॥ 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

स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ, नांदेड

Fax : (02462) 215572

Phone: (02462)215542

Academic-1 (BOS) Section

website: srtmun

E-mail: bos@srtmun

विज्ञान व तंत्रज्ञान विद्याशाखे अंतर्गत राष्ट्रीय शैक्षणिक धोरण २०२० च्या अनुषंगाने शैक्षणिक वर्ष २०२३–२४ पासून संलग्न महाविद्यालये व विद्यापीठ संकुलांत पदव्युत्तर पदवी प्रथम वर्ष आणि विद्यापीठ संकुले व न्यू मॉडेल डिग्री कॉलेज मध्ये पदवी प्रथमवर्ष अभ्यासक्रम लागू करण्याबाबत.

प रि प त्र क

या परिपत्रकान्वये सर्व संबंधितांना कळविण्यात येते की, शासन निर्णय क्र. एनईपी २०२०/प. क्र. ०९/विशि–३/शिकाना, दिनांक २० एप्रिल २०२३ व शासन पत्र. क्र एनईपी २०२०/प. क्र. ०९/विशि–३, दिनांक १६ जून २०२३ अन्वये सूचित केल्यानुसार राष्ट्रीय शैक्षणिक धोरण २०२०च्या अनुषंगाने दिलेल्या आराखडया नुसार दिनांक १६ जून २०२३ रोजी संपन्न झालेल्या मा. विद्यापरिषदेच्या बैठकीत ऐनवेळचा विषय क्र. ०५/५६–२०२३ अन्वये मान्यता दिल्यानुसार प्रस्तुत विद्यापीठाच्या विज्ञान व तंत्रज्ञान विद्याशाखा अंतर्गत खालील पदव्युत्तर पदवी अभ्यासक्रम (AICTE, PCL, BCI, CoA, NCTE इ. सारख्या नियमक संस्थाची मान्यता आवश्यक असलेले अभ्यासक्रम वगळून) संलग्न महाविद्यालये, विद्यापीठ परिसर व उपपरिसर संकुलांमध्ये आणि पदवी प्रथम वर्ष अभ्यासक्रम विद्यापीठ परिसर व उपपरिसर संकुले व विद्यापीठ संचलित न्यू मॉडेल डिग्री कॉलेज, हिंगोली येथे शैक्षणिक वर्ष २०२३–२४ पासून लागू करण्यात येत आहे.

1) M.Sc. Biotechnology (1st Year) - Campus School
2) M.Sc. Biotechnology (1st Year) – Affiliated colleges
3) B.Sc. Biotechnology (1st Year) – New Model Degree College, Hingoli
4) M.Sc. Botany (1st Year) - Campus School
5) M.Sc. Botany (1st Year) – Affiliated colleges
6) M.Sc. Herbal Medicine (1st Year) - Affiliated colleges
7) M.Sc. Chemistry (1st Year) - Campus School
8) M.Sc. Chemistry (1st Year) - Affiliated colleges
9) M.Sc. Computer Science / Computer Network / Computer Applications (1st Year) University campus, sub campus Latur
10) M.Sc. System Administration & Networking (1st Year) – Affiliated colleges
11) M.Sc. Computer Management (1st Year) – Affiliated Colleges
12) M.Sc. Computer Science (1st Year) – Affiliated Colleges
13) M.Sc. Dairy Science (1st Year) - Affiliated colleges
14) M.Sc. Electronic (1st Year) - Affiliated colleges
15) M.Sc. Geology (1st Year) – University Campus
16) M.Sc. Geography (1st Year) – University Campus
17) M.Sc. Applied Mathematics (1st Year) – Affiliated Colleges
18) M.Sc. Mathematics (1st Year) – Affiliated Colleges
19) M.Sc. Microbiology (1st Year) - University Campus
20) M.Sc. Microbiology (1st Year) – Affiliated colleges

21) M.Sc. Physics (1st Year) - University Campus
22) M.Sc. Physics (1st Year) – Affiliated Colleges
23) M.Sc. Statistics (1st Year) - University Campus
24) M.Sc. Statistics (1st Year) – Affiliated colleges
25) M.Sc. Biochemistry (1st Year) – Affiliated Colleges
26) M.Sc. Zoology (1st Year) – Affiliated Colleges

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/एनइपी२०२०/S&T/अक/२०२३–२४/ 130

सहा.कुलसचिव
शैक्षणिक (१–अभ्यासमंडळ) विभाग

दिनांक : ३०.०६.२०२३.

प्रत : १) मा. प्राचार्य, सर्व संलग्नित महाविद्यालये, प्रस्तुत विद्यापीठ.
२) मा. संचालक, सर्व संकुले परिसर व उपपरिसर, प्रस्तुत विद्यापीठ
३) मा. प्राचार्य, न्यु मॉडेल डिग्री कॉलेज हिंगोली.
४) मा. समन्यवक, कै. श्री उत्तमराव राठोड आदिवासी विकास व संशोधन केंद्र, किनवट.

प्रत माहितीस्तव :
१) मा. कुलगुरू महोदयांचे कार्यालय, प्रस्तुत विद्यापीठ.
२) मा. कुलसचिव, प्रस्तुत विद्यापीठ.
३) मा. सर्व आधिष्ठाता, प्रस्तुत विद्यापीठ.
४) सर्व प्रशासकीय विभाग प्रमुख साहाय्यक, प्रस्तुत विद्यापीठ.
५) सिस्टीम एक्सपर्ट, शैक्षणिक विभाग, प्रस्तुत विद्यापीठ.

Swami Ramanand Teerth Marathwada University

Nanded 431 606 Maharashtra

(R-2023)

TWO YEAR MASTERS PROGRAMME

Subject - GEOGRAPHY

(*Campus School*)

Under the Faculty of Science & Technology

Effective from Academic Year 2023-2024
(As per NEP-2020)

From the Desk of the Dean, Faculty of Science and Technology

Swami Ramanand Teerth Marathwada University, Nanded, enduring to its vision statement "***Enlightened Student: A Source of Immense Power",*** is trying hard consistently to enrich the quality of science education in its jurisdiction by implementing several quality initiatives. Revision and updating curriculum to meet the standard of the courses at national and international level, implementing innovative methods of teaching-learning, improvisation in the examination and evaluation processes are some of the important measures that enabled the University to achieve the **3Es, the *equity, the efficiency and the excellence*** in higher education of this region. To overcome the difficulty of comparing the performances of the graduating students and also to provide mobility to them to join other institutions the University has adopted the *cumulative grade point average* (CGPA) system in the year 2014-2015. Further, following the suggestions by the UGC and looking at the better employability, entrepreneurship possibilities and to enhance the latent skills of the stakeholders the University has adopted the *Choice Based Credit System* (CBCS) in the year 2018-2019 at graduate and post-graduate level. This provided flexibility to the students to choose courses of their own interests. To encourage the students to opt the world-class courses offered on the online platforms like, NPTEL, SWAYM, and other MOOCS platforms the University has implemented the credit transfer policy approved by its Academic Council and also has made a provision of reimbursing registration fees of the successful students completing such courses.

SRTM University has been producing a good number of high caliber graduates; however, it is necessary to ensure that our aspiring students are able to pursue the right education. Like the engineering students, the youngsters pursuing science education need to be equipped and trained as per the requirements of the R&D institutes and industries. This would become possible only when the students undergo studies with an updated and evolving curriculum to match global scenario.

Higher education is a dynamic process and in the present era the stakeholders need to be educated and trained in view of the self-employment and self-sustaining skills like start-ups. Revision of the curriculum alone is not the measure for bringing reforms in the higher education, but invite several other initiatives. Establishing industry-institute linkages and initiating internship, on job training for the graduates in reputed industries are some of the important steps that the University would like to take in the coming time. As a result, revision of the curriculum was the need of the hour and such an opportunity was provided by the New Education Policy 2020. National Education Policy 2020 (NEP 2020) aims at equipping students with knowledge, skills, values, leadership qualities and initiates

them for lifelong learning. As a result the students will acquire expertise in specialized areas of interest, kindle their intellectual curiosity and scientific temper, and create imaginative individuals.

The curriculum given in this document has been developed following the guidelines of NEP-2020 and is crucial as well as challenging due to the reason that it is a transition from general science-based to the discipline-specific-based curriculum. All the recommendations of the ***Sukanu Samiti*** given in the **NEP Curriculum Framework-2023** have been followed, keeping the disciplinary approach with rigor and depth, appropriate to the comprehension level of learners. All the Board of Studies (BoS) under the Faculty of Science and Technology of this university have put in their tremendous efforts in making this curriculum of international standard. They have taken care of maintaining logical sequencing of the subject matter with proper placement of concepts with their linkages for better understanding of the students. We take this opportunity to congratulate the Chairman(s) and all the members of various Boards of Studies for their immense contributions in preparing the revised curriculum for the benefits of the stakeholders in line with the guidelines of the Government of Maharashtra regarding NEP-2020. We also acknowledge the suggestions and contributions of the academic and industry experts of various disciplines.

We are sure that the adoption of the revised curriculum will be advantageous for the students to enhance their skills and employability. Introduction of the mandatory ***On Job Training, Internship*** program for science background students is praise worthy and certainly help the students to imbibe first-hand work experience, team work management. These initiatives will also help the students to inculcate the workmanship spirit and explore the possibilities of setting up of their own enterprises.

Dr. L. M. Waghmare, ***Dean,*** *Faculty of Science and Technology*
Dr. M. K. Patil, ***Associate Dean,*** *Faculty of Science and Technology*

From Desk of Chairman, Board of Studies of the Subject, Geography

Preamble:

Geography is the study of places on the Earth and their relationships with each other. Often the study of geography begins with one's home community and expands as a person gains greater experience. Thus, geography provides a conceptual link for children between home, school, and the world beyond.

Geography is one of the oldest earth sciences and its roots date back in the works of the early Greek scholars. The word 'geography' was first used by the Greek scholar Eratosthenes in the third century B.C. Geo "Earth" and Graphy "to describe" literal meaning of geography is to describe about the earth's surfaces. In other words, "Geography is largely the study of the interaction of all physical and human phenomena and landscapes created by such interactions." It is about how, why, and where human and natural activities occur and how these activities are interconnected.

Today the discipline is not only concerned with descriptions but also with analysis as well as prediction. Geographers study how people interact with the environment and with each other from place to place and they classify Earth into regions in order to draw generalizations about the complex world in which we live. Because it deals with where and how people live, geography is rich in material that relates to international understanding, multi-cultural concerns, and environmental education. The tools of geography help us understand places. To teach this subject at graduate and undergraduate level has become challenge for all the geography teachers due emerging new trends in this field. Geography helps student learn about the world knowing something about where places are and what they are like is important.

Geography contributes to international understanding the world's economies are increasingly linked into an international network of trade and exchange. If our competitors know more about us than we do about them, they have an advantage in serving our markets and negotiating trade agreements, and we are placed at a disadvantage in reaching their markets. Well - planned geography education at all grade levels will help to make us more aware of other countries and cultures and prepare our students to take their place in the world. Geography and citizenship Knowledge of geography helps us be better citizens. Through geography, we learn to locate important events. We can understand the relationship between geography and national or international policies and we can use geographical knowledge to make informed decisions regarding the best use of the nation's resources.

Finally, geographically informed students will be effective leaders for our country.

As the Chairman Board of Studies of the subject of Geography and Applied Geography, Swami Ramanand Teerth Marathwada University, Nanded happy to state here that the programme objectives have been finalized in the meeting of all the members Board of Studies.

- To meet need and Importance of Geography at the present time.
- To prepare the students to enhance their abilities to develop the innovative approach.
- To cultivate the life skills with the help of Geography.
- To enable the students for the better understanding of Geography.
- To generate the interest of students to contribute to expand their research skills.

Apart from the above objectives, the affiliated institute can add their own. As the Chairman of the Board of Studies, I strongly believe that, the framed syllabus will definitely meet the need of the students at present.

Dr. A. A. Kalgapure, Chairman,
Board of Studies of the subject of Geography and Applied Geography
Swami Ramanand Teerth Marathwada University, Nanded.

Swami Ramanand Teerth Marathwada University, Nanded
Members of the Board of Studies in the subject of
Geography and Applied Geography
Under the Faculty of Science & Technology

Sr. No.	Name of the Member	Designation	Address with E-mail ID	Contact No.
1	Dr. Apparao Annarao Kalgapure	Chairman	Shri. Havgiswami College, Udgir	9420215804
2	Dr. Avinash Sopanrao Kadam	Member	School of Earth Science (Campus) askadam505@gmail.com	9975834724
3	Dr. Parag Arun Khadke	Member	School of Earth Science (Campus) pakhadke@gmail.com	9028774190
4	Dr. Bhagwat Namdev Pastapure	Member	Indira Gandhi Sr. College, Cidco, Nanded	9403512340
5	Dr. Hanmant Dadarao Wagalgave	Member	Shivneri Mahavidyalaya, Shirur Anantpal	9673656114
6	Dr. Sadanand Hariba Gone	Member	Ujwal Gramin Mahavidyalaya, Ghonsi	9822145010
7	Dr. Bhagwan Prabhakarrao Shendge	Member	B. Raghunath Mahavidyalaya, Parbhani	9158443555
8	Dr. Nitin Trimbakrao Deshmukh	Member	Mahatma Gandhi Mahavidyalaya, Ahmadpur	9423705446
9	Dr. Suresh Jyotiram Phule	Member	R. S. Mahavidyalaya, Latur (Autonomous)	9028666874
10	Dr. Vishnudas Ram Rathod	Member	Vasantrao Naik College, Vasarani, Nanded	9423139319
11	Dr. B. Shrinaesh	Member	Osmania University, Hyderabad	9849269355
12	Dr. Anand Vijaykumar Walankikar	Member	V. D. M. College, Degloor	9422185102
13	Dr. Rajeshwar Balaji Kotalwar	Member	Rajiv Gandhi Mahavidyalaya, Mudkhed	9404760581
Invited Member				
14	Dr. Rajaram Dnyanoba Davankar	Member	Dr. B. A. Mahavidyalaya, Latur	7350393163
15	Dr. Manjunath. P. Mankari	Member	Udyagiri Mahavidyalaya, Udgir	7588874988
As per MUPA u/s 40(2) (d) (E) Invited Member				
16	Khase Mahesh Trambak (UG students)	Member	Dayanand Arts College, Latur	
17	Shaikh Masira Sadad (PG students)	Member	Indira Gandhi Sr. College, Cidco Nanded	

Swami Ramanand Teerth Marathwada University, Nanded
Faculty of Science and Technology, Major in Geography (DSC): University Campus
Credit Framework of Two-Year PG Program for the Faculty of Science and Technology

Year & Level	Sem.	Major Subject		RM	OJT / FP	Research Project	Practicals	Credits	Total Credi
		(DSC)	(DSE)						
1	2	3	4	5	6	7	8	9	10
1	1	SGEO-C401 Geomorphology (4 Cr) Theory SGEO-C402 Population Geography (4 Cr) Theory SGEO-C403 Biogeography (4 Cr) Theory	SGEO-E401 Cartography and Mapping (3 Cr) Theory SPGEO-E402 Cartographic Techniques (1 Cr) Practical	SVARM 401 Research Methodology In Geography (3 Cr)	-----		SPGEO-P401 Morphometric Analysis (1 Cr) Practical SPGEO-P402 Demographic Data (1 Cr) Practical SPGEO-P403 Biogeography (1 Cr) Practical	22	44
	2	SGEO-C451 Agriculture Geography (4 Cr) Theory SGEO-C452 Economic Geography (4 Cr) Theory SGEO-C453 Fundaments of Remote Sensing (4 Cr) Theory	SGEO-E451 Geography of India (3 Cr) Theory SPGEO-E452 Interpretation of SOI Maps (1 Cr) Practical **OR** SGEO-E453 Geography of Maharashtra (3 Cr) Theory SPGEO-E454 Landforms (1 Cr) Practical	-----	SDSCOJ 451 (3 Cr)		SPGEO-P451 Practicals in Agriculture Geography (1Cr) Practical SPGEO-P452 Practicals in Economic Geography (1 Cr) Practical SPGEO-P453 Practicals in Remote Sensing 1 Cr) Practical	22	
Exit option: Exit Option with PG Diploma (after 2024-25)									

Swami Ramanand Teerth Marathwada University, Nanded

Faculty of Science and Technology, Major in Geography (DSC): University Campus

Credit Framework of Two-Year PG Program for the Faculty of Science and Technology

Post Graduate First Year Programme of Semester I (Level 6.0): Teaching Scheme

Subject / Course	Course Code	Course Name	Credits Assigned			Teaching Scheme (Hours / Week)	
			Theory	Practical	Total	Theory	Practical
Major (DSC)	SGEO-C401	Geomorphology	04	--	**04**	04	--
	SGEO-C402	Population Geography	04	--	**04**	04	--
	SGEO-C403	Biogeography	04	--	**04**	04	--
Elective (DSE)	SGEO-E401	Cartography and Mapping	03	--	**03**	03	--
Research Methodology	SVECR401	Research Methodology in Geography	03	--	**03**	03	
DSC Practical	SPGEO-P401	Morphometric Analysis	--	01	**01**	--	02
	SPGEO-P402	Demographic Data	--	01	**01**	--	02
	SPGEO-P403	Biogeography	--	01	**01**	--	02
DSE Practical	SPGEO-E402	Cartographic Techniques	--	01	**01**	--	02
Total Credits			**18**	**04**	**22**	**14**	**08**

Swami Ramanand Teerth Marathwada University, Nanded

Faculty of Science and Technology, Major in Geography (DSC): University Campus

Credit Framework of Two-Year PG Program for the Faculty of Science and Technology

Post Graduate First Year Programme of Semester I (Level 6): Examination Scheme

[20% Continuous Assessment (**CA**) and 80% End Semester Examination (**ESE**)]

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

Subject / Course	Course Code	Course Name	Theory				Practical		Total Col (6+7) / Col (8+9)
			Continuous Assessment (CA)			ESE			
			Test 1	Test 2	Avg of (T1+T2)/2	Total	CA	ESE	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Major (DSC)	SGEO-C401	Geomorphology	20	20	20	80	--	--	100
	SGEO-C402	Population Geography	20	20	20	80	--	--	100
	SGEO-C403	Biogeography	20	20	20	80	--	--	100
Elective (DSE)	SGEO-E401	Cartography and Mapping	15	15	15	60	--	--	75
Research Methodology	SVECR401	Research Methodology in Geography	15	15	15	60	--	--	75
DSC Practical	SPGEO-P401	Morphometric Analysis	--	--	--	--	05	20	25
	SPGEO-P402	Demographic Data	--	--	--	--	05	20	25
	SPGEO-P403	Biogeography	--	--	--	--	05	20	25
DSE Practical	SPGEO-E402	Cartographic Techniques	--	--	--	--	05	20	25

Swami Ramanand Teerth Marathwada University, Nanded

Faculty of Science and Technology, Major in Geography (DSC): University Campus

Credit Framework of Two-Year PG Program for the Faculty of Science and Technology

Post Graduate First Year Programme of Semester II (Level 6.0): Teaching Scheme

Subject / Course	Course Code	Course Name	Credits Assigned			Teaching Scheme (Hours / Week)	
			Theory	Practical	Total	Theory	Practical
Major (DSC)	SGEO-C451	Agriculture Geography	04	--	**04**	04	--
	SGEO-C452	Economic Geography	04	--	**04**	04	--
	SGEO-C453	Fundaments of Remote Sensing	04	--	**04**	04	--
Elective (DSE)	SGEO-E451	Geography of India OR Geography of Maharashtra	03	--	**03**	03	--
On Job Training (OJT)	SVECR451	On Job Training	03	--	**03**	03	
DSC Practical	SPGEO-P451	Practicals in Agriculture Geography	--	01	**01**	--	02
	SPGEO-P452	Practicals in Economic Geography	--	01	**01**	--	02
	SPGEO-P453	Practicals in Remote Sensing	--	01	**01**	--	02
DSE Practical	SPGEO-E452	Interpretation of SOI Maps OR Landforms	--	01	**01**	--	02
Total Credits			**18**	**04**	**22**	**14**	**08**

Swami Ramanand Teerth Marathwada University, Nanded

Faculty of Science and Technology, Major in Geography (DSC): University Campus

Credit Framework of Two-Year PG Program for the Faculty of Science and Technology

Post Graduate First Year Programme of Semester II (Level 6): Examination Scheme

[20% Continuous Assessment (**CA**) and 80% End Semester Examination (**ESE**)]

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

Subject / Course	Course Code	Course Name	Theory				Practical		Total Col (6+7) / Col (8+9)
			Continuous Assessment (CA)			ESE			
			Test 1	Test 2	Avg of (T1+T2)/2	Total	CA	ESE	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Major (DSC)	SGEO-C451	Agriculture Geography	20	20	20	80	--	--	100
	SGEO-C452	Economic Geography	20	20	20	80	--	--	100
	SGEO-C453	Fundaments of Remote Sensing	20	20	20	80	--	--	100
Elective (DSE)	SGEO-E451	Geography of India OR Geography of Maharashtra	15	15	15	60	--	--	75
On Job Training	SVECR451	On Job Training (OJT)	15	15	15	60	--	--	75
DSC Practical	SPGEO-P451	Practicals in Agriculture Geography	--	--	--	--	05	20	25
	SPGEO-P452	Practicals in Economic Geography	--	--	--	--	05	20	25
	SPGEO-P453	Practicals in Remote Sensing	--	--	--	--	05	20	25
DSE Practical	SPGEO-E452	Interpretation of SOI Maps OR Landforms	--	--	--	--	05	20	25

%%%%% %%%%% %%%%% %%%%% %%%%% %%%%% %%%%% %%%%% %%%%% %%%%%

Semester I

%%%%% %%%%% %%%%% %%%%% %%%%% %%%%% %%%%% %%%%% %%%%% %%%%%

SGEO-C401 Geomorphology

Course Structure: Major (DSC) 1 – Teaching Scheme

Course Code	Course Name	Credits Assigned			Teaching Scheme (Hours / Week)	
		Theory	Practical	Total	Theory	Practical
SGEO-C401	Geomorphology	04	--	**04**	04	--

Course Structure: Major (DSC) 1 – Assessment Scheme

Course Code	Course Name	Theory				Practical		Total Col (6+7) / Col (8+9)
		Continuous Assessment (CA)			ESE			
		Test 1	Test 2	Avg of (T1+T2)/2	Total	CA	ESE	
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SGEO-C401	Geomorphology	**20**	**20**	**20**	**80**	**--**	**--**	**100**

SGEO-C401 Geomorphology: Curriculum Details

Course Pre-requisite:

- The candidate should know the basic concepts from physical set-up, topographical & Morphometric changes and background of natural movements.
- The candidate should know the basics about the SOI maps.

Course Objectives:

The objectives of this paper are,

- To understand the basic concepts of physical Geography,
- To study the principles of geomorphology and fundamental theories about the Geomorphological movements.
- Its prime aim is to understand and be capable to observe and note the endogenic and exogenic forces their processes in the field studies.

Course Outcomes:

- After completion of the paper / course, the students will get capabilities and skills to correlate the natural cycles and manmade activities at primary level.
- In short, the candidate will assess the cause-n-effect relationships, which will be helpful for answering reasoning types of questions asked in competitive examinations.

Curriculum Details (Four Modules with Units & Topics)

Module No.	Unit No.	Topic	Hours required to cover the contents
1.0	1.1	Geomorphology: Nature, Scope & Fundamental Concept	15
	1.2	Theory: Wegener's Continental Drift	
	1.3	Theory: Plate Tectonics	
	1.4	Theory: W. M. Davis's Concept of Geomorphic Cycle	
2.0	2.1	Endogenic Forces and Processes: Slow Movements (Compression/ Fold , Tension/ Faults)	15
	2.2	Endogenic Forces and Processes: Sudden Movements (Volcanism and Earthquakes)	
	2.3	Exogenic Forces & Processes: Weathering, Mass Movement	
	2.4	Exogenic Forces and Processes: Erosion & Deposition	
3.0	3.1	Land Forms: Associated with Coastal Processes	15
	3.2	Land Forms: Associated with Fluvial Processes	
	3.3	Land Forms: Associated with Glacial Processes	
	3.4	Land Forms: Associated with Arid Processes	
4.0	4.1	Relief Morphometry	15
	4.2	Types of Slopes	
	4.3	Geomorphology and Natural Cycles	
	4.4	Geomorphology and Human Activities	
Total Hours (1 hour = 60 minutes)			**60**

Text Books & Reference Books:

In English

- Thornbury, W. D. (I960): Principles of Geomorphology, John Wiley and Sons, New York.
- Chorley, R. J., Schumm, S. A. and Sugden, D. E. (1984): Geomorphology, Methuen, London.
- Savindra Singh (2002): Geomorphology, Prayag Pustak Bhawan, Allahabad
- Spark B. W. (1972): Geomorphology, Longman, New York
- Ollier, C. D. (1981) Tectonics and Landforms, Longman, London
- Strahler A. H and Strahler, A. N. (1992): Modern Physical Geography, John Wiley, New York
- Fairbridge, R. W. (1968): Encyclopedia of Geomorphology, Reinholdts, New York.

In Marathi

- Dhoble Shital and others (2017): Geomorphology, Nirali Prakashan, Pune
- Chaudhari Dr SR and Gavit (2015): Geomorphology, Prashant Publications, Jalgaon
- Karlekar Shrikant (2015): Physical Geography and Geomorphology, Daimand, Pune.
- Pathare and Gajhans (2015): Physical Geography, Vidya Books, Aurangabad.

%%%%% %%%%% %%%%% %%%%% %%%%%

SGEO-C402 Population Geography

Course Structure: Major (DSC) 1 – Teaching Scheme

Course Code	Course Name	Credits Assigned			Teaching Scheme (Hours / Week)	
		Theory	Practical	Total	Theory	Practical
SGEO-C401	Population Geography	04	--	**04**	04	--

Course Structure: Major (DSC) 1 – Assessment Scheme

Course Code	Course Name	Theory				Practical		Total Col (6+7) / Col (8+9)
		Continuous Assessment (CA)			ESE			
		Test 1	Test 2	Avg of (T1+T2)/2	Total	CA	ESE	
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SGEO-C402	Population Geography	**20**	**20**	**20**	**80**	--	--	**100**

SGEO-C402 Population Geography: Curriculum Details

Course Pre-requisite:

- Basic knowledge about elements of population and physical, culture and social geographical factors.

Course Objectives:

- The objectives of this course is to understand population growth, birth rate, death rate, crude birth rate, crude death rate, infant mortality rate, fertility, mortality, migration, age, sex ratio, age and sex pyramid, population density.

Course Outcomes:

- After completion of the course, the students get capabilities and skills on population geographical techniques, concepts, model and theories related to population geography. Also understand the various factor are affected of the population growth and population problems.

Curriculum Details (Four Modules with Units & Topics)

Module No.	Unit No.	Topic	Hours required to cover the contents
1.0	**1.1**	Nature, Scope, Subject Matter and Recent Trends	**15**
	1.2	Population Growth, Birth Rate & Crude Birth Rate	

	1.3	Crude Death rate, Infant mortality Rate, Fertility, Mortality	
	1.4	Migration, Age, Sex Ratio, Age & Sex Pyramid, Density	
2.0	**2.1**	Population Growth and Distribution: India	**15**
	2.2	Population Growth and Distribution: World	
	2.3	Influencing Factors: 1) Physical 2) Social	
	2.4	Influencing Factors: 1) Economic 2) Political	
3.0	**3.1**	Theory and Model: Basic Concept & Scope	**15**
	3.2	Theory and Model: Applications & Relevance	
	3.3	Malthus Theory of Population Growth	
	3.4	Demographic Transition Model	
4.0	**4.1**	Population as a Resource: Over, Optimum & Under	**15**
	4.2	Aspects: Size, Growth, Age, Education and Health	
	4.3	Population Resource Regions	
	4.4	Population Problems and Policies in India	
Total Hours (1 hour = 60 minutes)			**60**

Text Books & Reference Books:

- Barrett H.R. (1992): Population Geography, Oliver and Boyd Longman House, Harlow
- Bhende Asha & Kanitkar Tara (1975): principles of population Studies, Himalaya Publishing House, Bombay.
- Chandna, R.C. & Manjit S. Sidhu (1980): Introduction to Population Geography, Kalyani Publishers, New Delhi.
- Chandana, R.C. (1984): Geography of Population, Kalyani publisher, Ludhiana.
- Garnier, J.B. (1976): Geography of Population, Longman Group Ltd., London.
- Hausier, Philip M & Duncan (Eds.)(1959): The Study of Population, University Press, Chicago.
- Hussein, Majid (1999): Human Geography (2Ed.), Rawat Publications, Jaipur.
- Ravenstein, E (1889): The Laws of Migration, journal, Royal Statistical Society, 49, pp 241-305.
- Sinha V.C (1979): Dynamics of India's Population Growth, National Publishing House, New Delhi.
- Smith, T.L (1960): Fundamental of Population Studies, Lipineott, London.
- Zelinsky, W (1966): A Prologue of Population Geography, Prentice Hall Inc, M.J
- Sawant & Athawale A. S: Population Geography, Mehta Kolhapur.

%%%%% %%%%% %%%%% %%%%% %%%%%

SGEO-C403 Biogeography

Course Structure: Major (DSC) 1 – Teaching Scheme

Course Code	Course Name	Credits Assigned			Teaching Scheme (Hours / Week)	
		Theory	Practical	Total	Theory	Practical
SGEO-C403	Biogeography	04	--	**04**	04	--

Course Structure: Major (DSC) 1 – Assessment Scheme

Course Code	Course Name	Theory				Practical		Total Col (6+7) / Col (8+9)
		Continuous Assessment (CA)			ESE			
		Test 1	Test 2	Avg of (T1+T2)/2	Total	CA	ESE	
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SGEO-C403	Biogeography	**20**	**20**	**20**	**80**	--	--	**100**

SGEO-C403 Biogeography: Curriculum Details

Course Pre-requisite:

- The candidate should know the basic concepts from physical and Environmental Geography.

Course Objectives:

- The objectives of this paper are, to understand the basic concepts of physical Geography and Environmental Geography, to study the principles of Plant, Soil, Water and Climatic evolution. Its prime aim is to understand and be capable to observe and note the ecological things and related changes on the earth.

Course Outcomes:

- After completion of the paper / course, the students will get capabilities and skills to correlate the natural – Environmental cycles and all kinds of activities at primary level. In short, the candidate will assess the cause-n-effect relationships, which will be helpful for answering reasoning types of questions asked in competitive examinations.

Curriculum Details (Four Modules with Units & Topics)

Module No.	Unit No.	Topic	Hours required to cover the contents
1.0	**1.1**	Nature, Scope & Significance	**15**
	1.2	Elements of Biogeography: Reference to India	
	1.3	Plant Classification and Geography	
	1.4	Bioclimatic Frontiers	
2.0	**2.1**	Soil: Colour, Texture, Structure & Classification	**15**
	2.2	Forests: Need and Types	
	2.3	Deforestation and its Issues	
	2.4	Forestation & Social Forestry in India	
3.0	**3.1**	Environmental Control: on Plants	**15**
	3.2	Environmental Control: on Animals	
	3.3	Ecosystems (Major Types): Forms	
	3.4	Ecosystems (Major Types): Functions	
4.0	**4.1**	Conservation of Ecosystems: Need & Challenges	**15**
	4.2	Conservation of Ecosystems: Planning & Management	
	4.3	Ecological Balance: Need	
	4.4	Ecological Balance: Limitations	
Total Hours (1 hour = 60 minutes)			**60**

Text Books & Reference Books:

- Barry C., 1977, Biogeography – An ecological & evolutionary Approach, Oxford.
- Cole M.M., 1975, Recent developments in Biogeography, Longman, London.
- Darlington P.J. (1957): Zoogeography – Methew, New York.
- Joy T.V. (1997); Biogeography – study of plants in the ecosphere.
- Mathur H.S. (1986): Elements of Biogeography, Pointer Jaipur.
- Martin C. (1975): Plant Geography. Methuen, London.
- Muller P. (1986): Biogeography; Harper & Row, New York.
- New big in M.I. (1986): Plant & Animal Geography: Methuen, London.
- Pears N. (1985): Basic Biogeography, Longman, London.
- Watts, d. (1971): Principles of Biogeography, McMillan, London.
- Simmms T. G.: Biogeography, Natural & Cultural, Arnold & Heinemann, London.

%%%%% %%%%% %%%%% %%%%% %%%%%

SGEO-E401 Cartography and Mapping

Course Structure: Major (DSC) 1 – Teaching Scheme

Course Code	Course Name	Credits Assigned			Teaching Scheme (Hours / Week)	
		Theory	Practical	Total	Theory	Practical
SGEO-E401	Cartography and Mapping	03	--	**03**	03	--

Course Structure: Major (DSC) 1 – Assessment Scheme

Course Code	Course Name	Theory				Practical		Total Col (6+7) / Col (8+9)
		Continuous Assessment (CA)			ESE			
		Test 1	Test 2	Avg of (T1+T2)/2	Total	CA	ESE	
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SGEO-E401	Cartography and Mapping	**15**	**15**	**15**	**60**	**--**	**--**	**75**

SGEO-E401 Cartography and Mapping: Curriculum Details

Course Pre-requisite:

- The candidate should know the basic concepts from physical set-up, topographical changes and background of natural movements, which are the basics of maps. The candidate should familiar to the basic concepts, types of maps, SOI Toposheet maps and given information about the topographical features.

Course Objectives:

- The objectives of this paper are to understand the basic concepts of maps.

Course Outcomes:

- After completion of the paper / course, the students will get capabilities and skills to prepare regular and digital maps.

Curriculum Details (Four Modules with Units & Topics)

Module No.	Unit No.	Topic	Hours required to cover the contents
1.0	**1.1**	Types of Maps	**11**
	1.2	Map scales, types and conversions of scale	
	1.3	Symbolization, Enlargement and Reduction	

	1.4	Representation of statistical data on maps	
2.0	**2.1**	Introduction to SOI topographical maps	**11**
	2.2	SOI Toposheets: Indexing	
	2.3	SOI Toposheets: Signs & Symbols	
	2.4	SOI Toposheets: Contouring	
3.0	**3.1**	SOI Toposheets: Relief representation techniques	**11**
	3.2	SOI Toposheets: Identification of land forms	
	3.3	SOI Toposheets: Profiles	
	3.4	SOI Toposheets: LU LC changes	
4.0	**4.1**	SOI Toposheets: Reading	**12**
	4.2	SOI Toposheets: Interpretation	
	4.3	Available various types of maps	
	4.4	Digital Maps	
Total Hours (1 hour = 60 minutes)			**45**

Text Books & Reference Books:

- Monkhouse F.X.J. and Wilkinson H. R. (1971), Maps and Diagrams, London
- Ramamurthy, K. (1982): Map interpretation, Madras
- Petrie N. (1992), Analysis and Interpretation of Topographical Maps. Orient Longman Limited Calcutta
- Singh R. L. (1997), Elements of Practical Geography, Kalyan Publishing, New Delhi
- Meux A. H. (1960), Reading Topographical Maps. University of London Press Limited
- Jones P. A. (1968), Fieldwork in Geography. Longmans, Green and Company Limited
- Archer J. E and Dalton T. H. (1968), Fieldwork in Geography B.T. Batsford Limited London
- Wheeler K.S. Ed (1970), Geography in the field. Blond Educational, London
- Gupta, K. K. and Tyagi, V. C. (1992): Working with maps, Survey of India Publication, Dehradun.
- R.P. Mishra - Fundamentals of Cartography

%%%%% %%%%% %%%%% %%%%% %%%%%

SPGEO-P401 Morphometric Analysis

Course Structure: Major (DSC) 1 – Teaching Scheme

Course Code	Course Name	Credits Assigned			Teaching Scheme (Hours / Week)	
		Theory	Practical	Total	Theory	Practical
SPGEO-P401	Morphometric Analysis	--	01	**01**	--	02

Course Structure: Major (DSC) 1 – Assessment Scheme

Course Code	Course Name	Theory				Practical		Total Col (6+7) /
		Continuous Assessment (CA)			ESE			
		Test 1	Test 2	Avg of (T1+T2)/2	Total	CA	ESE	Col (8+9)
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SPGEO-P401	Morphometric Analysis	--	--	--	--	5	20	25

SPGEO-P401 Morphometric Analysis: Curriculum Details

Course Pre-requisite:

- The candidate should know the basic concepts from physical set-up, topographical & Morphometric changes and background of natural movements. The candidate should know the basics about the SOI maps. The candidate should have some conceptual understanding about the Physical Geography, Geomorphological Processes and mainly Morphometric changes.

Course Objectives

- The objective of this paper is to understand and be capable to observe and note the endogenic and exogenic forces their processes in the field studies. In addition, the objectives of this practical paper are to understand the spatio-temporal changes in the morphological situation of the region and their effects on various aspects of the concerned topography. It is also aims to see the influencing factors of the same.

Course Outcomes

- After completion of the paper / course, the students will get capabilities and skills to correlate the natural cycles and manmade activities at primary level. After completion of this practical paper, the student will assess the changes of any morphological aspects with proper scientific and statistic methods. He / she will draw a multi-applicable and suitable plan for the future changes.

Curriculum Details (Four Modules with Units & Topics)

Module No.	Unit No.	Topic	Hours required tocover the contents
1.0	1.1	To understand the basics of Drainage Patterns	7
	1.2	To draw Dendritic & Parallel drainage pattern	
	1.3	To draw Rectangular & Trellis drainage	
	1.4	To draw Radial & Annular drainage pattern	
2.0	2.1	To understand Basics of Stream Ordering	7
	2.2	To apply Horton's Method of Stream Ordering	
	2.3	To apply Strahler's Method of Stream Ordering	
	2.4	To apply Streve's Method of Stream Ordering	
3.0	3.1	To measure basin length and width	8
	3.2	To measure Stream Length and Ratio	
	3.3	To calculate Drainage Density	
	3.4	To calculate Bifurcation Ratio	
4.0	4.1	To measure basin area	8
	4.2	To calculate stream frequency	
	4.3	To calculate total slope of the basin	
	4.4	To calculate total slope of the given stream	
Total Hours (1 hour = 60 minutes)			**30**

Text Books & Reference Books:

In English

- King, C. A.M (1966): Techniques in Geomorphology, Edward Arnold, London
- Monkhouse, F. J. and Wilkinson, H. R., (1976). Maps and Diagrams, Methuen & Co.
- Savindra Singh (2002): Geomorphology, Prayag Pustak Bhawan, Allahabad
- Miller, Austin (1953): The skin of the Earth, Methuen & Co. Ltd. London
- Thornbury, W. D. (I960): Principles of Geomorphology, John Wiley and Sons, New York.
- Chorley, R. J., Schumm, S. A. and Sugden, D. E. (1984): Geomorphology, Methuen, London.
- Savindra Singh (2002): Geomorphology, Prayag Pustak Bhawan, Allahabad
- Spark B. W. (1972): Geomorphology, Longman, New York
- Ollier, C. D. (1981) Tectonics and Landforms, Longman, London
- Strahler A. H and Strahler, A. N. (1992): Modern Physical Geography, John Wiley, New York
- Fairbridge, R. W. (1968): Encyclopedia of Geomorphology, Reinholdts, New York.

In Marathi

- Dhoble Shital and others (2017): Geomorphology (in Marathi), Nirali Prakashan, Pune
- Chaudhari Dr SR and Gavit (2015): Geomorphology (in Marathi), Prashant Publications, Jalgaon
- Karlekar Shrikant (2015): Physical Geography and Geomorphology, (in Marathi), Daimand, Pune.
- Pathare and Gajhans (2015): Physical Geography (in Marathi), Vidya Books, Aurangabad.

SPGEO-P402 Demographic Data

Course Structure: Major (DSC) 1 – Teaching Scheme

Course Code	Course Name	Credits Assigned			Teaching Scheme (Hours / Week)	
		Theory	Practical	Total	Theory	Practical
SPGEO-P402	Demographic Data	--	01	**01**	--	02

Course Structure: Major (DSC) 1 – Assessment Scheme

Course Code	Course Name	Theory				Practical		Total Col (6+7) / Col (8+9)
		Continuous Assessment (CA)			ESE			
		Test 1	Test 2	Avg of (T1+T2)/2	Total	CA	ESE	
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SPGEO-P402	Demographic Data	--	--	--	--	5	20	25

SPGEO-P402 Demographic Data: Curriculum Details

Course Pre-requisite:

- Basic knowledge of population distribution, density and population growth. The knowledge about graph and map preparation is required for this paper.

Course Objectives:

- The objective of this course is to understand, calculation and construction of graphs and maps about population elements.

Course Outcomes:

- After completion of the course the student, get capabilities and skills on population geographical techniques, calculations in population geography, construction of population graphs and diagrams and preparation of maps regarding population geography.

Curriculum Details (Four Modules with Units & Topics)

Module No.	Unit No.	Topic	Hours required to cover the contents
1.0	1.1	To calculate : Density of Population	7
	1.2	To calculate : Sex Ratio	
	1.3	To calculate : Crude Birth and Death Rate	
	1.4	To calculate : Literacy Rate	

2.0	**2.1**	To calculate : Life Expectance Rate	**7**
	2.2	To calculate : Dependency Ratio	
	2.3	To calculate : Population growth rate	
	2.4	To calculate : Population projection	
3.0	**3.1**	To draw: Bar Graphs	**8**
	3.2	To draw: Line Graphs	
	3.3	To draw: Age-Sex Compound pyramid	
	3.4	To draw: Age-Sex Superimposed Pyramid	
4.0	**4.1**	To Preparation of Map: Population Density	**8**
	4.2	To Preparation of Map: Population Distribution	
	4.3	To Preparation of Map: Sex Ratio	
	4.4	To Preparation of Map: Population Literacy	
Total Hours (1 hour = 60 minutes)			**30**

Text Books & Reference Books:

- Lawrence, G.R.P. (1973): Cartographic methods, Methuen & Co. London.
- Mishra, R.P. (1982): Fundamentals of cartography, Prasaranga, University of Mysore.
- Monkhouse, F.J.R & Wilkinson, H.R: Maps & diagrams, Methuen & company, London.
- Raisz, Erwin: Principles of cartography, McGraw – hill Book Co., New York.
- Robinson A.H.& Sale R.D. Element of Cartography, John House & Sons Ltd., London.
- Singh R. L.: Elements of Practical Geography.
- Barrett H.R.(1992): Population Geography, Oliver and Boyd Longman House, Harlow.
- Bhende Asha & Kanitkar Tara(1975): principles of population Studies, Himalaya Publishing House, Bombay
- Chandna, R.C. & Manjit S. Sidhu (1980): Introduction to Population Geography, Kalyani Publishers, New Delhi.
- Chandana, R.C. (1984): Geography of Population, Kalyani publisher, Ludhiana.

%%%%% %%%%% %%%%% %%%%% %%%%%

SPGEO-P401 Biogeography

Course Structure: Major (DSC) 1 – Teaching Scheme

Course Code	Course Name	Credits Assigned			Teaching Scheme (Hours / Week)	
		Theory	Practical	Total	Theory	Practical
SPGEO-P401	Biogeography	--	01	**01**	--	02

Course Structure: Major (DSC) 1 – Assessment Scheme

Course Code	Course Name	Theory				Practical		Total Col (6+7) / Col (8+9)
		Continuous Assessment (CA)			ESE			
		Test 1	Test 2	Avg of (T1+T2)/2	Total	CA	ESE	
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SPGEO-P401	Biogeography	--	--	--	--	5	20	25

SPGEO-P401 Biogeography: Curriculum Details

Course Pre-requisite:

- The candidate should know the basic concepts from physical and Environmental Geography.

Course Objectives:

- The objectives of this paper are, to understand the basic concepts of physical Geography and Environmental Geography, to study the principles of Plant, Soil, Water and Climatic evolution. Its prime aim is to understand and be capable to observe and note the ecological things and related changes on the earth.

Course Outcomes:

- After completion of the paper / course, the students will get capabilities and skills to correlate the natural – Environmental cycles and all kinds of activities at primary level. In short, the candidate will assess the cause-n-effect relationships, which will be helpful for answering reasoning types of questions asked in competitive examinations.

Curriculum Details (Four Modules with Units & Topics)

Module No.	Unit No.	Topic	Hours required to cover the contents
1.0	1.1	To prepare a Map of Biogeographic realms of the world	7
	1.2	To prepare a Map of Biogeographic Regions of India	
	1.3	To draw a Map of Biogeographic Micro Regions of India	
	1.4	To classify Biogeographic regions of India	
2.0	2.1	To understand Soil: Colour, texture & Structure	7
	2.2	To prepare a maps of Indian Forest with various Types	
	2.3	To identify indigenous species from deforested regions	
	2.4	To prepare graphs related to Forest & Social forestry	
3.0	3.1	To measure an area for density of plant species.	8
	3.2	To calculate density of plant species.	
	3.3	To identify and calculate plant population	
	3.4	To estimate plant density and plant spacing heterogeneity	
4.0	4.1	To prepare a map of Maharashtra showing Soil Types	8
	4.2	To show graphically the Biogeographic Regions of state	
	4.3	To show Biogeographic Regions of Maharashtra with map	
	4.4	To classify Biogeographic regions of Maharashtra	
Total Hours (1 hour = 60 minutes)			**30**

Text Books & Reference Books:

- Barry C., 1977, Biogeography – An ecological & evolutionary Approach, Oxford.
- Cole M.M., 1975, Recent developments in Biogeography, Longman, London.
- Darlington P.J. (1957): Zoogeography – Methew, New York.
- Joy T.V. (1997); Biogeography – study of plants in the ecosphere.
- Mathur H.S. (1986): Elements of Biogeography, Pointer Jaipur.
- Martin C. (1975): Plant Geography. Methuen, London.
- Muller P. (1986): Biogeography; Harper & Row, New York.
- New big in M.I. (1986): Plant & Animal Geography: Methuen, London.
- Pears N. (1985): Basic Biogeography, Longman, London.
- Watts, d. (1971): Principles of Biogeography, McMillan, London.
- Simmms T. G.: Biogeography, Natural & Cultural, Arnold & Heinemann, London.

%%%%% %%%%% %%%%% %%%%% %%%%%

SPGEO-E402 Cartographic Techniques

Course Structure: Major (DSC) 1 – Teaching Scheme

Course Code	Course Name	Credits Assigned			Teaching Scheme (Hours / Week)	
		Theory	Practical	Total	Theory	Practical
SPGEO-E402	Cartographic Techniques	--	01	**01**	--	02

Course Structure: Major (DSC) 1 – Assessment Scheme

Course Code	Course Name	Theory				Practical		Total Col (6+7) / Col (8+9)
		Continuous Assessment (CA)			ESE			
		Test 1	Test 2	Avg of (T1+T2)/2	Total	CA	ESE	
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SPGEO-E402	Cartographic Techniques	--	--	--	--	5	20	25

SPGEO-E402 Cartographic Techniques: Curriculum Details

Course Pre-requisite:

- The candidate should know the basic concepts from physical set-up, topographical changes and background of natural movements, which are the basics of maps. The candidate should familiar to the basic concepts, types of maps, SOI Toposheet maps and given information about the topographical features.

Course Objectives:

- The objectives of this paper are to understand the basic concepts of maps.

Course Outcomes:

- After completion of the paper / course, the students will get capabilities and skills to prepare regular and digital maps.

Curriculum Details (Four Modules with Units & Topics)

Module No.	Unit No.	Topic	Hours required to cover the contents
1.0	1.1	To prepare a list of various Types of Maps	7
	1.2	To draw a Graphical Scale with conversion of RF	
	1.3	To convert British scale in to Metric Scale	

	1.4	To represent a statistical data on maps	
2.0	**2.1**	To draw a new map with enlargement technique	**7**
	2.2	To draw a new map with reduction technique	
	2.3	To note the marginal information of SOI Toposheets	
	2.4	To show Indexing of SOI Toposheets	
3.0	**3.1**	To draw Signs & Symbols of SOI Toposheets	**8**
	3.2	To prepare a Contour map from SOI Toposheets	
	3.3	To Identify of land forms from SOI Toposheet	
	3.4	To draw a Cross Profile	
4.0	**4.1**	To draw a Longitudinal Profile	**8**
	4.2	To indentify LULC from SOI Toposheets	
	4.3	To read at least one SOI Toposheets	
	4.4	To interpretation at least one SOI Toposheets	
Total Hours (1 hour = 60 minutes)			**30**

Text Books & Reference Books:

- Monkhouse F.X.J. and Wilkinson H. R. (1971), Maps and Diagrams, London
- Ramamurthy, K. (1982): Map interpretation, Madras
- Petrie N. (1992), Analysis and Interpretation of Topographical Maps. Orient Longman Limited Calcutta
- Singh R. L. (1997), Elements of Practical Geography, Kalyan Publishing, New Delhi
- Meux A. H. (1960), Reading Topographical Maps. University of London Press Limited
- Jones P. A. (1968), Fieldwork in Geography. Longmans, Green and Company Limited
- Archer J. E and Dalton T. H. (1968), Fieldwork in Geography B.T. Batsford Limited London
- Wheeler K.S. Ed (1970), Geography in the field. Blond Educational, London.
- Gupta, K. K. and Tyagi, V. C. (1992): Working with maps, Survey of India Publication, Dehradun.
- R.P. Mishra - Fundamentals of Cartography.

%%%%% %%%%% %%%%% %%%%% %%%%% %%%%% %%%%% %%%%% %%%%%

Semester II

%%%%% %%%%% %%%%% %%%%% %%%%% %%%%% %%%%% %%%%% %%%%%

SGEO-C451 Agriculture Geography

Course Structure: Major (DSC) 1 – Teaching Scheme

Course Code	Course Name	Credits Assigned			Teaching Scheme (Hours / Week)	
		Theory	Practical	Total	Theory	Practical
SGEO-C451	Agriculture Geography	04	--	**04**	04	--

Course Structure: Major (DSC) 1 – Assessment Scheme

Course Code	Course Name	Theory				Practical		Total Col (6+7) / Col (8+9)
		Continuous Assessment (CA)			ESE			
		Test 1	Test 2	Avg of (T1+T2)/2	Total	CA	ESE	
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SGEO-C451	Agriculture Geography	**20**	**20**	**20**	**80**	**--**	**--**	**100**

SGEO-C451 Agriculture Geography: Curriculum Details

Course Pre-requisite:

- The candidate should familiar with the basic concepts from Agriculture Geography i.e. General Land-use, Agricultural Land-use, Cropping Pattern, Soil and Crop relationships etc.

Course Objectives

- The objectives of this paper are, to understand the concepts from Physical and Human Geography, which will help to assess the cause-and-effect relationship between them, to study the principles of Agricultural Geography and fundaments of the same. Its prime aim is to understand and be capable to observe and note the micro to macro levelled changes in agrarian practices.

Course Outcomes

- After completion of the paper / course, the students will get capabilities and skills to correlate the natural cycles as well as manmade acts and agrarian development. In short, the candidate will assess the cause-n-effect relationships, which will be helpful for answering reasoning types of questions asked in competitive examinations.

Curriculum Details (Four Modules with Units & Topics)

Module No.	Unit No.	Topic	Hours required to cover the contents
1.0	1.1	Nature, Scope, Significance & Approaches	15
	1.2	General and Agricultural Land use	
	1.3	Land use surveys	
	1.4	Land Classification	
2.0	2.1	Physical Determinants: Relief, Climate, Water, Soil, etc	15
	2.2	Land holding, marketing, transport etc	
	2.3	Irrigation and Mechanization	
	2.4	Crop Diversification & Combination	
3.0	3.1	Shifting Cultivation & Intensive Subsistent Farming	15
	3.2	Mixed Farming & Plantation	
	3.3	Commercial Farming	
	3.4	Agricultural Efficiency	
4.0	4.1	Characteristics of arid and semi-arid regions	15
	4.2	Droughts and Famines	
	4.3	Role of Irrigation and Dry Farming	
	4.4	Agricultural Regions of India	
Total Hours (1 hour = 60 minutes)			**60**

Text Books & Reference Books:

- Aiyer, A.K.Y.N. (1949) – Agricultural and Allied Arts in Vedic India.
- Grigg. D.G. (1974) – The Agricultural Systems of the world An Evolutionary Approach.
- Grigg. D.G.(1964) – An Introduction to Agricultural Geography Hutchinson & Co.Ltd.,
- Illbery, B.W. (1985) – Agricultural Geography, Social & Economic Analysis, Oxford University Press.
- Morgan. W.B. & S.C. Monton (1971) – Agricultural Geography Methuen, London.
- Randhawa, M.S. (1980) – A History of Agriculture in India Vols. I, II, III, IV ICAR, New Delhi.
- Singh. J. and Dhillon S.S. (1994) – Agricultural Geography. Tata McGraw Hill, Publishing Co. Ltd.
- Symons, Leslie (1970) – Agricultural Geography, G. Belt and Sons Ltd., London.
- Tarrent, J.R. (1970) – Agricultural Geography, David and Charles, Newton Abbot.

%%%%% %%%%% %%%%% %%%%% %%%%%

SGEO-C452 Economic Geography

Course Structure: Major (DSC) 1 – Teaching Scheme

Course Code	Course Name	Credits Assigned			Teaching Scheme (Hours / Week)	
		Theory	Practical	Total	Theory	Practical
SGEO-C452	Economic Geography	04	--	**04**	04	--

Course Structure: Major (DSC) 1 – Assessment Scheme

Course Code	Course Name	Theory				Practical		Total Col (6+7) / Col (8+9)
		Continuous Assessment (CA)			ESE			
		Test 1	Test 2	Avg of (T1+T2)/2	Total	CA	ESE	
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SGEO-C452	Economic Geography	**20**	**20**	**20**	**80**	--	--	**100**

SGEO-C452 Economic Geography: Curriculum Details

Course Pre-requisite:

- Basic knowledge about economic activities, geographical factors and their relationship with economical activities and economical development leads to social development, and knowledge of 10^{th} standard geography.

Course Objectives:

- After completion of the course the student gets knowledge about the economical activities are related to geographical factors and various theories and models of economic developments. On successful completion of the module, students should be capable of

  explaining the principles of economic geography and their relation with development of the nation.

Course Outcome:

- This course is useful in understanding about basics of economic geography. This will be useful for application of the principles of economics in geography. Knowledge of this course will used for sustainable development.

Curriculum Details (Four Modules with Units & Topics)

Module No.	Unit No.	Topic	Hours required to cover the contents
1.0	1.1	Nature, Scope, Recent Trends in Economic Geography	15
	1.2	Economic Processes: Production, Exchange & consumption	
	1.3	Classification of economic Activities & Characteristics	
	1.4	Location of Economic activities	
2.0	2.1	Classification of Resources	15
	2.2	Resources and Environment - Scarcity and Sustainability,	
	2.3	Conversation of resources	
	2.4	Classification of Industries & Location Theories	
3.0	3.1	Major Transport Routes -Land, Rail, Water and Air Routes	15
	3.2	Mode of transportation and transport cost	
	3.3	Accessibility and connectivity	
	3.4	Trade: National and International	
4.0	4.1	Measures of Economic Development	15
	4.2	Sustainable Development	
	4.3	Regional Disparity in Economic Development	
	4.4	Impact of Green Revolution, Privatization, Globalization	
Total Hours (1 hour = 60 minutes)			**60**

Text Books & Reference Books:

- Alexander J.W. (1976): Economic Geography. Prentice Hall of India. New Delhi.
- Hartshorne, T.A. and J.W. Alexander (1988) –Economic Geography, Prentice Hall.
- Berry, Conkling & Ray (1988): Economic Geography Prentice Hall of India New Jersey.
- Hurst Elliott (1986): Geography of Economic Behaviour. Unwin, London.
- Johnson R.J. & Taylor D.J. (1989): A world in crisis. Basil-Blackwell, Oxford.
- Losch (1954): Economics of Location. Yale University Press New York.
- Redcliff M. (1987): Development & the environmental crisis. Methuen. London.
- Sinha B.N.(1971): Industrial geography of India
- Watts H.D. (1987): Industrial Geography, Longman scientific and Technical New York.
- Haggett, Peter: Modern Synthesis in Geography.
- Robinson H & Bamford C. G. (1978): Geography of Transport, Macdonald & Evans USA.
- Jones & Darkenwald: Economic geography.
- Fairbridge, R. W. (1968): Encyclopedia of Geomorphology, Reinholdts, New York.

%%%%% %%%%% %%%%% %%%%% %%%%%

SGEO-C453 Fundaments of Remote Sensing

Course Structure: Major (DSC) 1 – Teaching Scheme

Course Code	Course Name	Credits Assigned			Teaching Scheme (Hours / Week)	
		Theory	Practical	Total	Theory	Practical
SGEO-C453	Fundaments of Remote Sensing	04	--	**04**	04	--

Course Structure: Major (DSC) 1 – Assessment Scheme

Course Code	Course Name	Theory				Practical		Total Col (6+7) / Col (8+9)
		Continuous Assessment (CA)			ESE			
		Test 1	Test 2	Avg of (T1+T2)/2	Total	CA	ESE	
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SGEO-C453	Fundaments of Remote Sensing	**20**	**20**	**20**	**80**	--	--	**100**

SGEO-C453 Fundaments of Remote Sensing: Curriculum Details

Course Pre-requisite:

- Basic knowledge about 10 level physics and having the knowledge of geographical factors.

Course Objectives:

- The objectives of this course is to develop the skill of the remote sensing and use of remote sensing in the geography

Course Outcomes:

- After completion of the course, the students get capabilities and skills on remote sensing technology and application of the remote sensing in geography and map making.

Curriculum Details (Four Modules with Units & Topics)

Module No.	UnitNo.	Topic	Hours required to cover the contents
1.0	1.1	Introduction to Remote Sensing: Definition & History	15
	1.2	EMR & EMS; EMR interaction with Atmosphere and Earth	
	1.3	Types of Remote Sensing	
	1.4	Applications of Remote Sensing	
2.0	2.1	History of Aerial Photographs	15
	2.2	Fundamentals of Aerial Photography	
	2.3	Types of Aerial Photographs - Vertical & Oblique	
	2.4	Basic Geometric Characteristics- Scale, Overlap, Tilt,	
3.0	3.1	Distortion and Displacement of Aerial Photographs	15
	3.2	Advantages and Disadvantages of Aerial Photographs	
	3.3	Concepts: Reflection, Absorption, Transmission, Scattering	
	3.4	Concept of Signatures- Photo Interpretation Elements	
4.0	4.1	Types of Satellites - Sun-Synchronous and Geostationary	15
	4.2	Classification of Remote Sensors, Resolution - Spatial, Spectral, Radiometric, Temporal, Microwave Sensors, etc	
	4.3	Image Rectification and Restoration,	
	4.4	Image Enhancement, Image Manipulation, Filtering, Image Classification, Supervised and Unsupervised Classification	
Total Hours (1 hour = 60 minutes)			**60**

Text Books & Reference Books:

- Jensen, J.R. (2004): Remote sensing of the environment: An Earth Resource Perspective, Prentice Hall, Englewood Cliffs, N.J.
- Jones, C.B. (1997): Geographical Information Systems and Computer Cartography, Addison Wesley Longman Ltd. England.
- Kraak, M.J. and A. Brown (1996): Web Cartography: Developments and Prospects, Addison Wesley Longman Ltd, England.
- Monmonier, M.S. (1982): Computer Assisted Cartography: Principles and Prospects Prentice Hall, Inc. London.
- Jenson, J.R.: Introduction to Digital image processing, Prentice Hall, Englewood cliffs, N.J.
- Peuquet, D.J. & Marble, D.F.: Introductory Readings in Geographic information Systems Taylor & Francis, Washington, 1990
- P. A. Burrough and R. A. McDonnell, Principles of Geographical Information System, 2000, Oxford University Press.
- C.P. Lo and Albert K. W. Yeung, Concepts and Techniques of Geographic Information System, 2002 Prentice –Hall, India.
- George Joseph, Fundamentals of Remote Sensing, 2004, Universities Press Pvt. Ltd., Hyderabad.
- Lillesand T.M. and Kiefer R.W., 2002, Remote Sensing and Image Interpretation, John Wiley

SGEO-E451 Geography of India

Course Structure: Major (DSC) 1 – Teaching Scheme

Course Code	Course Name	Credits Assigned			Teaching Scheme (Hours / Week)	
		Theory	Practical	Total	Theory	Practical
SGEO-E451	Geography of India	03	--	**03**	03	--

Course Structure: Major (DSC) 1 – Assessment Scheme

Course Code	Course Name	Theory				Practical		Total Col (6+7) / Col (8+9)
		Continuous Assessment (CA)			ESE			
		Test 1	Test 2	Avg of (T1+T2)/2	Total	CA	ESE	
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SGEO-E451	Geography of India	**15**	**15**	**15**	**60**	--	--	**75**

SGEO-E451 Geography of India: Curriculum Details

Course Pre-requisite:

- Basic knowledge about physical factors and map of India, and knowledge of 10th standard geography.
- The candidate should know the basic concepts of region with the perspective of Human Geography and India Socio-Cultural Set up with maps. He / She should know the importance of all manmade characteristics of the region or any administrative region in the demarcation of region and its entities with their balanced identity or unbalanced changes.

Course Objectives:

- The objectives of this course are to understand physiography, climate, vegetation and soils of India.
- The objectives of this paper are to understand the basic concepts of Regional Geography with socio-cultural perspectives, mainly based on the economical and cultural activities of the region. The objectives of this course are to understand the population, Agriculture, Agro-based Industries, Mineral & Power resources and Transport and communication systems in India.

Course Outcomes:

- After completion of the course, the students get capabilities to understand the physiography, climate, vegetation and soils of India.
- This paper is providing basic information about the human geographical set up of the state. The students will get knowledge and will acquire skills for comparative regional study and correlate the cause-n-effect relationships of all basic socio-economical, demographical and cultural aspects. The students will get capabilities to understand the Human and allied set up of India with geographical perspective.

Curriculum Details (Four Modules with Units & Topics)

Module No.	Unit No.	Topic	Hours required to cover the contents
1.0	1.1	Physiography: Structure, Relief & Physiographic Divisions	11
	1.2	Natural Drainage System	
	1.3	Climate: Types & Climatic Regions	
	1.4	Climate and Agricultural Practices	
2.0	2.1	Natural Vegetation: Types & Regions	11
	2.2	Forests and Forest Products	
	2.3	Deforestation & Need of Conservation	
	2.4	Soil Types and Conservation	
3.0	3.1	Human Population: Distribution and Growth	11
	3.2	State-wise Rural and Urban Population	
	3.3	Urbanization: Problems and Prospects	
	3.4	Population: as a Problems & as a Resource	
4.0	4.1	Mineral & Power Resources: Iron, Mica, Manganese, Coal and Petroleum	12
	4.2	Major industries: Belts, Development and Problems	
	4.3	Industrial region of India	
	4.4	Transport Systems: Roads, Railways, Inland Waterways, Air Ways, Major ports & Sea Routes	
Total Hours (1 hour = 60 minutes)			**45**

Text Books & Reference Books:

- Sharma, T.C. & Coutinho: "Economic and Commercial Geography of India". Vikas Pub. House Delhi.
- Negi, B.S: "Economic & Commercial Geography India."Kedar Nath Ram Nath, N. Delhi.
- Mamoria, C.B. "Economic & Commercial Geography of India".

- Singh, Gopal: “Geography of India”.
- Kuriyan. George: “India- A General Survey”. National Bk. Trust.
- Stamp, L.D: “Geography of Asia”.
- Spate, O.H.K.& Learmonth, A.T.A: “Geography of India & Pakistan”.
- Robinson: “India- resources & their Development.
- Dobby, E.G.H:” Monsoon Asia.
- Tirtha Ranjit (1996): Geography of India, Rawat Jaipur.
- Tata McGraw Atlas: Socio Economic Atlas of India.
- Singh R. L.: Regional Geography of India.
- Majid Husain, 2015, Geography of India (Old edition), Publisher: McGraw Hill Education (August 15, 2015), ISBN-10: 9339220846, ISBN-13: 978-9339220846.
- Sanjeev Sanyal and Sowmya Rajendran, 2015, The Incredible History of India's Geography, Publisher: Penguin Books Limited; Latest edition (26 January 2015), ISBN-10: 9780143333661, ISBN-13: 978-0143333661.

%%%%% %%%%% %%%%% %%%%% %%%%%

SGEO-E451 Geography of Maharashtra

Course Structure: Major (DSC) 1 – Teaching Scheme

Course Code	Course Name	Credits Assigned			Teaching Scheme (Hours / Week)	
		Theory	Practical	Total	Theory	Practical
SGEO-E451	Geography of Maharashtra	03	--	**03**	03	--

Course Structure: Major (DSC) 1 – Assessment Scheme

Course Code	Course Name	Theory				Practical		Total Col (6+7) / Col (8+9)
		Continuous Assessment (CA)			ESE			
		Test 1	Test 2	Avg of (T1+T2)/2	Total	CA	ESE	
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SGEO-E451	Geography of Maharashtra	**15**	**15**	**15**	**60**	--	--	**75**

SGEO-E451 Geography of Maharashtra: Curriculum Details

Course Pre-requisite:

- The candidate should know the basic concepts from Physical and Regional Geography. The candidate should familiar with the natural set up and their relationships to each other. He / She should know the importance of physical features in demarcation of a region and regional entities.
- The candidate should know the basic concepts of region with the perspective of Human Geography. He / She should know the importance of all manmade characteristics of the region or any administrative region in the demarcation of a region and regional entities with their balanced identity or unbalanced changes.

Course Objectives:

- The objectives of this paper are to understand the basic concepts of Physical Geography with Regional perspective and fundamental theories about the region and their characteristics. Its prime aim is to understand the physical features and their spatial characters in details.
- The objectives of this paper are to understand the basic concepts of Regional Geography with socio-cultural perspectives and fundamental theories about the region and their characteristics, mainly based on the economical and cultural activities of the region.

Course Outcomes:

- This paper is providing basic information about the physical set up of the Region, i.e. Marathwada. The students will get knowledge and will acquire skills for comparative regional study and correlate the cause-n-effect relationships of all basic topography,

morphometry and resources.

- This paper is providing basic information about the human geographical set up of the state. The students will get knowledge and will acquire skills for comparative regional study and correlate the cause-n-effect relationships of all basic socio-economical, demographical and cultural aspects.

Curriculum Details (Four Modules with Units & Topics)

Module No.	Unit No.	Topic	Hours required to cover the contents
1.0	1.1	Location and Physiography of Maharashtra	11
	1.2	Main Rivers: Godavari, Krishna, Tapi	
	1.3	Soil: Types and Distribution	
	1.4	Vegetation Cover: Types and Distribution	
2.0	2.1	Major Climatic Types & Characteristics	11
	2.2	Distribution of Temperature and Rainfall	
	2.3	Water Resources: Major and Minor Projects	
	2.4	Mineral Resources: Resources and its Location	
3.0	3.1	Human Population: Growth & Distribution	11
	3.2	Sex Ratio, Literacy, Occupational Structure & Migration	
	3.3	Rural and Urban Settlement	
	3.4	Growth, Comparative Proportion and Trend of Urbanization	
4.0	4.1	Agriculture: Major Crops and Cropping Pattern	12
	4.2	Agriculture: Problems, Prospects & Influencing Factors	
	4.3	Industries: Major Industrial Belts / Pockets and Distribution	
	4.4	Industries: Problems and Prospects of Industrialization	
Total Hours (1 hour = 60 minutes)			**45**

Text Books & Reference Books:

- Gazetteer of Maharashtra, Govt of India.
- B. Arunchalm, Regional Geography of Maharashtra
- B.D. Nag Choudhary, "Introduction to Environment Management" Inter Print Mehata House, New Delhi.
- Brucu Mitchell "Geography and resources analysis" John willey and sons, New York.
- C.D. Deshpande, "Geography of Maharashtra" National book Trust of India, New Delhi.
- Cutler L, Renwick H.L. Exploitation conservation and preservation: A Geographical perspective and natural resource use, Rowmon and Allanhed, Towata.

- Govt. of Maharashtra "Economic development of Maharashtra", Economic Development Council.
- Dixit K.R., "Maharashtra in Maps"
- Deshpande, S.H. "Economy of Maharashtra"
- Annual Socio-Economic Abstracts, (1951 to 2011, all concern districts), Govt of Maharashtra.
- RBS, 2014, Visitors Guide India: Maharashtra, Publisher: Data And Expo India Pvt. Ltd.; Revised edition (2014), ISBN-10: 9380844093.
- Road Atlas Maharashtra (English), Samarth Udyog Prakashan.
- Prof. Sangle Shailaj, 2015, Paryatan Bhugol, Tourism Geography, Diamond Publication Pune.

%%%%% %%%%% %%%%% %%%%% %%%%%

SPGEO-P451 Practicals in Agriculture Geography

Course Structure: Major (DSC) 1 – Teaching Scheme

Course Code	Course Name	Credits Assigned			Teaching Scheme (Hours / Week)	
		Theory	Practical	Total	Theory	Practical
SPGEO-P451	Practicals in Agriculture Geography	--	01	**01**	--	02

Course Structure: Major (DSC) 1 – Assessment Scheme

Course Code	Course Name	Theory				Practical		Total Col (6+7) /
		Continuous Assessment (CA)			ESE			
		Test 1	Test 2	Avg of (T1+T2)/2	Total	CA	ESE	Col (8+9)
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SPGEO-P451	Practicals in Agriculture Geography	--	--	--	--	5	20	25

SPGEO-P451 Practicals in Agriculture Geography: Curriculum Details

Course Pre-requisite:

- The candidate should know the basic concepts from Agricultural Geography. The candidate should be able to solve the mathematical problems/ equations for calculating various types of index relating to agriculture.

Course Objectives:

- The objectives of this paper are, to understand the basic concepts of Agricultural Geography, to study the principles and fundamental things of agricultural studies. Its prime aim is to understand and be capable to correlate the things with number of parameters related to agrarian studies.

Course Outcomes:

- After completion of the paper / course, the students will get capabilities and skills to correlate and calculate values of parameters of agriculture with geo-scientific methods.

Curriculum Details (Four Modules with Units & Topics)

Module No.	Unit No.	Topic	Hours required to cover the contents
1.0	1.1	To calculate: Ranks and prepare a ranking table of Crops	7
	1.2	To calculate: Crop Combination by Weaver's Technique	
	1.3	To calculate: Crop Intensity	
	1.4	To calculate: Agricultural Density	
2.0	2.1	To calculate: Caloric Density	7
	2.2	To calculate: Nutritional Density	
	2.3	To calculate: Economic Density	
	2.4	To calculate: Marginal Resource Density	
3.0	3.1	To calculate: Index of Agricultural Efficiency	8
	3.2	To calculate: Agricultural Productivity	
	3.3	To calculate: Index of Area under Crop	
	3.4	To calculate: Index of Net Area Sown	
4.0	4.1	To calculate: Index of Cropping Pattern	8
	4.2	To calculate: Index of Yield	
	4.3	To calculate: Index of Productivity per Hectare of Net Area	
	4.4	To calculate: Relative Yield index	
Total Hours (1 hour = 60 minutes)			**30**

Text Books & Reference Books:

- Aiyer, A.K.Y.N. (1949) – Agricultural and Allied Arts in Vedic India.
- Grigg. D.G. (1974) – The Agricultural Systems of the world An Evolutionary Approach.
- Grigg. D.G. (1964) – An Introduction to Agricultural Geography Hutchinson & Co.Ltd.,
- Illbery, B.W. (1985) – Agricultural Geography, Social & Economic Analysis, Oxford University Press.
- Morgan. W.B. & S.C. Monton (1971) – Agricultural Geography Methuen, London.
- Randhawa, M.S. (1980) – A History of Agriculture in India Vols. I, II, III, IV ICAR, New Delhi.
- Singh. J. and Dhillon S.S. (1994) – Agricultural Geography. Tata McGraw Hill, Publishing Co. Ltd.
- Symons, Leslie (1970) – Agricultural Geography, G. Belt and Sons Ltd., London.
- Tarrent, J.R. (1970) – Agricultural Geography, David and Charles, Newton Abbot.

%%%%% %%%%% %%%%% %%%%% %%%%%

SPGEO-P452 Practicals in Economic Geography

Course Structure: Major (DSC) 1 – Teaching Scheme

Course Code	Course Name	Credits Assigned			Teaching Scheme (Hours / Week)	
		Theory	Practical	Total	Theory	Practical
SPGEO-P452	Practicals in Economic Geography	--	01	**01**	--	02

Course Structure: Major (DSC) 1 – Assessment Scheme

Course Code	Course Name	Theory				Practical		Total Col (6+7) / Col (8+9)
		Continuous Assessment (CA)			ESE			
		Test 1	Test 2	Avg of (T1+T2)/2	Total	CA	ESE	
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SPGEO-P452	Practicals in Economic Geography	--	--	--	--	5	20	25

SPGEO-P452 Practicals in Economic Geography: Curriculum Details

Course Pre-requisite:

- Practical knowledge about economic activities, geographical factors and their relationship with economical activities and economical development leads to social developments.

Course Objectives:

- The objectives of the course are to understand and develop the skill about economic activities of human and how geographical factors are responsible for different economic activities on the earth surface.

Course Outcomes:

- After completion of the course the student gets practical knowledge about the economical activities are related to geographical factors and various theories and models of economic developments.
- On successful completion of the module, students should be capable of representation economical geographical data with cartographic techniques and how to represent the data of economic activities.

Curriculum Details (Four Modules with Units & Topics)

Module No.	Unit No.	Topic	Hours required to cover the contents
1.0	1.1	To understand Methods of Choropleth Maps	7
	1.2	To understand Methods of Dot Maps	
	1.3	To understand various Flow Line Charts	
	1.4	To understand Maps of Transport Flow	
2.0	2.1	To prepare Choropleth Maps	7
	2.2	To prepare Dot Maps	
	2.3	To draw a Flow Line Charts	
	2.4	To draw a Map showing Transport Flow	
3.0	3.1	To use a two dimensional figures in Maps: Circle	8
	3.2	To use a two dimensional figures in Maps: Divide Circle	
	3.3	To use a three dimensional figures in Maps: Sphere	
	3.4	To use a three dimensional figures in Maps: Cubes	
4.0	4.1	To apply Location quotient for analysis of Industry	8
	4.2	To apply Lorenze Curves and draw a figure	
	4.3	To apply Gini's Coefficient and draw a figure	
	4.4	To prepare a list of key points of industrial visit report	
Total Hours (1 hour = 60 minutes)			**30**

Text Books & Reference Books:

- Lawrence, G.R.P. (1973): Cartographic methods, Methuen & Co. London.
- Mishra, R.P. (1982): Fundamentals of cartography, Prasaranga, University of Mysore.
- Monkhouse, F.J.R & Wilkinson, H.R: Maps & diagrams, Methuen & company, London.
- Raisz, Erwin: Principles of cartography, McGraw – hill Book Co., New York.
- Robinson A.H. & Sale R.D. Element of Cartography, John House & Sons Ltd., London.
- Singh R. L. Elements of Practical Geography.

%%%%% %%%%% %%%%% %%%%% %%%%%

SPGEO-P453 Practicals in Remote Sensing

Course Structure: Major (DSC) 1 – Teaching Scheme

Course Code	Course Name	Credits Assigned			Teaching Scheme (Hours / Week)	
		Theory	Practical	Total	Theory	Practical
SPGEO-P453	Practicals in Remote Sensing	--	01	**01**	--	02

Course Structure: Major (DSC) 1 – Assessment Scheme

Course Code	Course Name	Theory				Practical		Total Col (6+7) / Col (8+9)
		Continuous Assessment (CA)			ESE			
		Test 1	Test 2	Avg of (T1+T2)/2	Total	CA	ESE	
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SPGEO-P453	Practicals in Remote Sensing	--	--	--	--	5	20	25

SPGEO-P453 Practicals in Remote Sensing: Curriculum Details

Course Pre-requisite:

- Basic knowledge about 10 level physics and having the knowledge of geographical factors.

Course Objectives:

- The objectives of this course is to develop the skill of the remote sensing and use of remote sensing in the geography.

Course Outcomes:

- After completion of the course, the students get capabilities and skills on remote sensing and application of the remote sensing in geography and map making.

Curriculum Details (Four Modules with Units & Topics)

Module No.	Unit No.	Topic	Hours required to cover the contents
1.0	1.1	Indexing of aerial photographs	7
	1.2	Introduction to vertical aerial photographs and its geometry	
	1.3	Introduction to stereoscopes: Stereoscopic Vision test	

	1.4	Introduction to stereoscopes: Orientation & Construction of 3-D model under Pocket stereoscope	
2.0	**2.1**	Introduction to stereoscopes: Orientation & Construction of 3-D model under Mirror Stereoscope	**7**
	2.2	Determination of scale: By establishing relationship between Photo distance and Ground distance	
	2.3	Determination of scale: By establishing relationship between Photo distance and Map distance	
	2.4	Determination of scale: By establishing relationship between Focal length and Flying height	
3.0	**3.1**	Determination of Scale of Vertical Aerial Photograph	**8**
	3.2	Calculation of Relief Displacement, Object height determination from relief Displacement	
	3.3	Introduction to Parallax Bar & Object Height Determination	
	3.4	Calculation of Photo coverage Area	
4.0	**4.1**	Visual Interpretation and Mapping of Aerial photographs	**8**
	4.2	Interpretation & Annotations of Satellite image	
	4.3	Visual interpretation of satellite image	
	4.4	Digital Image Processing: Techniques, Enhancement, Image classification: Supervised and unsupervised	
Total Hours (1 hour = 60 minutes)			**30**

Text Books & Reference Books:

- Agarwal, C.S. and Garg, P.K. 2000. Textbook of Remote Sensing in Natural Resources Monitoring and Management. New Delhi: Wheeler Publishing.
- Jensen, John R. 2000. Remote Sensing of the Environment – An Earth Resource Perspective. Pearson Education (First Indian Edition, 2003).
- Rampal, K.K. 1999. Handbook of Aerial Photography and Interpretation. New Delhi: Concept Publishing Company.
- Rampal, K.K. 1999. Handbook of Aerial Photography and Interpretation. New Delhi: Concept Publishing Company.
- Floyd, F. Sabins, Jr. (1986): Remote Sensing: Principles and Interpretation, W.H. Freeman, N.Y.
- M. Anjji Reddy.(2015): Remote Sensing & Geographical information system, BS-Publication, Hyderabad

SPGEO-E452 Interpretation of SOI Maps

Course Structure: Major (DSC) 1 – Teaching Scheme

Course Code	Course Name	Credits Assigned			Teaching Scheme (Hours / Week)	
		Theory	Practical	Total	Theory	Practical
SPGEO-E452	Interpretation of SOI Maps	--	01	**01**	--	02

Course Structure: Major (DSC) 1 – Assessment Scheme

Course Code	Course Name	Theory				Practical		Total Col (6+7) / Col (8+9)
		Continuous Assessment (CA)			ESE			
		Test 1	Test 2	Avg of (T1+T2)/2	Total	CA	ESE	
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SPGEO-E452	Interpretation of SOI Maps	--	--	--	--	5	20	25

SPGEO-E452 Interpretation of SOI Maps: Curriculum Details

Course Pre-requisite:

- Basic knowledge about elements of maps and construction of maps. The knowledge about physicals and cultural features is required for this paper.

Course Objectives:

- The objectives of this course are to understand, calculation, construction and interpretation of topographical maps.

Course Outcomes:

- After completion of the course the student, get capabilities and skills on construction and interpretation of topographical maps and identified the physical and cultural features of on the map.

Curriculum Details (Four Modules with Units & Topics)

Module No.	Unit No.	Topic	Hours required to cover the contents
1.0	1.1	To Study of SOI Topographical 1:50,000 Series Maps	7
	1.2	To Study Indexing and conventional signs and symbols	
	1.3	To understand and use Grid references	
	1.4	To understand Location and Relief Aspects of the area	
2.0	2.1	To read the basics of SOI topographical Maps	7
	2.2	To note the Marginal Information of SOI Maps	
	2.3	To divide and draw the drainage basins	
	2.4	To identify and draw various patterns of Drainage	
	3.1	To read and interpret the SOI toposheet: Relief Features	

3.0	**3.2**	To read and interpret the SOI toposheet: Drainage	**8**
	3.3	To read and interpret the SOI toposheet: Vegetation Cover	
	3.4	To read and interpret the SOI toposheet: River Chanel	
4.0	**4.1**	To read and interpret the SOI toposheet: Rural Settlement	**8**
	4.2	To read and interpret the SOI toposheet: Urban Areas	
	4.3	To read and interpret the SOI toposheet: Road Network	
	4.4	To read and interpret the SOI toposheet: Cultural Aspects	
Total Hours (1 hour = 60 minutes)			**30**

Text Books & Reference Books:

- Monkhouse F.X.J. and Wilkinson H. R. (1971), Maps and Diagrams, London
- Ramamurthy, K. (1982): Map interpretation, Madras
- Petrie N. (1992), Analysis and Interpretation of Topographical Maps. Orient Longman Limited Calcutta
- Singh R. L. (1997), Elements of Practical Geography, Kalyan Publishing, New Delhi
- Meux A. H. (1960), Reading Topographical Maps. University of London Press Limited
- Jones P. A. (1968), Fieldwork in Geography. Longmans, Green and Company Limited
- Archer J. E and Dalton T. H. (1968), Fieldwork in Geography B.T. Batsford Limited London
- Wheeler K.S. Ed (1970), Geography in the field. Blond Educational, London.
- Gupta, K. K. and Tyagi, V. C. (1992): Working with maps, Survey of India Publication, Dehradun.

%%%%% %%%%% %%%%% %%%%% %%%%%

SPGEO-E452 Landforms

Course Structure: Major (DSC) 1 – Teaching Scheme

Course Code	Course Name	Credits Assigned			Teaching Scheme (Hours / Week)	
		Theory	Practical	Total	Theory	Practical
SPGEO-E452	Landforms	--	01	**01**	--	02

Course Structure: Major (DSC) 1 – Assessment Scheme

Course Code	Course Name	Theory				Practical		Total Col (6+7) / Col (8+9)
		Continuous Assessment (CA)			ESE			
		Test 1	Test 2	Avg of (T1+T2)/2	Total	CA	ESE	
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SPGEO-E452	Landforms	--	--	--	--	5	20	25

SPGEO-E452 Landforms of Maharashtra: Curriculum Details

Course Pre-requisite:

- The candidate should know the basic concepts from physical set-up, topographical and changes in landforms and slope with background of natural movements. The candidate should know the basics about the SOI maps. The candidate should have some conceptual understanding about the Physical Geography, Geomorphological Processes and mainly landforms and slope.

Course Objectives:

- The objective of this paper is to understand and be capable to observe and note the endogenic and exogenic forces their processes in the field studies. In addition, the objectives of this practical paper are to understand the spatio-temporal changes in the landforms and slope and their effects on various aspects of the concerned topography. It is also aims to see the influencing factors of the same.

Course Outcomes:

- After completion of the paper / course, the students will get capabilities and skills to correlate the natural cycles and manmade activities at primary level. After completion of this practical paper, the student will assess the changes of any aspect of landforms and slope with proper scientific and statistic methods. He / she will draw a multi-applicable and suitable plan for the future changes.

Curriculum Details (Four Modules with Units & Topics)

Module No.	Unit No.	Topic	Hours required to

			cover the contents
1.0	**1.1**	To use counters for relief representation of Hill	**7**
	1.2	To use counters for relief representation of Ridge	
	1.3	To use counters for relief representation of Saddle	
	1.4	To use counters for relief representation of Col	
2.0	**2.1**	To use counters for relief representation of Pass	**7**
	2.2	To use counters for relief representation of Spur	
	2.3	To use counters for relief representation of Plateau	
	2.4	To use counters for relief representation of Escarpment	
3.0	**3.1**	To use counters for relief representation of Cliff	**8**
	3.2	To use counters for relief representation of V-Shaped Valley	
	3.3	To use counters for relief representation of River Terraces	
	3.4	To draw a cross profile & a longitudinal profile	
4.0	**4.1**	To understand and draw a type of slope: Steep and Gentle	**8**
	4.2	To understand and draw a Concave and Convex Slope	
	4.3	To understand and draw a Uniform and Uneven Slope	
	4.4	To understand and draw a type of slope: Terraced	
Total Hours (1 hour = 60 minutes)			**30**

Text Books & Reference Books:

In English

- King, C. A.M (1966): Techniques in Geomorphology, Edward Arnold, London
- Monkhouse, F. J. and Wilkinson, H. R., (1976). Maps and Diagrams, Methuen & Co.
- Savindra Singh (2002): Geomorphology, Prayag Pustak Bhawan, Allahabad
- Miller, Austin (1953): The skin of the Earth, Methuen & Co. Ltd. London
- Thornbury, W. D. (I960): Principles of Geomorphology, John Wiley and Sons, New York.
- Chorley, R. J., Schumm, S. A. and Sugden, D. E. (1984): Geomorphology, Methuen, London.
- Savindra Singh (2002): Geomorphology, Prayag Pustak Bhawan, Allahabad
- Spark B. W. (1972): Geomorphology, Longman, New York
- Ollier, C. D. (1981) Tectonics and Landforms, Longman, London
- Strahler A. H and Strahler, A. N. (1992): Modern Physical Geography, John Wiley, New York
- Fairbridge, R. W. (1968): Encyclopedia of Geomorphology, Reinholdts, New York.

In Marathi

- Dhoble Shital and others (2017): Geomorphology, Nirali Prakashan, Pune
- Chaudhari Dr SR and Gavit (2015): Geomorphology, Prashant Publications, Jalgaon
- Karlekar Shrikant (2015): Physical Geography and Geomorphology, Daimand, Pune.
- Pathare and Gajhans (2015): Physical Geography (in Marathi), Vidya Books, Aurangabad.

%%%%% %%%%% %%%%% %%%%% %%%%% %%%%% %%%%% %%%%% %%%%%

Guidelines for Course Assessment:

A. Continuous Assessment (CA) (20% of the Maximum Marks):

This will form 20% of the Maximum Marks and will be carried out throughout the semester. It may be done by conducting Two Tests (Test I on 40% curriculum) and Test II on remaining 40% syllabus). Average of the marks scored by a student in these two tests of the theory paper will make his CA score (col. 6).

B. End Semester Examination / Assessment (80% of the Maximum Marks):

(For illustration we have considered a paper of 04 credits, 100 marks and need to be modified depending upon credits of an individual paper)

1. **ESA Question paper will consists of 6 questions, each of 20 marks.**
2. **Students are required to solve a total of 4 Questions.**
3. **Question No.1 will be compulsory and shall be based on entire syllabus.**
4. Students need to solve **ANY THREE** of the remaining Five Questions (Q.2 to Q.6) and shall be based on entire syllabus.

%%%%% %%%%% %%%%% %%%%% %%%%%