: Petrology offered by the University. Course Coordinator: Prof. Harel Thomas, available on SWAYAM Platform.

**Scheme of Ph.D. Programme
In
Applied Geology
2022-23**

Ph.D. Course Work – 16 Credits

Course Code	Title	Credits
GEO CC 141	Research Methodology	04
GEO CC 142	Instrumentation & Field Work	04
GEO CC 143	Review of Published Research	02
GEO CC 144	Research and Publication Ethics (RPE)	02
Elective	Title	04
GEO EC 141	Igneous, Metamorphic Petrology & Geochemistry	
GEO EC 142	Applied Micropaleontology	
GEO EC 143	Geoinformatics	
GEO EC 144	Sedimentary Petrology	
GEO EC 145	Environmental Geology	
GEO EC 146	Engineering Geology	
GEO EC 147	Structural Geology	
GEO EC 148	Economic Geology	
GEO EC 149	Hydrogeology	
Total Course Credits		16