



॥ सा विद्या या विमुक्तये ॥

स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ, नांदेड

'ज्ञानतीर्थ', विष्णुपुरी, नांदेड - ४३१ ६०६ (महाराष्ट्र राज्य) भारत

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED

'Dnyanteerth', Vishnupuri, Nanded - 431 606 (Maharashtra State) INDIA

Established on 17th September, 1994, Recognized By the UGC U/s 2(f) and 12(B), NAAC Re-accredited with 'B++' grade

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एनईपी-२०२० सुधारित श्रेयांक
आराखडयानुसार विज्ञान व तंत्रज्ञान
विद्याशाखेतील पदवी प्रथम वर्षाचे
अभ्यासक्रम शैक्षणिक वर्ष २०२६-२७
पासून लागू करण्याबाबत.

परिपत्रक

या परिपत्रकान्वये सर्व संबंधितांना कळविण्यात येते की, दिनांक २२ एप्रिल २०२६ रोजी संपन्न झालेल्या मा.विद्यापरिषद बैठकीतील विषय क्र.०४/६४-२०२६ च्या ठरावानुसार विज्ञान व तंत्रज्ञान विद्याशाखेतील राष्ट्रीय शैक्षणिक धोरण-२०२० सुधारित श्रेयांक आराखडयानुसार पदवी प्रथम वर्षाचे अभ्यासक्रम शैक्षणिक वर्ष २०२६-२७ पासून लागू करण्यास मा.विद्यापरिषदेने मान्यता प्रदान केली आहे. त्यानुसार विज्ञान व तंत्रज्ञान विद्याशाखेतील बी.एस्सी. प्रथम वर्षाचे खालील विषयाचे अभ्यासक्रम शैक्षणिक वर्ष २०२६-२७ पासून लागू करण्यात येत आहे.

01	B.Sc. I Year Botany	06	B.Sc. I Year Geology
02	B.Sc. I Year Chemistry	07	B.Sc. I Year Environment & Earth Science
03	B.Sc. I Year Mathematics	08	B.Sc. I Year Statistics
04	B.Sc. I Year Zoology	09	B.Sc. I Year Dairy Science
05	B.Sc. I Year Microbiology	10	B.Sc. I Year Agrochemical & Fertilizers

सदरील परिपत्रक व अभ्यासक्रम प्रस्तुत विद्यापीठाच्या www.srtmun.ac.in या संकेतस्थळावर उपलब्ध आहेत. तरी सदरील बाब ही सर्व संबंधितांच्या निदर्शनास आणून द्यावी, ही विनंती.

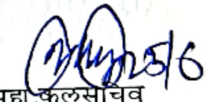
'ज्ञानतीर्थ' परिसर,

विष्णुपुरी, नांदेड - ४३१ ६०६.

जा.क्र.:शै-१/परिपत्रक/पदवी/बीएस्सी/२०२६-२७/66

दिनांक : २२.०६.२०२६




सहा.कुलसचिव
शैक्षणिक (१-अभ्यासमंडळ) विभाग

प्रत माहिती व पुढील कार्यवाहीस्तव :-

- १) मा. कुलगुरू महोदयांचे कार्यालय, प्रस्तुत विद्यापीठ.
- २) मा. प्र.कुलगुरू महोदयांचे कार्यालय, प्रस्तुत विद्यापीठ
- ३) मा. अधिष्ठाता, विज्ञान व तंत्रज्ञान विद्याशाखा, प्रस्तुत विद्यापीठ.
- ४) मा. संचालक, परिक्षा व मुल्यमापन मंडळ, प्रस्तुत विद्यापीठ.
- ५) मा. प्राचार्य, सर्व संबंधित संलग्नित महाविद्यालये, प्रस्तुत विद्यापीठ.
- ६) सिस्टीम एक्सपर्ट, शैक्षणिक विभाग, प्रस्तुत विद्यापीठ. यांना देवून कळविण्यात येते की, परिपत्रक अभ्यासक्रम संकेतस्थळावर प्रसिध्द करण्यात यावेत.



**SWAMI RAMANAND TEERTH
MARATHWADA UNIVERSITY,
NANDED - 431 606 (MS)**



**(Credit Framework and Structure of Four Year UG Program with
Multiple Entry and Exit Option as per NEP-2020)**

**UNDERGRADUATE PROGRAMME OF
SCIENCE & TECHNOLOGY**

Major in **GLG** and Minor in **GLG**(Subject)

GLG - GEOLOGY

Under the Faculty of Science & Technology

(Revised as per the Govt. Of Maharashtra circular dt. 13th March 2024)

2026-27

Details of the Board of Studies Members in Geology under the faculty of Science & Technology of S.R.T.M. University, Nanded

<i>Sr No</i>	<i>Name of the Member</i>	<i>Designation</i>	<i>Address</i>	<i>Contact No.</i>
1	<i>Dr. Shaikh MD Babar,</i>	<i>Professor</i>	<i>DSM 's College of Arts, Commerce and Science College, Parbhani</i>	9890184699
2	<i>Dr. Udaykumar Laxmikant Sahu</i>	<i>Associate Professor</i>	<i>Toshniwal Arts, Commerce & Science College, Sengaon, Tq. Sengaon, DistHingoli.</i>	9130006333
3	<i>Dr. Bhagwan Balasaheb Ghute</i>	<i>Associate Professor</i>	<i>Toshniwal Arts, Commerce & Science College, Sengaon, Tq. Sengaon, DistHingoli.</i>	9860406757
4	<i>Prof. D. C. Meshram</i>	<i>Professor</i>	<i>Department of Geology, S. P. Pune University, Pune</i>	8275697166
5	<i>Dr. A. N. Dongre</i>	<i>Associate Professor</i>	<i>Department of Geology, S. P. Pune University, Pune</i>	9922410132
6	<i>Dr. Sukanta Roy</i>	<i>Principal Scientist (F) & Project Director</i>	<i>BGRL, Ministry of Earth Sciences, Karad</i>	9490469980
7	<i>Prof. A. R. Kulkarni</i>	<i>Professor</i>	<i>SIBER, Kolhapur</i>	7588470146



B. Sc. First Year Semester I (Level 4.5)

Teaching Scheme

	Course Code	Course Name	Credits Assigned			Teaching Scheme (Hrs/ week)	
			Theory	Practical	Total	Theory	Practical
Optional 1	SGLGCT1101	Mineralogy and Crystallography	02	--	04	02	--
	SGLGCP1101	Practicals based on SGLGCT1101	-	02		--	04
Optional 2	SDSCMT1101	Title of paper 1	02	--	04	02	--
	SDSCMP1101	Title of paper 2 (practical)	-	02		--	04
Optional 3	SDSCMT1101	Title of paper 1	02	--	04	02	--
	SDSCMP1101	Title of paper 2 (practical)	-	02		--	04
Generic Electives (from other Faculty)	SGLGGE1101	Introduction to Minerals (Basket 3 of respective Faculty)	02	--	02	02	--
Skill Based Course (related to Major)	SDSCSC1101	Roof Water harvesting Or Preparation of Topographical Maps	--	02	02	--	04
Ability Enhancement Course	AECENG1101	L1 – Compulsory English	02	--	02	02	--
Ability Enhancement Course	--	--	--	--	--	--	--
Indian Knowledge System (IKS)	IKSXXX1101	Select from Basket 5	02	--	02	02	--
Community Engagement Services (CES)	CCCXXX1101	(XXX any one of NCC/NSS/Sports/ Culture/Health Wellness/ Yoga Education / Fitness	02	--	02	02	--
Total Credits			14	08	22	14	16



B. Sc. First Year Semester I (Level 4.5)

Examination Scheme

[20% Continuous Assessment (CA) and 80% End Semester Assessment (ESA)]

(For illustration we have considered a paper of 02 credits, 50 marks, need to be modified depending on credits assigned to individual paper)

Subject (1)	Course Code (2)	Course Name (3)	Theory			Practical			Total Col (6+7) / Col (8+9) (10)
			CA (4)	ESA (5)	Total (6)	CA (7)	ESA (8)	Total (9)	
Optional 1	SGLGCT1101	Mineralogy and Crystallography	20	30	50	--	--	--	50
	SGLGCP1101	Practicals based on SGLGCC1101	--	--	--	20	30	50	50
Optional 2	SDSCMT1101	Title of paper 1	20	30	50	--	--	--	50
	SDSCMP1101	Title of paper 2 practical	--	--	--	20	30	50	50
Optional 3	SDSCMT1101	Title of paper 1	20	30	50	--	--	--	50
	SDSCMP1101	Title of paper 2 practical	--	--	--	20	30	50	50
Generic Elective	SGLGGE1101	Introduction to Minerals (Basket 3)	20	30	50	--	--	--	50
Skill Based Course	SGLGSC1101	Roof Water harvesting Or Preparation of Topographical Maps	--	--	--	20	30	50	50
Ability Enhancement Course	AECENG1101	L1 – Compulsory English	20	30	50	--	--	--	50
Ability Enhancement Course	--	--	--	--	--	--	--	--	--
Indian Knowledge System	IKSXXX1101	Select from (Basket 5)	20	30	50	--	--	--	50
Community Engagement Services (CC)	CCCXXX1101	(XXX) any one of NCC/NSS/Sports/ Culture/Health Wellness/ Yoga Education / Fitness	--	--	--	20	30	50	50



B. Sc. First Year Semester II (Level 4.5)

Teaching Scheme

	Course Code	Course Name	Credits Assigned			Teaching Scheme (Hrs/ week)	
			Theory	Practical	Total	Theory	Practical
Optional 1	SGLGCT1151	Petrology	02	--	04	02	--
	SGLGCP1151	Practicals based on SGLGCT1151	-	02		--	04
Optional 2	SDSCMT1151	Title of paper 1	02	--	04	02	--
	SDSCMP1151	Title of paper 2 (practical)	-	02		--	04
Optional 3	SDSCMT1151	Title of paper 1	02	--	04	02	--
	SDSCMP1151	Title of paper 2 (practical)	-	02		--	04
Generic Electives (from other Faculty)	SGLGGE1151	Introduction to Rocks (Basket 3 of respective Faculty)	02	--	02	02	--
Skill Based Course (related to Major)	SGLGSC1151	Preparation of Lithologs OR Properties of Soil	--	02	02	--	04
Ability Enhancement Course	--	--	--	--	--	--	--
Ability Enhancement Course	AECMIL1151	L2- Marathi/Hindi/Urdu/ Kannada/Pali	02	--	02	02	--
Value Education Courses (VEC)	VECCOI1151	Constitution of India	02	--	02	02	--
Community Engagement Services (CES)	CCCXXX1151	(XXX any one of NCC/NSS/Sports/ Culture/Health Wellness/ Yoga Education / Fitness	02	--	02	02	--
Total Credits			14	08	22	14	16



B. Sc. First Year Semester II (Level 4.5)

Examination Scheme

[20% Continuous Assessment (CA) and 80% End Semester Assessment (ESA)]

(For illustration we have considered a paper of 02 credits, 50 marks, need to be modified depending on credits assigned to individual paper)

Subject (1)	Course Code (2)	Course Name (3)	Theory			Practical			Total Col (6) + Col (9) = (10)
			CA (4)	ESA (5)	Total (6)	CA (7)	ESA (9)	Total (9)	
Optional 1	SGLGCT1151	Petrology	20	30	50	--	--	--	50
	SGLGCP1151	Practicals based on SGLGCT1151	--	--	--	20	30	50	50
Optional 2	SDSCMT1151	Title of paper 1	20	30	50	--	--	--	50
	SDSCMP1151	Title of paper 2 practical	--	--	--	20	30	50	50
Optional 3	SDSCMT1151	Title of paper 1	20	30	50	--	--	--	50
	SDSCMP1151	Title of paper 2 practical	--	--	--	20	30	50	50
Generic Elective	SGLGGE1151	Introduction to Rocks (Basket 3 of respective Faculty)	20	30	50	--	--	--	50
Skill Based Course	SGLGSC1151	Preparation of Lithologs OR Properties of Soil	--	--	--	20	30	50	50
Ability Enhancement Course	--	--	--	--	--	--	--	--	--
Ability Enhancement Course	AECMIL1151	L2- Marathi/Hindi/Urdu/ Kannada/Pali	20	30	50	--	--	--	50
Value Education Courses (VEC)	VECCOI1151	Constitution of India	20	30	50	--	--	--	50
Community Engagement Services (CC)	CCCXXX1151	XXX any one of NCC/NSS/Sports/ Culture/Health Wellness/ Yoga Education / Fitness	--	--	--	20	30	50	50

Baskets Prepared:

List of courses under Generic Elective course (GE):

Name of the Faculty:

Board of studies in the subject of	Semester	List of courses from respective Board of Studies (BoS) for students of other faculty/ program/schools (semester wise)	Credit : 3 Choose any one from the basket of courses (Common across faculty)	Assessment: 40% - Continuous Assessment 60% - End Semester Examination
Geology	1	Introduction to Minerals	Introduction to Minerals	40% CA 60% ESE
Geology	2	Introduction to Rocks	Introduction to Rocks	40% CA 60% ESE

List of courses under Ability Enhancement Course :

Name of the Faculty:

L1- Compulsory English: 2 credits

L-2 Choose from basket of courses: 2 credits

Boas of studies in the subject of	Semester	List of Courses (L2) to be offered from respective board to the students. Choose any one from the basket of courses (Common across faculty)	Credit :	Assessment: 20 % - Continuous Assessment 80% - End Semester Examination
Languages	1	L1- Compulsory English	2	40% CA 60% ESE
Languages	2	L2- MIL : Marathi/Hindi/Urdu/ Kannada/Pali	2	40% CA 60% ESE

List of courses under Vocational and Skill course related DSC (VSC) : Choose courses from basket

Boas of studies in the subject of	Semester	List of Courses to be offered from respective board to the students (Choose any one from the basket)	Credit	Assessment: 40 % -Continuous Assessment 60% - End Semester Examination
Geology	1	Roof Water harvesting OR Preparation of Topographical Maps	2	40% CA 60% ESE
Geology	2	Preparation of Lithologs OR Properties of Soil	2	40% CA 60% ESE

SGLGCT1101: Title (Major 1) Curriculum Details

SGLGCT1101: Mineralogy and Crystallography (Major 1) Curriculum Details

Semester I

Course pre-requisite:

1. The course is essential to have understanding of the basic chemistry and physical characters of materials and to have basic information of earth crust.

Course objectives:

- To acquaint the students with Mineralogical applications in Geology.
- To understand, the formation and physico-chemical characters of earth's composition.

Course outcomes:

- Student will be able to know the fundamentals and identification of minerals.
- Student will use this information for the study of rocks.

Curriculum Details:(There shall be FOUR Modules in each course)

SGLGCT1101: Mineralogy and Crystallography

Module No.	Unit No.	Topic	Hrs. Required to cover the contents
1.0		Mineralogy	
	1.1	Chemical bonding and compound formation.	08
	1.2	Mineral: definition, classification and composition.	
	1.3	Introduction to common groups of rock forming minerals such as Olivine and Pyroxene.	
	1.4	Introduction to common groups of rock forming minerals such as Amphibole and Mica.	
2.0		Mineralogy	
	2.1	Introduction to common groups of rock forming minerals such as Silica and Feldspar.	07
	2.2	Study of Common ore minerals.	
	2.3	Study of Common industrial minerals.	
	2.4	Study of Common atomic minerals.	
3.0		Crystallography	
	3.1	Elementary ideas about crystal structure. Crystal: faces, edges, solid angles.	07
	3.2	Crystallographic axes and axial angles.	
	3.3	Interfacial angles, Contact Goniometer; Parameters and indices.	
	3.4	Crystal symmetry characters.	
4.0		Crystallography	
	4.1	Classification of crystals into six systems for normal classes such as Cubic and Tetragonal.	08
	4.2	Classification of crystals into six systems for normal classes such as Hexagonal and Orthorhombic systems.	
	4.3	Classification of crystals into six systems for normal classes such as Monoclinic and Triclinic systems.	
	4.4	Crystal forms; Twin and Twin laws.	
		Total	30

Text Books & Reference Books:

1. Berry, L.G., Mason, B. and Dietrich, R.V., 1982. Mineralogy. CBS Publ.
2. Nesse, D.W., 1986. Optical Mineralogy. McGraw Hill.
3. Read, H.H., 1968. Rutley's Element of Mineralogy (Rev. Ed.). Thomas Murby and Co
4. Flint, Y., 1975. Essential of crystallography, Mir Publishers.
5. Phillips, F.C., 1963. An introduction to crystallography. Wiley, New York.
6. Stephen E. Kesler and Adam C. Simon (2015). Mineral Resources Economics and the Environment. Cambridge University Press.
7. Mehar D.N. Wadiya (2021). Minerals Of India. National Book Trust of India

SGLGCP1101: Practicals based on SGLG CT1101

1. Study of physical properties of minerals in hand specimen.
2. Study of axial characters, elements of symmetry and forms for normal classes of six crystal systems.
3. Study of Twin and Twin laws in crystal systems.

Generic Elective

Curriculum Details: *(There shall be FOUR Modules in each course)*

SGLGGE1101: Introduction to Minerals Semester I

Module No.	Unit No.	Topic	Hrs. Required to cover the contents
1.0		Mineral	
	1.1	Definition	07
	1.2	Classification	
	1.3	Composition	
	1.4	Atomic bonds of minerals	
2.0		Physical properties of mineral	
	2.1	Introduction to general Physical properties of minerals	08
3.0		Groups of Rock Forming Minerals	
	3.1	Introduction to common groups of rock forming minerals	07
	3.2	Study of Olivine and Pyroxene Group	
	3.3	Study of Amphibole and Mica Group	
	3.4	Study of Silica and Feldspar Group	
4.0		Study of Common minerals	
	4.1	Study of Common ore minerals, industrial minerals and atomic minerals	08
	4.2	Study of Common industrial minerals	
	4.3	Study of Common Atomic minerals	
		Total	30

Text Books & Reference Books:

1. Berry, L.G., Mason, B. and Dietrich, R.V., 1982. Mineralogy. CBS Publ.
2. Nesse, D.W., 1986. Optical Mineralogy. McGraw Hill.
3. Read, H.H., 1968. Rutley's Element of Mineralogy (Rev. Ed.). Thomas Murby & Co.
4. Stephen E. Kesler and Adam C. Simon (2015). Mineral Resources Economics and the Environment. Cambridge University Press.
5. Mehar D.N. Wadiya (2021). Minerals Of India. National Book Trust of India

Vocational and Skill Enhancement Courses (SEC)

Curriculum Details: *(There shall be FOUR Modules in each course)*

SGLGSC1101: Roof water Harvesting (Practical based)

ModuleNo.	UnitNo.	Topic	Hrs. equired to cover the contents
1.0		Introduction to rainwater harvesting	07
	1.1	Hydrological cycle	
	1.2	Scarcity of water	
	1.3	Flood and drought	
	1.4	Factors affecting rainwater harvesting	
2.0		Methods of rainwater harvesting	08
	2.1	Direct use	
	2.2	Artificial techniques	
	2.3	Guidelines for Construction of Rainwater Harvesting Structures	
3.0		Calculation of Rainwater	07
	3.1	Calculation of surface area	
	3.2	Calculation of rainfall	
	3.3	Use of equations	
	3.4	Examples of Harvestable Rainwater	
4.0		Advantages of Rainwater Harvesting System	08
	4.1	The water conservation benefits of rainwater harvesting	
	4.2	The environmental benefits of rainwater harvesting	
	4.3	The Future of sustainable water resources	
	4.4	Create awareness	
		Total	30

Text Books & Reference Books:

1. Klaus Koenig (2001). The Rainwater Technology Handbook: Rain harvesting in Building. Wilobrain, Germany
2. Anil Agarwal, Sunita Narain and Indira Khurana (2001). Making water everybody's business: practice and policy of water harvesting. Centre for Science and Environment, New Delhi.
3. John Gould and Erik Nissen - Petersen. (2000). Rainwater Catchment Systems for Domestic Supply: Design, Construction and Implementation. Intermediate Technology Publications.
4. E M Tideman (2000). Watershed management, guidelines for Indian Conditions. Omega Scientific Publications, New Delhi.
5. Kollegal K. Meghashyam, Yogendra Popli, Akalank Kumar Jain (2014). J. Rain Water Harvesting A New Concept to Utilize Rainwater and Secure Future. .M. Jaina & Brothers.
6. Anthony Zagelow (2016). Rainwater Harvesting and Use: Understanding the Basics of Rainwater Harvesting: 1 (Water Conservation, Resource Management, Crisis, Water Storage, Water Security). Create space Independent Pub.

Curriculum Details:*(There shall be FOUR Modules in each course)*

SGLGSC1101: Preparation of Topographical Maps (Practical based)

Module No.	Unit No.	Topic	Hrs. Required to cover the contents
1.0		Basics of Topographical Maps	
	1.1	Concepts of map reading, map index.	07
	1.2	Types of scale and coordinate system (Latitude/Longitude).	
	1.3	Distance and legend.	
	1.4	Height and place approximation.	
2.0		Topographical Map Reading	
	2.1	Topographic sheet (SoI) in field, marking location.	08
	2.2	Contours represent height	
	2.3	Geography of area in maps (high ground, hills, valleys, plateaus, saddles etc).	
3.0		Topographical Contours	
	3.1	Contours indicate slopes.	07
	3.2	Types of slope .	
	3.3	Relief.	
4.0		Technique for Preparation of Topographical Maps	
	4.1	Interpretation of natural and man-made features from topographic map (Survey of India).	08
	4.2	Technique and procedure for Preparation of topographical maps from the given contour data..	
	4.3	At least 5 maps to be prepared.	
		Total	30

Text Books & Reference Books:

1. V.G. Amrite . (2021). New Topo Map Book. Akshar Publication.
2. Nelson Petrie (2016). Analysis and Interpretation of Topographical Maps. The Orient Blackswan.
3. Greg Miller, Betsy Mason (2018). All over the Map: A Cartographic Odyssey. National Geographic.
4. Vinod Sharma (2019) Map Study – Topographical. Prachi Publication.
5. Raghu Vira and B.G. Tamaskar (2020) Conventional signs for topographical maps of the survey of India. Nagpur : International Academy of Indian Culture.

SGLGC1151: Petrology (*Major 1*) Curriculum Details

Semester II

Course pre-requisite:

- The course is essential to have the understanding of the formation for Igneous, Sedimentary and Metamorphic rocks.

Course objectives:

- To acquaint the students with formation process of Igneous, Sedimentary and Metamorphic rocks.
- To Study of common igneous, Sedimentary and Metamorphic rocks.

Course outcomes:

- Student will be able to know the formation process of Igneous, Sedimentary and Metamorphic rocks.
- Student will be able to identify the common igneous, Sedimentary and Metamorphic rocks.

Curriculum Details:(*There shall be FOUR Modules in each course*)

Module No.	Unit No.	Topic	Hrs. Required to cover the contents
1.0		Igneous Petrology	
	1.1	Definition, composition & origin of magma.	07
	1.2	Origin, Forms, Textures, structures.	
	1.3	Classification of igneous rocks .	
	1.4	Study of common igneous rocks.	
2.0		Metamorphic Petrology	
	2.1	Agents and kinds of metamorphism.	08
	2.2	Metamorphic minerals, structures of metamorphic rocks.	
	2.3	Processes of formation of various metamorphic rocks by the process of Cataclastic, Thermal, Dynamothermal and Plutonic metamorphism.	
	2.4	Study of common metamorphic rocks.	
3.0		Sedimentary Petrology	
	3.1	Weathering.	07
	3.2	Soil formation.	
	3.3	Soil profile and soil types.	
	3.4	Soil properties.	
4.0		Sedimentary Petrology	
	4.1	Origin, transportation, deposition, consolidation and diagenesis of sediments.	08
	4.2	Sedimentary textures.	
	4.3	Classification of sedimentary deposits.	
	4.4	Study of common sedimentary rocks.	
		Total	30

Text Books & Reference Books:

1. Principles of Petrology. Methuren and Co (Students ed.).
2. Ehlers, WG, and Blatt, H., 1987. Petrology, Igneous, Sedimentary and Metamorphic rocks, CBS Publishers.
3. Turner, F.J. & Verhoogen, J., 1960, Igneous & Metamorphic petrology. McGraw Hill Co.
4. Moorhouse, WW., 1969. The study of rocks in thin sections. Harper and sons.
5. Friedman & Sanders, 1978. Principles of Sedimentology. John Wiley and sons.
6. Pettijohn, F.J., 1975. Sedimentary rocks, Harper & Bros. 3rd Ed.
7. Prasad, C., 1980. A text book of sedimentology. 8. Sengupta. S., 1997. Introduction to sedimentology. Oxford-IBH.
8. Mason, R., 1978. Petrology of Metamorphic Rocks. CBS Publ.

SGLGCP1151: Practicals based on SGLGCT1151

1. Study of megascopic characters of important rock types of igneous origin.
2. Study of megascopic characters of important rock types of sedimentary origin.
3. Study of megascopic characters of important rock types of metamorphic origin.
4. Geological Field Work (at least Three Days). Students will be required to carry out fieldwork for three days to study elementary aspects of field geology and submit report thereon.

Generic Elective

Curriculum Details: *(There shall be FOUR Modules in each course)*

SGLGGE1151: Introduction to Rocks

Module No.	Unit No.	Topic	Hrs. Required to cover the contents
1.0		Rocks	
	1.1	Definitions and physical process of rock formation,	07
	1.2	Types of rocks.	
	1.3	Rock Cycle.	
2.0		Igneous Rocks	
	2.1	Definition, composition and origin of magma.	08
	2.2	Forms, Textures and structures.	
	2.3	Classification of igneous rocks.	
	2.4	Study of common igneous rocks.	
3.0		Sedimentary rocks	
	3.1	Origin of sediments Weathering, Physical and chemical weathering.	07
	3.2	Identifications of textures and structures.	
	3.3	Classification of sedimentary deposits.	
	3.4	Study of common sedimentary rocks.	
4.0		Metamorphic rocks	
	4.1	Agents and kinds of metamorphism, metamorphic minerals.	08
	4.2	Structures of metamorphic rocks.	
	4.3	Processes of formation of various metamorphic rocks by the process of Cataclastic, Thermal, Dynamothermal and Plutonic metamorphism.	
	4.4	Study of common metamorphic rocks.	
		Total	30

Text Books & Reference Books:

1. Terryl G.W. 1989. The Principles of Petrology by AITBS Publishers.
2. Ehlers, WG, and Blatt, H., 1987. Petrology, Igneous, Sedimentary and Metamorphic rocks, CBS Publishers.
3. Turner, F.J. & Verhoogen, J., 1960, Igneous & Metamorphic petrology. McGraw Hill Co.
4. Moorhouse, WW., 1969. The study of rocks in thin sections. Harper and sons.
5. Friedman & Sanders, 1978. Principles of Sedimentology. John Wiley and sons.
6. Pettijohn, F.J., 1975. Sedimentary rocks, Harper & Bros. 3rd Ed.
7. Prasad, C., 1980. A text book of sedimentology.
8. Sengupta. S., 1997. Introduction to sedimentology. Oxford-IBH.
9. Mason, R., 1978. Petrology of Metamorphic Rocks. CBS Publ.

Vocational and Skill Enhancement Courses (SEC)

Curriculum Details: *(There shall be FOUR Modules in each course)*

SGLGSC1151: Preparation of Lithologs (Practical based)

Module No.	Unit No.	Topic	Hrs. Required to cover the contents
1.0		Introduction to lithologs	
	1.1	Introduction to rocks.	07
	1.2	Definition.	
	1.3	Measurement and interpretation of lithologs.	
2.0		Sedimentary lithologs	
	2.1	Field and laboratory techniques in sedimentology.	08
	2.2	Recording of sedimentary structures.	
3.0		Igneous/metamorphic lithologs	
	3.1	Preparation of lithologs from field data.	07
	3.2	Laboratory study of oriented samples etc.	
4.0		Preparation of lithologs	
	4.1	Preparation of litholog from visible vertical section.	08
	4.2	Detection of ideal cycle from vertical litholog.	
	4.3	Analysis of palaeo-current data Interpretation.	
	4.4	Correlation of lithology from lithologs.	
		Total	30

Text Books & Reference Books:

1. Terryl G.W. (1989). The Principles of Petrology by AITBS Publishers.
2. Ehlers, WG, and Blatt, H., (1987). Petrology, Igneous, Sedimentary and Metamorphic rocks, CBS Publishers.
3. Turner, F.J. & Verhoogen, J., 1960, Igneous & Metamorphic petrology. McGraw Hill Co.
4. Pettijohn, F.J., 1975. Sedimentary rocks, Harper & Bros. 3rd Ed.
5. Mason, R., 1978. Petrology of Metamorphic Rocks. CBS Publ.

Curriculum Details:*(There shall be FOUR Modules in each course)*

SGLGSC1151: Properties of Soil (Practical based)

Module No.	Unit No.	Topic	Hrs. Required to cover the contents
1.0		Introduction to soil	
	1.1	Formation of soil	07
	1.2	Soil horizon structure	
	1.3	Climate and source rock relation	
	1.4	Importance of soil	
2.0		Soil properties	
	2.1	Soil color	08
	2.2	Composition of soil	
	2.3	Soil texture and porosity	
	2.4	Factors affecting soil fertility; nutrient sources	
3.0		Types of soils	
	3.1	Alluvial Soil	07
	3.2	Black Cotton Soil	
	3.3	Red Soil	
	3.4	Mountainous or Forest Soils, Desert Soil, Saline and Alkaline Soil	
4.0		Soil conservation methods	
	4.1	Terrace farming	08
	4.2	contour farming	
	4.3	crop rotation	
	4.4	Intercropping etc.	
		Total	30

Text Books & Reference Books:

1. TNAU (ICAR, 2021). Introduction to Soil Science. ICAR
2. D. Tripathi, S. Mani, Sh. Mohinder Singh (2020). Fundamentals of Soil Science. ICAR
3. R. K. Mehra (2004). Textbook of Soil Science. ICAR
4. Henry D. Foth (1951). Fundamentals of Soil Science. John Wiley & Sons
5. Donald L. Sparks (2019). Fundamentals of Soil Chemistry, Wiley and Sons

Guidelines for the Course Assessment:

A. Continuous Assessment (CA) (40% of the Maximum Marks) of theory and practical courses:

- i. **For Theory Course:** CA shall form 40% of the Maximum Marks and shall be carried out over the entire semester. It shall be done by conducting **Test, Assignment** and **overall attendance** shall be taken as the **CA** score.
- ii. **For Practical Course:** CA score of the practical course shall be marks scored by a student in the internal practical examination conducted by the concerned teacher.

B. End Semester Assessment (60% of the Maximum Marks) of theory and practical courses:

(For illustration a paper of 02 credits, 50 marks has been considered and shall be modified appropriately depending upon credits of the individual paper)

Question Paper Pattern of the ESA:

- i. **ESA Question paper shall consist 5 questions, each of 10 marks. Total 30 marks.**
- ii. **Question No.1 shall be compulsory and shall be based on the entire syllabus**
- iii. **Students shall have to solve ANY TWO of the remaining Four Questions (i.e. from question 2 to 5)**
- iv. **Students shall have to solve a TOTAL of 3 Questions.**

C. Assessment of On Job Training (OJT) Course (for 04 credits):

- a. Continuous assessment part (**40%, 20 marks out of 50**) of this course shall be done by the mentor of the student, where he /she is supposed to complete his On Job Training. This shall be based on the regularity, participation and performance of the students at the place of OJT.
- b. Semester End Assessment (ESA) (**60% of the total marks, 30 marks out of 50**) of this course shall be done by a panel of examiners in two parts
 - i. based on the work report submitted by the student (**50% i.e. 15 marks**) and
 - ii. **Remaining 50%** (15 marks) shall be based on his presentation and viva-voce on the work carried to be assessed by the panel of examiners. This assessment shall be done along with practical examinations of respective courses / subjects.

D. Assessment of Field Project (FP) and Research Project (RP) (e.g. for 02 credits)

- a. Continuous assessment part (**40%, 20 marks out of 50**) of this course shall be done by the mentor of the student and shall be based on regularity, experimental work and performance of the student.
- b. Semester End Assessment (ESA) (**60% of the total marks, 30 marks out of 50**) of this course shall be done shall be done by a panel of examiners in two parts
 - i. based on the work report submitted by the student (**50% i.e. 30 marks**) and
 - ii. **Remaining 50%** (30 marks) shall be based on his presentation and viva-voce on the work carried out by the student. This assessment shall be done along with practical examinations of the respective courses / subjects.

E. Assessment of Co-Curricular courses (CCC):

- a. Assessment of the CCC course shall be done by the respective course coordinator as a part of CA and be based on the regularity, performance of a student and his participation in various activities as prescribed in the regulations prepared in this regard.
- b. The End Semester Assessment (ESA) of the CCC courses shall be done as per the regulations prepared in this regard and shall be done on the basis of the write-up, presentation by the student on the activities that he has carried out in a semester.
- c. Students shall have freedom to opt for more than one CCC courses. However, score of the best performing CC shall be considered for preparing his result.

F. Syllabi, Teaching and Examination Scheme for the courses in Column 7 and Column 8 (AEC, VEC, IKS, CI, EVS, CCCs, etc.) shall be common for all the students from different faculties.

Note: Number of lectures required to cover syllabus of a course depends on the number of credits assigned to a particular course. One credit of theory corresponds to 15 Hours lecturing and for practical course one credit corresponds to 30 Hours. For example, for a course of two credits 30 lectures of one hour duration are assigned, while that for a three credit course 45 lectures.

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