



SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE

(Formerly University of Pune)

Credit Framework and Syllabus for Under Graduate (UG)

Certificate, Diploma and Degree in B.A. Geography

(For Affiliated Colleges to Savitribai Phule Pune University, Pune)

Syllabus as per the guidelines of National Education Policy 2020

To be implemented from Academic Year 2024-2025

BOARD OF STUDIES [GEOGRAPHY]

Subject title and credit distribution structure for UG Certificate (B.A. Geography) - Semester: I & II

Level/ Difficult	Semester	Credits Related to Major					Minor (Different discipline or other faculty: Excluding Major)	GE/OE Faculty other than that of the Major) (Basket)	SEC (Basket)	AEC (Basket)	VEC	CC	Total Credi ts
		Major Core	Major Elective	VSC	IKS (Basket)	FP/ OJT/CEP							
Vertical [V]		V-1		V-4	V-5	V-6	V-2	V-3	V-4	V-5	V-5	V-6	
4.5/100	I	[4T+2P]		[2T]	[2T]			[2T+2P]	[2T/P]				22
		GEO(A) 101 MJ Fundamentals of Geography [4 T]		(Select any one of the following) GEO(A) 121 VSC Tourism Geography [2 T] OR GEO(A) 122 VSC Land measurement and surveying [2 T]	GEO(A) 101 VSC Development of Indian Geographical Knowledge [2 T]			(Select any one of the following) OE 101 GEO(A) Geography of Rural Development [2 T] OR OE 102 GEO(A) Commercial Geography-I [2 T]	(Select any one of the following) SEC 101 GEO(A) Introduction to computer applications in Geography [2 T] OR SEC 102 GEO(A) Introduction to digital mapping [2 T]	[2 T]	2	2	
	GEO(A) 102 MJP Practicals in Cartography [2 P]	--			--	--	(Select any one of the following) OEP 103 GEO(A) Practicals in Rural Development [2 P] OR OEP 104 GEO(A) Practicals in Commercial Geography-I [2 P]						
	[4T+2P]		[2P]			[2T]	[2T+2P]	2[T/P]					
II	GEO(A) 151 MJ Introduction to Physical and Human Geography [4 T]		(Select any one of the following) GEO(A) 171 VSC Practicals in Tour Planning [2 P] OR GEO(A) 172 VSC Practicals in land measurement and surveying [2 P]		GEO 191 MN(A) Geography of Maharashtra [2 T]	(Select any one of the following) OE 151 GEO(A) Development of Entrepreneurship in Geography [2 T] OR OE 152 GEO(A) Commercial Geography-II [2 T]	SEC 151 GEO(A) Applications of computer techniques in Geography [2 P] OR SEC 152 GEO(A) Practicals in digital mapping [2 P]	[2 T]	2	2	22		
	GEO(A) 152 MJP Practicals in Physical and Human Geography [2 P]	--			--	--	(Select any one of the following) OEP 153 GEO(A) Practicals in Entrepreneurship Development [2 P] OR OE 154 GEO(A) Practicals in Commercial Geography-II [2 P]						
TOTAL		12	0	4	2	0	2	8	4	4	4	4	44

Exit Option – Award of UG Certificate in Major with 44 Credits and an additional 4 Credits core NSQF course/Internship or Continue Major & Minor

Level / Difficulty	Semester	Credits Related to Major					Minor (Different discipline or other faculty: Excluding Major)	GE/OE Faculty other than that of the Major) (Basket)	SEC (Basket)	AEC (Basket)	VEC	CC	Total Credits
		Major Core	Major Elective	VSC	IKS (Basket)	FP/ OJT/ CEP							
5.0 /200	Vertical [V]	V-1		V-4	V-5	V-6	V-2	V-3	V-4	V-5	V-5	V-6	22
		[6T+2P]		2[T]		2[FP]	[2T+2P]	[2T]					
		GEO(A) 201 MJ Geomorphology and Oceanography [4 T]	--	(Select any one of the following) GEO 221 VSC Watershed Management [2 T]	--	GEO-231 FP Field visit and report writing [2 FP]	GEO(A) 241 MN Geography of India [2 T]	(Select any one of the following) OE 201 GEO(A) Geography of Regional planning [2 T]	--	[2 T]	--	[02]	
	GEO(A) 202 MJ Introduction to GIS [2 T]		OR GEO 222 VSC Demographic analysis [2 T]			GEO(A) 242 MNP Practical in map reading [2 P]	OR OE 202 GEO(A) Political Geography [2 T]						
	GEO(A) 203 MJP Practicals in Geomorphology [2 P]												
		III	[6T+2P]				2[CEP]	[2T+2P]	[2P]	[2T/P]			
GEO(A) 251 MJ Population and Settlement Geography [4 T]					GEO(A) 281 CEP Community Engagement Programme (Socio Economic survey) [2 CEP]	GEO(A) 291 MN Population Geography [2 T]	OE 251 GEO(A) Practicals in Town Planning [2 P]	SEC 251 GEO(A) Practicals in smart village / city [2 P]					
GEO(A) 252 MJ Introduction to RS [2 T]	--		--	--		GEO(A) 292 MNP Practical in Thematic mapping [2 P]		[2 T]	--	[02]	22		
GEO(A) 253 MJP Practicals in Population and Settlement Geography [2 P]													
TOTAL		16	0	2	0	4	8	4	2	4	0	4	44

Exit Option – Award of UG Diploma in Major and Minor with 88 Credits and an additional 4 Credits core NSQF course/Internship or Continue with Major & Minor

SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE

BOARD OF STUDIES [GEOGRAPHY]

Subject title and credit distribution structure for UG Degree (B.A. Geography)- Semester: V & VI

Level / Difficu lty	Semest	Credits Related to Major					Minor (Different discipline or other faculty: Excluding Major)	GE/OE Faculty other than that of the Major)(Basket)	SEC (Basket)	AEC (Basket)	VEC	CC	Total Credits	
		Major Core	Major Elective	VSC	IKS (Basket)	FP/OJT/CEP								
Vertical [V]		V-1		V-4	V-5	V-6	V-2	V-3	V-4	V-5	V-5	V-6		
5.5/300	V	[6T+4P]	[2T+2T/P]	[2P]		2[FP/CEP]	[2T+2P]						22	
		GEO(A) 301 MJ Geography of India [4 T]	(Select any one of the following) GEO(A) 310 MJ Climatology [2 T] OR GEO(A) 311 MJ Soil Geography [2 T]	GEO(A) 321 VSC Application of GPS [2 P]			GEO(A) 341 MN Introduction to Climatology [2 T]							
		GEO(A) 302 MJ Geography of Maharashtra [2 T]	(Select any one of the following) GEO(A) 312 MJP Practicals in Climatology [2 P] OR GEO(A) 313 MJP Practicals in Soil Geography [2 P]		--	GEO(A) 331 FP Field Project [2 FP]	GEO(A) 342 MNP Practicals in Climatology [2 P]	--	--	--	--	--		
	GEO(A) 303 MJP Practicals in map projection and statistical analysis [4 P]													
	VI	[6T+4P]	[2T+2T/P]			4[OJT]	[2T+2P]							22
		GEO(A) 351 MJ Economic Geography [4 T]	(Select any one of the following) GEO(A) 360 MJ Geography of Disaster Management [2 T] OR GEO(A) 361 MJ Water Analysis [2 T]			GEO(A) 381 OJT On Job Training [4 OJT]	GEO(A) 391 MN Social Geography [2 T]							
GEO(A) 352 MJ Agriculture Geography [2 T]		GEO(A) 362 MJ (Select any one of the following) Practicals in advanced Surveying techniques OR GEO(A) 363 MJ Practicals in Water analysis [2 P]	--	--		GEO(A) 392 MNP Practicals in Web of GIS [2 P]	--	--	--	--	--			
	GEO(A) 353 MJP Practical in Spatial Analysis [4 P]													
TOTAL		20	8	2	0	6	8	0	0	0	0	0	44	

Exit Option – Award of UG Degree in Major with 132 Credits or Continue Major & Minor

**SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE
BOARD OF STUDIES [GEOGRAPHY]**

Total Courses and Credit distribution structure for UG Degree (B.A. Geography)- 3 Years

Abbreviations:

▪ T	Theory	▪ MJP	Major Core Practical	▪ CEP	Community Engagement Programmes
▪ P	Practical	▪ VSC	Vocational Skill Courses	▪ GE/OE	Generic Elective/Open Elective
▪ GEO(S)	Geography Science	▪ IKS	Indian Knowledge System	▪ MJP	Minor Practical
▪ MJ	Major	▪ OJT	On Job Training	▪ SEC	Skill Enhancement Course
▪ MN	Minor	▪ FP	Field Project	▪ VEC	Value Education Course

Courses offered by the BOS Geography for B.A. Geography

Year	Sem	MJT	MJP	MET	MEP	IKS	VSC	VSCP	FP	OJT	CEP	MT	MP	GET	GEP	SECT	SECP	Total
1	I	1	1			1	2							2	2	2		11
1	II	1	1					2				1		2	2		2	11
2	III	2	1				2		1			1	1	2				10
2	IV	2	1								1	1	1		1		1	08
3	V	2	1	2	2			1	1			1	1					11
3	VI	2	1	2	2					1		1	1					10
Total offered		10	6	4	4	1	4	3	2	1	1	5	4	6	5	2	3	61

Courses need to complete by the students

Year	Sem	MJT	MJP	MET	MEP	IKS	VSC	VSCP	FP	OJT	CEP	MT	MP	GET	GEP	SECT	SECP	Total Courses	Credits	Total Credits			
																				AEC	VEC	CC	Total Credits
1	I	1	1			1	1							1	1	1		7	16	2	2	2	22
1	II	1	1					1				1		1	1		1	7	16	2	2	2	22
2	III	2	1				1		1			1	1	1				8	18	2		2	22
2	IV	2	1								1	1	1		1		1	8	18	2		2	22
3	V	2	1	1	1			1	1		1	1						9	22				22
3	VI	2	1	1	1					1	1	1						8	22				22
Total		10	6	2	2	1	2	2	2	1	3	5	2	3	3	1	2	47	112	08	04	08	132

Savitribai Phule Pune University, Pune
B.A. (Geography) as per NEP 2020

Name of the Programme	:	B.A. (Geography)
Class	:	F.Y.B.A.
Semester	:	I
Name of Vertical Group	:	Major Core (V-1)
Course Code	:	GEO(A) 101 MJ
Course Title	:	Fundamentals of Geography
Type of course	:	Theory
Total Credits	:	04
Workload	:	(15 hours/credit) 4 credits x 15 hours = 60 hours in semester

Objectives of the Course:

1. To create awareness amongst students regarding the fundamental concepts of Geography, including its meaning, nature and scope.
2. To inculcate knowledge and comprehend essential geographic concepts such as location, space and pattern.
3. To analyze the complex inter-relationship between humans and the environment.
4. To understand the inter-connectedness of various geographic phenomena and apply geographical knowledge in various fields.

Topics and Learning Points

Topic No.	Topic Name	Sub Topics	No. of Hours
1.	Introduction to Geography	i. Meaning and definitions of Geography ii. Nature and scope iii. Branches of Geography iv. Concepts: Location (Place), Space, Pattern v. Importance of the study of Geography	15
2.	The Earth	i. Solar system and the Earth as unique planet ii. Origin and Evolution of the Earth (Big bang theory) iii. Shape of the Earth and its proofs iv. Size and measurements of the Earth (Radius, Diameter) v. Distribution of continents and ocean vi. Natural Satellite (The moon)	15
3.	The Geographic Grid and Motions of the Earth	i. Latitudes and Longitudes, Parallels of latitudes and meridian of longitudes ii. The heat zones iii. Local and Standard time iv. World time zones, International Date Line (IDL) v. Motions: a. Rotation and its effect (day and Night)	15

Topic No.	Topic Name	Sub Topics	No. of Hours
		b. Revolution and its effects: (Seasons, Equinox and Solstice)	
4.	Human and Environment Relationship	i. Earth's System: Lithosphere, Hydrosphere, Atmosphere and Biosphere ii. Evolution of Human on the Earth iii. Human- environment interrelationship iv. Applications of Geography	15

Course Outcome:

By the end of this course, student will be able to:

- CO 1** : Define and explain the meaning, nature and scope of Geography.
- CO 2** : Discuss the origin and evolution of Earth, thus enabling them to analyze the distribution of continents and oceans on the Earth's surface.
- CO 3** : Apply knowledge of Earth's motions to understand the seasonal changes in different regions.
- CO 4** : Gain insights into the practical applications of Geography in real world situations.

References:

- सु. प्र. दाते आणि सं. सु. दाते; (१९९५) प्राकृतिक भूगोल, विद्या प्रकाशन, नागपूर
- श्री. रा. लाटकर आणि अ. श्री. आपटे (१९९८) प्राकृतिक भूगोलाची मुलतत्वे, विद्या प्रकाशन, नागपूर.
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- Clyton K., (1986), Earth Crust, Adus Book, London.
- Davis W. M., (1909), Geographical Essay, Ginnia Co.
- De Blij, H. J and Muller, P.O. (1996), Physical Geography of the global Environment, USA, John Wiley and Sons Inc.
- Gabler, R.E, Sager, R.J and Wise, D.L. (1997), Essentials of Physical Geography, Saunders College Publishing, New York.
- Jethe A. M. ad Thakare L. M. (2022) Physical Geography, Nirali Prakashan, Pune
- Kale V.S. and Gupta A., (2015), Introduction of Geomorphology, University Press, PVT Kolkata.
- Khullar D.R; (2021), Physical Geography, Kalyani publishers, Ludhiyana.
- Miller, G.T. (1996), Living in the Environment, Principles, connections and solutions, Wadsworth.
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- Steers J. A., (1964), The Unstable Earth Some Recent Views in Geography, Kalyani Publishers, New Delhi.
- Strahler, A.N., Strahler, A.H. (2004), Physical Environment, Wiley, New York.

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B.A. (Geography) as per NEP 2020

Name of the Programme	:	B.A. (Geography)
Class	:	F.Y.B.A.
Semester	:	I
Name of Vertical Group	:	V 1
Course Code	:	GEO(A) 102-MJP
Course Title	:	Practicals in Cartography
Type of course	:	Practical
Total Credits	:	02
Workload	:	Total Workload: -2 credits x 30 hours = 60 hours in semester

Objectives of the Course:

1. To understand the principles and historical development of cartography and its evolution over time.
2. To introduce the students with the fundamental concepts and techniques of cartography.
3. To enable students to use various data visualisation techniques in Cartography.
4. To recognize the importance of cartography in various fields and applications.

Topics and Learning Points

Topic No	Topic Name	Sub Topic	No. of Hours
1	Introduction of Cartography	i. Meaning and definition of cartography ii. Importance of cartography iii. Historical development of cartography iv. Elements of map v. Applications of cartographic techniques	16
2	Map Scale	i. Definition of Map Scale ii. Types of Map Scale a. Verbal scale b. Representative fraction c. Graphical scale iii. Conversion of Scale (British and Metric System) a. Verbal scale into Representative fraction b. Representative fraction into Verbal scale iv. Construction of Simple Graphical scale (At least one examples from British and Metric System).	20

Topic No	Topic Name	Sub Topic	No. of Hours
3	Data representation by various techniques by using computer	i. Simple line graph ii. Polygraph iii. Simple bar diagram iv. Compound bar diagram v. Pie diagram vi. Choropleth map vii. Flow diagram	24

Course Outcome:

By the end of this course, student will be able to:

- CO 1** : Recognize the key terminologies and principles associated with cartography.
- CO 2** : Describe the major technological advancements in cartographic techniques over time.
- CO 3** : Develop skills needed to create meaningful maps and data visualisations, enhancing their ability to convey information and represent geographical data.

References:

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- Dent B. D., Torguson J. S., and Holder T. W., (2008) Cartography: Thematic Map Design (6th Edition), Mcgraw-Hill Higher Education
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- Sharma J. P., (2010), Prayogic Bhugol, Rastogi Publishers, Meerut.
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- Slocum T. A., McMaster R. B. and Kessler F. C., (2008), Thematic Cartography and Geo visualization (3rd Edition), Prentice Hall.
- Tyner J. A., (2010), Principles of Map Design, The Guilford Press.
- Sarkar, A., (2015), Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi.
- Singh, L. R. and Singh, R., (1977), Manচিত্রা or Paryaogatamek Bhugol , Central Book Depot, Allahabad
- Bhopal Singh, R. L., and Dutta, P. K., (2012), Prayogatama Bhugol, Central Book Depot, Allahabad.

Savitribai Phule Pune University, Pune
B.A. (Geography) as per NEP 2020

Name of the Programme	:	B.A. (Geography)
Class	:	F.Y.B.A.
Semester	:	I
Name of Vertical Group	:	V4 VSC
Course Code	:	GEO(A) 121 VSC
Course Title	:	Tourism Geography
Type of course	:	Theory
Total Credits	:	02
Workload	:	(15 hours/credit) 2 Credits x 15 hours = 30 hours in semester

Objectives of the Course:

1. To understand the diverse nature and broad scope of Tourism Geography.
2. To provide students with a broad understanding of recent and emerging types of tourism.
3. To gain insights into specialized forms of tourism and understanding their characteristics and sustainability considerations.
4. To explore the socio-cultural determinants of tourism.
5. To classify tourism enabling students to categorize and analyse diverse tourism trends.

Topics and Learning Points

Topic No	Topic Name	Sub Topic	No. of Hours
1	Introduction to Tourism Geography	i. Definition, Nature and Scope of Tourism Geography ii. Concept of Tourist and Tourism iii. Importance of Tourism in Geography	10
2	Determinants of Tourism Development	i. Physical a. Relief b. Climate c. Forest d. Water ii. Socio-Cultural a. Religious b. Historical c. Cultural iii. Political a. Policies iv. Other a. Accessibility b. Safety of Tourists	10
3	Classification and recent types of	i. Classification of Tourism based on a. Nationality b. Travel Period	10

Topic No	Topic Name	Sub Topic	No. of Hours
	Tourism	c. Purpose of Tourism ii. Recent types of Tourism a. Agro Tourism b. Ecotourism c. Wildlife Tourism d. Health Tourism e. Sports Tourism	

Course Outcome:

By the end of this course, student will be able to:

- CO 1** : Understand of the definition, nature, and scope of tourism.
- CO 2** : Recognize and articulate the economic, social, and cultural importance of tourism.
- CO 3** : Categorize tourism based on nationality, understanding the distinctions between domestic and international tourism.
- CO 4** : Analyze the impact of physical determinants such as relief, climate, forests, and water bodies on tourism development and experiences.
- CO 5** : Identify and evaluate the influence of religious, historical, and cultural factors on tourist attractions and destination choices.

References:

- Cooper, C. and Hall, M., (2008). *Tourism and Leisure: Issues and Challenges*. Channel View Publications, Bristol.
- Goeldner, C. R. and Ritchie, J. R. B., (2017). *Tourism: Principles, Practices, Philosophies*. John Wiley & Sons, Hoboken.
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Savitribai Phule Pune University, Pune

B.Sc. (Geography) as per NEP 2020

Name of the Programme	:	B.A. (Geography)
Class	:	F.Y.B.A.
Semester	:	I
Name of Vertical Group	:	V4 VSC
Course Code	:	GEO(S) 122 VSC
Course Title	:	Land Measurement and Surveying
Type of course	:	Theory
Total Credits	:	02
Workload	:	(15 hours/credit) 2 Credits x 15 hours = 30 hours in semester

Objectives of the Course:

1. To understand the importance and opportunities in field of surveying and land measurements
2. To deliver students with a broad understanding of use, classifications and principals of surveying,
3. To acquaint students about land measurements units and their use in Maharashtra and India
4. To explore the knowledge of Reading of 7/12 *Utara* or Extract (Village sample 7 and 12)

Topics and Learning Points

Topic No	Topic Name	Sub Topic	No. of Periods
1	Introduction	i. Meaning and definitions Land Measurement and Survey ii. Scope, Importance and applications of the study iii. Currier opportunities	06
2	Surveying	i. Definition and object of surveying ii. Use of Surveying iii. Classification of surveying 1) Primary: Plane and Geodetic 2) Secondary: Based on instrument, Based on Method, Based on Object and Based on Nature of field iv. General Principal of Surveying Accessories for liner measurement (Ranging rods, Chains, tapes and Arrows)	12
3	Land measurement and Extract	i. Land measurement units (linear and area) in India and Maharashtra (Meters, Kilometers, Feet, Yard, Guntha, Bigha, Acre, Hectare, etc.) ii. Reading of 7/12 <i>Utara</i> or Extract (Village sample 7 and 12)	12

Topic No	Topic Name	Sub Topic	No. of Periods
		<ul style="list-style-type: none"> ▪ Village Name ▪ Survey number ▪ Sub-division of survey number ▪ Type of occupancy ▪ Local Name of the field ▪ Cultivable Land ▪ Uncultivable Land ▪ Judicial TAX OR Special Assessment ▪ Name of the holder/occupant ▪ Khata No ▪ Name of tenant ▪ Other Rights ▪ Details of Agricultural Aspects of Land 	

Course Outcome:

By the completion of the course, student will be able to:

COs 1	:	understand the opportunities and applications in the field of surveying and land measurements
COs 2	:	understanding the uses, classifications and principals of surveying
COs 3	:	acquaint about land measurements units and their use in Maharashtra and India
COs 4	:	explore the meaning and extract the information about 7/12 <i>Utara</i>

References:

Kanetkar T. P., Kulkarni S. V., 1986, Surveying and Leveling, Pune Vidyarthi Griha Publication, Pune 11. Kumbhare A., Practical Geography, 12. Saha P., Basu P., 2007, Advanced Practical Geography, Books and Allied (P) Ltd, Kolkata
 Advanced Practical Geography: 2007, Saha P., Basu P., Books and Allied (P) Ltd, Kolkata
 BASAK, N.N., Surveying and Levelling., 2010, TATA MCGraw Hill Publishing Company Limited

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B.A. (Geography) as per NEP 2020

Name of the Programme	:	B.A. (Geography)
Class	:	F.Y.B.A.
Semester	:	I
Name of Vertical Group	:	IKS
Course Code	:	GEO(A) 101 IKS
Course Title	:	Development of Indian Geographical Knowledge
Type of course	:	Theory
Total Credits	:	02
Workload	:	(15 hours/credit) 2 Credits x 15 hours = 30 hours in semester

Objectives of the Course:

1. To introduce students about Geographical IKS
2. To demonstrate the multifaceted nature of IKS and its importance in contemporary society.
3. To explain the Geographical knowledge in vedas, vedangas, Upavedas and Puranas.
4. To know the development of Indian Geographical knowledge and its importance in contemporary society.
5. To motivate students to study Indian Geographical knowledge in detail and explore their application potential

Topics and Learning Points

Topic No	Topic Name	Sub Topic	No. of Periods
1	Introduction to Indian Knowledge System (IKS)	a. Concept of IKS b. Structure and Scope of IKS c. IKS based approaches on Knowledge Paradigms d. IKS From ancient to medieval Period.	10
2	Indian Geographical knowledge	a. Geographical Literature - Vaidikas, the Ramayana, the Mahabharata, the works of Buddhists, Jains, the Puranas and Gandhian philosophy. b. Geographical concepts in Ancient India – Eclipses, Earth, Size of Earth, Latitude and Longitude, Earthquakes, Atmosphere, Weather and climate, Division of celestial sphere (Panchang), planetary computation c. Regional Geography of Ancient India : continents, Bharatvarsa, Mountains and rivers, Gandhian ideas of regional Development, Concept of <i>gramswaraj</i> as microregional approach.	10

Topic No	Topic Name	Sub Topic	No. of Periods
3	Practices of Indian Knowledge in Geography	a. Ancient routes of trade (Inland and Overseas) b. Observatories in historical India – Rajasthan, Delhi, Ujjain c. Indian Geographical Knowledge and Cultural Practices In India. (Agriculture , Festivals , Architecture), d. Gandhian approach towards agriculture, architecture, resource management and environment. Gandhian philosophy for Climate adaptation.	10

Course Outcome:

By the completion of the course, student will be able to:

- COs 1** : Students will understand the IKS
- COs 2** : Student will utilize the multifaceted nature of IKS and its importance in contemporary society.
- COs 3** : Student will able to explain the Geographical knowledge in vedas, vedangas, Upavedas and Puranas.
- COs 4** : Student will acquire the development of Indian Geographical knowledge and its importance in contemporary society.
- COs 5** : Student will motivate to study Indian Geographical knowledge in detail and explore their application potential

References:

1. Vasant Lad (1996), “Ayurveda: A Brief Introduction and Guide”, (whole article). •
2. Ramachandrudu P. (2010), “Glimpse into Kautilya’s Arthashastra”, Sanskrit Academy, Hyderabad.
3. Kantawala, S.G. (1999). “Purāṇas: Source of Ancient Indian History & Culture
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8. Dube B. 1967 Geographical concepts in ancient India, The National Geography Society of India, BHU Varansasi
9. Majumdar S.N. 1924 Cunningham’s Ancient Geography of India Culcutta
10. Sircar D.C. 1960 Studies in the Ancient and Medieval India
11. Rana P.B. Singh Geographical thoughts in India : Snapshots and visions for the 21st Century

Savitribai Phule Pune University, Pune

B.A. (Geography) as per NEP 2020

Name of the Programme	:	B.A. (Geography)
Class	:	F.Y.B.A.
Semester	:	I
Name of Vertical Group	:	Open Elective (V-4)
Course Code	:	OE-101-GEO(A)
Course Title	:	Geography of Rural Development
Type of course	:	Theory
Total Credits	:	02
Workload	:	(15 hours/credit) 2 credits x 15 hours = 30 hours in semester

Objectives of the Course:

1.	To understand the concept, nature and scope of rural development in India.
2.	To overview various approaches to rural development.
3.	To discuss some important issues related to rural development.
4.	To study various schemes and policies of rural health in India.

Topics and Learning Points

Topic No.	Topic Name	Sub Topics	No. of Hours
1.	Introduction	1.1 Concept of rural development 1.2 Definition and meaning of rural development 1.3 Causes of rural backwardness 1.4 Nature and scope of rural development	8
2.	Approaches to Rural Development in India	2.1 Gandhian approach 2.2 Decentralized planning approach 2.3 Sectoral approach 2.4 Participatory approach	10
3.	Issues of Rural Development	3.1 Lack of potable drinking water 3.2 Sanitation problems and programs 3.3 Green revolution and its benefits to urban and rural sectors 3.4 Urban-rural divide 3.5 Health care services	12

Course Outcome:

By the end of this course, student will be able to:

CO 1	:	Learn the concept, nature and importance of rural development to India
CO 2	:	Learn different approaches of rural development for successful applications of schemes.
CO 3	:	Learn different issues and post-implantation of different schemes in rural area.
CO 4	:	Know about health care services in rural areas.

References:

1. Vasant Desai (2012), Rural Development in India, Himalaya Publishing House, Mumbai.
2. Singh, R. B. (1985), Geography of Rural Development. New Delhi, India, Inter India.
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6. Dr. B. S. Nagi, Commercial Geography, Kedarnath Ramnath publications, Meerut.
7. T. Y. Rao, Human Resource Development, SAGE Publication, New Delhi.
8. Katar Singh, Rural Development: Principles, Policies and Management.
9. Jasbir Singh and S.S. Dhillon, Agricultural Geography (Second edition), Tata McGraw Hill.
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17. Mishra, S. K. and Puri V. K. (2012), Economics of Development and Planning, Himalaya Publishing House, Mumbai.
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19. Shankar Chatterjee, Implementation of Rural Development.
20. Gilg A. W. (1985), An Introduction to Rural Geography, Edwin Arnold, London.
21. Misra R. P. and Sundaram, K. V. 1979, Rural Area Development: Perspectives

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B.A. (Geography) as per NEP 2020

Name of the Programme	:	B.A. (Geography)
Class	:	F.Y.B.A.
Semester	:	I
Name of Vertical Group	:	Open Elective (V-4)
Course Code	:	OE-102-GEO (S)
Course Title	:	Commercial Geography-I
Type of course	:	Theory
Total Credits	:	02
Workload	:	(15 hours/credit) 2 credits x 15 hours = 30 hours in semester

Objectives of the Course:

1.	To understand the scope and content of commercial geography in relation to the spatial distribution of resources.
2.	To acquaint the students with the dynamic nature of commercial geography.
3.	To make students aware of the relationships between geographical factors and economics activities.
4.	To identify Resource Constraints
5.	To assess the Impact of Human Capital.

Topics and Learning Points

Topic No	Topic Name	Sub Topic	No. of Hours
1	Introduction to Commercial Geography.	a) Meaning and Definition of Commercial Geography b) Nature, Scope and Development of Commercial Geography c) Approaches to the study of Commercial Geography.	10
2	Economic Resources	a. Meaning and Types of Resources b. Classification of Resources Natural-Renewable, Non-renewable, etc. c. Major Resources i. Water, ii. Soil, iii. Forests, iv. Energy (w.r.t. related economic and commercial activities) d. Crises and Conservation of Resources e. Economics Activities	10
3	Human Resources	a. Concept of i. Over population ii. Under population iii. Optimum population. b. Contemporary Issues of	10

Topic No	Topic Name	Sub Topic	No. of Hours
		Population and Development i. Dependency Ratio ii. Human Development Index (HDI) iii. Migration and its effects	

Course Outcome:

By the completion of the course, student will be able to:

COs 1	:	Understand and explain the concept of commercial geography as a subfield of geography
COs 2	:	Recognize the scope and significance of commercial geography in understanding global and regional economic dynamics
COs 3	:	Examine the role of natural resources in commercial geography, including their distribution, exploitation, and environmental implications.
COs 4	:	Explore the concept of resource sustainability and its relevance in the context of commercial geography
COs 5	:	Analyze demographic trends and their impact on regional and global economic activities
COs 6	:	Appreciate the importance of skill development and education in enhancing human resources and fostering economic growth.

References:

1. Sir L. Dudley Stamp, 1973: "Commercial Geography", Prentice Hall Press; 9th edition
2. Leong, Goh Cheng, 1975: Human and Economic Geography, Oxford University Press.
3. Jacques W. Redway, 2008: "Commercial Geography", Jacques W. Redway
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B.A. (Geography) as per NEP 2020

Name of the Programme	:	B.A. (Geography)
Class	:	F.Y.B.A.
Semester	:	I
Name of Vertical Group	:	Open Elective (V-4)
Course Code	:	OEP-103-GEO(A)
Course Title	:	Practical in Geography of Rural Development
Type of course	:	Practical
Total Credits	:	02
Workload	:	(30 hours/credit) 2 credits x 30 hours = 60 hours in semester

Objectives of the Course:

1.	To understand the concept and measures of rural development.
2.	To learn the methods and techniques useful for analysis of agricultural and infrastructural development in rural area.
3.	To learn the methods and techniques useful for analysis of rural development.
4.	To acquire the report writing skills on rural development.

Topics and Learning Points

Topic No.	Topic Name	Sub Topics	No. of Hours
1.	Introduction	1.1 Concept of rural development 1.2 Measures of rural development 1.3 Importance of practical approaches in rural development	10
2.	Agricultural Development	2.1 Parameters of agricultural development 2.2 Calculation of Agricultural Development Index	10
3.	Infrastructure Development	3.1 Parameters of infrastructure development 3.2 Calculation of Infrastructure Development Index	10
4.	Rural Development	4.1 Parameters of rural developments 4.2 Calculation of Rural Development Index	12
5.	A case study and Report writing	Calculate the Rural Development Index for a nearby village based on field visit/secondary data and write a report.	18

Course Outcome:

By the end of this course, student will be able to:

CO 1	:	Learn the practical approaches for rural development.
CO 2	:	Learn the techniques for analysis of agricultural and infrastructural development in rural area.
CO 3	:	Learn methods and techniques for analysis of rural development.
CO 4	:	Acquire the skills of case study and report writing on rural development.

References:

1. Narton R.D., Agricultural Development Policy: Concepts and Experiences.
2. Quaraishi, M. A., Indian Agriculture and Rural Development.
3. Vasanth Desai, Rural Development, Vol.-I toV.
4. Brahmananda, et al., Dimensions of Rural Development in India,
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6. Katar Sing (1986), Rural Development, Principles, Policies, and Management, Sage publication, New Delhi
7. Kalipada Deb (1997), The challenge of Rural Development, M.D. Publications Pvt. Ltd., New Delhi.
8. T.P Gopal Swamy, Rural Marketing.
9. William J. Goode and Paul K (1988). Methods in Social Research Young (Mauline, V) Scientific Social Surveys and Research Prentice Hall, New Delhi.
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B.A. (Geography) as per NEP 2020

Name of the Programme	:	B.A. (Geography)
Class	:	F.Y.B.A.
Semester	:	I
Name of Vertical Group	:	Open Elective (V-4)
Course Code	:	OEP 104 GEO(A)
Course Title	:	Practical in Commercial Geography-I
Type of course	:	Practical
Total Credits	:	02
Workload	:	(30 hours/credit) 2 credits x 30 hours = 60 hours in semester

Objectives of the Course:

1.	To Understand the concept of geographical data and its significance in various fields such as geography, environmental science, and urban planning.
2.	To Describe the types and sources of geographical data, including spatial and non-spatial data.
3.	To Demonstrate proficiency in creating and interpreting common graphical representations such as bar graphs, line graphs, scatter plots, and pie charts.
4.	To Describe different types of distributional maps, including choropleth maps, dot density maps, and Traffic-Flow Cartogram.

Topics and Learning Points

Topic No	Topic Name	Sub Topic	No. of Periods
1	Geographical Data	1. Definition of Data 2. Types of Geographical Data d) Spatial Data e) Non-spatial /Attribute Data	20
2	Methods of Representation of Data by Graphs and Diagrams	1. Line Graphs 2. Bar Graphs 3. Pie Diagram 4. Population Pyramid (Use of Computer Application)	20
3	Methods of Representation of Data by Distributional Maps	1. Choropleth Method 2. Isopleth Method 3. Dot Method 4. Traffic-Flow Cartogram	20

Course Outcome:

By the completion of the course, student will be able to:

COs 1	:	Describe the key concepts and significance of geographical data in various fields.
COs 2	:	Create and interpret various types of graphs and diagrams, including bar graphs, line graphs, scatter plots, and pie charts.

COs 3	:	Evaluate the advantages and limitations of different graph types for specific data types and research questions.
COs 4	:	Interpret and analyze distributional maps to extract spatial patterns, trends, and spatial relationships within geographical data.
COs 5	:	Design informative and effective distributional maps for various applications, such as environmental analysis, demographic studies, and urban planning.

References:

1. Cuff J. D. and Mattson M. T., 1982: Thematic Maps: Their Design and Production, Methuen Young Books
2. Dent B. D., Torguson J. S., and Holder T. W., 2008: Cartography: Thematic Map Design (6th Edition), Mcgraw-Hill Higher Education
3. Gupta K. K. and Tyagi V. C., 1992: Working with Maps, Survey of India, DST, New Delhi.
4. Kraak M. J. and Ormeling F., 2003: Cartography: Visualization of Geo-Spatial Data, Prentice-Hall.
5. Mishra R. P. and Ramesh A., 1989: Fundamentals of Cartography, Concept, New Delhi.
6. Mishra R.P and Ramesh A. 2000: Fundamentals of Cartography. Concept Publ. Com., New Delhi,
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10. Tyner J. A., 2010: Principles of Map Design, The Guilford Press.
11. Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi
12. Singh, L R & Singh R (1977): Manchitra or Pryaogatamek Bhugol , Central Book, Depot, Allahabad
13. Bhopal Singh R L and Duttta P K (2012) Prayogatama Bhugol, Central Book Depot, Allahabad

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B.A. (Geography) as per NEP 2020

Name of the Programme	:	B.A. (Geography)
Class	:	F.Y.B.A.
Semester	:	I
Name of Vertical Group	:	V4 SEC
Course Code	:	SEC-101-GEO(A)
Course Title	:	Introduction to computer applications in Geography
Type of course	:	Theory
Total Credits	:	02
Workload	:	(15 hours/credit) 2 Credits x 15 hours = 30 hours in semester

Objectives of the Course:

1. To introduce fundamental use of computer techniques in the field of Geography.
2. To identify and explain the key elements of a map and understand their utility in representing geographical data.
3. To introduce students with uses of GPS and digital map portals for geographic information retrieval and analysis.

Topics and Learning Points

Topic No	Topic Name	Sub Topic	No. of Hours
1	Introduction to computer system	i. Components of Computer hardware: a. A central processing unit (CPU)/ processor: RAM b. Input devices c. Storage devices d. Output devices ii. Types of software: a. System software b. Application software c. Utility software	08
2	Maps and Diagrams	i. Definition of Map and diagram ii. Elements of Map a. Title b. Scale c. Co-ordinate System / Projection d. Direction e. Sign and symbol / Index iii. Geographical data and its representation using various diagrams and its Merits & Demerits a. Types of line graphs b. Types of bar graphs	12

Topic No	Topic Name	Sub Topic	No. of Hours
		c. Pie charts d. Clustered column and line graph	
3	Introduction to GPS and Digital Map	i. GPS a. Definition of GPS b. Segments of GPS c. Applications of GPS ii. Digital map portals a. Google map b. 2D Bhuvan portal C. IMD weather map	10

Course Outcome:

By the end of this course, student will be able to:

- CO 1** : Understand the components of computer hardware and various types of software.
- CO 2** : Evaluate various types of maps and graphical diagrams to understand their merits and demerits in representing geographical data.
- CO 3** : Understand various applications of GPS in geographical data collection and navigation.
- CO 4** : Recognize the use of digital map portals for geographical data.
- CO 5** : Analyze and interpret geographical data using digital map portals.
- CO 6** : Analyze geographic data using computer techniques.
- CO 8** : Interpret the results of representation of geographical data by using charts and graphs.

References:

1. Chaudhar, et.al (2014), Fundamental of Geographical Analysis, Atharva publication, Pune
2. D. J. Maguire (1989), Computers in Geography, Longman, London, England
3. Dr. R. Khullar, (2000), Essentials of Practical Geography, New academic publishing co. Mai Hiran Gate, Jalandhar- 144008.
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6. Sarkar A., 2015, Practical Geography: A Systematic Approach, Orient Black Swan Private Ltd., New Delhi.
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8. <https://bhuvan.nrsc.gov.in>
9. <https://earth.google.com>
10. <https://bharatmaps.gov.in>

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B.A. (Geography) as per NEP 2020

Name of the Programme	:	B.A. (Geography)
Class	:	F.Y.B.A.
Semester	:	I
Name of Vertical Group	:	V4 SEC
Course Code	:	SEC-102-GEO(A)
Course Title	:	Introduction to Digital Mapping
Type of course	:	Theory
Total Credits	:	02
Workload	:	(15 hours/credit) 2 Credits x 15 hours = 30 hours in semester

Objectives of the Course:

1. To introduce the students about GIS components
2. To enable students with basics of map layout and GIS data
3. To enhance the students' knowledge of digital mapping using GIS Techniques
4. To acquaint students with analysis of spatial data and attribute data

Topic and Learning Points

Topic No	Topic Name	Sub Topic	No. of Hours
1	Introduction	Definitions of GIS, History of GIS, Objectives of GIS, Components of GIS, Hardware and Software Requirements, Applications of GIS	10
2	Spatial Data	Concept of Point, Line and Polygon Digitization Editing Types of geographic data Representation of geographic features in vector	12
3	Non-spatial data	Attribution Tables and relationships Normalization Manipulation	08

Course Outcome:

By the end of this course, student will be able to:

- CO 1** : Understood the techniques of digital mapping
- CO 2** : Describe the use of GIS spatial data and techniques
- CO 3** : Acquire skills of differentiate the spatial data and non- spatial data

CO 4 : Elaborate the GIS techniques applications in the thematic mapping

References:

1. Burroughs, P. A. and McDonnell, R. A. (2002): Principles of Geographical Information System, Oxford University Press.
2. Clarke, Keith C. (1999) Getting Started with Geographic Information Systems, Prentice Hall, New Jersey
3. DeMers Michel N.(2000): Geographic Information Systems, John Wiley and Sons.
4. George J. (2004): Fundamentals of Remote Sensing, Universities Press Pvt. Ltd., Hyderabad.
5. Jensen, J. R. (2003): Remote Sensing of Environment, An Earth Resource Perspective, Pearson Education Pvt. Ltd., New Delhi.
6. Kang-tsung Chang (2003) Geographic Information Systems, Tata McGraw Hill, New Delhi
7. Lillesand, T. M. and Kiefer R. W. (2002): Remote Sensing and Image Interpretation, John Wiley and Sons, New Delhi.
8. Lo Albert, C.P., and Young, K.W (2003) Concepts and Techniques of Geographical Information Systems, Prentice Hall of India Pvt. Ltd., New Delhi.
9. Michael F. Goodchild and Karen K. Kemp (1990) Introduction to GIS, National Center for Geographic Information and Analysis, University of California, Santa Barbara.
10. Paul A. Lonfley, Michel F. Goodchild, D J. Maguire and D W. Rhind, (2002): Introduction to Geographic Information Systems and Science, John Wiley and Sons Ltd.
11. Shrikat Karlekar (2014) Geographic Information Systems, dimand publication, Pune
12. Star J, and J. Estes, (1994), Geographic Information Systems: An Introduction, Prentice Hall, New Jersey.
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B.A. (Geography) as per NEP 2020

Name of the Programme	:	B.A. (Geography)
Class	:	F.Y.B.A.
Semester	:	II
Name of Vertical Group	:	Major Core (V1)
Course Code	:	GEO(A) 151 MJ
Course Title	:	Introduction to Physical & Human Geography
Type of course	:	Theory
Total Credits	:	04
Workload	:	(15 hours/credit) 4 credits x 15 hours = 60 hours in semester

Objectives of the Course:

1. To acquaint students with basic principles of physical and human geography.
2. To introduce the processes and patterns in the atmosphere, hydrosphere and lithosphere.
3. To develop scientific insights into dynamics of the earth system.
4. To understand multifaceted human-environment relationships.
5. To analyse, interpret, understand and compare spatial variations in human environment.

Topics and Learning Points

Topic No	Topic Name	Sub Topic	No. of Hours
Section- I (Physical Geography)			
1.	Physical Geography	i. Introduction to Physical Geography a. Definitions and branches of Physical Geography b. Importance of Physical Geography ii. Lithosphere: a. Interior of the Earth b. Wegener's Continental Drift Theory	10
2.	Atmosphere	i. Concept of weather and climate. ii. Composition and structure of the atmosphere iii. Horizontal distribution of atmospheric pressure	10
3.	Hydrosphere	i. General structure of ocean floor ii. Movements of ocean water a. Waves- meaning, causes and types b. Tides- meaning, causes and types	10
Section-II (Human Geography)			
4.	Human Geography	i. Definitions and branches of Human Geography ii. Importance of Human Geography iii. Approaches of Human Geography: a. Determinism	10

Topic No	Topic Name	Sub Topic	No. of Hours
		b. Possibilism c. Neo-determinism	
5.	Economic activities	i. Primary activities: hunting, fishing, gathering, farming, lumbering, pasturing and mining. ii. Secondary activities: manufacturing, processing, construction and infrastructure industry iii. Tertiary activities: trade, transportation, communication, banking, entertainment and tourism iv. Quaternary activities: information technology, scientific research, software-based activities v. Quinary activities: government decisions	10
6.	Population Dynamics	i. Sources of Population Data: Primary and Secondary sources ii. Distribution of population iii. Concept and component of population growth (Fertility, Mortality, and Migration)	10

Course Outcome:

By the end of this course, student will be able to:

- CO 1** : Understand fundamental concepts, theories and approaches of physical and human geography.
- CO 2** : Recognize functions of complex interactive earth systems.
- CO 3** : Demonstrate scientific explanation of physical processes of the atmosphere, hydrosphere and lithosphere.
- CO 4** : Describe diverse human activities in changing natural environment.
- CO 5** : Study and understand the spatial patterns, interactions, and relationships between humans and their environments.

References:

- Chavhan G. K., (2019), Physical and Human Geography (Marathi), Prashant Publication, Jalgaon.
- Dayal P., (1996), Text Book of Geomorphology, Shukla Book Depot, Patna.
- Kale V.S. and Gupta A., (2015), Introduction of Geomorphology, University Press, Kolkata.
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- Siddhartha, K., (2001), The Earth's Dynamic Surface, Kisalaya Publications Pvt. Ltd, New Delhi.
- Lutgens, F.K. and Tarbuck, E.J., (2007), The Atmosphere, Pearson Prentice Hall, New Jersey.
- Bergwan, Edward E., (1995), Human Geography: Culture, Connections and Landscape, Prentice-Hall, New Jersey.

13. Fellman, J.L., (1997), Human Geography-Landscapes of Human Activities. Brown and Benchman Pub., U.S.A.
14. Johnston, R.J., (1994), Dictionary of Human Geography, Blackwell, Oxford.
15. Chandna, R.C., (2000), Geography of Population: Concepts, Determinants and Patterns, Kalyani Publishers, New Delhi.
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B.A. (Geography) as per NEP 2020

Name of the Programme	:	B.A. (Geography)
Class	:	F.Y.B.A.
Semester	:	II
Name of Vertical Group	:	V 1
Course Code	:	GEO(A)152 MJP
Course Title	:	Practicals in Physical and Human Geography
Type of course	:	Practical
Total Credits	:	02
Workload	:	2 credits x 30 hours = 60 hours in semester

Objectives of the Course:

1. To acquaint students with methods of relief representation
2. To understand mechanism, function and use of weather instruments
3. To make students aware about population indices
4. To explain the methods of crop combination and agricultural efficiency

Topics and Learning Points

Topic No	Topic Name	Sub Topic	No. of Hours
Section- I (Physical Geography)			
01	Methods of Relief Representation	A. Methods of Relief Representation i. Qualitative Methods a. Hachures b. Hill Shading c. Color shading or tinting ii. Quantitative Methods a. Spot Height b. Bench Mark c. Triangulation Method d. Form line e. Contours B. Representation of slope by contours a. Gentle and steep slope b. Even and uneven slope c. Concave and convex slope	16
02	Weather Instruments	i. Weather Instrument (Function and Use) a. Thermometer b. Rain Gauge c. Hygrometer	16

Topic No	Topic Name	Sub Topic	No. of Hours
		d. Aneroid barometer e. Wind Vane ii. Visit to nearby weather station	
Section- II (Human Geography)			
3.	Population Indices	Calculation of Population Indices (Calculation & Plotting) i. Age-sex pyramid ii. Child-woman ratio iii. Population growth rate iv. Dependency ratio	16
4.	Techniques in Agriculture Geography	i. Crop Combination: Weaver method ii. Agricultural Efficiency: Kendall method	12

Course Outcome:

By the end of this course, student will be able to:

- CO 1** : Identify different methods of relief representation
CO 2 : Acquire knowledge of weather instruments
CO 3 : Calculate and interpret population indices
CO 4 : Understand and examine crop combination and agriculture efficiency

References:

- Ahirrao, D. Y. And Karanjkele, E.K., (2002), Pratyakshik Bhugol, Sudarshan Publication, Nashik.
- Chandana, R. C., (2015), Geography of Population, Kalyani Publisher, New Delhi.
- Chavhan G. K., (2019), Physical and Human Geography (Marathi), Prashant Publication, Jalgaon.
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- Nagtode P. M., and Lanjewar H.D., (2009), Nakashashtra, Pimplapure Publication, Nagpur
- Pathare, A. R., Bhamre V.N., Pathare, J. A., Deshmukh, P. P., (2021), Practical in Human Geography, Atharv Publication, Jalgaon
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- Singh, G., (2005), Map Work and Practical Geography, Vikas Publishing House Pvt. Ltd., New Delhi.
- Singh, R.L., (2005), Elements of Practical Geography. Kalyani Publishers, New Delhi.
- Singh, J. and Dhillon, S., (1994), Agricultural Geography. McGraw Hill Education India Pvt Ltd, New Delhi.

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Name of the Programme	:	B.A. (Geography)
Class	:	F.Y.B.A.
Semester	:	II
Name of Vertical Group	:	V4 VSC
Course Code	:	GEO(A) 171 VSC
Course Title	:	Practicals in Tour Planning
Type of course	:	Practical
Total Credits	:	02
Workload	:	2 Credits x 30 hours = 60 hours in semester

Objectives of the Course:

1. To provide students with practical knowledge and skills related to tour planning and management.
2. To familiarize students with the information about the necessary documentation for tour planning
3. To train the students with the essential online booking process
4. To recognize the importance of tour planning in the tourism industry.

Topics and Learning Points

Topic No	Topic Name	Sub Topic	No. of Hours
1	Introduction of Tour planning	i. Meaning of Tour planning ii. Elements of Tour planning: iii. Classification of Tour planning: individual, family, group and mass level iv. Importance of tour planning.	20
2	Techniques of Tour Planning	i. Preparation of Tour Planning: Leaflet of tour planning, Passenger documentation, Insurance calculation, Currency exchange, Time exchange and calculation, Distance measurement. ii. Tourist Guide iii. Computer application for tour planning. iv. Procedure of passport & visa application. v. Booking and cancellation system: Transportation (Air, Rail, Road) and hospitality (accommodation)	20
3	Planning and visit to tourist place	Preparation of one short or long international/ national/ local tour plan.	20

Course Outcome:**By the end of this course, student will be able to:**

- CO 1** : Identify and describe the essential elements of tour planning.
CO 2 : Prepare tour planning materials, including documentation and booking and cancellation systems for transport and accommodation.
CO 3 : Develop skills required to plan and manage tours effectively.

References:

1. Bhatt, H (2007) Tourism Planning and Development, Commonwealth Publishers, New Delhi
2. Bhatia AK (2002), Tourism Development: Principles and Practices, Revised edition Sterling Publishers Private Limited, New Delhi.
3. Chand, M (2002) Travel Agency Management, Anmol Publication
4. Ghosh Bishwanth (2000), Tourism & Travel Management, Second Revised Edition Vikas Publishing House Pvt Ltd, New Delhi.
5. Seth, P.N. (1998). An Introduction to Travel and Tourism, Sterling Publishers Pvt. Ltd., New Delhi.
6. Muluk, Doke, Musmade, More (2021), Geography of Tourism – II, Nirali Publication, Pune
7. Sinha, P (1998). Tourism Planning. Anmol Publication Pvt. Ltd., New Delhi.
8. Pacharne, Patil, Suryavanshi, Chaudhar (2014) Tourism Geography, Atharv Publication, Pune.

Savitribai Phule Pune University, Pune
B.A. (Geography) as per NEP 2020

Name of the Programme	:	B.A. (Geography)
Class	:	F.Y.B.A.
Semester	:	II
Name of Vertical Group	:	V4 VSC
Course Code	:	GEO(A)172 VSC
Course Title	:	Practicals in Land measurement and surveying
Type of course	:	Practical
Total Credits	:	02
Workload	:	2 Credits x 30 hours = 60 hours in semester

Objectives of the Course:

1. To provide students with practical knowledge and skills related to surveying and measurements of lands
2. To familiarize students with advanced survey techniques like total station and GPS
3. To demonstrate the students with the land measurements by various methods
4. To recognize the significance and application of surveying and measurements of lands in the various sector

Topics and Learning Points

Topic No	Topic Name	Sub Topic	No. of Periods
1	Surveying	<p>A: Plane Table survey</p> <ol style="list-style-type: none"> Plane Table Surveying: Accessories of plane table, Orientation, Methods of Plane Table: Radiation and Intersection method (Two example of each) Advantage and Disadvantage of plane table survey <p>B: Auto level survey</p> <ol style="list-style-type: none"> Introduction to instruments with diagram Tripod setting, bubble and staff reading Methods of auto level survey: Rise and Fall Method, Collimation Method ((Two example of each) <p>C: Total station</p> <ol style="list-style-type: none"> Introduction to instruments with diagram Creating new Job file: Station, back sight, Fore sight and Pole handling Change point (CP), Shifting using resection method Advantage and Disadvantage of of Total station survey <p>D: GPS surveying</p>	40

Topic No	Topic Name	Sub Topic	No. of Periods
2	Land Measurement	i. British and Metric Units of Land measurement ii. Contemporary standard units of land measurement iii. Land measurement units and conversion (Distance and Area) iv. Measurement of Land: A. Geometrical Shapes: (Circle, Square, Rectangle, Triangle, etc.) B. Uneven shape: River, Cost line, Pons, Farm, Plot or any uneven area, etc. v. Measurement of survey field vi. Visit to offices related to land measurement	20

Course Outcome:

By the completion of the course, student will be able to:

COs 1	:	Learn the practical knowledge and skills related to surveying and measurements of lands
COs 2	:	Apply and use the advanced survey techniques like total station and GPS
COs 3	:	Measure the land by various methods/surveys
COs 4	:	recognise the significance and application of surveying and measurements of lands in the various sectors

References:

Kanetkar T. P., Kulkarni S. V., 1986, Surveying and Leveling, Pune Vidyarthi Griha Publication, Pune 11. Kumbhare A., Practical Geography, 12. Saha P., Basu P., 2007, Advanced Practical Geography, Books and Allied (P) Ltd, Kolkata

Advanced Practical Geography: 2007, Saha P., Basu P., Books and Allied (P) Ltd, Kolkata

BASAK, N.N., Surveying and Levelling., 2010, TATA MCGraw Hill Publishing Company Limited

Savitribai Phule Pune University, Pune
B.A. (Geography) as per NEP 2020

Name of the Programme	:	B.A. (Geography)
Class	:	F.Y.B.A.
Semester	:	II
Name of Vertical Group	:	V3 GE/OE
Course Code	:	OE-101-GEO(A)
Course Title	:	Physical Geography of Maharashtra
Type of course	:	Theory
Total Credits	:	02
Workload	:	(15 hours/credit) 2 Credits x 15 hours = 30 hours in semester

Objectives of the Course:

1. To acquaint students with location and administrative divisions of Maharashtra.
2. To make students aware about physical structure of Maharashtra.
3. To understand seasons, climatic regions and rainfall distribution Maharashtra.
4. To explain the types and distribution of soils and vegetation.

Topics and Learning Points

Topic No.	Topic Name	Sub Topic	No. of Hours
1.	Introduction	i. Location, Extent and Adjoining States of Maharashtra ii. Administrative Divisions	6
2.	Physiography and Drainage	i. Physical Divisions ii. Major drainage system: Godavari, Krushna, Tapi, Savitri	9
3.	Climate	i. Major seasons ii. Climatic Regions iii. Rainfall distribution and draught prone areas	6
4.	Soil and Vegetation	i. Major Soil types and distribution ii. Soil degradation and conservation iii. Forest types and distribution iv. Deforestation and conservation	9

Course Outcome:

By the end of this course, student will be able to:

- CO 1** : Understand location and extent of the Maharashtra.
- CO 2** : Describe and analyse the major physical divisions and drainage systems of Maharashtra.
- CO 3** : Distinguish between different climatic regions within the state.
- CO 4** : Identify major soil and vegetation types, their distribution and related issues.
- CO 5** : Acquaint themselves with geographical knowledge of Maharashtra that will assist them in the preparation of competitive examinations.

References:

1. Dastane S., (1993), Glimpses of Maharashtra, Dastane Ramchandra & Co Publication, Pune.
2. Deshpande C.D., (1971), Geography of Maharashtra, N. Delhi. 1971.Nat.Bk.Trst. Publication, Delhi.
3. Dikshit K. R., (2021), Maharashtra in Maps, Maharashtra state board for literature and culture, Mumbai.
4. Magar A.S., Jethe A.M. and Thakare L.M., (2020), Geography of Maharashtra (Physical), Nirali Publication, Pune.
5. More J.C., Jethe A.M., and Kolpkar R. S., (2020), Geography of Maharashtra, Nirali Publication, Pune.
6. Patil S. B., (2019), Geography of Maharashtra, Prashant Publication, Jalgaon.
7. Sadhu Arun, (2017), Maharashtra, National Book Trust publication, New Delhi
8. साळुंखे वासुदेव ,कुदर नानाभाऊ, पाडकर नीलेश, आणि भगत रवींद्र, (२०२०), महाराष्ट्रचा भूगोल, प्रशांत प्रकाशन, जळगाव.
9. चौधरी ए.पी., चौधरी अर्चना, (२०१९), महाराष्ट्रचा भूगोल, प्रशांत प्रकाशन, जळगाव.
10. सवदी ए.बी., कोळेकर पी.एस., (२०१७), महाराष्ट्रचा भूगोल शासकीय सांख्यिकी विश्लेषण, निराली प्रकाशन, पुणे.
11. सवदी ए.बी., कोळेकर पी.एस., (२०२२), महाराष्ट्रचा भूगोल, निराली प्रकाशन, पुणे.

Savitribai Phule Pune University, Pune
B.A. (Geography) as per NEP 2020

Name of the Programme	:	B.Sc. (Geography)
Class	:	F.Y.B.A.
Semester	:	II
Name of Vertical Group	:	Open Elective (V-4)
Course Code	:	OE-151-GEO(A)
Course Title	:	Geography of Entrepreneurship Development
Type of course	:	Theory
Total Credits	:	02
Workload	:	(15 hours/credit) 2 credits x 15 hours = 30 hours in semester

Objectives of the Course:

1.	To learn the concept and scope of entrepreneurship with geographic perspective.
2.	To learn the different geographic aspects for entrepreneurship development.
3.	To learn the skills for identification of nest for business opportunities in native areas.
4.	To promote students for developing the entrepreneurship skills.

Topics and Learning Points

Topic No.	Topic Name	Sub Topics	No. of Hours
1.	Introduction	1.1 Concepts of entrepreneurship and geopreneurship, nature and scope 1.2 Factors influencing entrepreneurship: Physical and socioeconomic 1.3 Types of entrepreneurs: According to business and technology New generations of entrepreneurship viz. social, geospatial, educational, health, tourism, women. 1.4 Role of geography in development of entrepreneurship	10
2.	Geography of entrepreneurship development	2.1 Aspects of business: Resources, human power, capital, row material, transportation, marketing. 2.2 Selection of business based on geographic feasibility 2.3 Marketing and network	10
3.	Business and entrepreneurship	3.1 Agro-based business 3.2 Service based business 3.3 Tourism based business Learning points: Regional potentials, challenges and limitations (Give focus on local examples.)	10

Course Outcome:

By the end of this course, student will be able to:

CO 1	:	Learn the concept of entrepreneurship with geographic perspectives.
CO 2	:	Learn the geographic aspects for entrepreneurship development.
CO 3	:	Acquire the skills for identification of nest for business opportunities in native areas.
CO 4	:	Promoted for developing the entrepreneurship skills and career opportunities.

References:

1. Kotler Philip (2000), Marketing Management (Millenium Edition); Prentice Hall of India, New Delh.
2. Pattanayak B. (2018), Human Resource Management : Prentice Hall of India, New Delhi.
3. VSP Rao, P.S. Narayana (1987), Business Entrepreneurship Environment and Organizational Behavior, Primier Book Company.
4. Gupta, Shrinivasan (2023), Entrepreneurship Development, S. Chand & Sons.
5. Gupta M., Theory of Enterprenurship, Jaipur Raj Publishing House.
6. A. Sahay and A. Nirar (2007), Entrepreneurship: Education, Research and Practice, Excel Books.
7. Balbir Shingh Negi (1990), Economic and Commercial Geography, Kedar Nath Ram Nath, Meerut.
8. प्रभाकर देशमुख, उद्योजकता विकास: संकल्पना आणि व्यवहार, पिंपळापुरे अँड कं. पब्लिशर्स, नागपूर.

Savitribai Phule Pune University, Pune
B.A. (Geography) as per NEP 2020

Name of the Programme	:	B.A. (Geography)
Class	:	F.Y.B.A.
Semester	:	II
Name of Vertical Group	:	Open Elective (V-4)
Course Code	:	OE-152-GEO(A)
Course Title	:	Commercial Geography-II
Type of course	:	Theory
Total Credits	:	02
Workload	:	(15 hours/credit) 2 credits x 15 hours = 30 hours in semester

Objectives of the Course:

1.	To make students of the Commerce faculty aware of the correlations between Economic activities and Geographical factors.
2.	To acquaint the students with the Industrial sector and the pollution associated with it.
3.	To make the students aware of the changing role of transport and communication in Trade and Commerce.
4.	To make the students aware of the role of tourism in development.

Topics and Learning Points

Topic No	Topic Name	Subtopic	No. of Periods
1	Industry and Economic Development	1.Role of Industry in Economics Development 2. Classification of Industry 3. Factors affecting Industrial Location. 4. Weber's theory of Industrial Location 5. Major Industry in India a) Argo Based- Sugar, Cotton Textile b) Assembly line Based-Automobile c) Footloose and I.T. Industry	10
2	Trade, Transport and Communication	1. Concept of Trade its Types 2. Geographical Factors affecting Trade. 3. Role of W.T.O. in International Trade 4. Classification of various means of Transport. Advantages and Disadvantages, Latest developments in India for: i Land Transport (Road and Railway) ii Water Transport (Inland and Oceans) iii Air Transport 5. Types of Communications and their use in Commerce.	10

Topic No	Topic Name	Subtopic	No. of Periods
		i. Use of telecommunications, Internet, Mobile phones in Trade	
3	Tourism and Hospitality	1. Factors affecting Tourism (Geographical and Cultural) 2. Growth of Tourism Industry in the World and India. 3. Government Policies for Tourism development 4. Role of M.T.D.C. in the development of Tourism in Maharashtra and Rural Tourism 5. Problems facing the Tourism Industry.	10

Course Outcome:

By the completion of the course, student will be able to:

COs 1	:	Explain the fundamental concepts of industry and economic development, including factors influencing economic growth and development.
COs 2	:	Analyze different trade systems and understand the concepts of international trade, including comparative advantage and trade barriers.
COs 3	:	Examine various modes of transportation, such as road, rail, air, and sea, and their roles in facilitating trade and economic development.
COs 4	:	Understand current trends and challenges in the tourism and hospitality industry, including sustainable tourism practices.
COs 5	:	Evaluate the role of hospitality services, including accommodation, food and beverage, and customer service, in enhancing the tourist experience.

References:

1. Sir L. Dudley Stamp, 1973: "Commercial Geography", Prentice Hall Press; 9th edition
2. Leong, Goh Cheng, 1975: Human and Economic Geography, Oxford University Press.
3. Jacques W. Redway, 2008: "Commercial Geography", Jacques W. Redway
4. Claude S. George Jr. and Stanley H. Hallett 2014: "Commercial Geography", Waveland Press
5. Anthony Venables, David De Meza, and Chris Robinson, 2021: "Economic Geography: Places, Networks, and Flows" Wiley
6. Robert B. Potter, Tony Binns, and Jennifer A. Elliott, 2018: "Geographies of Development: An Introduction to Development Studies" Pearson.
7. Stephen J. Page, 2021: "Tourism Management: An Introduction", Routledge
8. Charles R., Goeldner and J.R. Brent Ritchie, 2019: "Tourism: Principles, Practices, Philosophies", Wiley

Savitribai Phule Pune University, Pune
B.Sc. (Geography) as per NEP 2020

Name of the Programme	:	B.A. (Geography)
Class	:	F.Y.B.A .
Semester	:	II
Name of Vertical Group	:	Open Elective (V-4)
Course Code	:	OEP-153-GEO(A)
Course Title	:	Practical in Geography of Entrepreneurship Development
Type of course	:	Practical
Total Credits	:	02
Workload	:	(30 hours/credit) 2 credits x 30 hours = 60 hours in semester

Objectives of the Course:

1.	To learn the concept and approaches of entrepreneurship development with geographic perspective.
2.	To learn the methods and techniques of data collection and analysis for entrepreneurship development.
3.	To get field based practical experiences and insights for entrepreneurship development.
4.	To acquire the skills of developing a new business ideas and writing the project proposals.

Topics and Learning Points

Topic No.	Topic Name	Sub Topics	No. of Hours
1.	Introduction	1.1 Concept of entrepreneurship development 1.2 Role of geography in entrepreneurship development 1.3 Approaches in entrepreneurship development	10
2.	Data	2.1 Types of data 2.2 Sources of data 2.3 Sources of data collection: Interview, questionnaire and checklist.	10
3.	Field visit and interview of successful entrepreneur	3.1 Preparation of questionnaire and checklist for conducting interview of entrepreneurs 3.2 Industrial/firm visit, interview and data collection	20
4.	Idea generation and project proposal	4.1 Identification of potential business opportunities: Group discussion and brainstorming sessions 4.2 Project proposal writing 4.3 Presentation of project proposal	20

Course Outcome:

By the end of this course, student will be able to:

CO 1	:	Learn the concept and approaches of entrepreneurship development with geographic perspective.
CO 2	:	Learn the methods and techniques of data collection and analysis for entrepreneurship development.
CO 3	:	Get field based practical experiences and insights for entrepreneurship development.
CO 4	:	Acquire the skills for developing a new business ideas and writing the project proposals.

References:

1. Sadhu Singh (2022), Research Methodology in Social Sciences, Himalaya Publishing House.
2. Kumar Arvind (2002), Research Methodology in Social Science, Sarup and Sons.
3. Ranjit Kumar (2014), Research Methodology: A step by step guide for beginners, Penguin Books Ltd.
4. Chary S.N. (2019) Production and Operations Management, Tata McGraw Hill.
5. Longenecker J. G, Moore C. W. and Petty J. W., Small Business Management.
6. A. Sahay and A. Nirar (2007), Entrepreneurship: Education, Research and Practice, Excel Books.
7. Balbir Shingh Negi (1990), Economic and Commercial Geography, Kedar Nath Ram Nath, Meerut.
8. प्रभाकर देशमुख, उद्योजकता विकास: संकल्पना आणि व्यवहार, पिंपळापुरे अँड कं. पब्लिशर्स, नागपूर.

Savitribai Phule Pune University, Pune
B.A. (Geography) as per NEP 2020

Name of the Programme	:	B.A. (Geography)
Class	:	F.Y.B.A .
Semester	:	II
Name of Vertical Group	:	Open Elective (V-4)
Course Code	:	OEP-154-GEO(A)
Course Title	:	Practical in Commercial Geography -II
Type of course	:	Practical
Total Credits	:	02
Workload	:	(30 hours/credit) 2 credits x 30 hours = 60 hours in semester

Objectives of the Course:

1.	To introduce students to the basic methods, techniques, and applications of commercial Geography
2.	To acquaint the students with applied Commercial Geography
3.	To develop skills and techniques for the representation of commercial data.
4.	To provide an opportunity to the students with the understanding of ground reality of a specific chosen Commercial market observation, and learn field survey techniques.

Topics and Learning Points

Topic No	Topic Name	Subtopic	No. of Periods
1	Techniques in Industrial and Transportation Geography	A) Measurement of industrial activity. a) Location Quotient. b) Simple Lorenz curve B) Measure in Transportation Network structure: a) Alpha b) Beta c) Gamma C) Gravity Model	10
2	Techniques in Commercial Geography	A) Delimitation of market area region. B) Identification of the Market cycle from a given map of market days. C) Application of statistical techniques in the analysis of Commercial data: a) Mean b) Mode c) Median	10
3	Commercial Market Visit	Visit one Commercial Market Unit and report writing	10

Course Outcome:**By the completion of the course, students will be able to:**

COs 1	:	Acquire the advanced knowledge about the Commercial phenomena
COs 2	:	Understand the various concepts and methods of Commercial geography
COs 3	:	Calculate the geographical problems as well as research problems
COs 4	:	Apply practical knowledge for the analysis of the project work as well as research.

References:

1. Kansky, N. T. (1965): Structure of Transport Network
2. Liendsor, J. M. (1997): Techniques in Human Geography, Routledge Chand, M (2002) Travel Agency Management, Anmol Publication
3. Singh & Kanujia : Map work and Practical Geography
4. Yeats, M. H. (1974): An introduction to Quantitative Analysis in Human Geography
5. Johnston R; Gregory D, Pratt G. et al. (2008) The Dictionary of Human Geography, Blackwell Publication.
6. Michael E. and E. Hurse: Transportation Geography
7. Sarkar, A. (2015): Practical Geography: A systematic approach, Orient BlackSwan, New Delhi
8. Chapman Mc Grew, J. and Monroe, C.B. (2000): An Introduction to Statistical Problems Solving in Geography, McGraw Hills, New York
9. Griffith, D.A., Amrhein, C.G. and Desloges, J. R. (1991): Statistical Analysis for Geographers, Prentice Hall, New York.
10. Rogerson, P.A. (2010): Statistical Methods for Geography: A Student's Guide, Sage Publication, Kolkata.

Savitribai Phule Pune University, Pune

B.A. (Geography) as per NEP 2020

Name of the Programme	:	B.A. (Geography)
Class	:	F.Y.B.A.
Semester	:	II
Name of Vertical Group	:	V4- SEC
Course Code	:	SEC QG151 GEO(A)
Course Title	:	Applications of computer techniques in Geography
Type of course	:	Practical
Total Credits	:	02
Workload	:	2 Credits x 30 hours = 60 hours in semester

Objectives of the Course:

1. To introduce the students to the use of web-based digital maps
2. To enable students with basic use of MS excel for representation of geographical data through graphs and charts
3. To enable students with use of computer in mapping and surveying with GPS
4. To acquaint students with use of Bhuvan/Google Earth and GPS Programme in Geography

Topic and Learning Points

Topic No	Topic Name	Sub Topic	No. of Hours
1	Introduction to Digital maps	i. Application and uses of digital maps (Web based GIS) <ol style="list-style-type: none"> a. Google Earth b. Bhuvan Portal c. Mahabhumi d. Bharat Maps ii. Digitization of vector layers and preparation of map layout of the above web-based portal	16
2	Preparation of Geographical Diagrams using Computer	Geographical data and its representation using Graphs and Diagrams in the Microsoft excel and interpretation of the results <ol style="list-style-type: none"> i. Types of line graph ii. Types of bar graph iii. Pie chart iv. Clustered column and line graph 	22
3	Use of GPS	i. GPS device and its functions ii. GPS survey	22

Topic No	Topic Name	Sub Topic	No. of Hours
		iii. Plotting of GPS data (Point, line and Polygon on Google Earth/ Bhuvan Portal)	
		iv. Conversion of SHP file to KML	

Course Outcome:

By the end of this course, student will be able to:

- CO 1** : Acquaint themselves with various utilities of digital maps
- CO 2** : Use computer techniques in preparation of statistical diagrams
- CO 3** : Demonstrate practical applications of GPS in geographical data collection and navigation.
- CO 4** : Retrieve Geographical information by navigating and using digital map portals.
- CO 5** : Acquire skills of using computers in digital diagrams, surveying and mapping with GPS

References:

1. Chaudhar , et.al (2014) Fundamental of Geographical Analysis, Atharva publication, Pune
2. D. J. Maguire (1989), Computers in Geography, Longman, London, England
3. Dr. R. Khullar,(2000), Essentials of Practical Geography, New academic publishing co. Mai Hiran Gate, Jalandhar- 144008.
4. Singh R. L. and Singh R. P. B., 1999, Elements of Practical Geography, Kalyani Publishers.
5. Singh R. L. and Dutta P. K., 2012, Prayogatama Bhugol, Central Book Depot, Allahabad
6. Sarkar A., 2015, Practical Geography: A Systematic Approach, Orient Black Swan Private Ltd., New Delhi
7. <https://mahabhumi.gov.in>
8. <https://bhuvan.nrsc.gov.in>
9. <https://earth.google.com>

Savitribai Phule Pune University, Pune
B.A. (Geography) as per NEP 2020

Name of the Programme	:	B.A. (Geography)
Class	:	F.Y.B.A .
Semester	:	II
Name of Vertical Group	:	SEC (V-5)
Course Code	:	SEC-152-GEO(A)
Course Title	:	Practical in Digital Mapping
Type of course	:	Practical
Total Credits	:	02
Workload	:	(30 hours/credit) 2 credits x 30 hours = 60 hours in semester

Objectives of the Course:

1. To introduce the students to the use of GIS software
2. To enable students with basic map layout and GIS data
3. To enhance the students' knowledge of digital mapping using GIS Techniques
4. To acquaint students with analysis of spatial data and attribute data

Topic and Learning Points

Topic No	Topic Name	Sub Topic	No. of Hours
1	Introduction	1. Overview of Open-source software Q-GIS / SAGA/or any GIS software 2. Geo-referencing	08
2	Non Spatial Data	1. Attribute Data : 2. Tables, Queries on Tables, 3. Use of MS-Excel and MS Access	16
3	Spatial Data and its Analysis	1. Creation of Vector Layers : Point, Line, Polygon 2. On-Screen Digitization, 3. Editing, Topology Creation, Line and Area Measurements 4. Data Attribution	36

Course Outcome:

By the end of this course, student will be able to:

- CO 1** : Understood the techniques of digital mapping
- CO 2** : Use the GIS software in preparation of digital maps
- CO 3** : Acquire skills of spatial analysis, topology building and data attribution
- CO 4** : Apply the GIS software for performing query analysis and thematic mapping

References:

1. Burroughs, P. A. and McDonnell, R. A. (2002): Principles of Geographical Information System, Oxford University Press.
2. Clarke, Keith C. (1999) Getting Started with Geographic Information Systems, Prentice Hall, New Jersey
3. DeMers Michel N.(2000): Geographic Information Systems, John Wiley and Sons.
4. George J. (2004): Fundamentals of Remote Sensing, Universities Press Pvt. Ltd., Hyderabad.
5. Jensen, J. R. (2003): Remote Sensing of Environment, An Earth Resource Perspective, Pearson Education Pvt. Ltd., New Delhi.
6. Kang-tsung Chang (2003) Geographic Information Systems, Tata McGraw Hill, New Delhi
7. Lillesand, T. M. and Kiefer R. W. (2002): Remote Sensing and Image Interpretation, John Wiley and Sons, New Delhi.
8. Lo Albert, C.P., and Young, K.W (2003) Concepts and Techniques of Geographical Information Systems, Prentice Hall of India Pvt. Ltd., New Delhi.
9. Michael F. Goodchild and Karen K. Kemp (1990) Introduction to GIS, National Center for Geographic Information and Analysis, University of California, Santa Barbara.
10. Paul A. Lonfley, Michel F. Goodchild, D J. Maguire and D W. Rhind, (2002): Introduction to Geographic Information Systems and Science, John Wiley and Sons Ltd.
11. Shrikat Karlekar (2014) Geographic Information Systems, dimand publication, Pune
12. Star J, and J. Estes, (1994), Geographic Information Systems: An Introduction, Prentice Hall, New Jersey.
13. Williams J. (1995): Geographic information from space, John Wiley and Sons, England
