1.3.3 - Number of students undertaking project work/field work/ internships-2022-23

Documents

Botany

1) Project Reports/Tour reports

2) Certificates of students

3) Syllabus of Botany in which field project, experiential learning is included

https://vmssangola.org/naac202122/Aug/2023_24_1.3.2.pdf

physics

1) Project Reports

2) Certificates of students

3) Syllabus of physics in which field project, experiential learning is included

https://vmssangola.org/naac202122/Aug/2023_24_1.3.2-1.pdf

Zoology

1) Certificates of students

2) Syllabus of Zoology in which field project, experiential learning is included

https://vmssangola.org/naac202122/Aug/2023_24_1.3.2-2.pdf

Chemistry

1) Project Reports

2) Syllabus of chemistry in which field project, experiential learning is included

https://vmssangola.org/naac202122/Aug/2023_24_1.3.2-3.pdf

Geography

1) Project Reports/Tour reports

2) Certificates of students

3) Syllabus of Geography in which field project, experiential learning is included

https://vmssangola.org/naac202122/Aug/2023_24_1.3.2-4.pdf

Mridula
मृदुला बायोटेक ॲण्ड रिसर्च सेंटर

उपलब्ध सुविधा :
- माती तपासणी
- सुत्रकृमी तपासणी
- शेतीचे पाणी
- पान-देठ
- पिण्याचे पाणी
- सेंद्रीय खते
- मुख्य अन्नद्रव्ये
- सुक्ष्म अन्नद्रव्ये

महाराष्ट्र शासन कृषि विभाग मान्यताप्राप्त
मृदुला बायोटेक ॲण्ड रिसर्च सेंटर, सांगोला

मृदुला लॅबोरेटरीज्
स्थायी व फिरती मृदचाचणी प्रयोगशाळा

लॅब : शेतीवाडी, नवीन वसाहत, शिवाजीनगर, सांगोला ✆ 9890168213, 9890164480
ऑफिस : महाराष्ट्र शॉपिंग सेंटर, गाळा नं. ७, नेहरू चौक, सांगोला ✆ 9404279913

Date: August 2, 2023

To Whomever it may concern

The 56 students of B.Sc. III year chemistry of Vidnyan Mahavidyalay Sangola have visited the Mrudula laboratory during 01/02/2023 to 29/04/2023 for internship of the course water and soil analysis. In this tenure they have learned how to analyze the different parameters of water and soil samples using the instrumentation available in our laboratory. They have successfully learned the procedures to analyse the different water and soil parameters. They have also discussed about the latest research regarding the same. This program was held under the MOU between

1) Vidnyan Mahavidyalay Sangola

And

2) Mrudula Laboratory Sangola

The internship was successfully conducted during 01/02/2023 to 29/04/2023.

Mridula Biotech and Research Centre
Reg. No. MAHA/690 2009
Sangola Dist. Solapur (M.S.)

LAB-INCHARGE

P.S. : This report should not be used for court affair.

TECHNICAL ADVISOR
Prof. Dr. Ashok Shinde
M.Sc. (Agri) Hort. P.hd

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

पुण्यश्लोक अहिल्यादेवी होळकर
सोलापूर विद्यापीठ
।। विद्यया संपन्नता ।।

NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty: Science & Technology

Choice Based Credit System

Syllabus: Physics

Name of the Course: B.Sc. III (Sem–V & VI)

(Syllabus to be implemented with effect from June 2021)

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Syllabus
For B.Sc. III Physics
(CBCS Pattern)
Choice Based Credit System (CBCS) Pattern
To be implemented from Academic Year 2021-22

1. Preamble:

Bachelor of Science (B.Sc.) in Physics is the course disseminating knowledge of the subject from fundamental concepts to state-of-technologies. Indeed, the curriculum encompasses knowledge of various themes such as Mathematical Physics, Classical Mechanics, Atomic & Molecular Physics Materials Science, Quantum Mechanics, and Electronics etc. The Choice Based Credit System (CBCS) is implemented for this course. Out of 4 theory papers, in each semester, 3 papers are of core. However, students have to opt one paper from DSE papers. Also one Add on Skill enhance course is included as SEC. In the practical course of 400 marks there are compulsory experiments for practical course IV, V, VI and VII (Project/ Internship). Moreover, project work is also mandatory in curriculum at last semester to ensure better practical knowledge and hence better job opportunities in Research & industrial sector. The details are mentioned in the syllabus.

2. Objectives of the course:

The aim of the course is to generate trained manpower with adequate theoretical and practical knowledge of physics domain. Due care is taken to inculcate conceptual understanding in basic phenomena, materials, appropriate practical skills suitable for research and industrial needs. Objectives are

- To design the syllabus with specific focus on key Learning Areas.
- To equip student with necessary fundamental concepts and knowledge base.
- To develop specific practical skills.
- To impart training on circuit design, analysis, building and testing.
- To prepare students for demonstrating the acquired knowledge.
- To encourage student to develop skills for accepting challenges of upcoming technological advancements.

3. Nature of theory question paper

The nature of theory question paper is as per university common model.

Total Marks 80.

Q. 1 Multiple choice questions (One mark each)	16
Q. 2 Short answer question (Any eight)	16
Q. 3 A Short answer question (Any four)	12
B Short answer question (one compulsory)	04
Q. 4 Short answer question (Any four)	16
Q. 5 Long answer question. (Any two)	16
OR	
Q. 5 Answer the following.	16
A.	
B.	

5. Distribution of Practical Marks (400):

Sr. No.	**UA (320)**		**CA (80)**	
1.	Practicals (50 x 4 Practicals)	200	Experiment Test (10 + 10)	20
2.	Project (Project-60, Report-10, Oral-10, Presentation-10, Idea/Theme-10)	100	Practical Test (20 + 20)	40
3.	Journal	20	Seminar	10
4.			Industrial visit/ Industrial Case Study / Visit to industrial exhibition /Participation in Conference/ Workshop/ Seminars	10
	Total	320	**Total**	80
			Total	400

A) University Assessment (320):

Practical Marks (50 X 4=200) may be as given below.

- Flexibility should be given to the students to draw diagrams of respective experiments.
- **Project:** Every student should take up a project and submit the report of the work carried out. The project work will be assessed independently at the time of practical examination.
- It is mandatory for the students to produce certified journal at the time of practical examination.

B) College Assessment (80):

- **Experiment Test:** 02 Experiment diagram tests, each of 10 marks.
- **Practical Test:** 02 Practical tests, semester-wise, each of 20 marks.
- **Seminar:** Every student of B.Sc. III, Physics will have to deliver one seminar of at least 10 minutes on any advanced topic in Physics using ICT (power point presentation) and submit the report of presentation, for 10 marks.
- **Industrial visit / Local industry case study / Job training/ Visit to industrial exhibition/Participation in the Conference/ Workshop/seminars** : In order to give the exposure of industry/ Research Institute and advances in the field of Physics, industrial visit should be arranged and submit the report. OR he should submit the report of the case study of local industry or on job training (minimum four days) OR he may visit to an industrial/ Science exhibition OR participate in conference / Seminar / workshop and produce certificate of participation, for 10 marks.

C) Skill Enhancement Course (SEC):

Student has to complete min one of this activity on his own resources and has to produce the certificate of the same. If any official documentation is necessary from institute, it will be provide, e.g. consent letter, etc. The Internship/Industrial Training must have minimum of 240 hours.

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Science
Choice Based Credit System (CBCS)
(w.e.f. 2021-22)
Revised Structure for B.Sc-III Physics

4. Course Structure:

Subject/ Core Course	Name and Type of the Paper		No. of papers/ Practical	Hrs/week			Total Marks Per Paper	UA	CA	Credits
	Type	Name		L	T	P				
Class :	**B.Sc.- III Semester - V**									
Ability Enhancement Course (AECC)		English (Business English)	Paper II Part A	4	--	--	50	40	10	2.0
Core (Students can opt any one subjects among the three. Subjects excluding interdisciplinary offered at B.Sc. II)		DSE 1 A	**Paper IX :** Mathematical Physics and Statistical Physics	4	--	--	100	80	20	4.0
		DSE 2 A	**Paper X :** Solid State Physics	4	--	--	100	80	20	4.0
		DSE 3A	**Paper XI:** Classical Mechanics	4	--	--	100	80	20	4.0
		DSE 4 A	**Paper XII:** Nuclear Physics	4	--	--	100	80	20	4.0
Skill Enhancement Course		SEC 3	**Paper XIII:** *Skill Course	4	--	--	100	80	20	4.0
Grand Total				**24**	**--**	**--**	**550**	**440**	**110**	**22**
Class :	**B.Sc.- III Semester -VI**									
Ability Enhancement Course(AECC)		English (Business English)	Paper II Part B	4	--	--	50	40	10	2.0
Core (Students can opt any one subjects among the three Subjects excluding interdisciplinary offered at B.Sc. II.		DSE 1 B	**Paper XIV:** Electrodynamics	4	--	--	100	80	20	4.0
		DSE 2B	**Paper XV :** Materials Science	4	--	--	100	80	20	4.0
		DSE 3B	**Paper XVI :** Atomic Physics, Molecular	4	--	--	100	80	20	4.0

		Physics and Quantum Mechanics							
	DSE 4B	**Paper XVII:** Electronics	4	--	--	100	80	20	4.0
Total (Theory)			**20**	**--**	**--**	**450**	**360**	**90**	**18**
Core	DSE 1A &1B	Practical IV	--	--	5	100	80	20	4.0
	DSE 2A & 2B	Practical V	--	--	5	100	80	20	4.0
	DSE 3A & 3B	Practical VI	--	--	5	100	80	20	4.0
	DSE 4A & 4B	Practical VII (Project / Internship)	--	--	5	100	80	20	4.0
Total (Practicals)			**--**	**--**	**20**	**400**	**320**	**80**	**16**
Grand Total			**44**	**--**	**20**	**1400**	**1120**	**280**	**56**

***Skill Enhancement Course (SEC): As per University Rules**

Summary of the Structure of B.Sc. Programme as per CBCS pattern

Class	Semester	Marks-Theory	Credits Theory	Marks-Practical	Credits-Practical's	Total - credits
B.Sc.-III	V	550	22	--	--	22
	VI	450	18	400	16	34
Total		1000	40	400	16	56
Grand Total	**1000(T) +400 (P) = 1400**					

Numbers of Papers Theory: Ability Enhancement Course (AECC) : 02
Theory: Discipline Specific Elective Paper (DSE) : 08
Skill Enhancement Courses : 01

Abbreviations:
L: Lectures
T: Tutorials
P: Practicals
UA : University Assessment
CA: College Assessment
CC: Core Course
AEC: Ability Enhancement Course
DSE: Discipline Specific Elective Paper
SEC: Skill Enhancement Course
GE: Generic Elective

***List of Skill Enhancement Courses**

1) Certificate course in Testing and Repairs of Electric Appliances (DBF Dayanad College of Arts & Science)
2) Thin film deposition and Characterization Techniques (KN Bhise College, Kurduwadi)
3) Laboratory Safety and Disaster Management (SSM, Barshi)
4) Solar Panel Installation and Maintenance
5) Medical Physics
6) Energy Resources
7**)** Energy studies

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

Revised Syllabus For

B. A. Part-III Geography

Under the Faculty of Science and Technology

CBCS PATTERN

Syllabus to be implemented from June 2021

(Subject to the modifications to be made from time to time)

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Choice Based Credit System (CBCS) (w.e.f. June 2021)
Revised Structure for B.A. III

Semester V								
Sr. No.	**Code**	**Paper No**	**Name of the paper**	**CA**	**UA**	**Total Marks**	**Lectures / week**	**Credit**
1	DSC 7	VII	Regional Planning and Development	10	40	50	04	04
Select Any One								
2	DSE 1A	VIII	Urban Geography	10	40	50	04	04
3	DSE 1B	VIII	Agriculture Geography	10	40	50	04	04
Select Any One								
4	DSE 2A	IX	Resource Geography	10	40	50	04	04
5	DSE 2B	IX	Population Geography	10	40	50	04	04
Semester VI								
6	DSC 8	X	Evaluation of Geographical Thought	10	40	50	04	04
Select Any One								
7	DSE 3A	XI	Geography of Health and Well being	10	40	50	04	04
8	DSE 3B	XI	Political Geography	10	40	50	04	04
Select Any One								
9	DSE 4A	XII	Hydrology and Oceanography	10	40	50	04	04
10	DSE 4B	XII	Social Geography	10	40	50	04	04
Annual								
11	DSC 9	Practical P. I	Map Making and Map Interpretation	20	80	100	10	08
12	DSC 10	Practical P. II	Advanced Tools, Techniques (Computer, Remote Sensing, GIS, GPS) & Field Work	20	80	100	10	08
Select Any One Short Term Course								
1	SEC 1	-	A Certificate Course in Land Survey	10	40	50	3 Months	04
2	SEC 2	-	A Certificate Course Travel and Tourism	10	40	50	3 Months	04`

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

Bachelor of Arts (B. A.)

B. A. Part - III

Regional Planning and Development

Syllabus to be implemented from June 2021 onwards

1. **Title :** Regional Planning and Development
2. **Year of Implementation :** Revised Syllabi will be implemented from June 2021 onwards.
3. **Preamble**: Regional Planning is the need of time to everyone. Geography subject can lead to the development of human activities through regional planning. In the process of development of geography, the changing nature of subject will make aware to the students about the recent technologies used in geography. This will further help to improve the use of geographical techniques and methods in teaching, learning and research work through regional planning.
4. **Objectives:**
    - To Familiarize the student with the types of region and types of Regional Planning and Delineation of planning region.
    - To Familiarize the student with the theory and models of regional planning
    - To get familiar with indicators of measurement of development.
5. **Course Outcomes:**

    After the completion of course, the students will have ability to:
    - The students were known the importance of regional planning.
    - The students understood the concepts of region, regionalization, regional planning & development and detailed knowledge of region.
    - The students were familiar with indicators of measurement of development.
    - Detail understanding of Growth Pole Model, Center place Theory and Growth Foci Model in Indian context.
6. **Pattern of Exam:** Semester

7. Scheme of Teaching & Examination

Sr. No.	Subjects/Papers	Teaching Scheme Hrs./Week				Examination scheme (Marks)		
		L	T	P	Total	Theory	Term work	Total
1	Regional Planning and Development	04	04	--	04	40	10	50

8. Equivalence in accordance with titles and contents of papers (For revised papers)

Sr. No.	Title of Old Paper	Old paper No.	Title of New paper	New Paper No.
1.	**Resource Geography**	**VII**	**Regional Planning and Development**	**DSC 7 OR VII**

NEW/REVISED SYLLABUS FOR
B. A. Part-III Geography
(Introduced from June 2021 onwards)
Semester – V

i. **DSC 7 OR Paper No. VII**

ii. Title of Paper: **Regional Planning and Development**

Unit I: Region and Regional Planning **15**

1.1. Definition of Region

1.2. Types of Region : (Formal and Functional)

1.3. Need of Regional Planning

1.4. Types of Regional Planning

Unit II. Delineation of Planning Region **15**

2.1. Choice of Region for Planning

2.2. Characteristics of Ideal Planning Region

2.3. Delineation of Planning Region

2.4. Planning Regions of India

Unit III. Theories and Models for Regional Planning **15**

3.1. Growth Pole Model of Perroux

3.2. Centre Place Theory of Walter Christaller

3.3. Growth foci concept of R.P. Misra

Unit IV. Measuring of Development. **15**

4.1. Indicators of Economic Development

4.2. Indicators of Social Development

4.3. Indicators of Environmental Development and Human Development.

References:

- Blij H.J. (Dec.1971):,Geography: Regional and Concept, Johan Wiley and Sons.
- Cloud P.I. (1998), An Introduction to Regional Geography, BlackWell Publication, Oxford and Massachusettes.
- Friedemann J.& Alonson W.(1964): Regional Development and Planning, MIT Press, Cambridge.
- Gore C.G. (1984): Regions in Question: Space Development Theory and Regional Policy, Methuen London.
- Gore C.G., Kohler G., Rich U.P. & Ziesemer T. (1996) : Quetioning Development, Essay on the Theory, Policies and Practice of Development Intervetion, Motropolis-Verlaje, Marburg.
- Peet R. (1999) :Theories of Development, Guilford Press, New York.
- Alden J. & Morgan (1974) :Regional Planning A Comprehensive view, Leonard Hill Books.
- Chand M. & Puri V. (1983): Regional Planning in India, Allied Publisher Ltd., New Delhi.
- Chandana R.C. (2000): Regional Planning & Development, Kalyani Publishers, Ludhiyana.
- Cook P. (1983): Theories of Planning & Spatial Development, Hutchinson & Com. Ltd. London.
- Glasson, John (1974): An Introduction to Regional Planning, Hutchinson Educational London.
- Misra R.P., Sundaram K.V. & Rao, etd.(1974): Regional Development Planning in India.
- Misra R.P (1992): Regional Planning, Concept Publishing Com. New Delhi.

PUNYASHLOK AHILYADEVI HOLKAR
SOLAPUR UNIVERSITY, SOLAPUR
Bachelor of Arts (B. A.)
B. A. Part - III
Urban Geography

Syllabus to be implemented from June 2021 onwards

1. **Title :** Urban Geography
2. **Year of Implementation :** Revised Syllabi will be implemented from June 2021 onwards.
3. **Preamble**: The Board of studies should briefly mention foundation, core and applied Components of the course/ Paper. The student should get into the prime objectives and expected level of study with required outcome in terms of basic and advance knowledge at examination level.
4. **Objectives:**
   - To study the basic of unban Geography.
   - To study the type of urban Settlements, site and situations.
   - To get as ideas of relationship between human activities and urban development.
   - To make the students capable for handling the present problematic situation in urban development.
   - To make students as a good urban planner and environmental conservator.
5. **Course Outcomes:**

   After the completion of course, the students will have ability to:
   - The students were known the importance of urban settlements through urban geography.
   - The students understood the types of urban Settlements, Site and situations.
   - The students were familiar with an idea of relationship between human activities and urban development.
   - Detail understanding of students regarding present urban problems and students are capable to handling of present problematic situations in urban areas.
   - The students are developed as a good urban planner and environmental conservator.

6. **Pattern of Exam:** Semester

7. Scheme of Teaching & Examination

Sr. No.	Subjects/Papers	Teaching Scheme Hrs./Week				Examination scheme (Marks)		
		L	T	P	Total	Theory	Term work	Total
1	Urban Geography	04	04	--	04	40	10	50

8. Equivalence in accordance with titles and contents of papers (For revised papers)

Sr. No.	Title of Old Paper	Old paper No.	Title of New paper	New Paper No.
1.	**Urban Geography**	**VIII**	**Urban Geography**	**DSE 1A OR VIII**

NEW/REVISED SYLLABUS FOR
B. A. Part-III Geography
(Introduced from June 2021 onwards)
Semester – V

i. **DSE 1A OR Paper No. VIII**

ii. Title of Paper: **Urban Geography**

Unit I: Introduction to Urban Geography **15**

1.1 Meaning and definition of Urban Geography

1.2 Nature and scope of Urban Geography

1.3. Approaches of Urban Geography

1.4. Significance of Urban Geography

Unit II. Patterns of Urbanisation **15**

2.1 Meaning of urban settlement and Urbansiation

2.2 Concept and factors of urbanization

2.3 Patterns of Urbanisation in developed and developing countries

Unit III. Function, Structure and Morphology of Urban centers **15**

3.1 Functional classification of town and cities

3.2 concept of structure and morphology

3.3 City Regions and C.B.D.

3.4 Models of towns Morphology; The Concentric Zone Theory, The Sector

Theory and the Multi-Nuclei Theory

Unit IV. Urban Issue and Case studies **15**

4.1 Problems of housing and growth of slums

4.2 Problems of civic amenities (Water and Transport)

4.3 Problems of environmental pollution

4.4 Case studies of Solapur smart city and Pandharpur (with reference to Land use and Urban Issues)

References:

- Fyfe N. R. and Kenny J. T., 2005: The Urban Geography Reader, Routledge.
- Graham S. and Marvin S., 2001: Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition, Routledge.
- Hall T., 2006: Urban Geography, Taylor and Francis.
- Kaplan D. H., Wheeler J. O. and Holloway S. R., 2008: Urban Geography, John Wiley.
- Knox P. L. and McCarthy L., 2005: Urbanization: An Introduction to Urban Geography, Pearson Prentice Hall New York.
- Knox P. L. and Pinch S., 2006: Urban Social Geography: An Introduction, Prentice-Hall.
- Pacione M., 2009: Urban Geography: A Global Perspective, Taylor and Francis.
- Sassen S., 2001: The Global City: New York, London and Tokyo, Princeton University Press.
- Ramachandran R (1989): Urbanisation and Urban Systems of India, Oxford University Press, New Delhi
- Ramachandran, R., 1992: The Study of Urbanisation, Oxford University Press, Delhi
- Singh, R.B. (Eds.) (2001) Urban Sustainability in the Context of Global Change, Science Pub., Inc., Enfield (NH), USA and Oxford & IBH Pub., New Delhi.
- Singh, R.B. (Ed.) (2015) Urban development, challenges, risks andresilience in Asian meg

PUNYASHLOK AHILYADEVI HOLKAR
SOLAPUR UNIVERSITY, SOLAPUR
Bachelor of Arts (B. A.)

B. A. Part - III

Agriculture Geography

Syllabus to be implemented from June 2021 onwards

8. Title : Agriculture Geography

9. Year of Implementation : Revised Syllabi will be implemented from June 2021 onwards.

10. Preamble: Agricultural Geography is the most and comparatively developed branch of Economic Geography. The presence syllabus of this paper includes along with the Nature and Scope the study of Agricultural determinants, Land use Theory and Agricultural systems, agricultural concepts like crop combination and productivity, impact of Green revolution and the modern technology used in agriculture. This study will be helps in making aware the students to the use of modern technologies which are used in agriculture.

11. Objectives:

- To help students to know the approaches to study agriculture geography.
- To study the methods of regionalization of agriculture.
- To provide in depth knowledge about agriculture geography.

12. Course Outcomes:

After the completion of course, the students will have ability to:

13. Pattern of Exam: Semester

14. Scheme of Teaching & Examination

Sr. No.	Subjects/Papers	Teaching Scheme Hrs./Week				Examination scheme (Marks)		
		L	T	P	Total	Theory	Term work	Total
1	Agriculture Geography	04	04	--	04	40	10	50

8. Equivalence in accordance with titles and contents of papers (For revised papers)

Sr. No.	Title of Old Paper	Old paper No.	Title of New paper	New Paper No.
1.	Development of Geography	**IX**	**Agriculture Geography**	**DSE 1B OR IX**

NEW/REVISED SYLLABUS FOR
B. A. Part-III Geography
(Introduced from June 2021 onwards)
Semester – V

i. DSE 1B Paper No. IX

ii. Title of Paper: **Agriculture Geography**

Unit I: Introduction to agriculture Geography **15**

1.1 Definition, Nature and Scope of Agriculture Geography

1.2 Importance of Agriculture

1.3 Modern Techniques in Agriculture

Unit II. Determination of Agriculture **15**

2.1 Physical

2.2 Economical

2.3 Social

2.4 Cultural

Unit III. Agriculture Regions of India **15**

3.1 Agro-Climatic regions

3.2 Agro-Ecological regions

3.3 Crop-Combination

3.4 Crop-Diversification

Unit IV. Agricultural Land use theory **15**

4.1 Von Thunen Theory of Agricultural land use

4.2 Green and white revaluation of Agriculture in India

4.3 Agricultural problem and prospects in India - Physical and non-Physical

References:

1. Bayliss Smith, T.P.: The Ecology of Agricultural Systems. Cambridge University Press, London. 1987.
2. Gregor, H.P.: Geography of Agriculture. Prentice Hall, New York, 1970.
3. Grigg, D.B.: The Agricultural Systems of the World, Cambridge University Press, New York. 1974.
4. Fulle S.J.: Krushi Bhugol; Vidhyabharti Prakashan Latur, 2000.
5. Bhatt, M.S. (ed.) 2004: Poverty and Food Security in India Problems and Policies. Akkar Books, New Delhi.
6. Morgan W.B. & Muton R.C.(1971): Agricultural Geography, Mathuen, London.
7. Singh Jasbir & Dhillon S.S. (2004): Agricultural Geography, Tata Mc-Graw Hill Education, New Delhi.
8. Bhatia B.M. (1977): Socio-Economic Growth, Vikas New Delhi.
9. Hussain, M. (1999): Systematic Agricultural Geography, Rawat publications, Jaipur. (India)
10. Shafi M. (1983): Agricultural Productivity and Regional Imbalances a Study of Uttar Pradesh, Concept, New Delhi.
11. Symon, L. (1968): Agricultural geography, London.

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

Bachelor of Arts (B. A.)

B. A. Part - III

Population Geography

Syllabus to be implemented from June 2021 onwards

1. **Title :** Population Geography
2. **Year of Implementation :** Revised Syllabi will be implemented from June 2021 onwards.
3. **Preamble**: This curriculum focuses on the understanding of core and fundamental branches of the discipline. This paper is specially designed to learn the role of demography and population studies as a distinct field of human geography. It encompasses sound knowledge of key concept, different components of population. The curriculum has been carefully designed to include conceptual, basic themes, population dynamics and characteristic with contemporary issues.
4. **Objectives:**
   - To study the basics of population geography.
   - To study the population growth trends and its distribution.
   - To study the population dynamics and various theories of population.
   - To study the population compositions and its characteristics.
5. **Course Outcomes:**

   After the completion of course, the students will have ability to:
   - This paper would bring an understanding of population geography along with relevance of demographic data.
   - The students would get an understanding of distribution and trends of population growth in the developed and less developed countries, along with population concepts.
   - The students would get an understanding of the dynamics of population.
   - An understanding of the implications of population composition in different regions of the world.

- An appreciation of the contemporary issues in the field of population studies

6. Pattern of Exam: Semester

7. Scheme of Teaching & Examination

Sr. No.	**Subjects/Papers**	**Teaching Scheme Hrs./Week**				**Examination scheme (Marks)**		
		L	**T**	**P**	**Total**	**Theory**	**Term work**	**Total**
1	Population Geography	04	04	--	04	40	10	50

8. Equivalence in accordance with titles and contents of papers (For revised papers)

Sr. No.	Title of Old Paper	Old paper No.	Title of New paper	New Paper No.
1.	Development of Geography	**IX**	**Population Geography**	**DSE 2A OR IX**

NEW/REVISED SYLLABUS FOR
B. A. Part-III Geography
(Introduced from June 2021 onwards)
Semester – V

i. DSE 2A OR Paper No. IX

ii. Title of Paper: **Population Geography**

Unit I: Introduction to Population Geography **15**

1.1 Definition of population geography

1.2 Nature and Scope of population Geography

1.3 Significance of population Geography

1.4 Sources of population data (Census, Statistical abstract, NSS)

Unit II. Population Growth and Distribution **15**

2.1 Growth of World population

2.2 Factors affecting the distribution of population

2.3 Population distribution of the world

2.4 Theories of population Growth: Malthus Theory and Demographic Transition Theory

Unit III. Population Dynamics **15**

3.1 Concept of population Dynamics

3.2 Fertility: Causes, Effects and Measures

3.3 Mortality: Causes, Effects and Measures

3.4 Migration: Types, causes and effects Major international migration of the world after world War II

Unit IV. Population Composition and Characteristics **15**

4.1 Age-Sex Composition Causes, Effects ,Measures and Characteristics

4.2 Rural and Urban Composition Causes, Effects ,Measures and Characteristics

4.3 Literacy: Effects and Characteristics

4.4Contemporary Issues : HIV/ AIDS, Covid 19

References:

- Barrett H. R., 1995: Population Geography, Oliver and Boyd.
- Bhende A. and Kanitkar T., 2000: Principles of Population Studies, Himalaya Publishing House.
- Chandna R. C. and Sidhu M. S., 1980: An Introduction to Population Geography, Kalyani Publishers.
- Clarke J. I., 1965: Population Geography, Pergamon Press, Oxford.
- Jones, H. R., 2000: Population Geography, 3rd ed. Paul Chapman, London.
- Lutz W., Warren C. S. and Scherbov S., 2004: The End of the World Population Growth in the 21st Century, Earthscan
- Newbold K. B., 2009: Population Geography: Tools and Issues, Rowman and Littlefield Publishers.
- Pacione M., 1986: Population Geography: Progress and Prospect, Taylor and Francis.
- Wilson M. G. A., 1968: Population Geography, Nelson.
- Panda B P (1988): Janasankya Bhugol, M P Hindi Granth Academy,Bhopal
- Maurya S D (2009) Jansankya Bhugol, Sharda Putak Bhawan, Allahabad
- Chandna, R C (2006), Jansankhya Bhugol, Kalyani Publishers, Delhi
- Trewartha, G T (1969), A Geography of Population: world patterns, John Wiley, New York.
- MOOCS - NPTEL: https://nptel.ac.in/
- MOOCS - SWAYAM: https://swayam.gov.in/
- National Digital Library of India: https://ndl.iitkgp.ac.in/

PUNYASHLOK AHILYADEVI HOLKAR
SOLAPUR UNIVERSITY, SOLAPUR
Bachelor of Arts (B. A.)

B. A. Part - III

Resource Geography

Syllabus to be implemented from June 2021 onwards

15. Title : Resource Geography

16. Year of Implementation : Revised Syllabi will be implemented from June 2021 onwards.

17. Preamble: Resource Geography is a major and developing branch of Economic Geography. The world countries are trying to make overall development with blindly utilizing different resources. The growing population exerts its pressure on present resources which generates various problems in front of countryside. The present syllabus of this paper includes Definition, Scope, concept, classification and significance of Resource Geography. It also includes major resources such as water, forest, energy and human resources with its distribution, utilization and problems. Newly evolved concept sustainable development is also studied with said resources.

18. Objectives:

- To understand the concept and classification of Resources.
- To examine the major resources (water, forest, energy and human) with their distribution, utilization and problems.
- To study the sustainable resource development.

19. Course Outcomes:

After the completion of course, the students will have ability to:

- The students were known the importance of Resources.
- The students were familiar with distribution, utilization and problems of resources like water, forest, energy and human.
- Detail understanding the sustainability of natural resource development.

20. Pattern of Exam: Semester

21. Scheme of Teaching & Examination

Sr. No.	Subjects/Papers	Teaching Scheme Hrs./Week				Examination scheme (Marks)		
		L	T	P	Total	Theory	Term work	Total
1	Resource Geography	04	04	--	04	40	10	50

8. Equivalence in accordance with titles and contents of papers (For revised papers)

Sr. No.	Title of Old Paper	Old paper No.	Title of New paper	New Paper No.
1.	Development of Geography	**IX**	**Resource Geography**	**DSE 2B OR IX**

NEW/REVISED SYLLABUS FOR
B. A. Part-III Geography
(Introduced from June 2021 onwards)
Semester – V

i. **DSE 2B OR Paper No. IX**

ii. Title of Paper: **Resource Geography**

Unit I: Introduction to Resource Geography **15**

1.1 Definition, Nature, and Scope of Resource Geography.

1.2 Concept and Classification of Natural Resource.

1.3 Importance of Resource Geography.

Unit II. Natural Resource **15**

2.1 Land Resource – Distribution, Utilization, Problems and Conservation.

2.2 Water Resources-Distribution, Utilization, Problems and Conservation.

2.3 Forest Resource-Distribution, Production, Problems and Conservation.

Unit III. Energy Resource **15**

3.1 Conventional Resource-Distribution, Utilization, Problems and Conservation.

3.2 Non-Conventional Resource-Distribution, Utilization, Problems and Conservation.

Unit IV. Sustainable Resource development **15**

4.1 Concept of sustainable Resource Development.

4.2 Sustainable Natural Resource Development- Land, Water, Forest, Energy.

References:

1. Cutter S. N., Renwich H. L. and Renwick W., 1991: Exploitation, Conservation, Preservation: AGeographical Perspective on Natural Resources Use, John Wiley and Sons, New York.
2. Gadgil M. and Guha R., 2005: The Use and Abuse of Nature: Incorporating This Fissured Land: An Ecological History of India and Ecology and Equity, Oxford University Press. USA.
3. Holechek J. L. C., Richard A., Fisher J. T. and Valdez R., 2003: Natural Resources: Ecology, Economics and Policy, Prentice Hall, New Jersey.
4. Jones G. and Hollier G., 1997: Resources, Society and Environmental Management, Paul Chapman, London.
5. Klee G., 1991: Conservation of Natural Resources, Prentice Hall, Englewood.
6. Mather A. S. and Chapman K., 1995: Environmental Resources, John Wiley and Sons, New York.
7. Mitchell B., 1997: Resource and Environmental Management, Longman Harlow, England.
8. Owen S. and Owen P. L., 1991: Environment, Resources and Conservation, Cambridge University Press, New York.

PUNYASHLOK AHILYADEVI HOLKAR
SOLAPUR UNIVERSITY, SOLAPUR
Bachelor of Arts (B. A.)

B. A. Part - III

Evolution of Geographical Thought

Syllabus to be implemented from June 2021 onwards

1. **Title :** Evolution of Geographical Thought
2. **Year of Implementation :** Revised Syllabi will be implemented from June 2021 onwards.
3. **Preamble**: This paper is basically designed to cater to foundation building of the students by imparting knowledge about the pillars of geography. It encompasses the evolution of the subject right from the experiences and understanding of travelers and explorers to the progression towards establishment of the discipline geography in sciences
4. **Objectives:**
   - To study the evolution of geographic thought.
   - To evaluating the contemporary trends in geographical studies.
   - To understands the debates in the geographical studies.
   - To study the recent trends in geography
5. **Course Outcomes:**
   - Students were able to visualize the basic theme, ideas and approaches of geographic knowledge with relation to historical juncture, varying schools and era of their emergence.
   - Detailed knowledge about the debates in the geographical studies.
   - Understanding of recent trends in Geography.
6. **Pattern of Exam :** Semester
7. **Scheme of Teaching & Examination**

Sr. No.	Subjects/Papers	Teaching Scheme Hrs./Week	Examination scheme (Marks)

		L	T	P	Total	Theory	Term work	Total
1	Evolution of Geographical Thought	04	04	--	04	40	10	50

8. Equivalence in accordance with titles and contents of papers (For revised papers)

Sr. No.	Title of Old Paper	Old paper No.	Title of New paper	New Paper No.
1.	**Geography of Economic Activities**	**X**	**Evolution of Geographical Thought**	**DSC 8 OR X**

NEW/REVISED SYLLABUS FOR
B. A. Part-III Geography
(Introduced from June 2021 onwards)
Semester – VI

i. **DSC 8 OR Paper No. X**

ii. Title of Paper: **Evolution of Geographical Thought**

Unit I. History of Geographical Idea **15**

1.1 Ancient period – contribution of Greek, Roman and Indian Geographers

1.2 Medieval period – Arab Geographers

Unit II. Schools of Geography **15**

2.1 German School of Geography – Humboldt, Ritter & Razel

2.2 French School of Geography – Vidal -de-la- Blache

2.3 American School of Geography – Ellen Semple

2.4 British School of Geography – Mackinder

Unit III. Dichotomy in Geography **15**

3.1 Environmental Determinism Vs Possibilism

3.2 Physical Vs Human Geography

3.3 Systematic Vs Regional Geography

Unit IV. Development of Geography after World War II **15**

1.1 Quantitative revolution in Geography concept, objectives and merits

1.2 Impact of Quantitative revolution in Geography.

1.3 Perspectives in Geography: Behaviouralism, Humanism, Systems Approach, Radicalism

References:

1. Hartshorne Richard (1959) - Perspective on the nature of Geography Rand McNally& Co., New York
2. Dixit R.D. - Geography Thought: A contextual history of Idea
3. Dickinson R.E. - Makers of Modern Geography
4. Taylor Griffith - Geography of 20th Century
5. Sudipta Adhikari: History of Geographical Thought
6. Harvey David (1980) - Explanation in Geography Edward - Arnold Landon
7. Husain Majid (1984) - Evolution of Geographical Thought Rawat Publication, Jaipur
8. खतीब के . ए. व भांजे बी. एम- भूविज्ञान विकास, संजोग प्रकाशन, कोल्हापूर.

PUNYASHLOK AHILYADEVI HOLKAR
SOLAPUR UNIVERSITY, SOLAPUR
Bachelor of Arts (B. A.)

B. A. Part - III

Geography of Health and Wellbeing

Syllabus to be implemented from June 2021 onwards

1. **Title : Geography of Health and Wellbeing**
2. **Year of Implementation :** Revised Syllabi will be implemented from June 2021 onwards.
3. **Preamble:** Geography of Health and Wellbeing considers the significance for physical and mental health of interactions between people and their environment. This branch of Geography becomes popular due to its significance. In this course the fundamental concepts and knowledge of Geography of Health and wellbeing have been included. The present syllabus of this course includes perspectives of health, pressure on environmental quality and health, exposure and health risks, health and disease patterns.
4. **Objectives:**
   - To study the awareness about the health and wellbeing.
   - To evaluating the contemporary trends in geographical studies.
   - To understands the debates in the geographical studies.
   - To understands the curiosity about disease and health.
5. **Course Outcomes:**

   After the completion of course, the students will have ability to:
   - Understand various geographical perspectives related to human health.
   - Create awareness of human health and environmental trends.
   - The students are familiar with geographical background of diseases and their regional pattern.
   - Detail understanding of pressure on environmental quality and human health.
   - The students are familiar with the process of health care planning in India.
   - The students are aware about impact of climate change on human health.
6. **Pattern of Exam:** Semester

7. Scheme of Teaching & Examination

Sr. No.	Subjects/Papers	Teaching Scheme Hrs./Week				Examination scheme (Marks)		
		L	T	P	Total	Theory	Term work	Total
1	Geography of Health and Wellbeing	04	04	--	04	40	10	50

8. Equivalence in accordance with titles and contents of papers (For revised papers)

Sr. No.	Title of Old Paper	Old paper No.	Title of New paper	New Paper No.
1.	**Political Geography**	**XI**	**Geography of Health and Wellbeing**	**DSE 3A OR XI**

NEW/REVISED SYLLABUS FOR
B. A. Part-III Geography
(Introduced from June 2021 onwards)
Semester – VI

i. DSE 3A OR Paper No. XI

ii. Title of Paper: **Geography of Health and Wellbeing**

Unit I. Perspectives on Health: 15

1.1 Definition and scope

1.2 Linkages with environment and development

1.3 Health and Environmental trends: Population dynamics, urbanization, poverty and inequality

Unit II. Pressure on Environmental Quality and Health 15

2.1 Human activities and its pressure on environment

2.2 Land use and agricultural development

2.3 Industrialization

2.4 Transport

Unit III. Exposure and Health Risks 15

3.1 Air pollution

3.2 Water Pollution

3.3 Household wastes

3.4 Housing

3.5 Workplace

Unit IV. Climate Change, Health and Disease Patterns **15**

(In Environmental Context with special reference to India)

4.1 Communicable diseases and their regional pattern – AIDS

4.2 Lifestyle related diseases and their regional pattern – Cancer and Diabetes

4.3 Climate change and human health

4.4 Food production and nutrition

References:

1) Akhtar Rais (Ed.), 1990:Environment and Health Themes in Medical Geography, Ashish Publishing House, New Delhi.
2) Avon Joan L. and Jonathan A Patzed., 2001:Ecosystem Changes and Public Health, Baltimin, John Hopling Unit Press(ed).
3) Bradley, D., 1977: Water, Wastes and Health in Hot Climates, John Wiley Chichesten.
4) Brown T., S. Mc Lafferty, and G. Moon. 2009. A companion to health and medical geography. Chichester, UK: Wiley-Blackwell. DOI:
5) Christaler George and Hristopoles Dionissios, 1998:SpatioTemporalEnvironment Health Modelling, Boston Kluwer Academic Press.
6) Cliff, A.D. andPeter, H., 1988: Atlas of Disease Distributions, Blackwell Publishers, Oxford.
7) Emch, M., Root, E.D., Carrel, M., 2017, Health and Medical Geography, Fourth Edition Guilford Publications
8) Gatrell, A., and Loytonen, 1998: GISand Health, Taylor and Francis Ltd, London.
9) Gatrell A., and S. Elliott. 2009. Geographies of health. Chichester, UK: Wiley- Blackwell.
10) Gesler, W., and W. Kearns. 2002. Culture place and health. Critical Geographies. London: Routledge.
11) HardhamT. and TannavM., (eds):Urban Health in Developing Countries; Progress, Projects, Earthgoan, London.
12) Moeller Dadewed., 1993: Environmental Health, Cambridge, Harvard University Press.
13) Shelar, S.K., 2012: Introduction to Medical Geography, Chandralok Pub., Kanpur.
14) Tromp, S., 1980: Biometeorology: The Impact of Weather and Climate on Humans and their Environment, Heydon and Son.

e-PGPathshala: https://epgp.inflibnet.ac.in/

MOOCS - NPTEL: https://nptel.ac.in/

MOOCS - SWAYAM: https://swayam.gov.in/

National Digital Library of India: https://ndl.iitkgp.ac.in/

PUNYASHLOK AHILYADEVI HOLKAR
SOLAPUR UNIVERSITY, SOLAPUR
Bachelor of Arts (B. A.)

B. A. Part - III

Political Geography

Syllabus to be implemented from June 2021 onwards

1. **Title : Political Geography**
2. **Year of Implementation :** Revised Syllabi will be implemented from June 2021 onwards.
3. **Preamble**: This paper is an academic discipline which is designed for student to convey knowledge about political activity of people and integral geographical space, which includes physical, economic, social, cultural, and political spaces. Also concerned with the study of both the spatially uneven outcomes of political processes and the ways in which political processes are themselves affected by spatial structures.
4. **Objectives:**
   - To understand the basic concepts of political geography.
   - To familiarize the students with the geographical factors which have a bearing on the geopolitical/ administrative organization of space.
   - To enhance awareness of multidimensional nature of geo-political space.
5. **Course Outcomes:**

   After the completion of course, the students will have ability to:
   - Student will understand the history and development of political geography.
   - Get knowledge about evaluation of state and nation.
   - Get knowledge of Geo-political theories.
   - Investigates problems and disputes of India with the most current research topics in political geography.
6. **Pattern of Exam:** Semester

7. Scheme of Teaching & Examination

Sr. No.	Subjects/Papers	Teaching Scheme Hrs./Week				Examination scheme (Marks)		
		L	T	P	Total	Theory	Term work	Total
1	Political Geography	04	04	--	04	40	10	50

8. Equivalence in accordance with titles and contents of papers (For revised papers)

Sr. No.	Title of Old Paper	Old paper No.	Title of New paper	New Paper No.
1.	**Political Geography**	**IX**	**Political Geography**	**DSE 3B OR XI**

NEW/REVISED SYLLABUS FOR
B. A. Part-III Geography
(Introduced from June 2021 onwards)
Semester – VI

i. DSE 3B OR Paper No. XI

ii. Title of Paper: **Political Geography**

Unit I. Introduction of Political Geography **15**

1.1 Definition of Political Geography

1.2 Nature and Scope of Political Geography

1.3 Historical Development of Political Geography

1.4 Significance of Political Geography

Unit II. Concepts in Political Geography **15**

2.1 Concept of State, Nation, State- Nation, Frontiers and Boundaries

2.2 Elements of State: Location, Shape, Size, Topography, Climate, Vegetation, Resources, Population and Communication.

2.3 Concept of Geopolitics

Unit III. Theories in Political Geography **15**

3.1 The Heartland Theory of H. J. Mackinder

3.2 Rim Land Theory of N. J. Spykman

Unit IV. Resource Conflicts and Politics of Displacement **15**

4.1 Krishna Water Conflict (Inter State)

4.2 Ganga Water Conflict (International)

4.3 Issues of Relief, Compensation and Rehabilitation: Sardar Sarovar

4.4 Issues of Relief, Compensation and Rehabilitation: Ujani Projects

References:

1. Agnew J., 2002: *Making Political Geography,* Arnold.
2. Agnew J., Mitchell K. and Toal G., 2003: *A Companion to Political Geography,* Blackwell.
3. Cox K. R., Low M. and Robinson J., 2008: *The Sage Handbook of Political Geography*, Sage Publications.
4. Cox K., 2002: *Political Geography: Territory, State and Society*, Wiley-Blackwell
5. Gallaher C., et al, 2009: *Key Concepts in Political Geography*, Sage Publications.
6. Glassner M., 1993: *Political Geography*, Wiley.
7. Jones M., 2004: *An Introduction to Political Geography: Space, Place and Politics,* Routledg .
8. Mathur H M and M M Cernea (eds.) Development, Displacement and Resettlement – Focus on Asian Experience, Vikas, Delhi
9. Painter J. and Jeffrey A., 2009: *Political Geography*, Sage Publications.
10. Taylor P. and Flint C., 2000: *Political Geography*, Pearson Education.
11. Verma M K (2004): Development, Displacement and Resettlement, Rawat Publications, Delhi
12. Hodder Dick, Sarah J Llyod and Keith S McLachlan (1998), *Land Locked States of Africa and Asia* (vo.2), Frank Cass

PUNYASHLOK AHILYADEVI HOLKAR
SOLAPUR UNIVERSITY, SOLAPUR
Bachelor of Arts (B. A.)

B. A. Part - III

Hydrology and Oceanography

Syllabus to be implemented from June 2021 onwards

1. **Title :** Hydrology and Oceanography
2. **Year of Implementation :** Revised Syllabi will be implemented from June 2021 onwards.
3. **Preamble**: This paper is basically designed to cater to foundation building of the students by imparting knowledge about the hydrological cycle. It encompasses the availability of water on the globe and its uses on the earth surface.
4. **Objectives:**
   - To study the basic knowledge of hydrological cycle on the globe.
   - To study the importance of oceans and seas related to precipitation on the earth surface and its impact on agriculture.
   - To understands the riverine basin and its impact on human settlement
   - To study the marine organism and its necessity to over population in future
5. **Course Outcomes:**

   After the completion of course, the students will have ability to:
   - Students were able to visualize the basic theme, ideas and approaches of geographic knowledge about hydrological cycle related to formation of precipitation, infiltration, ground water recharge.
   - Detailed knowledge sea organism life and mineral wealth and its application to food shortage problems in over populated region and industrial development in underdeveloped countries respectively in future.
   - Understanding of human interference on hydrological cycle and its impact on globally drought region, flooded area.
6. **Pattern of Exam:** Semester

7. Scheme of Teaching & Examination

Sr. No.	Subjects/Papers	Teaching Scheme Hrs./Week				Examination scheme (Marks)		
		L	T	P	Total	Theory	Term work	Total
1	Hydrology and Oceanography	04	04	--	04	40	10	50

8. Equivalence in accordance with titles and contents of papers (For revised papers)

Sr. No.	Title of Old Paper	Old paper No.	Title of New paper	New Paper No.
1.	**Applied Geography**	**XII**	**Hydrology and Oceanography**	**DSE 4A OR XII**

NEW/REVISED SYLLABUS FOR
B. A. Part-III Geography
(Introduced from June 2021 onwards)
Semester – VI

i. **DSE 4A OR Paper No. XII**

ii. Title of Paper: **Hydrology and Oceanography**

Unit I. Hydrological Cycle **15**

Systems approach in hydrology, human impact on the hydrological cycle; Precipitation, interception, evaporation, evapo-transpiration, infiltration, ground-water, run off and over land flow; Hydrological input and output. Water budget on globe.

Unit II. River Basin and Problems of Regional Hydrology **15**

Characteristics of river drainage basins, basin surface run-off, measurement of river discharge; floods and droughts.

Unit III. Ocean Floor Topography and Oceanic Movements **15**

Ocean Waves, Currents and Tides. Ocean Salinity and Temperature –Distribution and Determinants.

Unit IV. Coral Reefs and Marine Deposits and Ocean Resources **15**

Types and Theories of Origin of Coral formation; Biotic and Mineral wealth in seas and oceans

References:

- Andrew. D. ward and Stanley, Trimble (2004): Environmental Hydrology, 2nd edition, Lewis Publishers, CRC Press.
- Karanth, K.R., 1988 : Ground Water: Exploration, Assessment and Development, Tata-McGraw Hill, New Delhi.
- Ramaswamy, C. (1985): Review of floods in India during the past 75 years: A Perspective. Indian National Science Academy, New Delhi.
- Rao, K.L., 1982 : India's Water Wealth 2nd edition, Orient Longman, Delhi,.
- Singh, Vijay P. (1995): Environmental Hydrology. Kluwar Academic Publications, The Netherlands.
- 6.Anikouchine W. A. and Sternberg R. W., 1973: The World Oceans: An Introduction to Oceanography, Prentice-Hall.
- 7.Garrison T., 1998: Oceanography, Wordsworth Company, Belmont.
- Kershaw S., 2000: Oceanography: An Earth Science Perspective, Stanley Thornes, UK.
- Pinet P. R., 2008: Invitation to Oceanography (Fifth Edition), Jones and Barlett Publishers, USA, UK and Canada.
- Sharma R. C. and Vatal M., 1980: Oceanography for Geographers, Chaitanya Publishing House, Allahabad.
- Sverdrup K. A. and Armbrust, E. V., 2008: An Introduction to the World Ocean, McGraw Hill, Boston.
- Singh, M., Singh, R.B. and Hassan, M.I. (Eds.) (2014) Landscape ecology and water management. Proceedings of IGU Rohtak Conference, Volume 2. Advances in Geographical and Environmental Studies, Springer
- Raghunath, H.M. (2006): Hydrology: Principles, analysis and Design (2nd Ed.), New age International, New Delhi.
- Cech, T.V. (2009): Principles of Water Resources: History, Development, Management, and Policy (3rd Ed.), Wiley, Hoboken, New Jersey.
- Trujillo, A.P., and Thurman, H.V. (2010): Essentials to Oceanography (10th Ed.), Prentice Hall, New Jersey.

PUNYASHLOK AHILYADEVI HOLKAR
SOLAPUR UNIVERSITY, SOLAPUR
Bachelor of Arts (B. A.)

B. A. Part - III

Social Geography

Syllabus to be implemented from June 2021 onwards

1. **Title :** Social Geography
2. **Year of Implementation :** Revised Syllabi will be implemented from June 2021 onwards.
3. **Preamble**: This curriculum focuses on the understanding of social geography of the discipline. This paper is specially designed to cater to social study of the students by imparting knowledge about the society. Social geography is the branch of human geography that is most closely related to social problems and well being, dealing with the relation of social phenomena and its spatial components. The different conceptions of social geography have been overlapping with other sub-fields of geography.
4. **Objectives:**
   - Understanding the concept, nature and scope of social geography.
   - To study the technological, occupational and migration changes of peoples in India.
   - An analysis of different social categories and their spatial distribution.
   - To understand the geographies of social welfare, well being and social problem.
5. **Course Outcomes:**

   After the completion of course, the students will have ability to:
   - In depth understanding the problems and prospects of society in India.
   - The students are fully aware about the technological, occupational and migration changes of peoples in India.
   - Detailed knowledge about the social categories and their spatial distribution.
   - Understanding concepts of social wellbeing, welfare and social problem in India.
6. **Pattern of Exam:** Semester

7. Scheme of Teaching & Examination

Sr. No.	Subjects/Papers	Teaching Scheme Hrs./Week				Examination scheme (Marks)		
		L	T	P	Total	Theory	Term work	Total
1	Social Geography	04	04	--	04	40	10	50

8. Equivalence in accordance with titles and contents of papers (For revised papers)

Sr. No.	Title of Old Paper	Old paper No.	Title of New paper	New Paper No.
1.	**Applied Geography**	**XII**	**Social Geography**	**DSE 4B OR XII**

NEW/REVISED SYLLABUS FOR
B. A. Part-III Geography
(Introduced from June 2021 onwards)
Semester – VI

i. DSE 3A OR Paper No. XII

ii. Title of Paper: **Social Geography**

Unit I: Introduction of Social Geography **15**

1.1 Definition of Social Geography

1.2 Nature and Scope of Social Geography

1.3 Branches of Social Geography

1.4 Approaches and Importance of Social Geography

Unit II. Peopling Process of India **15**

2.1 Concept of peopling process

2.2 Technological Changes

2.3 Occupational Changes

2.4 Migration

Unit III. Social Categories and their spatial distribution of World **15**

3.1 Tribe

3.2 Race

3.3 Religion

3.4 Gender

Unit IV. Social Welfare, Wellbeing and Social Problems in India **15**

4.1 Concept of Social Welfare and Wellbeing

4.2 Components of Social Welfare and Wellbeing – Healthcare, Housing and Education

4.3 Social Problems- Slums, Communal Conflicts and Crime

References:

1. Ahmed A., 1999: Social Geography, Rawat Publications.

2. Casino V. J. D., Jr., 2009) Social Geography: A Critical Introduction, Wiley Blackwell.

3. Cater J. and Jones T., 2000: Social Geography: An Introduction to Contemporary Issues, Hodder Arnold.

4. Holt L., 2011: Geographies of Children, Youth and Families: An International Perspective, Taylor & Francis.

5. Panelli R., 2004: Social Geographies: From Difference to Action, Sage.

6. Rachel P., Burke M., Fuller D., Gough J., Macfarlane R. and Mowl G., 2001: Introducing Social Geographies, Oxford University Press.

7. Smith D. M., 1977: Human geography: A Welfare Approach, Edward Arnold, London.

8. Smith D. M., 1994: Geography and Social Justice, Blackwell, Oxford.

9. Smith S. J., Pain R., Marston S. A., Jones J. P., 2009: The SAGE Handbook of Social Geographies, Sage Publications.

10. Sopher, David (1980): An Exploration of India, Cornell University Press, Ithasa

11. Valentine G., 2001: Social Geographies: Space and Society, Prentice Hall.

12. सामाजिक व सांस्कृतिक भूगोल - विठ्ठल घारपुरे, पिंपळापुरे बुक डीस्ट्रीबुटर

PUNYASHLOK AHILYADEVI HOLKAR
SOLAPUR UNIVERSITY, SOLAPUR
Bachelor of Arts (B. A.)
B. A. Part – III Geography
(Practical Paper -I)

1.	**Title**	**:**	Map Work & Map Interpretation
2.	**Year of Implementation**	**:**	Revised Syllabi will be implemented from June 2021 onwards.
3.	**Preamble**	**:**	Practical Work is the most important part of Geography. Map is an indispensable tool in Geographical Studies & Research activities. The present syllabus of this paper includes study of maps and their types, Map Projections, S.O.I. Topomaps, I.M.D. Weather Maps, and Cartographic Techniques.
4.	**Objectives**	**:**	2. To introduce the students with the importance of map making and map Interpretation. 3. To make the students to understand map, concept of scale and concept of projection. 4. To provide training in analysis of landforms. 5. To give basic information to the students about S.O.I. maps and I.M.D. weather Reports. 6. To develop the skill of map Interpretation among the students.
5.	**Course Outcomes**	**:**	1.In depth understanding the map, concept of scale and projection. 2.Detailed knowledge about the analysis of landforms and its identification. 3.The students are deeply aware about basic information to the students about S.O.I. toposheets and I.M.D. weather reports and obtained the skills about map interpretation.
6.	**Pattern of Exam**	**:**	Annual
7.	**Scheme of Teaching & Examination**		

Sr. No.	Subjects/Papers	Teaching Scheme Hrs./Week				Examination scheme (Marks)		
		L	T	P	Total	Practical	Term work	Total (Annual)
1	Map Making and Map Interpretation	--	--	10	10	100	--	100

Revised Syllabus for B. A. – III
(Introduced from June 2021 Onwards)
Revised Syllabus for
B. A. (Part III) Geography
Practical Paper -I

Title of Paper - Map Making and Map Interpretation (100 Marks)

Unit – 1 : Introduction to Map and Map Scales **Periods 50 Marks (15)**

1.1 Map

1.1.1 Map – Definition, Elements

1.1.2 Classification of Maps: Based on Scale and Purpose

1.2 Map Scale

1.2.1 Meaning and Definition of Map Scale

1.2.2 Methods of Representation of scale - Verbal, Numerical and Graphical.

1.2.3 Scale Conversion

1.2.4 Construction of Graphical Scale – i) Simple (Plane Scale) ii) Time and Distance Scale iii) Diagonal Scale

Unit – 2. Map Projection **Periods 50 Marks (15)**

2.1. Definition, Classification of Projections:

- Based on Method of Construction: perspective and non-perspective
- Based on Developable Surface used: Conical, Cylindrical, Zenithal, Conventional.
- Based on Position of Tangent Surfaces: Polar, Equatorial (normal), Oblique.
- Based on Position of view point or light: Gnomonic, Stereographic, Orthographic

2.2. Graphical Construction of the following Projections with Properties and Use:

- Zenithal Polar Gnomonic Projection

- Zenithal Polar Equal Area Projection
- Simple Conical Projection with one standard Parallel
- Simple Conical Projection with two standard Parallel
- Cylindrical equal area projection
- Mercator's Projection and Reference to Universal Transverse Mercator (UTM) Projection

Unit – 3 : Profile Analysis **Period 50 Marks (15)**

3.1 Slope and Gradient

3.1.1 Types of Slope: Gentle, Steep, Even, Uneven, Convex, Concave, Terraced.

3.1.2 Methods of Relief Representation

Qualitative: - Hachures, Hill shading, Layer Tint

Quantitative: - Contours, Form lines, Spot Heights, Bench Marks, Triangulation Mark

3.1.2 Expression of Slopes: a) Gradient b) Degree c) Per Cent d) Mills

3.1.3 Representation of Relief by Contours: Hill, Mountain, Ridge, Cliff, Saddle, Plateau, Knoll, Spur, Col or Pass, Gorge, 'V' Shaped Valley, Waterfall, 'U' Shaped Valley, Cirque, Ria Coast, Fiord Coast, Sea cliff.

3.2 Profiles- Simple profile, Longitudinal profile

Unit – 4 : Topographical Maps **Periods 50 Marks (15)**

4.1 Development of Survey of India

4.2 Indexing of S.O.I. Topographical Maps

4.3 Signs, Symbols and Colors used in SOI Toposheet

4.4 Interpretation of S.O.I.'s Topographical Map (Mountain, Plateau and Plain) a) Marginal Information b) Physical environment: Relief, Drainage and Vegetation c) Cultural environment: Settlements, Transportation and Communication, Irrigation. d) Land Use

Unit 5: Weather Instruments and IMD Maps Periods 50 Marks (15)

5.1 Study of weather Instruments with reference to Principle, Mechanism, and Function a) Thermograph b) Barograph c) Dry and Wet Bulb Thermometer d) Wind vane e) Cup Anemometer f) Rain Gauge.

5.2 Sign and Symbols used in Indian Daily Weather Maps.

5.3 Isobaric Patterns: Cyclone, Anticyclone, Col, Ridge, Secondary Depression.

5.4 Interpretation of Indian Daily Weather Maps (Rainy, Winter and Summer) Marginal Information, Pressure, Winds, Clouds, Rainfall, Other Conditions, Sea Condition, Temperature departure from normal.

Unit 6 : Representation of Statistical Data Periods 50 Marks 15

6.1 Graphs and Diagrams

6.1.1 Diagrammatic Data Presentation: i) Climograph, ii) Hythergraph iii) Ergograph (Crop Calendar)

6.2 Thematic Mapping Techniques: i) Proportional Circle ii) Choropleth Map iii) Dot Map iv) Isopleths v) Star Diagram

7 Journal and Viva Voce Marks 10

Note :

1. Use of stencils, log tables, computer and calculator is allowed.
2. Journal should be completed and duly certified by practical in-charge and Head of the Department.
3. Examiners should set jointly the question paper for each batch.
4. Each batch should not more than 12 students

Reference:

- Bygoot, J: An Introduction to Mapwork and Practical Geography, University Tutorial, London 1964.
- Khan MD. Zulfequar Ahmad : Text Book of Practical Geography, Concept Publishing Company, New Delhi, 1998
- Mishra, R.P. and Ramesh A. : Fundamentals of Cartography, Concept Publishing Company, New Delhi, 2000
- Monkhouse F.J. and Wilkison, H.R.: Maps and Diagrams, Mathuen. London, 1971.
- Negi., Dr. Balbir Singh : Practical Geography, Kedar Nath Ram Nath, Meerut, Delhi.

- Raisz, E.: Principals of Cartography, McGraw Hill Book Com., Inc, New York, 1962.
- Robinson, A.H. and Sale, S.D.: Elements of Cartography, John Witey and Sons, Inc, New York, 1969.
- Saha, Pijushkanti and Basu Partha : Advanced Practical Geography – A Laboratory
- Manual Books and Allied (P) Ltd, Kolkata. 2010.
- Sarkar, Ashis : Practical Geography: A systematic Approach, Orient Longman limited, Calcutta, 1997.
- Singh, Gopal : Map work and Practical Geography Vikas Publishing House Pvt. Ltd. New Delhi, 1996.
- Singh, R and Kanaujia, L.R.S.: Map Work and Practical Geography, Central Book Depot, Allahabad.
- Singh, R. L. and Rana P.B. : Elements of Practical Geography, Kalyani Publishers, New Delhi – Ludhiana, 1998.
- Aher A. B., Chodhari A. P. & Bharambe S. N. Techniques of Spatial Analysis Prashant Publication Jalgaon 2015
- Maurice Yeats, An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York, 1974.
- P. Saha and P. Basu (2006): Advanced Practical Geography, Books and Allied Publication, Kolkata, India.
- Khullar, Essentials of Practical Geography, New Academic Publishing Co, India.
- Singh L R (2011): Fundamentals of Practical Geography
- Robinson Rep. (2010): Elements of Cartography

PUNYASHLOK AHILYADEVI HOLKAR
SOLAPUR UNIVERSITY, SOLAPUR
Bachelor of Arts (B. A.)
B. A. Part – III Geography
(Practical Paper -II)

1. Title : **Advanced Tools, Techniques & Field Work**

2. Year of Implementation : Revised Syllabi will be implemented from June 2021 onwards.

3. Preamble : Modern science & technology have gained momentum. In the process of development of science and technology, the changing nature of subject of Geography will make aware to the students about the advanced techniques such as Remote Sensing, GIS and GPS. The application of computers has revolutionized the use of methods & techniques. The present syllabus of this paper includes study of Aerial Photographs, Remote Sensing, GIS, Application of Computer and use of field work in Geography. This will further help to improve the use of advanced techniques and methods in teaching-learning and research work.

4. Objectives :
1) To introduce the students with the importance of field work and advanced Techniques in Geography.
2) To provide training in application of modern tool and techniques in Geography.
3) To enable the students to understand the use of computer for analysis of Geographical data.
4) To enhance the skill of the students in instrumental survey.
5) To give basic information to the students about Arial Photographs, Remote Sensing, GIS and GPS.

5. Course Outcomes :
1. In depth understanding the importance of field work and advanced Techniques in Geography.
2. The students are trained to implement modern tool and techniques in Geography.
3. The students are deeply aware about the basics and trained in instrumental survey.
4. The students are deeply familiar with computer, GIS, GPS and Remote Sensing.

6. Pattern of Exam : Annual

7. Scheme of Teaching & Examination

Sr. No.	Subjects/Papers	Teaching Scheme Hrs./Week				Examination scheme (Marks)		
		L	T	P	Total	Practical	Term work	Total (Annual)
1	**Advanced Tools, Techniques & Field Work**	--	--	10	10	100	--	100

Revised Syllabus for B. A. – III
(Introduced from June 2021 Onwards)
Revised Syllabus for
B. A. (Part III) Geography
Practical Paper -II

Title of Paper - Advanced Tools, Techniques (Computer, Remote Sensing, GIS, GPS) & Field Work (100 Marks)

Unite: 1 Introduction to Computer

Lectures-50 Marks-10

1.1: **Computer Fundamentals**: Definition, Characteristics, Hardware & Software.

1.2: **Application of computer in geography**

1.2.1: Construction of Line Graphs, Bar Graphs

1.2.2: Construction of Pie Diagram and Scatter Diagram.

1.3: **Significance and application of Internet in Geographical Studies.**

Unit: 2 Remote Sensing

Lectures- 50 Marks-15

2.1 Definition, Components and Development of Remote Sensing.

2.2 Principles of Remote Sensing: EMR, Sensors and Platforms.

2.3 Application of Remote Sensing in Geography.

2.4 Aerial photographs and Satellite imagery: Definition, types

2.5 Identification of Physical and cultural features from Aerial Photographs or Satellite Imagery.

Unit: 3 GIS and GNSS (GPS) **Lectures- 50 Marks 15**

3.1 Geographical Information System (GIS)

3.1.1 Definition and components

3.1.2 GIS Data Structure: Types (spatial and non-spatial), Raster and Vector data

3.1.3 Georeferencing, Digitization, Map Layout Preparation

3.1.4 Application of GIS in Geography: Land use or Land Cover, Urban Sprawl Analysis, Forests Monitoring

3.2 Global Navigation Satellite System (Global Positioning System)

3.2.1 Definition and components

3.2.2 Application of GPS in Geography

3.2.3 Field work through GPS: Determining latitude, longitude and altitude

3.2.4 Exercise with Google earth Program.

Unit :4 Statistical methods and techniques **Lectures- 60 Marks-15**

4.1: Geographical Data:

4.1.1. Spatial and Temporal

4.1.2. Individual, Discrete and Continuous Data

4.2 Analysis of statistical data by the following methods and techniques

4.2.1 Measures of Central Tendency: Mean, Median and Mode

4.2.2 Dispersion: Mean deviation, Standard deviation and Quartile Deviation.

4.2.3 Correlation: Karl Pearson's Method

4.2.4 Analysis of Time Series: Semi-average Method and Moving average method

Unit :5 Surveying **Lectures- 60 Marks-15**

5.1 Introduction to Survey: Meaning and types

5.2 Preparation of plans of the given area with the following survey method **(Any one methods among them)**

A)Dumpy Level survey

B) Plane Table survey (Radial, Intersection, and open and closed Traverse method)

C)Abony Level Survey.

5.3 Preparation of plans Prismatic compass survey (Radical, Intersection and open and closed Traverse method)

5.3.1 Correction of bearing.

5.4 Preparation of Chain and Tape survey (Triangulation and open and closed Traverse method)

5.4.1. Cross staff surveying

Unit:6 Project work based on field work any one of below **Marks-10**

6.1 Research Methodology

6.2 Resource, Population, Agricultural, Settlement, Environmental, Industrial, Health issues, any other issues related to local area.

(Project Report must be content of following points: Introduction – Aims – Objectives - Review of the literature - Data collection – Methodology - Data Analysis – Interpretation - Findings – Suggestions – Bibliography)

Unit:7 Study Tour **Marks-10**

Maximum 15 days at Geographical Interest in India and preparation of tour report.

Unit:8 Journal and Viva Voce **Marks 10**

Note : 1. Use of stencils, log tables, computer and calculator is allowed.

2. Journal should be completed and duly certified by practical in-charge and Head of

the Department.

3. Examiners should set jointly the question paper for each batch.

4. Each batch should not more than 12 students

5. Each department should have at least 2 computers, 1 printer, 1 scanner, 10 pairs of Aerial Photographs, 5 Pocket Stereoscopes, 2 Mirror Stereoscopes and 5 Remote Sensing Images.

Reference:

- Bygoot, J: An Introduction to Mapwork and Practical Geography, University Tutorial, London 1964.
- Khan MD. Zulfequar Ahmad : Text Book of Practical Geography, Concept Publishing Company, New Delhi, 1998

- Mishra, R.P. and Ramesh A. : Fundamentals of Cartography, Concept Publishing Company, New Delhi, 2000
- Monkhouse F.J. and Wilkison, H.R.: Maps and Diagrams, Mathuen. London, 1971.
- Negi., Dr. Balbir Singh : Practical Geography, Kedar Nath Ram Nath, Meerut, Delhi.
- Raisz, E.: Principals of Cartography, McGraw Hill Book Com., Inc, New York, 1962.
- Robinson, A.H. and Sale, S.D.: Elements of Cartography, John Witey and Sons, Inc, New York, 1969.
- Saha, Pijushkanti and Basu Partha : Advanced Practical Geography – A Laboratory
- Manual Books and Allied (P) Ltd, Kolkata. 2010.
- Sarkar, Ashis : Practical Geography: A systematic Approach, Orient Longman limited, Calcutta, 1997.
- Singh, Gopal : Map work and Practical Geography Vikas Publishing House Pvt. Ltd. New Delhi, 1996.
- Singh, R and Kanaujia, L.R.S.: Map Work and Practical Geography, Central Book Depot, Allahabad.
- Singh, R. L. and Rana P.B. : Elements of Practical Geography, Kalyani Publishers, New Delhi – Ludhiana, 1998.
- Aher A. B., Chodhari A. P. & Bharambe S. N. Techniques of Spatial Analysis Prashant Publication Jalgaon 2015
- Maurice Yeats, An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York, 1974.
- P. Saha and P. Basu (2006): Advanced Practical Geography, Books and Allied Publication, Kolkata, India.
- Khullar, Essentials of Practical Geography, New Academic Publishing Co, India.
- Singh L R (2011): Fundamentals of Practical Geography
- Robinson Rep. (2010): Elements of Cartography

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR
Bachelor of Arts (B. A.)

B. A. Part - III

SEC 01
A CERTIFICATE COURSE IN LAND SURVEY

Objectives – The course aims to achieve the following objectives:

- To introduce the students a new technology of Land Surveying.
- To acquaint the students with reading obtained with Total Station/GPS forming a database for surveying and mapping.
- To offer practical training in land surveying to the students and make them surveying experts.
- To generate job opportunities in the corporate and government sector.

Paper I Theory

Unit No.	Topic	Subtopic	No. of Periods
9.	**Introduction to Surveying**	Meaning and definition of surveying, History of survey, Types of surveying, Concept of Surveying, Uses of surveying	**05**
10.	**Scale and Contours**	Definition and meaning, Characteristics and properties, Methods of contour, Definition and Methods of expression of Scale, Measurement units	**05**
11.	**Introduction to S.O.I. Toposheets**	Indexing, Conventional Signs, Symbols Interpretation of SOI topographical map	**05**
12.	**Surveying**	Introduction to chain and tape, plane table and prismatic compass survey Survey instruments and its use, merits and demerits	**05**
13.	**Dumpy level Survey**	Definition and Principles, Instruments and its use, Merits and demerits	**05**
14.	**Theodolite Survey**	Definition and Principles, Horizontal & Vertical angles, Instrument and its use, Merits and demerits	**05**

15.	**Computer Cartography**	Principles of Computer Cartography, Hardware and Software, Application of Computer Cartography, Advantages and Limitation	**10**
16.	**Total Station Surveying**	Basic Terms used in Total Station Surveying, Total Station instrument components, Phases of Total Stations Survey, Sources of error for total stations, Electronic Notebook, Advantage and disadvantage	**10**

REFERENCES

iii. Rangwala S.C. 2011. Surveying and Leveling, Charotar Publishing HousePvt. Ltd. Anand,(GJ)

iv. Mishra, R.P. (1973): Elements of Cartography. Prasaranga, University of Mysore.

v. S. K. Roy (2004) Fundamentals Of Surveying, PHI Learning Pvt. Ltd.

vi. Robinson, A.H & Sale R.D.: Elements of Cartography. Johns House & Sons, London.

vii. Sing R. L. (1996) : Map Work & Practical Geography, Central Book Dept. Allahabad.

viii. Ahmed, E-I. Rabbany 2006) :Introduction to GPS: The Global Positioning System, Artech House, Boston

ix. Nel, S . (2008):Global Positioning, John Wiley and Sons, Hoboken

Paper II

Paper – II (Practical)

Field Work and Laboratory Work **Total Periods: 80**

Unit No	Topic	Subtopic	No. of Periods
ii.	**Scale and Area Measurement**	8. Conversion of units 9. Conversion and Construction of scale 10. Exercises on area measurement. 11. Interpolation of contour lines	**15**
v.	**Modern Land Surveying Techniques**	• **<u>Total Station-</u>** Vertical and horizontal angle measurement, topographical survey (plain table and contour survey), Stake out / Demarcation/ Survey of Building Layouts / Plot Layouts / Roads / Alignments, Establish Benchmarks, Measurement of remote distance and elevation using special function of TS, Solution of trigonometric problems using COGO function on the field / Site, Calculate 2D, 3D area on the field / Site, Calculation of surface volume on the field / Site, Survey work estimation factors, procedure for download and upload data to TS, TS data formats, Preparation simple survey map using Software.	**25**
v.	**Field trip**	Organization of field trip for Total Station	**05**
vi.	**Project work**	(Application of Total Station in specific domain area) Total Station data acquisition, Processing and Presentation Project Report : Final Reporting	**20**
ii.	**Viva – voce**	Based on Project Work	**05**

REFERENCE

- Satheesh Gopi, (2007), Advanced Surveying: Total Station, GIS and Remote Sensing Pearson Education India,
- Charles D. Ghilani, Paul Richard Wolf (2008): Elementary Surveying: An Introduction to Geomatics, Prentice Hall,
- N. N. Basak (1994): Surveying and Leveling, Tata McGraw Hill Publishing Company LTD., New Delhi.

- Parkinson, B. Spilker J. : (Eds.) (1996) GPS : Theory and Applications Vol. I & II, AIAA, Washington.

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

Bachelor of Arts (B. A.)

B. A. Part - III

SEC 02

A CERTIFICATE COURSE TRAVEL AND TOURISM

Objectives:

iii. To introduce the fundamental concept of Travel and Tourism.

iv. To familiarize with the significance and emerging trends in tourism.

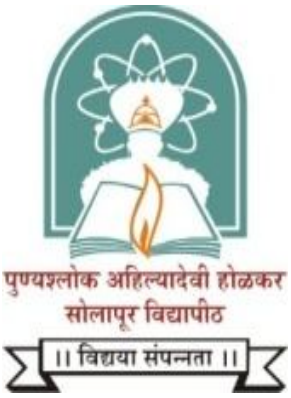
Unit No	Topic	Subtopic	No. of Periods
1	Introduction to Travel	Meaning & definitions of tourism, traveler, excursionist, tourists - Objectives, nature & Classification of tourism & tourists. Tourism recreation & leisure inter-relationship. Growth and development of Tourism through the ages.	**10**
2	History and growth of travel agency businesses	Emergence of Thomas Cook – Emergence of Travel Intermediaries- Definition - The travel Market: Business Travel - Corporate Travel - Commercial Group Travel - Institutional Travel - Leisure Travel - Family Travel - Single Resort Travel - Special Interest Travel. Types of travel agency and tour operations - Inter-relationship between Travel agency and tour operation. Indian travel agents and tour operators - an overview.	**10**
3	Components and Forms of Tourism	Components of tourism Forms of Tourism: religious, Medical Tourism, historical, social, adventure, health, business, conferences, conventions, incentives, sports and adventure tourism	**10**
4	Major tourist attractions in India	physical and political features of Indian subcontinents. Climatic conditions prevailing in India. Tourism attractions in different states and territories of India.	**10**
5	Tourism Marketing	Marketing for Hospitality and Tourism – Definition – Core Marketing Concepts – Marketing Philosophies – Selling Vs	**10**

		Marketing, Differences between Products and Services – Technology and Marketing – Specific features of Tourism Marketing.	
		FIELD WORK CASE STUDIES Panning and Organization of tour on famous routs for 2 to 15 days.	**60**

References:

8. Dennis L & Foseter – Glencoe (2003), an Introduction to Travel & Tourism, McGrawHill
9. Ghosh Bishwanth (2000), Tourism & Travel Management, Second Revised Edition Vikas Publishing House Pvt Ltd, New Delhi.
10. Kaul R.N 91991), Dynamics of Tourism, Sterling Publishers Pvt Ltd, Volume 1,2 & 3 New Delhi,
11. Pran Nath Seth(1997),Successful Tourism Management, Sterling Publishers Pvt Ltd, New Delhi,
12. Praveen Sethi(1999), Tourism for the Next Millennium, Rajat Publication New Delhi.
13. Singh Anand (2005), Tourism in Ancient India, Serials Publications, New Delhi.
14. Sinha R.K (2003), Growth and Development of Modern Tourism, Dominant Publishers, New Delhi.

Punyashlok Ahilyadevi Holkar Solapur University, Solapur



NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty: Science & Technology

CHOICE BASED CREDIT SYSTEM

Syllabus: Bachelor of Computer Applications

Name of the Course: B. C. A. Part- III (Sem. V & VI)

(Syllabus to be implemented from w.e.f. June 2021)

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

Choice Based Credit System (CBCS), (w. e. f. June-2021)

Syllabus for B. C. A. – Part III (Science)

Name and Type of the Paper		Title of Paper	Hrs/Wee		Total Marks per paper	UA	CA	Credits
Type	**Name**		**L**	**P**				
B. C. A. – III Semester V								
English (Business English)	English (Business English)		4	-	50	40	10	2.0
DSE 1 A	Paper IX	Core Java	4	-	100	80	20	4.0
DSE 2 A	Paper X	Visual Programming	4	-	100	80	20	4.0
DSE 3 A	Paper XI	Computer Graphics	4	-	100	80	20	4.0
DSE 4 A	Paper XII	Recent Trends in IT	4	-	100	80	20	4.0
SEC 3	Paper XIII	Linux and Shell Programming	4	-	100	80	20	4.0
	Total (Theory)		**24**	**-**	**550**	**440**	**110**	**22.0**
B. C. A. – III Semester VI								
English (Business English)	English (Business English)		4	-	50	40	10	2.0
DSE 1 B	Paper XIV	Advanced Java	4	-	100	80	20	4.0
DSE 2 B	Paper XV	Dot Net Technology	4	-	100	80	20	4.0
DSE 3 B	Paper XVI	Data Warehouse and Data Mining	4	-	100	80	20	4.0
DSE 4 B	Paper XVII	Cryptography and Network Security	4	-	100	80	20	4.0
SEC 4	Paper XVIII	Advanced Python	4	-	100	80	20	4.0
	Total (Theory)		**24**	**-**	**550**	**440**	**110**	**22.0**
Practical								
DSE 1A &1B	Practical IV	Practical On Core Java and Advance Java	-	5	100	80	20	4.0
DSE 2A &2B	Practical V	Practical on Visual Programming and .Net Technology	-	5	100	80	20	4.0
DSE 3A &3B	Practical VI	Practical on Computer Graphics And DM & DW	-	5	100	80	20	4.0
	Practical VII	Project	-	5	100	80	20	4.0
	Total (Practicals)		**-**	**20**	**400**	**320**	**80**	**16**
Grand Total			**48**	**20**	**1500**	**1200**	**300**	**60**

BCA Part - III

Semester V

Course Code: Paper IX **Course Title: Core Java**

Teaching Scheme: Theory 4 Lect./week **Total Marks: 100**

Unit No.	Description	No. of Lectures
I	**Introduction to Java Programming** • Overview of Java • Features of Java as programming language / Platform • JDK Environment and Tools	03
II	**Java Programming Fundaments** • Data types, Variables, Operators, Keywords, Naming Conventions • Structure of Java Program • Flow Control- Decision, Iterations • Arrays	03
III	**Classes and Objects** • Class – Members access control, Objects, Constructors, Use of 'this' keyword • Static, non-static data members and methods. • public, private & protected data members	03
IV	**Inheritance & Polymorphism** • Access/Scope specifiers protected • Super, extends, single, multiple inheritance • Method overriding • Abstract classes & ADT, 'final' keyword • Extending interfaces	05
V	**Exception Handling** • Exceptions and Types, try. catch and finally block • throw & throws statement, user-defined exceptions	06
VI	**Threading** • Java thread lifecycle • Thread class & run able interface Thread priorities & synchronization • Usage of wait & notify	10
VII	**Java I/O** • Java I/O package, byte & character stream • Reader & writer, file reader & file writer	10
VIII	**Event Programming** • Java awt components: window, Frame, Panel, Dialog, File Dialog, Label, Button, List, Check Box, Text Components, Choice, Menu Components • Layout Managers • Border, Flow, Grid, Event Model • Listeners / Adapters	10
IX	**JDBC** • Introduction to JDBC • Feature & Architecture of JDBC • Types of drivers, its advantage & disadvantage • JDBC Statements & Methods : statement, PreparedStatement, Callable Statement, execute(), executeQuery(), executeUpdate(), Working with Resultset interface, Working with Resultset Metadata	10

Reference Books:

1. Java 2 for professional developers [by Michael Morgen]
2. Jdbc, Servlets & JSP black book [by Santoshkumar K. Kogent Solution Inc.]
3. Core Java Vol 1 and Vol 2 [by Cay. S. Horstmann, Gray Cornell]
4. Java The complete Reference [by Herbert Schildt]

BCA Part - III

Semester V

Course Code: Paper X **Course Title: Visual Programming**

Teaching Scheme: Theory 4 Lect./week **Total Marks: 100**

Unit No	Description	No. of Lectures
I	**Introduction to Dot.Net Framework** • Introduction to DOTNET • DOT NET class framework • Common Language Runtime • Overview • Elements of .NET application • Memory Management • Garbage Collector : Faster Memory allocation, • Optimizations • Common Language Integration • Common type system • User and Program Interface	**08**
II	**Introduction to C#** • C# Language elements • Data types -Reference Type and Value Type • Boxing and Unboxing • Enum and Constant • Operators • Control Statements • Working with Arrays and Strings • Parameter passing technique: • Pass by value and by reference, out parameters, Variable length parameter	**10**
III	**Object oriented concepts** • Working with Indexer and Properties • Constructor & Destructor • Working with "static" Members • Inheritance & Polymorphism - Types of Inheritance - Constructor in Inheritance - Interface Implementation - Operator and method Overloading and overriding - Static and Dynamic Binding and • Virtual Methods • Abstract Class, sealed keyword	**10**
IV	**Exception Handling** • What is Exception • Rules for Handling Exception • Exception classes and its important properties • Understanding & using try, catch keywords • Throwing exceptions • Importance of finally block	**04**

V	**USING I/O Class** • Streams Class • Text Stream and Binary Stream • System.IO and Base classes of Stream • Console I/O Streams • Working with File System -File ,FileInfo, • Directory ,DirectoryInfo classes	**04**
VI	**Delegates** • Introduction of Delegation • Types of delegate • Anonymous Methods	**03**
VII	**Collections & Generics** • Collection classes: • ArrayList, Hashtable, stack, queue. • Writing custom generic classes. • Working with Generic Collection Classes	**05**
VIII	**Windows Forms** • Controls: Common control Group, • Data control Group, Dialog control Group, • Container control Group • Menus and Context Menus: Menu Strip, • Toolbar Strip. • SDI and MDI Applications	**10**
IX	**Data Access using ADO.NET** • Evolution of ADO.NET • Connected and Disconnect Classes • Establishing Connection with Database • Executing simple Insert, Update and Delete • Statements • DataReader and DataAdapter • What is Dataset? • Advantages of DataSet • Stored Procedures	**06**

Reference Books:

1. "Programming C#"- Jesse Liberty , O'Reilly Press.
2. "Professional C#"-Robinson et al, Wrox Press, 2002.
3. "The Complete Reference: C#"-Herbert Schildt, Tata McGraw Hill.
4. "The Complete Reference: Ado.Net"- Jerke, Tata McGraw Hill.
5. 5."C# for programmer"-Deilte-Pearson

BCA Part - III

Semester- V

Course Code: Paper XI **Course Title: Computer Graphics**

Teaching Scheme: Theory 4 Lect./week **Total Marks: 100**

Unit No.	Description	No. of Lectures
I	**Introduction** – applications of computer graphics, operations of computer graphics, graphics software packages.	**04**
II	**Graphical input – output devices**- graphical input devices, graphical output devices, raster scan video principles- raster scan monitors, color raster scan systems, plasma panel display, LCD panels, hard copy raster devices. Random scan devices- monitor tube displays, plotters.	**10**
III	**Scan conversion** – scan conversion methods, polynomial method for line, polynomial method for circle, DDA algorithm for line, circle and ellipse, Bresenham's algorithm for line drawing and circle. Midpoint methods for line and circle, problems of scan conversion.	**10**
IV	**Scan conversion for solids**- solid areas or polygons, inside-outside test – odd even method, winding number method. Solid area filling algorithms- boundary fill algorithm, scan line fill algorithm, scan line seed fill algorithm, ordered edge list algorithm.	**10**
V	**2D geometrical transformations** – basic transformations- translation, rotation, scaling, homogeneous co-ordinate system – transformations in homogeneous notation, inverse of basic transformations, scaling about a reference point, rotation about an arbitrary point. Other transformations – reflection about any arbitrary line, shearing, combined transformation- computational efficiency, visual reality, inverse of combined transformation.	**10**
VI	**3D geometrical transformations**- basic 3D transformation- 3D translation, 3D scaling. 3D rotation, rotation about an arbitrary axis in space, other 3D transformations- 3D reflection, reflection about any arbitrary plane, 3D shearing	**06**
VII	**Projection** – introduction, parallel projection- orthographic projection, axonometric projection, oblique projection, perspective projection – standard perspective projection, vanishing points. Image formation inside a camera.	**04**
VIII	**2D viewing and clipping**- windows and viewports, viewing transformation, clipping of lines in 2D- cohen-sutherland clipping algorithm, midpoint subdivision method, polygon clipping – Sutherland – hogman polygon clipping.	**06**

Reference Book:

1. Computer Graphics, Multimedia and Animation by Malay K Pakhira
2. Computer Graphics, Donald Hearn, M. Pauline Baker, Prentice-Hall
3. Computer Graphics, Roy A. Plastock, Gordon Kalley, Schaum's Outlines, McGraw Hill

BCA Part - III

Semester- VI

Course Code: Paper XII **Course Title: Recent Trends in IT**

Teaching Scheme: Theory 4 Lect./week **Total Marks: 100**

Unit No.	Description	No. of Lectures
I.	**GREEN IT** **INTRODUCTION** Environmental Impacts of IT, Holistic Approach to Greening IT, Green IT Standards and Eco-Labelling, Enterprise Green IT Strategy , Green IT: Burden or Opportunity? **Hardware:** Life Cycle of a Device or Hardware, Reuse, Recycle and Dispose. **Software:** Introduction, Energy-Saving Software Techniques, Evaluating and Measuring Software Impact to Platform Power.	**10**
II.	**BIG DATA AND HADOOP** 1: Introduction to Big Data Topics - What is Big Data and where it is produced? Rise of Big Data, Compare Hadoop vs traditional systems, Limitations and Solutions of existing Data Analytics Architecture, Attributes of Big Data, Types of data, other technologies vs Big Data. 2: Hadoop Architecture and HDFS Topics - What is Hadoop? Hadoop History, Distributing Processing System, Core Components of Hadoop, HDFS Architecture, Hadoop Master – Slave Architecture, Daemon types - Learn Name node, Data node, Secondary Name node.	**10**
III.	**DATA SCIENCE** Definition, working, benefits and uses of Data Science, Data science vs BI, The data science process, Role of a Data Scientist, Populations and samples, Statistical modeling, probability distributions	**10**
IV.	**MACHINE LEARNING** **INTRODUCTION TO MACHINE LEARNING(8)** Why Machine learning, Examples of Machine Learning Problems, Structure of Learning, Learning versus Designing, Training versus Testing, Characteristics of Machine learning tasks, Predictive and descriptive tasks, Features: Feature types, Feature Construction and Transformation, Feature Selection.	**10**
V.	**CLOUD COMPUTING** **INTRODUCTION TO CLOUD COMPUTING (8)** Defining Cloud computing, Essential characteristics of Cloud computing, Cloud deployment model, Cloud service models, Multitenancy, Cloud cube model, Cloud economics and benefits, Cloud types and service scalability over the cloud, challenges in cloud NIST guidelines. **VIRTUALIZATION, SERVER, STORAGE AND NETWORKING** Virtualization concepts, types, Server virtualization, Storage virtualization, Storage services, Network virtualization, Service virtualization, Virtualization management, Virtualization technologies and architectures, Internals of virtual machine, Measurement and profiling of virtualized applications. Hypervisors: KVM, Xen, HyperV Different hypervisors and features.	**10**

VI.	**INTERNET OF THINGS** **INTRODUCTION** What is the Internet of Things? : History of IoT, About IoT, Overview and Motivations, Examples of Applications, Internet of Things Definitions and Frameworks : IoT Definitions, IoT Architecture, General Observations, ITU-T Views, Working Definition, IoT Frameworks, Basic Nodal Capabilities	**10**

Reference Books:

1. San Murugesan, G. R. Gangadharan: Harnessing Green IT,WILEY 1st Edition-2013
2. Data science and big data analytics, EMC
3. Doing Data Science, *Rachel Schutt and Cathy O'Neil*
4. Introducing Data Science, Davy Cielen
5. Data Science for Business, Foster Provost and Tom Fawcett, O'Reilly.
6. Peter Flach: Machine Learning: The Art and Science of Algorithms that Make Sense of Data, Cambridge University Press, Edition 2012.
7. Hastie, Tibshirani, Friedman: Introduction to Statistical Machine Learning with Applications in R, Springer, 2nd Edition-2012.
8. Barrie Sosinsky, " Cloud Computing Bible", Wiley
9. Gautham Shroff, "Enterprise Cloud Computing", Cambridge.
10. Stefan Poslad, "Ubiquitous Computing: Smart Devices, Environments and Interactions" by John Wiley & Sons, 2011.
11. A.Shrinivasan, J.Suresh, "Cloud Computing: A practical approach for learning and implementation", Pearson
12. Daniel Minoli, "Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications", ISBN: 978-1-118-47347-4, Willy Publications
13. Bernd Scholz-Reiter, Florian Michahelles, "Architecting the Internet of Things", ISBN 978-3- 642-19156-5 e-ISBN 978-3-642-19157-2, Springer
14. Parikshit N. Mahalle& Poonam N. Railkar, "Identity Management for Internet of Things", River Publishers, ISBN: 978-87-93102-90-3 (Hard Copy)

BCA Part - III

Semester V

Course Code: Paper XIII **Course Title: Linux & Shell Programming**

Teaching Scheme: Theory 4 Lect./week **Total Marks: 100**

Unit No.	Description	No. of Lectures
I	**Introduction to Linux** History, Distributions, Features, Linux Architecture, Kernel, Types of Shells, Difference between Windows and Linux Working environments -KDE, GNOME , Xface4 etc	03
II	**Installation of Linux** Hardware requirement, Software requirements, Create partitions, Configuration of X system, Start-up configuration.	03
III	**Linux File System** File System, Hierarchy of File system, Devices and Drives in Linux, Mounting Devices File System parts- Boot Block, Super Block, Inode Block, Data Block	03
IV	**Users, Groups and Permissions** Create Users ,Create groups, Special groups, Assigning permissions to users and groups	05
V	**Commands, Utilities and File Management** Managing file and directories: mkdir, cd and pwd, ls, cat, more, less. Nested directories, File and Directory Operations: find, cp, mv, rm, ln etc. Filters: head, tail , pr, cut, paste , sort, uniq, grep, egrep, fgrep. Text Editors- vi, vim File and Directory permissions- chmod, chown, chgrp. Printing the files - lpr, lpq, lprm etc. Archive and File compression, Windows integration tools.	06
VI	**Shell Programming and Process Management** Shell Variables, Shell Scripts – Control and Loop structure, User defined commands, I/O and Redirection, Piping, Metacharacters Process Management : Shell process, Parent and children, Process status, System process, Multiple jobs in background and foreground, Changing process priority with nice. listing processes, ps, kill, Premature termination of process.	10
VII	**Disk management and System Administration** Boot Loaders-GRUB, LILO, Custom Loaders System administration – Common administrative tasks, Identifying administrative files, Configuration and log files, Chkconfig, Role of system administrator, Security Enhanced Linux. Configuration Apache and MySql, X Window, Communication.	10
VIII	**Linux Networking** Networking services and Configuration files, starting services, Network tools-ping, finger, traceroute, who, host, rlogin, slogin, rcp, rsh, ssh. Protocols and Services- SMB, FTP, DHCP, LDAP, NFS and NIS.	10

Reference Books:

1) Operating Systems by William Stallings(PHI)
2) Operating System by Achyut Godbole (TMH)
3) Linux the complete refrence by Richard Mathews(TMH)
4) Red Hat Linux :The Complete Reference by Peterson (TMH)
5) Unix Systems V 4 Concepts & Applications by Sumitabha Das
6) Using Linux by Bill Ball

BCA Part - III

Semester- VI

Course Code: Paper XIV **Course Title: Advanced Java**

Teaching Scheme: Theory 4 Lect./week **Total Marks: 100**

Unit No.	Description	No. of Lectures
I	**Servlet** • Introducing CGI • Introducing Servlet • Advantages of Servlet over CGI • Features of Servlet • Introducing Servlet API • Javax.servlet package • Javax.servlet.http package • Introducing Servlet • Advantages of Servlet over CGI • Features of Servlet • Servlet life Cycle • Init() • Service() • Destroy() • Working with GenericServlet and • HttpServlet • RequestDispatcher interface • Include() and forward() • Use of RequestDispatcher • Session in Servlet • Introducing session • Session tracking mechanism • Cookies • Advantages & disadvantages • use of cookies • Hidden form filed • Advantages & disadvantages • use of Hidden form filed • URL rewritten • disadvantages • use of URL rewritten • HttpSession • Advantages & disadvantages • use of URL HttpSession	**18**
II	**JSP** • Introduction to JSP • Advantages of JSP over Servlet • JSP architecture • JSP life cycle • Implicit objects in JSP- request, response, out, page, page Context, application,session, config, exception • JSP tag elements- Declarative, Declaration, scriplet, expression, action.	**18**

	• Java Bean- Advantages & Disadvantages, • Use Bean tag- setProperty and getProperty • Bean In Jsp • JSTL core tag: General purpose tag, • conditional tag, networking tag • JSTL SQL tags • JSTL formatting tags • JSTL xml tags • Custom tag: empty tag, body content tag, • iteration tag, simple tag • Introducing internationalization & Java: local class, ResourceBundle class	
III	**Hibernate** • Introduction Hibernate(HB) • Architecture of HB • Application of HB: HB with annotation, • HB web application • Inheritance mapping: Table per Hierarchy • (TPH), TPH using annotation, Table Per • Concrete (TPC), TPC using annotation, • Table Per Subclass (TPS), • TPS using annotation. • Collection mapping: • Mapping list, one to many by list, • one to many by bag, • one to many by set, one to many by map.	**12**
IV	**Spring** • Introduction to spring • Spring modules. • Spring application • Dependency injection: constructor Injection (CI), • CI dependant object, • CI with collection, • CI with map, • CI inheriting bean • Spring JDBC: JDBC template, • PreparedStatement, ResultsetExactor, • RowMapper, NamedParameter, • Simple JDBC template. • Spring with Hibernate	**12**

Reference Books:

1. "JDBC, Servlet and JSP Black Book"- Santosh Kumar K.
2. "Java EE Server programming"- Sharanam Shah and Vaishali Shah.
3. "Java Server Programming Black book"
4. "Hibernate"- Sharanam Shah & Vaishali Shah
5. "Spring Persistence with Hibernate"- Paul Tepper Fisher, Brian D Murphy.

BCA Part - III

Semester- VI

Course Code: Paper XV **Course Title: Dot Net Technology**

Teaching Scheme: Theory 4 Lect./week **Total Marks: 100**

Unit No.	Description	No. of Lectures
I	Introduction of Asp.Net • Evaluation of Asp.Net • Fundamentals of ASP.NET • Understanding architecture ASP.NET • Compilation Technique of ASP.Net • Application Location • Web Page and Web Site life cycle • ASP.Net Page Structure • Page Directives • Self-page and Cross page posting • Post back and View State concepts • Application Folders	**08**
II	Web Server Control • Creating ASP.NET Pages – Web Forms • Working with web controls – Standard • Control group, Rich Controls. • Different type of List controls • File Upload, AdRotator, MultiView, Calendar • Create Web User Control	**10**
III	Validation controls • Introduction of validation • Types of validation • Validation Controls • Validation Groups	**06**
IV	Master Pages & Themes • Need of Master Pages • Basics of master pages • Creating Master and Content pages • Programmatically assign master pages • Nested Master pages • Event ordering of master pages • Basic Themes and Skins • Creating and Using Themes • Defining multiple skins • Programmatically working with themes	**08**
V	Site Navigation • Site Navigation technique • Site Map Path, Tree View and Menu Control • Nesting sitemap file • Attach XML file to tree view and menu	**04**
VI	State Management • Introduction of state management • technique • Types of State Management technique	**04**

	• Client side and server side State Management	
VII	Personalization • Personalization Model • Creating Personalization Properties	**03**
VIII	AJAX • What is AJAX and need for AJAX • Client side and server side AJAX • Implementing AJAX with JavaScript • Using ASP.NET Ajax Control toolkit • Working with AJAX's Server side controls. • Script Manager, Script Manger Proxy, • Update panel, Update Progress, Timer	**06**
IX	Web Services • What is Web Service? • Understanding SOAP, WSDL, Proxy etc. • Creating Web services • How to consume web services • To build an Web Service application and Client	**05**
X	Storing and Retrieving Data with ADO.NET • Accessing Data with ADO.NET • Using Data Sets on Web Forms • Processing Transactions • Working with DML commands	**06**

Reference Books:

1. "Unlished Asp.Net "- Walther , SAMS Pearson.
2. "Professional ASP.Net"-Evjen, Sivkumar, Wrox Press.
3. "The Complete Reference: Asp.Net"-MacDonald, Tata McGraw Hill.
4. "The Complete Reference: Ajex"- Powell, Tata McGraw Hill.
5."Pro Asp.Net in C#"-MacDonald, Szpuszta-APress
6."Asp.Net Step by step"- George Shephera-Microsoft Press
8. "Professional Ajex"-Zakas, NxPeak, fawcett, Wrox Press
9. complete reference crystal reports-Geogre Peak

BCA Part – III

Semester- V

Course Code: Paper XVI **Course Title: Data Warehouse and Data Mining**

Teaching Scheme: Theory 4 Lect./week **Total Marks: 100**

Unit No.	Description	No. of Lectures
I	**Introduction to Data Warehouse** ✓ Difference between operational database systems and data warehouses. ✓ Data warehouse Characteristics, ✓ Data warehouse Architecture and its Components, ✓ Extraction – Transformation – Loading, Logical (Multi – Dimensional), ✓ Data Modelling - Schema Design, Star and Snow – Flake Schema, Fact Constellation, Fact Table, Fully Addictive, Semi – Addictive, Non Addictive Measures; Fact – Less – Facts, ✓ Dimension Table Characteristics; OLAP Cube, OLAP Operations, OLAP Server Architecture – ROLAP, MOLAP and HOLAP.	**12**
II	**Introduction to Data Mining** ✓ What is Data Mining, Difference between Database Management System, Data Warehouse and Data Mining ✓ KDD, Challenges, Data Mining Tasks, ✓ Need for Pre-processing the Data ✓ Data Summarization ✓ Data Cleaning ✓ Data Integration and Transformation, ✓ Data Reduction ✓ Discretization and Concept Hierarchy ✓ Generation ✓ Binaryzation ✓ Data Transformation; Measures of Similarity and Dissimilarity – Basics.	**12**
III	**Association Rule** ✓ problems Definition, ✓ Frequent Item Set Generation, ✓ The APRIORI Principle, Support and Confidence Measures, ✓ Association Rule Generation; APRIOIRI Algorithm, ✓ The Partition Algorithms, FP- Growth Algorithms, ✓ Compact Representation of Frequent Item set- Maximal Frequent Item Set, ✓ Closed Frequent Item Sets.	**10**

IV	**Classification** ✓ Problem Definition, ✓ General Approaches to solving a classification problem, ✓ Evaluation of classifiers, Classification Techniques, ✓ Decision Tree – Decision tree Construction, Methods for ✓ Expressing attribute test conditions, ✓ Measures for Selecting the Best Split, ✓ Algorithm for Decision tree Induction; Naive Bayes Classifier, ✓ Rule base classification ✓ Bayesaian Belief Networks; K – N earnest neighbor classification – Algorithm and Characteristics.	**10**
V	**Clustering** ✓ Problem Definition, Clustering Overview, ✓ Evaluation of Clustering Algorithms, Partitioning Clustering -K-Means Algorithm, K-Means Additional issues, ✓ PAM Algorithm; ✓ Hierarchical Clustering – Agglomerative Methods and divisive methods, ✓ Basic Agglomerative Hierarchical Clustering, Strengths and Weakness; ✓ Outlier Detection.	**10**
VI	**Application and trends in Data Mining** ✓ Spatial Data Mining ✓ Text Data Mining ✓ Multimedia Data Mining ✓ Web Data Mining ✓ Application of data mining	**06**

Reference Books:

1. Data Mining – Concepts and Techniques – Jiawei Han, Michelinen Kamber, Morgan Kaufmann Publishers, Elsevier, 2 Edition, 2006.
2. Introduction to Data Mining, Pang – Ning Tan, Vipin Kumar, Michael Steinbanch, Pearson Education.
3. Data Mining Techniques, Arun K Pujari, 3rd Edition, Universities Press.
4. Data Warehouse Fundamentals, Pualraj Ponnaiah, Wiley Student Edition.
5. Data Mining, Vikaram Pudi, P Radha Krishna, Oxford University Press

BCA Part – III

Semester- VI

Course Code: Paper XVII **Course Title: Cryptography and Network Security**

Teaching Scheme: Theory 4 Lect./week **Total Marks: 100**

Unit No.	Description	No. of Lectures
I	Security Concepts: Introduction, The need for security, Security approaches, Principles of security, Types of Security attacks – Active and Passive, Security services, Security Mechanisms, A model for Network Security	08
II	Cryptography Concepts and Techniques: Introduction, plain text and cipher text, substitution techniques, transposition techniques, encryption and decryption, symmetric and asymmetric key cryptography, steganography, key range and key size, possible types of attacks	15
III	Symmetric Key Cryptographic Algorithms: Algorithm Types and Modes, An overview of Symmetric Key Cryptography, DES, International Data Encryption Algorithm (IDEA), RC5, Blowfish, AES Asymmetric Key Cryptography: Brief History of Asymmetric Key Cryptography, An overview of Asymmetric Key Cryptography, The RSA Algorithm, Symmetric and Asymmetric Key Cryptography Together	15
	Digital Signatures: Introduction, Message digests, MD5, SHA-512,MAC, HMAC, Knapsack Algorithm, Elliptic curve Technology, ELGamal Algorithm. Internet Security Protocols: Secure Socket Layer/TLS, Secure Electronic Transaction, SSL versus SET, E-mail Security- PGP, S/MIME.	15
V	User Authentication and Kerberos: Authentication basics, Passwords, use of smart cards, Biometrics, Kerberos. Network Security: Firewalls, types of firewalls, IP Security Intrusion : Intruders, Audit Records, Intrusion Detection, honey pots.	07

Reference Books:

1. Atul Kahate Cryptography and Network Security, Tata McGraw-Hill, 2007
2. Behrouz A. Forouzan, Debdeep Mukhopadhyay: Cryptography and Network Security, 2nd Edition, Special Indian Edition, Tata McGraw-Hill, 2011.
3. Michael E. Whitman and Herbert J. Mattord: Principles of Information Security, 2nd Edition, Thomson, Cengage Delmar Learning India Pvt., 2012.
4. William Stallings: Network Security Essentials: Applications and Standards, 4th Edition, Pearson Education, 2012.

BCA Part – III

Semester- VI

Course Code: Paper XVIII **Course Title: Advanced Python**

Teaching Scheme: Theory 4 Lect./week **Total Marks: 100**

Unit No.	Description	No. of Lectures
I	Windows Applications using Tkinter GUI Programming GUI in Python, Advantages of GUI, Introduction to GUI library, Basic Operations using Tkinter, Root Window, Working with Containers: Frame, Canvas Layout Management, Events and Bindings, Font, Colors, drawing on Canvas (line, oval, rectangle, etc.) Widgets: Label, Button, Check button, Entry, List box, Message, Radio button, Text, Spinbox, Scrollbar, Menu etc. Writing Python Programs for GUI applications	**15**
II	**Web Application using Django** : What Is a Web Framework? The MVC Design Pattern, Django's History, Advantages of Django, Understanding Django environment, Installing Django, Setting Up a Database Django architecture, The Development Server, Django Commands Overview, Starting a Project, Django apps, Difference between app and project, The Project Structure, Setting Up Your Project, Create an Application Migration, Admin Panel. Views in Django, URL Routing, Template in Django, Models in Django, Forms in Django.	**15**
III	**XML**: Introduction to XML, XML Parser Architecture and API's, Parsing XML with SAX API's, Parsing XML with DOM API's	**12**
IV	**Network Programming:-** Introduction to Sockets Programming, Server Socket Methods, Client Socket Methods, IP Address, URL, TCP/IP Server, TCP/IP Client, Sending E-mail Application	**12**

Reference Books:

1. Beginning Django: Web Application Development and Deployment with Python-Daniel Rubio-Apress
2. Django Unleashed- Andrew Pinkham-SAMS
3. Practical Django Projects- James Bennett-Apress
4. Python GUI Programming with Tkinter- Alan D. Moore-Packt
5. Tkinter GUI Application Development H TSHOT - Bhaskar Chaudhary -Packt

Sample Assignments on Core Java

1. WAP to demonstrate the use of various data types.
2. WAP to print following pattern.
    a. A
    b. A B
    c. A B C
    d. A B C D
3. WAP which will check number for Armstrong, prime, palindrome & perfect number.
4. WAP USING arrays to sort player name along with timing of Athlete (sort using two dimensional array).
5. WAP to demonstrate the use of Access Control.(Public, private , protected).
6. WAP using static & non static data members.
7. WAP using Interface.
8. WAP to demonstrate use of Exception Handling.
9. WAP which will create user defined Exception.
10. WAP which will accept string and calculate how many vowels present in it.
11. WAP which will accept range of years from users and print leap years between them.
12. WAP to reverse the number.
13. WAP which will accept number and displays it in words.
    a. e.g.- If number-123 as one two three.(use switch).
14. WAP which will create following threads.
    a. Print even & odd numbers.
    b. Print Hello 15 times.
    c. Print the prime number.
15. WAP which will demonstrate overloading & Inheritance.
16. WAP to display the following pattern.
    a. *1
    b. **2
    c. ***3
17. WAP to show demo of parameterized constructor.
18. Create an Applet which contains one combo box for font name, one list box , for font size and three radio button for font style i.e. Bold, Italic and Normal.
    The applet also displays some string message by label.
    WAP such that user will be able to change the font type, font size and font style of the text display and label caption.
19. WAP to append the contents of one file with another file.
20. WAP to develop a calculator using Applet (functions showing addition, subtraction, Multiplication and Division.
21. WAP which will insert student records into database having fields roll no, name, marks of five subjects, total marks and percentage and display the same.

Sample Assignments on Visual Programming

1. WAP program to check entered number is even or odd. AP program to get number and display sum of digits.
2. WAP program to check whether entered year is leap year or not.
3. WAP program to display date in various formats.
4. WAP program to Illustrate the Use of Access Specifiers.
5. WAP to create sealed class.
6. WAP to perform boxing and unboxing operation.
7. WAP to demonstrate multilevel inheritance.
8. WAP to demonstrate single level inheritance.
9. WAP to demonstrate multilevel inheritance with virtual methods.
10. WAP to get lower bound and upper bound of an array.
11. WAP to demonstrate jagged array.
12. WAP to find Minimum and Maximum of numbers.
13. WAP to search elements of an array.
14. WAP to copy a section of one array to another.
15. WAP to demonstrate abstract properties.
16. WAP to implement delegates.
17. WAP to combine two delegates.
18. WAP to implement multicast delegate.
19. WAP to demonstrate DivideByZero Exception.
20. WAP to demonstrate Multiple exceptions.
21. WAP to create a file.
22. WAP to Read the Contents of File.
23. WAP to Create Directory.
24. WAP to implement BinaryReader.
25. WAP to Read Line from File until end of file is reached.
26. WAP to Design user interface using all windows controls.
27. WAP to design MDI application.
28. WAP to demonstrate ADO.NET.
29. WAP to demonstrate Insert, Update and Delete Statements.

Sample Assignments on Computer Graphics

1. Write a program to implement bouncing of a ball over a horizontal plane.
2. Program to create Pie Chart.
3. Program to create Bar Chart.
4. Program to display Circles in Circle.
5. Program to create smiling face.
6. Program to create National Flag.
7. Program to create Solar System.
8. Program to create an analog clock
9. Program to create a digital clock
10. Program to animate a Fan.
11. Program to animate a Flying Kite
12. Program to animate a Traffic light
13. Program to translate an object with respect to origin.
14. Program to rotate an object with respect to origin.
15. Program to scale an object with respect to origin.
16. Program to rotate an object with respect to arbitrary point.
17. Write a program to draw a line by using DDA algorithm. 1
8. Write a program to draw a line by using Bresenham's algorithm.
19. Write a program to draw a Midpoint Circle algorithm

Sample Assignments on Advance Java

1. Write a programme which demonstrates life cycle of Servlet
2. Write a programme by using GenericServlet
3. Write a programme by using HttpServlet
4. Write a Servlet programme to send request to another page
5. Write a Servlet programme to track the user by using (Cookies, URL-rewriting, Hidden form field & HttpSession)
6. Write Jsp programme which will display its life cycle
7. Write a Jsp programme by using its implicit objects like request, response, out, page, pageContext, application, session, config, exception
8. Write a Jsp programme which will use scriplet, expression and declarative tag.
9. Write a Jsp programme which will create bean and calculate simple interest
10. Write a Jsp programme to create bean to check account balance(from database)
11. Write a Jsp programme to insert data into database
12. Write a Jsp programme which will use JSTL core tag, JSTL SQL tags, JSTL formatting tags, JSTL xml tags, Customtag: empty tag, body content tag, iteration tag, simple tag
13. Write a programme to display a message in different languages (use java internationalization)
14. Write a simple Hibernate programme
15. Write a HB with annotation
16. Write a HB web application
17. Write a HB Inheritance mapping: Table per Hierarchy(TPH), TPH using annotation, Table Per Concrete (TPC), TPC using annotation, Table Per Subclass (TPS), TPS using annotation. Collection mapping: Mapping list, one to many by list, one to many by bag, one to many by set, one to many by map.
18. Write simple Spring programme.
19. Write a Spring programme to show Dependency injection: constructor Injection (CI),CI dependant object, CI with collection, CI with map, CI inheriting bean
20. Write a Spring Spring JDBC programme using : JDBC template, PreparedStatement, ResultsetExactor,RowMapper, NamedParameter, Simple JDBC template. Spring with Hibernate

Sample Assignments on Dot Net Technology

1. Write a JavaScript for Addition, Subtraction, Division, and Multiplication of two numbers.
2. Design Webpage for employee registration form using all HTML controls and CSS.
3. Design web page for simple calculator By using class. Command name property. Button event.
4. Design web page of online shopping form which used textbox, label, buttons, and all type list controls.
5. Design Application for cross page posting.
6. Design This year calendar with all holidays in red color.
7. Design web page for image map by using Both method.
8. Design Advertisement web page.
9. Design web page which uses Multiview & View control. Wizard control. File upload control
10. Design web page for all validation control & validation Groups.
11. Create nested master pages.
12. Design web site which uses all site navigation Control.
13. Design web page which shows list of employees in selected dept.
14. Create XML & it's styles Sheet file.
15. Create Master Detail Form.
16. Create web page demonstrate insert, update, delete and select record.
17. Create web page demonstrate insert record and find sum of sal using stored procedure.
18. Design web page for grid view control.
19. Design web page which shows 10 events in calendar control.
20. Design web page which demonstrate wizard control

Sample Assignment on Data Warehousing and Data Mining

1. Open any dataset in WEKA and write down the attributes in that dataset also write down its types.
2. Open iris dataset in weka. Apply each type of classification algorithm on dataset. Identify which is best classification algorithm for iris dataset.
3. Convert CSV file to ARFF file format.
4. Demonstrate supervised and unsupervised filter of preprocessor tab.
5. Open any data set and apply tree base classification algorithm on that dataset. Interpret the result.
6. Open any data set and apply Rule base classification algorithm on that dataset. Interpret the result.
7. Load the weather.nominal dataset. Demonstrate how to remove all instances in which the humidity attribute has the value high.
8. Load the iris data using the Preprocess panel. Evaluate C4.5 on this data using (a) the training set and (b) cross-validation. What is the estimated percentage of correct classifications for (a) and (b)? Which estimate is more realistic?
9. Find the glass dataset glass.arff and load it into the Explorer interface. Apply the unsupervised discretization filter in the two different modes (equal-width (the default) and equal-frequency discretization.) explained previously.
10. Apply the ranking technique to the labor negotiations data in labor.arff to determine the four most important attributes based on information gain.
11. Demonstrate how to convert numeric to nominal, nominal to numeric, string to nominal and nominal to string.

Project Work

Course Code: Practical VII **Course Title: Major Project Work**
Internal Assessment: 20 **External Assessment: 50**

Instructions: Team size for major project not exceed than two students.

Equivalent Subject for Old SyllabusB.C.A. (Computer Science) - III (Semester –V and VI)

Semester-V		
Sr. No.	**Name of the Old Paper (w.e.f.2018-19)**	**Name of the New Paper (w.e.f.2021-2022)**
1	Core Java	Core Java (Sem-V)
2	Visual Programming	Visual Programming (Sem-V)
3	Linux and Shell Programming	Linux and Shell Programming (Sem-V)
4	Computer Graphics	Computer Graphics (Sem-V)
5	Data Warehouse and Data Mining	Data Warehouse and Data Mining (Sem-VI)
6	Theory of Computation	**No Equivalence**
Semester-VI		
Sr. No.	**Name of the Old Paper (w.e.f.2018-19)**	**Name of the New Paper (w.e.f.2021-2022)**
1	Advanced Java	Advanced Java (Sem-VI)
2	Dot Net Technology	Dot Net Technology (Sem-VI)
3	Recent Trends in IT	Recent Trends in IT (Sem-V)
4	Cryptography and Network Security	Cryptography and Network Security(Sem-VI)
5	System Programming	**No Equivalence**

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

पुण्यश्लोक अहिल्यादेवी होळकर
सोलापूर विद्यापीठ
।। विद्यया संपन्नता ।।

NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty: Science & Technology

CHOICE BASED CREDIT SYSTEM

Syllabus: Entire Computer Science

Name of the Course: B. Sc. (E.C.S.) Part- III (Sem. V & VI)

(Syllabus to be implemented from w.e.f. June 2021)

PunyashlokAhilyadeviHolkarSolapurUniversity,Solapur
FacultyofScienceandTechnology
ChoiceBasedCreditSystem(CBCS)(w.e.f.2021-22)RevisedStructureforB.Sc.(ECS)-III

Subject/ CoreCourse	Nameand Typeof thePaper		No. ofPapers /Practical	Hrs./Week			Total Marks perPaper	UA	CA	Credits
	Type	Name		L	T	P				
Class:	**B.Sc.(EntireComputer Science)- IIISemester–V**									
AbilityEnhancementCourse	(AECC)	English (BusinessEnglish)	Paper IIPart A	4	--	--	50	40	10	2.0
Core	DSE1 A	Data CommunicationandNetworking	Paper IX	4	--	--	100	80	20	4.0
	DSE2 A	Theory of ComputerScience	PaperX	4	--	--	100	80	20	4.0
	DSE3 A	VisualProgramming	PaperXI	4	--	--	100	80	20	4.0
	DSE4 A	AdvancedJava	PaperXII	4	--	--	100	80	20	4.0
SkillEnhancementCourse	SEC3	Advanced PythonProgramming	Paper XIII	4	--	--	100	80	20	4.0
TotalTheorySemester-V				**24**			**550**	**440**	**110**	**22**
Class:	**B.Sc.(EntireComputerScience)-IIISemester –VI**									
AbilityEnhancementCourse	(AECC)	English (BusinessEnglish)	Paper IIPartB	4	--	--	50	40	10	2.0
Core	DSE1 B	SystemSecurity	Paper XIV	4	--	--	100	80	20	4.0
	DSE2 B	CompilerConstruction	PaperXV	4	--	--	100	80	20	4.0
	DSE3 B	InternetProgramming usingASP.Net	Paper XVI	4	--	--	100	80	20	4.0
	DSE4 B	AngularJS	Paper XVII	4	--	--	100	80	20	4.0
Skill Enhancement Course	SEC4	Mobile ApplicationDevelopment	Paper XVIII	4	--	--	100	80	20	4.0
TotalTheorySemester-VI				**24**			**550**	**440**	**110**	**22**
Practical'son		DSE2 AandDSE 2 B		--	--	5	100	80	20	4.0
		DSE3 AandDSE 3 B		--	---	5	100	80	20	4.0
		DSE4 AandDSE 4 B		--	--	5	100	80	20	4.0
		Project work		--	--	5	100	80	20	4.0
Total(practical's)						**20**	**400**	**320**	**80**	**16**
Grand Total				**48**	**--**	**20**	**1500**	**1200**	**300**	**60**

Abbreviations:

L:

LecturesT:

TutorialsP:

Practicals

UA : University

AssessmentCA : College

AssessmentCC:CoreCourse

AEC:AbilityEnhancementCourseDSE :

Discipline Specific Elective PaperSEC:

SkillEnhancement Course

Type: DSE1A

CourseTitle:DataCommunicationandNetworking(PaperCode:PaperIX)

CourseObjectives:

1. TounderstandthestructureofDataCommunicationsSystemanditscomponents.
2. Befamiliarizewithdifferentnetworkterminologies.

CourseOutcomes: Upon successfulcompletionofthis course,studentswill beable to-

1. Familiarizewithcontemporaryissuesin network technologies.
2. Knowthelayered modelapproachexplainedinOSIandTCP/IP network models
3. Identifydifferenttypes ofnetworkdevices andtheirfunctions withinanetwork.
4. Know the Basic routing mechanisms, IP addressing scheme and internetworkingconcepts.
5. Familiarizewith IPand TCP Internetprotocols.
6. Understandmajor conceptsinvolvedindesignof WAN, LAN andwirelessnetworks.
7. Knowthebasicsofnetworkconfigurationandmaintenance.
8. Knowthe fundamentals of networksecurityissues.

Unit1:IntroductiontoComputerNetworks [6]

Network Definition, Network Topologies, Network Classifications, Network Protocol,Layered Network Architecture, Overview of ISO-OSI Reference Model, Overview of TCP/IPProtocolSuite.

Unit2:DataCommunicationFundamentalsandTechniques [10]

Signals-Analog and Digital Signal, Data-Rate Limits, Digital to Digital Line EncodingSchemes, Pulse Code Modulation,ParallelandSerialTransmission,DigitaltoAnalogModulation, Multiplexing Techniques- FDM, TDM, Transmission Media, Switching: CircuitSwitching,MessageSwitching, Packet Switching,

Unit3:DataLinkLayerFunctionsandProtocols [8]

Design issues, Error Detection and Error Correction Techniques, Data-Link Control-Framingand Flow Control, Error Recovery Protocols-Stop and Wait ARQ, Go-Back-N ARQ, Point toPointProtocol on Internet.

Unit4:MultipleAccess ProtocolandNetworkLayer [8]

Design issues, CSMA/CDProtocols, EthernetLANS;ConnectingLANandBack - BoneNetworks-Repeaters,Hubs, Switches, Bridges, Router and Gateways, Networks LayerFunctions and Protocols, Routing,RoutingAlgorithms,NetworkLayerProtocolofInternet-IP Protocol,Internet ControlProtocols.

Unit5:Transport,Session,Presentation andApplicationLayerProtocol

[12]Trans

port Services- Error and Flow Control, Connection Establishment and ConnectionRelease, Flow Control & Buffering, TCP/IP protocol suite, Concept of- TCP, UDP, IP, FTP,DNS,Telnet, SMTP, POP, HTTP, WWW, ARP,RARP.

ReferenceBooks:

- B.A.Forouzan:Data Communications and Networking, Fourth edition, THMPublishingCompanyLtd2007.
- S.Tanenbaum:ComputerNetworks, Fourthedition,PHIPvt. Ltd2002

Type: DSE2A

CourseTitle:TheoryofComputerScience(P aperCode:PaperX)

CourseObjectives

1. Course should provide a formal connection between algorithmic problem solving andthe theory of languages and automata and develop them into a mathematical (and lessmagical)viewtowardsalgorithmicdesignand ingeneralcomputationitself.
2. The course should in addition clarify the practical view towards the applications oftheseideasin theengineeringpart ofCS.

CourseOutcomes: Afterlearningthiscourse,the studentsshouldbeableto-

1. Understandthebasicconceptsandapplication inTheoryofComputation.
2. ApplythisbasicknowledgeofTheoryof Computation inthecomputerfield to solvecomputationalproblems and in thefieldof compiler also.

Unit1:Preliminaries **[4]**

BasicDefinitions,Sets,VariouswaysofdescribingaSet,Subsets,operationsonSets,InfiniteSetsRelations, Properties of relations, Equivalenceof relations.

Unit2:FiniteAutomata **[10]**

Introduction, Deterministic Finite Automata, Non Deterministic Finite Automata, TheEquivalenceofDFAsandNFAs, FiniteAutomata withεMoves,EquivalenceofNFAwith εTransitions and NFA without Transitions, Finite Automata with output, Moore Machine,MelayMachine Equivalenceof Mooreand MelayMachine.

Unit3:RegularExpression andPropertiesof RegularSets

[10]

Regular Expression Operations on set of strings, Regular Expression, Regular Sets,Equivalence of finite automata and regular expression Properties of Regular Sets Closureproperties,Thepumpinglemma ofregular sets,Application ofpumpinglemma.

Unit4:Regularand Context FreeGrammars

[8]

Context Free Grammars (CFG) Derivation and Language generated by grammar, DerivationTrees, Ambiguity of CFG, Simplification of CFG, Normal forms of CFG Regular

GrammarsEquivalenceof regular grammars andfiniteautomata Closureproperties of CFG.

Unit5:PushdownAutomata **[8]**

Introduction, Definitions, Equivalence of acceptance by final state and empty stack,Definition of DPDA and NPDA their correlation and examples of NPDA, CFG to PDA:Methodandexample, Closurepropertiesof Regularlanguage,ApplicationofPDA.

Unit6:Introduction ofTuring Machine **[4]**

Turing Machine model and definition of TM, Language accepted by TM, Design of TM andexamples.

ReferenceBooks:

- J.P.Hopcroft,RajeevMotwani,J.D.Ullman,IntroductiontoAutomataTheory,Languagesand Computation,IIEdition, PearsonEducation, 2001.
- JohnMartin,IntroductiontoLanguagesandTheoryofComputation,TataMcGrawHill,2003.
- Daniel I.A., Cohen, Introduction to Computer Theory, 2 nd Edition, John Wiley andSons,Inc, 2000.

Type: DSE3A

CourseTitle:VisualProgramming(

PaperCode:PaperXI)

CourseObjectives:

1. Tounderstand.NetFramework.
2. To learn computer programming using the Visual programming language with object-orientedprogrammingprinciples.
3. To understand the concepts of Exception handling mechanism and Input outputprogrammingparadigms.
4. Emphasis is on event-driven programming methods, including creating andmanipulating objects, classes, and using object-oriented tools such as the classdebugger.

CourseOutcomes: Upon successfulcompletionofthis course,studentswill beable to-

1. Design, create,build,anddebugVisualprogrammingapplications.
2. ExploreVisualProgrammingIntegratedDevelopmentEnvironment(IDE).
3. Implementsyntax rulesinVisualprogramming.
4. Explainvariablesanddatatypesusedinprogramdevelopment.
5. Writeand applydecisionstructuresfordeterminingdifferent operations.
6. Writeand applyloop structuresto performrepetitivetasks.
7. Writeandapplyprocedures, sub-procedures,andfunctionsto createmanageablecode.

Unit1:IntroductiontoDot.NetFramework

[6]

Introduction to DOTNET, DOT NET class framework, Common Language Runtime,Overview, Elements of .NET application, Memory Management, Garbage Collector: FasterMemory allocation, Optimizations, Common Language Integration, Common type system,Userand ProgramInterface

Unit2:IntroductiontoC# **[6]**

C# Language elements, Data types -Reference Type and Value Type, Boxing and Unboxing,Enum and Constant, Operators, Control Statements, working with Arrays and Strings,Parameterpassingtechnique:Pass byvalueand byreference, outparameters, Variablelengthparameter.

Unit3:ObjectorientedProgrammingConcepts

[8]

Working with Indexer and Properties, Constructor and Destructor, working with "static"Members, Inheritance & Polymorphism - Types of Inheritance - Constructor in Inheritance -Interface Implementation - Operator and method Overloading and overriding - Static andDynamicBindingandVirtual Methods, AbstractClass, sealed keyword.

Unit4:ExceptionHandlingandI/OProgramming

[8]

What is Exception, Rules for Handling Exception, Exception classes, Exception handlingkeywords, Throwing exceptions, Stream Classes, System.IO and Base classes of Stream,Console I/O Stream,Workingwith File, Directoryclasses.

Unit5:Delegates,Collectionclasses **[6]**

Introduction to Delegation, Types of delegates, Anonymous Methods, ArrayList, HashTable,Stack,Queue, Writingcustom genericclasses,workingwith GenericCollection Classes.

Unit6:WindowsFormsandADO.NET **[10]**

Controls: Common control Group, Data, control Group, Dialog control Group, Containercontrol Group, Menus and Context Menus: Menu Strip, Toolbar Strip. SDI and MDIApplications, Evolution of ADO.NET, Connected and Disconnect Classes, EstablishingConnection with Database, Executing simple Insert, Update and Delete, Statements,DataReaderandDataAdapter, Datasetand itsAdvantages, StoredProcedures.

ReferenceBooks:

- “ProgrammingC#”-JesseLiberty,O’ReillyPress.
- “ProfessionalC#”-Robinsonetal,Wrox Press,2002.
- “TheCompleteReference:C#”-HerbertSchildt,TataMcGrawHill.
- “TheCompleteReference:Ado.Net”-Jerke,TataMcGrawHill.
- “C#forprogrammer”-Deilte-Pearson

Type: DSE 4 A

CourseTitle:Advanced Java

(PaperCode:PaperXII)

CourseObjectives:

1. To learn GUIprogrammingusingswingTechnology
2. Tostudydatabaseprogrammingusing Java.
3. Tostudyweb development conceptusingServletand JSP
4. TolearnsocketprogrammingconceptusingNetworking.

CourseOutcomes: Upon successfulcompletionofthis course,studentswill beable to-

1. Design,create,build,and debugJavaapplications.
2. ExploreIntegratedDevelopmentEnvironment(IDE).

Unit1:Networking **[6]**

Basics,networkingclassesandinterfaces,usingjava.netpackage,doingTCP/IPandDatagramProgramming.

Unit2:IntroductiontoSwingTechnology

[10]

JApplet, JFrame and JComponent, Icons and Labels, Handling Threading issues, Text fields,JButton class, Check Boxes, Radio buttons, Combo boxes, Tabbed panes, Scroll panes, Tree,Tableand Menus.

Unit3:Working withdatabases **[6]**

Steps for Connecting to databases, Types of Drivers, Handling Exceptions, Creating andUsingStatementObjects,UsingStatementstoInsert,Update,DeleteDataintoaDatabase,UsingtheResultSet Class,Datanavigation, PreparedStatements,CallableStatements.

Unit4:Servlets **[10]**

Introduction, HTTP Request Model, Sending the HTTP Request, HTTP Request Methods,Servlet Architecture, Servlets Packages, Life Cycle of Servlet, Types of Servlet, HandlingHTTP Requests and Responses using GET and POST methods, Deployment Descriptors,Multithreading in Servlets, Session Tracking, Using Cookies, Servlet Filters-ImplementingtheFilter Interface,TheMVC Architecture.

Unit5:JavaServer Pages **[12]**

Introduction to JSP- JSP Development, Basic JSP Lifecycle, JSP Elements, Creating andDeploying a JSP Web Application, Using Implicit Objects- The Request Object, TheResponse Object, The Out Object-The Session Object, The config Object, The ExceptionObject, The Application Object, Using Standard Actions and Implicit Objects in JSP Pages,Translation and Compilation, Handling Error and Exceptions-Dealing with Exceptionsthrough the Page Directive, Dealing with Exceptions in the Deployment Descriptor, AddingException Handling in JSP Pages, Including and Forwarding from JSP Pages- ExpressionLanguage,Custom Actions andTagHandlers JSPStandard TagLibrary(JSTL).

Referencebooks:

- Javathecomplete ReferencebyHerbert Schildt
- JavaServlet ProgrammingbyJasan Hunter
- BeginningJavaEE5from NovicetoProfessionals byK. Makhar&C.Zelenk
- JavaServerProgrammingbyBayross &Shah
- Thinkingin javabyBrucel

Type:SEC3

CourseTitle:AdvancedPythonProgramming(Paper Code:PaperXIII)

CourseObjectives:

1. TolearnMultithreadedProgramming.
2. TolearnGUIprogrammingusingdifferent typesofpython modules.
3. TostudydatabaseprogrammingusingMySQL.
4. TostudyWeb serverprogrammingusingCGIandXML.
5. To study Statistical Data analysis and Generating Reports using pandas and matplotlibmodules.
6. TolearnsocketprogrammingconceptusingNetworking.

CourseOutcomes: Upon successfulcompletionofthis course,studentswill beable to-

1. Design,Create,Build,andDebugPythonapplications.
2. ExploreIntegratedDevelopmentEnvironment(IDE).

Unit1:Multithreading **[6]**

Understandingthreads,DifferencebetweenProcessand aThread,CreatingThreads,ThreadSynchronization,Deadlock of Threads,AvoidingDeadlock inaProgram.

Unit2:Networkingin Python **[5]**

IntroductiontoSocketsProgramming,ServerSocketMethods,ClientSocketMethods, IPAddress,URL, TCP/IP Server,TCP/IP Client, SendingE-mail Application.

Unit3:GUI Programming: **[11]**

Introduction, Advantages of GUI, Introduction to GUI library, Root Window, Working withContainers: Frame, Canvas Layout Management, Events and Bindings, Font, Colors, drawingon Canvas (line, oval, rectangle, etc.) Widgets: Label, Button, Checkbutton, Entry, Listbox,Message, Radiobutton, Text, Spinbox, Scrollbar, Menu etc. Writing Python Programs for GUIapplications.

Unit4:Database ConnectivityusingMySQL

[4]

Installation of MySQL Database Software, Installing MySQL Connector, Steps for DatabaseConnectivity, Working with MySQL Database: Inserting, Retrieving, Deleting and updatingthedataworkingwith Stored Procedure.

Unit5:IntroductiontoCGI ProgrammingandXML

[10]

Introduction to CGI, Architecture of CGI, Web Server Configuration, Http Header, CGIEnvironment Variables, GET and POST Methods, File Upload, Handling Cookies, Validationand Authentication, Accessing and Managing Users, Introduction to XML, XML ParserArchitectureandAPI's,ParsingXMLwithSAX API's,ParsingXMLwithDOMAPI's.

Unit6:Python forData Analysis **[8]**

Use of pandas module, Install and import module, Creating Series and DataFrame, UpdatingSeries and DataFrame, Exporting and importing data- Excel and MySQL, Introduction toplotting- use of matplotlib, Install and import matplotlib, statistical graphics using matplotlib-Univariate, Bivariate and Multivariate data, Pandas objects- Histograms, Density plot, Scatterplot,Hexbin plot, Boxplot

ReferenceBooks:

- AdvancedPython Programming-ByRichardOzer, 2017
- CorepythonProgramming- Dr.RNageswaraRao
- PandasforEveryonePythonData Analysis-ByDanielY. Chen · 2017
- Expert Python Programming,: Become a master in Python-By Michał Jaworski, TarekZiade
- MySQLforPython:DatabaseAccessMadeEasy- A.Lukaszewski

Type:DSE1BCourseT itle:SystemSecurity (PaperCode:PaperXIV)

CourseObjectives:

1. Tolearncryptographictools.
2. Tolearn securityissues regardinguser Authentication.
3. Tounderstandthevariousaccesscontrolmechanisms.
4. TolearnvarioustypesofmaliciousSoftwaresandDenial-of-Serviceattacks.

CourseOutcomes: Uponsuccessful completionof thiscourse, studentswill beable to-

1. Develop an understanding of information assurance as practiced in computer operatingsystems,distributed systems,networks and representativeapplications.
2. Gainfamiliaritywithprevalentnetworkanddistributedsystemattacks,defensesagainstthem, and forensics to investigate theaftermath.
3. Developabasicunderstandingofcryptography,howithasevolved,andsomekeyencryption techniques used today.
4. Developanunderstandingofsecuritypolicies(suchasauthentication,integrityand confidentiality),as well as protocols to implement such policies in the form ofmessageexchanges.

Unit1:Cryptographic Tools **[6]**

Confidentiality with Symmetric Encryption, Message Authentication and Hash Functions,Public-Key Encryption, Digital Signatures and Key Management, Random andPseudorandomNumbers,PracticalApplication: EncryptionofStoredData.

Unit2:UserAuthentication **[6]**

Means of Authentication, Password-Based Authentication,Token-BasedAuthentication,BiometricAuthentication,Remote UserAuthentication,SecurityIssuesforUserAuthentication,Practical Application: An Iris Biometric System, Case Study: SecurityProblemsforATM Systems.

Unit3:AccessControl **[8]**

Access Control Principles, Subjects, Objects, and Access Rights, Discretionary AccessControl, Example: UNIX File Access Control, Role - Based Access Control, Case Study:RBACSystem for aBank.

Unit4:DatabaseSecurity **[6]**

The Need for Database Security, Database Management Systems, Relational Databases,Database Access Control, Inference, Statistical Databases, Database Encryption, CloudSecurity

Unit5:MaliciousSoftware **[10]**

Types of Malicious Software (Malware), Propagation– Infected Content– Viruses,Propagation–Vulnerability Exploit–Worms, Propagation–Social Engineering–SPAM E-mail,Trojans, Payload–System Corruption, Payload–Attack Agent–Zombie, Bots, Payload–Information Theft– Keyloggers, Phishing, Spyware, Payload–Stealthing–Backdoors,Rootkits,,Countermeasures

Unit6:Denial-of-ServiceAttacks **[8]**

Denial-of-ServiceAttacks,FloodingAttacks, Distributed Denial-of-Service Attacks,Application-Based BandwidthAttacks,ReflectorandAmplifierAttacks,DefensesAgainstDenial-of-ServiceAttacks, Respondingto aDenial-of-ServiceAttack.

ReferenceBooks:

- M.Stamp,“InformationSecurity:PrinciplesandPractice,”2stEdition,Wiley, ISBN:0470626399, 2011.
- M. E. Whitman and H. J. Mattord, “Principles of Information Security,” 4 st Edition,CourseTechnology,ISBN: 1111138214, 2011.
- M. Bishop, “Computer Security:Art and Science,” Addison Wesley, ISBN: 0 -201-44099-7, 2002.
- G.McGraw, “Software Security:Building Security In,” Addison Wesley, ISBN:0321356705, 2006.

Type:DSE2B

CourseTitle:CompilerConstruction(Paper Code:PaperXV)

CourseObjectives:

1. Tolearntheprocessoftranslatingamodernhigh-levellanguagetoexecutablecode.
2. To learn an understanding of the fundamental principles in compiler design and toprovidetheskillsneededforbuildingcompilersforvarioussituationsthatonemayencounterin acareer in ComputerScience.
3. Todevelopanawareness ofthefunctionand complexityofmoderncompilers.
4. To apply the code generation algorithms to get the machine code for the optimizedcode.
5. Torepresentthetargetcodeinanyoneofthecodeformats
6. Tounderstandthemachinedependentcode
7. Todrawtheflowgraphfortheintermediatecodes.
8. Toapplytheoptimizationtechniquestohaveabettercodeforcode generation

CourseOutcomes:

1. Togivesyouwithboththeoreticalandpracticalknowledgethatiscrucialinordertoimplement aprogramminglanguage.
2. It gives you a new level of understanding of a language in order to make better useofthelanguage(optimization is just oneexample).

Unit1:Introductiontocompiling [4]

Compiler, self-compiler, cross compiler, boot strapping , phases of compiler, compilerconstructiontools,asimpleonepass,twopassandmultipasscompiler,factoraffectingpassstructureofcompiler.

Unit2:Lexical Analysis [6]

Roleoflexicalanalyzer,inputbuffering,specificationandrecognitionoftokens,finiteautomataimplications, designingalexical analyzergenerator

Unit3:SyntaxAnalysis **[8]**

RoleofParser,writinggrammarsforcontextfreeenvironments,topdownparsing,recursivedescen t and predictive parsers (LL), Bottom-up parser, Operator precedence Parsing, LR,SLRandLALRparsers.

Unit4:SyntaxDirectedTranslation **[6]**

Syntax directed definitions, construction of syntax tree, bottom-up evaluation of S-attributeddefinitions, L-attributed definitions, Top-down translation and Bottom – up evaluation ofinheritedattributes,analysis of syntax directed definitions.

Unit5:Runtime environments **[4]**

Sourcelanguageissues,storageorganizationandlocationstrategies,parameterpassing,symboltabl eorganization andgeneration, dynamicstorage allocation.

Unit6:Intermediatecodegeneration **[4]**

Intermediate languages, declarations, assignments statements and Boolean expressions, casestatements,back patching, procedurecalls.

Unit7:Codegeneration **[6]**

Issuesindesignofacodegeneratorandtargetmachine,runtimestoragemanagement,basicblocks and flow graphs, next use information and simple code generator, issue of registerallocation, assignment and basic blocs, code generationfrom DAG and the dynamic codegenerationalgorithm.

Unit8:Code optimization **[6]**

Source of optimization, peephole optimization and basic blocks loop in flow graphs, dataflow analysis and equations, code improving transformation and aliases, data flow analysisandalgorithms,symbolicdebuggingof optimizedcode.

ReferenceBooks:

- Compilers Priciple,Techniques,ToolsbyAho,Lam,Sethi and Ulman
- CompilerDesignbyWihelm,Mauer
- CompilerDesign:Theory,ToolsandExamplesbyBergamann

Type:DSE3B

Course Title: Internet Programming using ASP.Net(PaperCode:PaperXVI)

CourseObjectives:

1. TounderstandtheAsp.netarchitecture.
2. Tolearnthevariouswebservercontrolsandvalidationcontrols.
3. Toknowtheconceptofmasterpage,themesandsitenavigation.
4. Tounderstandthestatemanagementtechniquesanditstypes.
5. TolearnAjaxclient and server sitetechnology.
6. Toknowthewebservices
7. Tolearnthe differentdatatransactionsusingADO.NET

CourseOutcomes: Uponsuccessfulcompletionofthis course,studentswillbeableto-

1. Create,Design,DebugandDeployWebapplications.
2. ExploreIntegratedDevelopmentEnvironment(IDE).

Unit1:IntroductionofAsp.Net

Evaluation of Asp.Net, Fundamentals of ASP.NET, Understanding architecture ASP.NET,CompilationTechniqueofASP.Net,ApplicationLocation,WebPage andWebSite lifecycle,ASP.Net Page Structure, Page Directives, Self-page and Cross page posting, Postback andViewStateconcepts,Application Folders.

Unit2:WebServerControl

Creating ASP.NET Pages – Web Forms, Working with web controls – Standard, controlgroup, Rich Controls, Different type of List controls, FileUpload, AdRotator, MultiView,Calendar,CreateWebUser Control

Unit3:Validationcontrols

Introductionofvalidation,Typesofvalidation,ValidationControls,ValidationGroups.

Unit4:MasterPagesandThemes

Need of Master Pages, Basics of master pages, Creating Master and Content pages,Programmaticallyassign masterpages, NestedMasterpages,Eventorderingofmasterpages,

BasicThemesandSkins,CreatingandUsingThemes,Definingmultipleskins,Programmaticallyworkingwiththemes.

Unit5:SiteNavigation

SiteNavigationtechnique,SiteMapPath,TreeViewandMenuControl,Nestingsitemapfile,AttachXMLfileto treeviewand menu.

Unit6:StateManagement

Introductionofstatemanagement,technique,TypesofStateManagementtechnique-Clientsideand server sideStateManagement.

Unit7:AJAX

WhatisAJAX andneedforAJAX, Clientsideand server sideAJAX,ImplementingAJAXwith JavaScript, Using ASP.NET Ajax Control toolkit, Working with AJAX's Server sidecontrols,ScriptManager,ScriptMangerProxy,Updatepanel,UpdateProgress,Timer.

Unit8:WebServices

WhatisWebService?UnderstandingSOAP,WSDL,Proxyetc.CreatingWebservices,Howtoconsumewebservices,to buildanWebService application andClient

Unit9:StoringandRetrievingDatawithADO.NET

Accessing Data with ADO.NET, Using Data Sets on Web Forms, Processing Transactions,WorkingwithDMLcommands.

ReferenceBooks:

- "ProfessionalASP.Net"-Evjen, Sivkumar,WroxPress.
- "TheCompleteReference:Asp.Net"-MacDonald, TataMcGrawHill.
- "TheCompleteReference:Ajax"- Powell,Tata McGrawHill.
- "Asp.NetStepbystep"-GeorgeShephera-MicrosoftPress
- Completereferencecrystalreports-GeogrePeak.

Type: DSE 4

BCourse Title: Angular JS(PaperCode:PaperXVII)

Courseobjectives:

1. Reducetheamountofcode youwritetobuildrichuserinterface applications.
2. Increasethereliabilityand maintainabilityofUIbyusingdata binding.
3. Retrievedatafromback-endserver,manipulateit anddisplayitwithease.
4. Modularizeyourcodewiththecustomservicesanddirectives.
5. Providingtwowaybindingof data.
6. Create SinglePageApplications (SPA).

CourseOutcomes: Uponsuccessfulcompletionofthiscourse,studentswillbeableto-

1. Create,Design,DebugandDeployWebapplications.
2. ExploreIntegratedDevelopmentEnvironment(IDE).

Unit1:IntroductiontoJavaScript **[8]**

Including scripts on a page, adding statements or expressions, comments, functions,parametersandreturnvalues,primitivetypes,JavaScriptoperators,EqualityVs.Identity, pre,postincrement,Reading andmodifyingobjectsproperties,addingmethodstoobjects,Control flow statements, working with arrays, Error handling mechanisms usingtry/catch/finally,throwingour ownexceptions.

Unit2:BasicsofAngularJS **[9]**

Introduction to Angular JS, Features of Angular JS, MVC Architecture, Setting up theEnvironment, First Simple Application, Working with Directives- Directive lifecycle, UsingAngular JS built-in directives, Core Directives, Conditional Directives, Style Directives,MouseandKeyboardEventsDirectives,Matchingdirectives,creatingacustomdirective .

Expressions and Data Biding- Number and String Expressions, Object Binding andExpressions,WorkingwithArrays,ForgivingBehavior,Understanding Data binding.

Unit3:Controllers **[6]**

UnderstandingControllers,ProgrammingControllersandscopeobject,AddingBehaviorto aScope Object, Passing Parameters to the Methods,Array as members in Controller Scope,NestedControllersand Scope Inheritance,MultipleControllers andtheirscopes.

Unit4:FiltersandModules **[6]**

Filters:Built-infilters,Uppercaseand LowercaseFilters,CurrencyandNumberFormattingFilters, OrederBy Filter, Filter Filter, Creating custom filters. AngularJS Modules-Introduction to Angular JS Module,Module Loading and Dependencies, RecommendedSetupofApplication, Creation vs Retrieval.

Unit5:Forms **[10]**

Angular JS Forms: Working with Angular Forms, Model binding, Understanding DataBinding, Binding controls to data, Form controller, Validating Angular Forms, Form events,Updatingmodelswithatwist,$errorobject,Scope-Whatisscope,Scopelifecycle,Twowaydatabinding,Scopeinheritance,Scopeandcontrollers,Scopeanddirectives, $applyand $watch,Rootscope,Scopebroadcasting,Scopeevents.

Unit6:ServicesandAjaxinAngularJS

[5]

Understanding Services, Developing Creating Services, Using a Service, InjectingDependenciesin aService.
$httpService,$qService,AjaxImplementationusing$httpand $qService

ReferenceBooks:

- BeginningAngularJS-ByAndrewGrant- 2014
- ProfessionalAngularJSby DiegoNettoandValeriKarpov-Wroxpress
- LearningAngularJSbyBradDayley-Addison-WesleyProfessiona
- AngularJSbyBradGreenandShyamSeshadri-O'Reilly

Type:SEC4

CourseTitle:MobileApplicationDevelopment(Paper Code:PaperXVIII)

CourseObjectives:

1. TounderstandAndroidplatformanditsarchitecture.
2. Tolearnaboutmobiledevicestypesanddifferentmodernmobileoperatingsystems.
3. TolearnactivitycreationandAndroidUserInterfacedesigning.
4. TolearnbasicsofIntent,BroadcastandInternetservices.
5. Tolearnaboutdifferentwirelessmobiledatatransmissionstandards.
6. Tounderstandandlearnhowtointegratebasicphonefeatures,multimedia,cameraandLocationbased servicesinAndroidApplication.
7. Tolearnaboutdifferentsystemsformobileapplicationdevelopment,deploymentanddistributioninMobilemarket place(Android, IOS).
8. Tounderstandand carryoutfunctionalteststrategiesformobileapplications.

CourseOutcomes: Uponsuccessfulcompletionofthiscourse,studentswillbeableto-

1. Create,Design,Debugand DeployAndroidapplications.
2. ExploreIntegratedDevelopmentEnvironment(IDE).

Unit1:Introduction

WhatisAndroid,AndroidVersionsandits FeatureSet,VariousAndroidDevices ontheMarket, Android Market Application Store, Android Development Environment, SystemRequirements,AndroidSDK, InstallingJava, and ADTbundle- Eclipse IntegratedDevelopmentEnvironment(IDE),CreatingAndroidVirtualDevices (AVDs).

Unit2:AndroidArchitecture OverviewandApplication

AndroidSoftwareStack,TheLinuxKernel,AndroidRuntime-DalvikVirtualMachine,AndroidRuntime–Core Libraries,DalvikVMSpecificLibraries, JavaInteroperabilityLibraries,Android Libraries, Application Framework, Creating a NewAndroid Project, Defining the Project Name and SDK Settings, Project ConfigurationSettings, Configuring the Launcher Icon, CreatinganActivity,RunningtheApplicationintheAVD,StoppingaRunning Application,Modifyingthe Example Application,ReviewingtheLayoutand ResourceFiles.

Unit3:AndroidSoftware DevelopmentPlatformandFramework

Understanding Java SE and the Dalvik Virtual Machine, The Directory Structure of anAndroid Project, Common Default Resources Folders, The Values Folder, LeveragingAndroid XML, Screen Sizes , Launching Mobile Application: The AndroidManifest.xml File,Android Application Components, Android Activities:Defining the UI, Android Service s:Processingin the Background, Broadcast Receivers: Announcementsand NotificationsContent Providers: Data Management, Android Intent Objects: Messaging for Components,AndroidManifestXML:DeclaringYour Components.

Unit4:UnderstandingAndroidUserInterfaces,ViewsandLayouts

Designingfor Different Android Devices, Views and View Groups, Android LayoutManagers, The View Hierarchy,DesigninganAndroidUserInterfaceusingtheGraphicalLayoutTool,DisplayingTextwithTextView,RetrievingDatafromUsers,UsingButtons, Check Boxes and Radio Groups, Getting Dates and Times from Users, UsingIndicators to Display Data to Users, Adjusting Progress with Seek Bar, Working with Menususing views, Gallery, Image Switcher, Grid View, and Image View views to display images,CreatingAnimation.

Unit5:Databases,Intents,Location-basedServices

Saving and Loading Files, SQLite Databases, Android Database Design, Exposing Access toa Data Source through a Content Provider,ContentProviderRegistration,NativeContentProvidersIntentsandIntentFilters:Intent Overview,ImplicitIntents,CreatingtheImplicitIntent Example Project, Explicit Intents, Creating the Explicit Intent Example Application,IntentswithActivities,Intentswith BroadcastReceivers.

Unit6:ApplicationDevelopment

SendingSMS MessagesProgrammatically,GettingFeedbackafter Sendingthe Message,Sending SMS Messages Using Intent Receiving, Sending email, Introduction to location-basedservice,ConfiguringtheAndroidEmulatorforLocation-BasedServices,Geocodingand Map-Based Activities Multimedia: Audio, Video, Camera: Playing Audio and Video,RecordingAudio andVideo,Usingthe Camera toTake and ProcessPictures.

ReferenceBooks

- AndroidProgrammingUnleashed(1stEdition)byHarwani.
- BeginningMobileApplicationDevelopmentintheCloud (2011),Richard Rodger.

- LearnAndroidApp DevelopmentbyWallaceJackson.
- ProfessionalAndroidApplicationDevelopmentbyRetoMeier.

PracticalAssignmentson DSE2Aand DSE2B

Tool:JFLAP

PracticalAssignmentson DSE 2A: (Theory ofComputerScience)

ThestudentsareexpectedtounderstandJFLAPtoolsanddesigningsuitableautomatatorecognizethe followingandtest theoutput asstringaccepted orrejected.

1. Design aDFAwhich accept stringisstartwithaover∑={a,b}.
2. Design aDFAwhich acceptnumberisevenorodd.
3. Design aDFAwhich acceptstringeitherendingwithaorbcover ∑={a,b,c}.
4. DesignaDFAwhichacceptstringdoesnot havingabcassubstringover∑={a,b,c}.
5. DesignDFAwhichacceptstringslengthisoddover∑={0,1}.
6. DesignMooremachine forfindingbinaryisevenor odd.
7. DesignaMealymachine for1'scomplementofbinarynumber.
8. Design Mealymachinefor accepting 2's complement ofbinarynumber.
9. Removalunitproductionoffollowinggrammar;

I) A -> BB -> aB- >b	II) S -> AS -> bbA -> BA -> bB->a B->S

10. Removalε-productionof followinggrammar;

I) S -> aSaS -> bSbS - >ε	II) S->aS- >Xb S- >aYaX - > YX- >ε Y->b Y->ε

11. ConvertfollowingContextFreeGrammar(CFG)toChomskyNormalForm(CNF);

I) S- >ABABA- >Aa A- >aB- >b	II) S- >ABAA- >aAA->ε B->bB B->ε

12. Design aPDAforacceptingpalindromestringover∑={0,1}.

13. DesignaPDAto checkwhethera given stringover{a,b}endsinabb.

14. DesignTMfor L={$a^n b^n$|n>1}.

15. ConstructTuringmachinefor copystringover ∑={a,b}.

16. ConstructTuringMachinethatrecognizethelanguage:

17. L={xϵ{0,1}*|xends in 00}.

PracticalAssignmentsonDSE2B:(CompilerConstruction)

1) ConvertfollowingGrammartoLLGrammar;

I)	S -> ABcCA- >aA A->ϵ B -> bbBB->ϵ C ->BA	II)	S -> ABcCA- >aA A->ϵ B- >bbBB- >ϵ C->BA

2) Build LL(1)parsetable forfollowingGrammar andfindoutLL(1)ornot;

I.	S ->A A -> aaAA->b	II.	E- >E+TT - > T*FF- >(E)F-> a
III.	S -> aAS-> aA->a	IV.	S -> ASS->a A->SA A->b
V.	S -> BAcA -> aAA->a B -> ABB -> bBB->d		

3) BuildSLR(1)parsetableforfollowingGrammar and findoutLL(1)ornot;

I.	S->AS -> BA - > aAA- >bB- >dB B->b	II.	E- >E+TT - > T*FF- >(E)F-> a
III.	S -> AAS - >aA A->b	IV.	S->A A- >aaAA- >b
V.	S ->AbA ->aAA- >ab A->ϵ		

PracticalAssignmentson DSE3AandDSE3

BPracticalAssignmentsonDSE3A: (Visual Programming)

1. Writeaprogramtocheck enterednumberiseven orodd.
2. Writeaprogramto getnumberanddisplaysumofdigits.
3. Writeaprogramtocheck whetherenteredyearisleapyearornot.
4. Writeaprogramtodisplaydateinvariousformats.
5. Write aprogramtoillustrate theUse ofAccess Specifiers.
6. WriteaProgramtocreatesealedclass.
7. WriteaProgramtoperformboxingandunboxingoperation.
8. WriteaProgramtodemonstratemultilevelinheritance.
9. WriteaProgramtodemonstratesinglelevelinheritance.
10. WriteaProgramtodemonstratemultilevelinheritancewithvirtualmethods.
11. WriteaProgramtogetlowerboundandupperboundofanarray.
12. WriteaProgramtodemonstratejaggedarray.
13. WriteaProgramtofindMinimumandMaximumofnumbers.
14. WriteaProgramtosearchelementsofanarray.
15. WriteaProgramtocopyasectionofonearraytoanother.
16. WriteaProgramtodemonstrateabstractproperties.
17. WriteaProgramtoimplementdelegates.
18. WriteaProgramtocombinetwodelegates.
19. WriteaProgramtoimplementmulticastdelegate.
20. WriteaProgramtodemonstrateDivideByZeroException.
21. WriteaProgramtodemonstrateMultipleexceptions.
22. WriteaProgramtocreateafile.
23. WriteaProgramtoRead theContentsofFile.
24. WriteaProgramtoCreateDirectory.
25. WriteaProgramtoimplementBinaryReader.
26. WriteaProgramtoRead LinefromFileuntilendoffileisreached.
27. WriteaProgramtoDesignuserinterfaceusingallwindowscontrols.
28. Write a ProgramtodesignMDIapplication.29.WAPtodemonstrateADO.NET.
29. WriteaProgramtodemonstrateInsert,UpdateandDeleteStatements.

PracticalAssignmentsonDSE3B: (InternetProgrammingusingASP.Net)

1. Designwebpageforstudentadmissionwhichusesl Label,TextBox,RadioButton,Chec kBox,ListClass,ButtonClass,Calendar,Image, FileUploadetc.controls.
2. Designscientificcalculator.
3. Designwebpagewhichdemonstratecommandnameproperty.
4. Design web page which demonstrate which code is execute at first either server sideorclient side.
5. Design webpageforSelf PagePostingandCrossPagePosting.
6. Design web page which demonstrate App_code using class library. Class librarycontainsmethodswhich checksodd,even,prime,Armstrong,Palindrome, StrongandMagicnumber.
7. DesignwebpagewhichdemonstrateApp_GlobalResourcesandAp p_LocalResources.
8. Designwebpagewhich demonstratepagelifecycleandwebsitelifecycle.
9. Designsimpleapplicationwhich displaysselectedcheckboxesandradiobutton.
10. Designawebpageforimagemappingusingstatic anddynamicmethod.
11. Demonstrateallmethodsofinsertionofitemin list class.
12. Design web page which displays all system fonts, system colors, font size in ListClass.Displaytextmessage accordingtotheselectedfont,sizeandcolor.
13. DisplayCurrentYearcalendar.Thiscalendarshowsallholidaysin Redcolorwithinform ation.
14. Displayselecteddateinatleast10differentformats.
15. Designs XML file which shows College-Stream-Department-Staff-name-quali-exp-subject.
16. Displayatleast10differentadvertisements.
17. DesignawebpageforWizardandMultiViewcontrol.
18. Designawebpagewhichdisplays10 textboxcontrolsbyusingcontrolarraymethod.
19. Designwebpagewhichusesallvalidationcontrolswithvalidationgroupproperty.
20. DesignNestedmasterpagesusingthemes.
21. Designwebpagewhich demonstrateworkingofDMLQueries.

PracticalAssignmentson DSE4Aand DSE4B

PracticalAssignmentsonDSE4A:(AdvancedJava)

1. Writeajavasocketprogramminginwhichclientsendsa textandserverreceivesit.
2. WriteaprogramtodemonstrateURLclass.
3. WriteaprogramtodemonstrateInetAddressclass.
4. WriteaprogramtodemonstrateuseofDatagram Socket.
5. Writeaprogramtocreate StudentregistrationformusingSwingComponent.
6. WriteaprogramtodemonstrateJTabbedPane,JScrollPaneandJTreeCo mponent.
7. WriteaprogramforinsertingdataintotableusingPreparedStatement.
8. WriteaprogramforupdatingdataintotableusingPreparedStatement.
9. WriteaprogramfordeletingdataintotableusingPreparedStatement.
10. Writeaprogramtodemonstratecallablestatement.
11. Writeaservletbasedprogramtodisplay“Hello!”messageonbrowser.
12. Writeaprogramthatreadsparametersfromservletanddisplayit.
13. WriteaservlettohandleHttpGETRequest.
14. WriteaservlettohandleHttpPOSTRequest.
15. Writeaservletbasedprogramthatwilladdthecookieanddisplayallthecookiesstored.
16. Writeaservletbasedprogramthatwilldisplaythelastlogindateandtimeofauser.
17. Writeaservletbasedprogramthewilldisplayhowmanytimes auservisitedtothepage.
18. WriteaprogramthatimplementsFilterinterfaceandservletfiltermappinginweb.x ml.
19. Writeaservletbasedprogramforloginformvalidation.
20. Create a simple HTML form, Example.html, which allows a user to enter a number.Example.html submits the number captured to the web server when the user clicks onthe form’s Submit button. The web server executes Example.jsp code spec andrespondswithanHtmlpagewithHelloWorld!Repeatedasmanytimesasspecified.
21. Createajsp pagethatwill displaycurrent data andtime.
22. Create a user interface that accepts data using an Html form and display the same onpagesubmission.

23. Createanhtmlpage[userinterface] forcapturingBookinformation.Thisform willacceptdatafrom the useranddisplaythe same upon pagesubmission.
24. Create an html page [user interface] for capturing Book information. This form willacceptdatafrom the useranddisplaythe same upon pagesubmission.
25. Createthefollowingfilestodemonstratethe<jsp:forward>actionelement:
26. Writeanapplicationtodemonstratethe<jsp:plugin>actionelement.
27. Create a registration form using action elements, perform the following steps:register.jsp- This file holds the actual registration form interface. The data capturedhere is submitted to the process.jsp file for further processing. Process.jsp- This filevalidates the form contents i.e. data captured using a method of FormBean.java and ifdata is found valid, then control is forwarded to success.jsp file. If data if foundinvalid then control is shifted back to register.jsp file. Success.jsp- This file retrievesthe captured and validated data using bean and displays the same. FormBean.java-Thisfiledoesthe actual validation.
28. Createajsppagethatusesthe implicitobject.
29. Createacustom taganduseitin ajsppage.

PracticalAssignmentsonDSE4B:(AngularJS)

1. Write anAngularJSsimple HelloWorld! Program.
2. WriteanangularJSprogramthatdisplayyourRollNo,NameandClassofstudent.
3. WriteanangularJSprogramwhichdemonstratethatone-waydatabindingandtwo-waydata binding.
4. WriteanangularJSprogramwhichdemonstrateng-cut,ng-copy,ng-pastedirective.
5. WriteanangularJSprogramwhichdemonstratedifferentdirective relatedtokeyboard.
6. WriteanangularJSprogramwhichdemonstrateconditionaldirective.
7. WriteanangularJSprogramforcreatingcustomdirectivewhichdisplayemployeeidandname.
8. WriteanangularJSprogramwhichdemonstratealltypesofexpressions1)Numberexpression2) Stringexpression 3)Objectexpression 4)Arrayexpression
9. WriteanangularJSprogramtodemonstrateuseofnestedcontroller.
10. WriteanangularJSprogramtodemonstratemultiplecontroller
11. WriteanangularJSprogramtodemonstratejsonfilter
12. WriteanangularJSprogramtodemonstratecustomfilter
13. WriteanangularJSprogramtodesignsimplesinglepageapplication.
14. WriteanangularJSprogramtocreateCustomvalidationin.

CourseTitle:ProjectWork

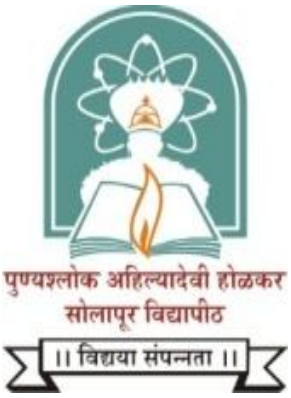
Instructions:

1. Teamsizeformajorprojectnotexceedthantwostudents.
2. RealtimeandliveprojectfollowedbyPresentationandViva-Voce.

Equivalent Subject for Old SyllabusB.Sc. (Entire Computer Science) - III (Semester –V and VI)

Semester-V		
Sr. No.	**Name of the Old Paper (w.e.f.2018-19)**	**Name of the New Paper (w.e.f.2021-2022)**
1	English	English (Business English) Paper-II Part-A (Sem-V)
2	Data Communication and Networking - I	Data Communication and Networking(Sem-V)
3	Theory of Computer Science	Theory of Computer Science(Sem-V)
4	Visual Programming - I	**No Equivalence**
5	Web technology and E-commerce –I	**No Equivalence**
6	Python – I	**No Equivalence**
Semester-VI		
Sr. No.	**Name of the Old Paper (w.e.f.2018-19)**	**Name of the New Paper (w.e.f.2021-2022)**
1	English	English (Business English) Paper-II Part-B (Sem-VI)
2	Data Communication and Networking – II	System Security(Sem-VI)
3	Advanced Java	Advanced Java (Sem-V)
4	Visual Programming -II	Visual Programming (Sem-V)
5	Web technology and E-commerce –II	Internet Programming using ASP.Net(Sem-VI)
6	Python - II	Advanced Python Programming (Sem-V)

Punyashlok Ahilyadevi Holkar Solapur University, Solapur



NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty: Science & Technology

CHOICE BASED CREDIT SYSTEM

Syllabus: Computer Science

Name of the Course: B. Sc. Part- III (Sem. V & VI)

(Syllabus to be implemented from w.e.f. June 2021)

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

Syllabus for B.Sc. Part – III (CBCS Semester Pattern)

Computer Science (W.E.F. June 2021)

Name and Type of the Paper		Title of Paper	Hrs/Wee		Total Marks per paper	UA	CA	Credits
Type	**Name**		**L**	**P**				
B.Sc.- III Semester - V								
English (Business English)	English (Business English)		4	-	50	40	10	2.0
DSE 1 A	Paper IX	Visual Programming Using C#	4	-	100	80	20	4.0
DSE 2 A	Paper X	Core Java	4	-	100	80	20	4.0
DSE 3 A	Paper XI	Operating System	4	-	100	80	20	4.0
DSE 4 A	Paper XII	Python	4	-	100	80	20	4.0
SEC 3	Paper XIII	Linux	4	-	100	80	20	4.0
	Total (Theory)		**24**	**-**	**550**	**440**	**110**	**22.0**
B.Sc.- III Semester - VI								
English (Business English)	English (Business English)		4	-	50	40	10	2.0
DSE 1 B	Paper XIV	Web Technology	4	-	100	80	20	4.0
DSE 2 B	Paper XV	Advanced Java	4	-	100	80	20	4.0
DSE 3 B	Paper XVI	Data Communication and Networking	4	-	100	80	20	4.0
DSE 4 B	Paper XVII	Advance Python	4	-	100	80	20	4.0
SEC 4	Paper XVIII	Software Testing	4	-	100	80	20	4.0
	Total (Theory)		**24**	**-**	**550**	**440**	**110**	**22.0**
Practical								
DSE 1A &1B	Practical IV	Practical On C# and Asp.Net	-	5	100	80	20	4.0
DSE 2A &2B	Practical V	Practical on Core Java and Advanced Java	-	5	100	80	20	4.0
DSE 4A &4B	Practical VI	Practical on Python and Advance Python	-	5	100	80	20	4.0
	Practical VII	Project	-	5	100	80	20	4.0
	Total (Practical)		**-**	**20**	**400**	**320**	**80**	**16.0**
Grand Total			**48**	**20**	**1500**	**1200**	**300**	**60.0**

Note:

1. Practical IV, Practical V, Practical VI and Practical VII are as per guidelines of Science Faculty.
2. Nature of internal examination, passing standard, ATKT and the conversion of marks into grades and credits are as per guidelines of Science Faculty Credit and Grading System

Equivalence papers for B.Sc.-III Sem V and VI (Computer Science)

Sr. No	Old Paper	New Paper
B.Sc.- III Semester - V		
1	Visual Programming Using C#	Visual Programming Using C# (Sem-V)
2	Core Java	Core Java (Sem-V)
3	Operating System	Operating System (Sem-V)
4	Python	Python (Sem-V)
5	Software Testing	Software Testing (Sem-VI)
B.Sc.- III Semester - V		
6	Web Technology	Web Technology (Sem-VI)
7	Advanced Java	Advanced Java (Sem-VI)
8	Data Communication and Networking	Data Communication and Networking (Sem-VI)
9	AngularJS	**No Equivalence**
10	Linux Operating System	Linux Operating System (Sem-V)

Semester – V

Paper IX: -Visual Programming Using C#

Objectives: -

Students will try to learn:

1. To understand how to design, implement, test, debug, and document programs that use basic data types and computation, simple I/O, conditional and control structures, string handling and functions.
2. To understand the importance of Classes & objects along with constructors, Arrays and Vectors.
3. Discuss the principles of inheritance, interface and packages and demonstrate though problem analysis assignments how they relate to the design of methods, abstract classes and interfaces and packages.
4. To understand importance of Multi-threading & different exception handling mechanisms.
5. To understand how to design GUI base windows application using C#.

Unit 1: Introduction to NET and C# (10)

Block diagram of .net framework, The Common Language Runtime, Advantages of Managed Code, A Closer Look at Intermediate Language & Assemblies-Support for Object Orientation and Interfaces, Distinct Value and Reference Types, Strong Data Typing, Garbage Collection, Compiling and Running the Program, Variables, Data Types, Flow Control, Enumerations, Namespaces-The using Statement, Namespace Aliases, The Main() Method-Multiple Main() Methods, defining & using functions & its scope, Passing Arguments to Main(), Parameter passing technique.

Unit 2: Object oriented programming in C# (10)

Classes and Structs, Class Members- Data Members, Function Members read-only Fields, properties and indexer, The Object Class-System, Object Methods, The ToString() Method

Inheritance and Polymorphism: Introduction-Types of Inheritance, Implementation Inheritance-Abstract Classes and Functions, Sealed Classes and Functions, Constructors and its types, Destructor, Interfaces-Defining and Implementing Interfaces, Derived Interfaces, Polymorphism - Method overloading, Operator overloading.

Unit 3:- Exception, Threading, Delegate and IO (15)

Exception Handling:-Try, catch, and throw, finally, Nested try, Custom exception

Threading:-Introduction- Applications with Multiple Threads, Thread Priorities, Synchronization, Life Cycle.

Delegate and Events:- Delegeates, Types of delegates- single cast, multicast and anonymous delegates, Event

IO and Collection Classes:- Stream Classes, Console I/O, File Stream and Byte-Oriented File I/O, Character based File I/O.

Unit 4:- Windows Applications (10)

Controls: Common control Group, Data control Group, Dialog control Group, Container control Group, Menus and Context Menus: Menu Strip, Toolbar Strip, SDI and MDI Applications

Outcomes:-

Students will be able to:

1. Implement Object Oriented programming concept using basic syntaxes of control Structures, strings and function for developing skills of logic building activity using Java.
2. Identify classes, objects, members of a class and the relationships among them needed for a finding the solution to specific problem in Java.
3. Demonstrates how to achieve reusability using inheritance, interfaces and packages and describes faster application development can be achieved.
4. Demonstrate understanding and use of different exception handling mechanisms and concept of multithreading for robust faster and efficient application development.
5. Able to develop windows applications using C#.

Reference books:

1. Professional C# - Wrox Publication by Simon Robinson, Christain Nagel, Karli Watson, Jay Glynn, Morgan Skinner, Bill Evjen.
2. Inside C# - Microsoft Press by Tom Archer, Andrew Whitechapel.
3. Programming Microsoft Visual C# 2005 - The Language (Microsoft Press) by Donis Marshall

Paper X:-Core Java

Objectives:-

Students will try to learn:

1. To understand how to design, implement, test, debug, and document programs that use basic data types and computation, simple I/O, conditional and control structures, string handling and functions.
2. To understand the importance of Classes & objects along with constructors, Arrays and Vectors.
3. Discuss the principles of inheritance, interface and packages and demonstrate though problem analysis assignments how they relate to the design of methods, abstract classes and interfaces and packages.
4. To understand importance of Multi-threading & different exception handling mechanisms.
5. To understand how to develop GUI applications using Swing technology

Unit 1: Introduction to Java Programming (10)

Overview of Java, Features of Java as programming language /Platform, JDK Environment and Tools

Java Programming Fundaments:-Data types, Variables, Operators, Keywords, Naming Conventions, Structure of Java Program, Flow Control- Decision, Iterations, Arrays,

Unit 2: Object oriented programming in Java (10)

Class – Members access control, Objects, Constructors, Use of 'this' keyword, Static, non-static data members and methods., public, private & protected data members

Inheritance & Polymorphism-Access/Scope specifiers protected, Super, extends, single, multiple inheritance, Method overriding, Abstract classes & ADT, 'final' keyword, Extending interfaces

Unit 3: Exception Handling, Threading and Collection framework (15)

Exceptions and Types, try..catch, finally block, throw & throws statement, user-defined exceptions, Java I/O package, byte & character stream, reader & writer, file reader & writer

Threading-Java thread lifecycle, Thread class & run able interface Thread priorities & synchronization, Usage of

wait & notify

Collection framework :- Collection overview, Collection interfaces, Collection classes Vector, Array list, Hash map, Hash table, Tree map, Tree set, Hash set, Properties, Stack

Unit 4: Swing and event handling: (10)

Introduction to swing, difference between AWT and swing, hierarchy of Swing classes, Swing controls: - JButton, JTextfield, JLabel, JCheckBox, JRadionButton, JFame, Jtable, JList, JoptionPane, JMenuitem and JMenu ,etc

Outcomes:-

Students will be able to:

1. Implement Object Oriented programming concept using basic syntaxes of control Structures, strings and function for developing skills of logic building activity using Java.
2. Identify classes, objects, members of a class and the relationships among them needed for a finding the solution to specific problem in Java.
3. Demonstrates how to achieve reusability using inheritance, interfaces and packages and describes faster application development can be achieved.
4. Demonstrate understanding and use of different exception handling mechanisms and concept of multithreading for robust faster and efficient application development.
5. Able to develop GUI applications using Swing technology.

Reference Books:

1. Java 2 for professional developers by Michael Morgen
2. Core Java Vol 1 and vol 2 by Cay. S. Horstmann, Gray Cornell.
3. Java by Nutshell
4. Java The complete Reference by Herbert Schildt
5. Thinking in java by Brucel

Paper XI:-Operating System

Objective:-

Students will try to learn:

1. To understand the main components of an OS & their functions.
2. To study the process management and scheduling.
3. To understand the concepts and implementation Memory management policies and virtual memory.
4. To understand the working of an OS as a resource manager, file system manager, process manager, memory manager and I/O manager and methods used to implement the different parts of OS

Unit 1: Introduction Operating System:- **(10)**

Definition Operating systems, Types of Operating Systems-Batch, Multiprogramming, Time-Sharing, Real-Time, Distributed, Parallel., OS Service, System components, System Calls, OS structure: Layered, Monolithic, Microkernel Operating Systems – Concept of Virtual Machine

Unit 2: Process Management: - **(10)**

Concept of Process, Process states, Process Control Block, Context switching, Operations on Process, Co-operating Process, Threads – Types of threads, Benefits of threads.

Concept of Process Scheduling- Types of Schedulers, Scheduling criteria, Scheduling algorithms-Preemptive and Non-pre emptive , FCFS, SJF, Round Robin, Priority Scheduling, Multilevel Queu Scheduling, Multilevel- feedback Queue Scheduling.

Unit 3: Process Synchronization and Deadlocks: - (10)

The Producer Consumer Problem, Race Conditions, Critical Section Problem, Semaphores, Classical Problems of Synchronization: Reader-Writer Problem, Dinning Philosopher Problem, Critical Regions.

Definition, System Model, Dead Lock Characterization, Resource Allocation Graph, Methods of Handling Dead Locks- Deadlock Prevention, Deadlock Avoidance -banker's algorithm, resource request algorithm, Deadlock detection and Recovery.

Unit 4: Storage Management **(15)**

Memory Management: - Basic Hardware Address Binding, Logical and Physical address Space, Dynamic Loading, Overlays, Swapping,

Memory allocation: Contiguous Memory allocation – Fixed and variable partition – Internal and External fragmentation and Compaction, Paging, Segmentation. Basics of Virtual Memory,

demand paging, Page fault, Page Replacement policies: Optimal (OPT), First in First Out (FIFO), Least Recently used (LRU), Thrashing.

Storage Management:- File Management: File concept, Access methods, File types, File operation, Directory structure, File System structure, Allocation methods (contiguous, linked, indexed), Free space management (bit vector, linked list, grouping).

Disk Management: disk structure, disk scheduling (FCFS, SSTF, SCAN, C-SCAN), disk reliability, disk formatting, boot block, bad blocks.

Outcomes:-

Students will able to:

1. Describe the important computer system resources and the role of operating system in their management policies and algorithms.
2. Understand the process management policies and scheduling of processes by CPU
3. Evaluate the requirement for process synchronization and coordination handled by operating system
4. Describe and analyze the memory management and its allocation policies.
5. Identify use and evaluate the storage management policies with respect to different storage management technologies.

Reference Books:

1. System programming and O.S. By D.M. Dhamdhere.
2. Modern O.S. By Andrews Tanenbaum.
3. Operating System Concepts By Siberchatz and Galvin.
4. Operating System(Unix) By Bach

Paper XII:-Python

Objectives:-

Students will try to learn:

1. Basics of Python programming
2. Decision Making and Functions in Python
3. Object Oriented Programming using Python
4. Files Handling in Python
5. Regular expression for pattern matching

Unit 1:- Introduction to Python: (10)

Features/Characteristics of Python, Installation and Working with Python, Structure of a Python Program, Writing simple python program, Executing python program using command line window and IDLE graphics window, Python Virtual Machine, Identifiers and Keywords, Operators (Arithmetic operators, Relational operators, Logical or Boolean operators, Assignment Operators, Bit wise operators, Membership operators, Identity operators), Operator Precedence and Associativity

Python Data Types: -Python Variables, Data types in python, Built-in Datatypes, Bool datatype , Sequences in python, Sets, Literals in python, User Defined Datatypes, Constants in python, Type conversion, Input and Output Statements, Command line arguments

Control Statements:-Conditional Statements: if, if-else, nested if –else, Looping: for, while, nested loops, Loop manipulation using pass, continue, break, assert and else suite

Unit 2:- Strings, Collection Lists, Tuples, Dictionaries, Functions and, Modules: (10)

Strings: Introduction to String, String Manipulation., Collection List: Introduction to List, Manipulating list., Tuples: Introduction to Tuples, Manipulating Tuples., Dictionaries: Concept of Dictionary, Techniques to create, update & delete dictionary items.

Functions, Modules :- Difference between a Function and a Method, Functions:- Defining a function, Calling a function, Advantages of functions, Types of functions, Function parameters:- Formal parameters, Actual parameters, Anonymous functions, Global and Local variables, Modules:- Importing module, Creating & exploring modules, Math module, Random module, Time module

Unit 3:- Object Oriented Programming (6) (15)

Features, Concept of Class & Objects, Constructor, Types of Variables, Namespaces, Types of Methods, Inner Classes, Constructors in Inheritance, Overriding Super Class Constructors and

Methods, Types of Inheritance, Abstract Classes and Interfaces, The Super() Method, Operator Overloading, Method Overloading, Method Overriding

Unit 4: Regular Expressions, Exception Handling and File (10)

Introduction to Regular Expression, Advantages & Operations, Sequence characters in Regular Expression, Powerful pattern matching and searching, Password, email, url validation using regular expression, Pattern finding programs using regular expression

Exception :- Errors in a Program, Exceptions, Exception handling, Types of Exceptions, User-defined Exceptions

Python File Operation:- Types of File, Opening and Closing a File, Reading and writing to files, Manipulating directories

Outcomes:-

Students will be able to:

1. Describe the Numbers, Math functions, Strings, List, Tuples and Dictionaries in Python
2. Express different Decision Making statements and Functions
3. Interpret Object oriented programming in Python
4. Understand and summarize different File handling operations
5. Understand Regular expression and implement for pattern matching.

Reference Books

1. Beginning Python by Magnus Lie Hetland-Apress
2. Python Programming for the Absolute Beginner by Michael Dawson-Cengage Learning
3. Python for Everybody: Exploring Data in Python 3 by Charles Severance-CreateSpace Independent Publishing Platform
4. Introducing Python: Modern Computing in Simple Packages by Bill Lubanovic-O'Reilly Media
5. Python Programming for Beginners: An Introduction to the Python Computer by Jason Cannon- CreateSpace Independent Publishing Platform
6. Python for Beginners by Harsh Bhasin

Paper XIII:-Linux

Objectives:-

Students will try to learn:

1. To introduce Basic Linux general purpose Commands
2. To learn different editor
3. To learn shell script concepts.
4. To learn file management and permission advance commands.
5. To learn awk, grap, perl scripts.

Unit 1: Introduction of Linux:- **(10)**

History of Linux, Architecture of Linux system & features, Kernel, Shell & its type, Difference between Windows and Linux. Linux Distributions, Working environments: KDE, GNOME, Xface4, Hardware requirement, Installation procedure of Linux, Create partitions, Configuration of X system Users & Groups Management:- Create Users, Create groups, Special groups, Assigning permissions to users and Groups, File and Directory permissions- chmod, chown, chgrp.

Linux File System:-Hierarchy of File system, File System parts- Boot Block, Super Block, Inode Block, Data Block, File types, Devices and Drives in Linux, Mounting devices (CD/DVD, usb, hard drive partition), file system

Unit 2: Linux Command **(15)**

Linux commands File and directory Management Commands:-mkdir, rmdir, cd and pwd, file, ls, cat, more, less, File and Directory Operations: find, cp, mv, rm, ln etc, Printing the files - lpr, lpq, lprm etc.

Filter Commands & Editor:- Filters: head, tail , pr, cut, paste, sort, uniq, tr, grep, egrep, fgrep, sed.

Communication commands:- mesg, talk, write, wall, mail.

Text Editors- vi, vim, Archive and File compression commands

Shell Programming:- Shell Variables, Meta characters, Shell Scripts – Control and Loop structure, I/O and Redirection, Piping,

Unit 3: Linux System Management (10)

Process Management: Shell process, Parent and children, Process status, System process, Multiple jobs in background and foreground, Changing process priority with nice. Listing processes, ps, kill, premature termination of process.

Disk management and System Administration:-Disk Partitioning- RAID, LVM etc., disk related Management Tools- Fdisk, Parted etc. , Boot Loaders- GRUB, LILO, Custom Loaders

Unit 4:-Linux System and Network Administration (10)

System administration – Role of system administrator, identifying administrative tasks & files, Configuration and log files, Chkconfig, Security Enhanced Linux, Installing and removing packages with rpm command

Understanding various Servers:- DHCP, DNS, Squid, Apache, Telnet, FTP, Samba.

Outcomes:-

Students will be able to:

1. Identify the basic Linux general purpose commands.
2. Apply and change the ownership and file permissions using advance Linux commands.
3. Use the awk, grep, perl scripts.
4. Implement shell scripts.
5. Apply basic of administrative task.

Reference Books :

1. Official Red Hat Linux Users guide by Redhat, Wiley Dreamtech India
2. UNIX for programmers and users by Graham Glass & King Ables, Pearson Education
3. Beginning Linux Programming by Neil Mathew & Richard Stones, Wiley Dreamtech India
4. Red Hat Linux Bible by Cristopher Negus, Wiley Dreamtech India
5. UNIX Shell Programming by Yeswant Kanethkar, BPB

Semester – VI

Paper XIV:- Web Technology

Objectives:-

Students will try to learn:

1. To understand basic of ASP.Net
2. To understand different server controls used in ASP.Net for web application.
3. To understand master page concept
4. To learn how to maintain state and security in web application.
5. To understand database connectivity with web application.

Unit 1: Introduction to ASP.Net (10)

Introduction to Web Architecture Model, Introduction to Visual Studio for Web Application, historical development of ASP.Net

Application and Page Frameworks

Application Location Options, Built-In Web Server, IIS,FTP, Web Site Requiring FrontPage, Extensions, The ASP.NET Page Life Cycle, The ASP.NET Page Structure Options, Inline Coding, New Code-Behind Pages, ASP.NET 2.0 Page Directives, @Page, @Master, @Control, @Import, @Implements, @Register, @Assembly, @PreviousPageType, @MasterType, @OutputCache, @Reference. ASP.NET Page Events, Dealing with PostBacks, Cross-Page Posting, ASP.NET Application Folders, \App_Code Folder, \App_Data Folder, \App_Themes Folder, \App_GlobalResources Folder, \App_LocalResources, \App_WebReferences, \App_Browsers, Compilation, Global.asax

Unit 2: ASP.NET Server Controls and Validation Controls (10)

ASP.Net Server Controls, Understanding Validation, Client-Side versus Server-Side, Validation, ASP.NET Validation Server Controls, Validation Causes, The Required Field Validator Server Control, The CompareValidator Server Control, The RangeValidator Server Control, The RegularExpressionValidator Server Control, The CustomValidator Server Control, The ValidationSummary Server Control, Turning Off Client-Side Validation, Using Images and Sounds for Error Notifications, Working with Validation Groups

Master Pages:- Introduction of Master Pages- The Basics of Master Pages, Coding a Master Page, Coding a Content Page, Mixing Page Types and Languages, Specifying Which Master Page to Use, Working with the Page Title, Working with Controls and Properties from the Master Page,

Specifying Default Content in the Master Page, Programmatically Assigning the Master Page, Nesting Master Pages, Master Page Events, Themes and Skins

Unit 3: ASP.Net State Management, Navigation and Security (15)

Application State, Session State, Client & server storing, View state, Cache, Hidden Variable, Session object, Profiles, Overview of HTTP Handler & Modules

Site Navigation:- Site Navigation technique, SiteMap file, SiteMapPath, TreeView and MenuView control, Using XML file

ASP.NET web security:- Authentication & Authorization, Windows & forms, User.identity, User.IsInRoles, Using Data Adapter, Debugging & error Handling, ASP.Net tracing, Page Level, Application Level, Debugging, Start Debugging session, Client side debugging, Exception Handling, On page, HTTP status code,

Unit 4: ADO.Net and AJAX (10)

Data Access with ADO.NET:- ADO.NET Overview, Using Database Connections, Executing Commands, Calling Stored Procedures, Fast Data Access: The Data Reader, Data Adapter

Introduction to AJAX:- Introduction to AJAX and Need of AJAX, Server side and client side architecture ScriptManager, UpdatePanel, Timer control.

Outcomes:-

Students will be able to:

1. Understand basic of ASP.Net and web application.
2. Use different ASP.Net web server control to develop web application.
3. Use master page for interactive design
4. Maintain state and security in web application.
5. Connect any database with web application.

Reference Books:

1. Professional ASP.NET– Wrox Publication by Bill Evjen, Scott Hanselman, Farhan Muhammed, Sirnivasa Sivakumar, Devin Rader.
2. Microsoft ASP.NET Step by Step - Microsoft Press by George Shepherd.

Paper XV:- Advanced Java

Objectives:-

Students will try to learn:

1. To understand database connectivity using JDBC.
2. To learn how to develop web applications using servlet.
3. How to develop web applications using JSP.
4. To Understand concept of hibernate and struts.

Unit -1:-JDBC (10)

Introducing JDBC: Describing Components of JDBC, Features of JDBC, JDBC Architecture: Types of Divers:Advantages and disadvantages of Drives, Use of Drivers, JDBC Statement and Methods:-Statement, PreparedStatement, CallableStatement, execute(), executeQuery(), executeUpdate(), Working with Resultset interface,Working with Resultset and MetaData.

Unit -2:-Servlet (15)

Introducing CGI, Introducing Servlet, Advantages of Servlet over CGI, Features of Servlet, Introducing Servlet API, Javax.servlet package, Javax.servlet.http package, Introducing Servlet, Advantages of Servlet over CGI, Features of Servlet, Servlet life Cycle, Init(), Service(), Destroy(), Working with GenericServlet and HttpServlet, RequestDispatcher interface, Include() and forward(), Use of RequestDispatcher, Session in Servlet, Introducing session, Session tracking mechanism, Cookies, Advantages & disadvantages, use of cookies, Hidden form filed, Advantages & disadvantages, use of Hidden form filed, URL rewritten, disadvantages, use of URL rewritten, HttpSession, Advantages & disadvantages,use of URL HttpSession

Unit -3:- JSP (10)

Introduction to JSP, Advantages of JSP over Servlet, JSP architecture, JSP life cycle, Implicit objects in JSP- request, response, out, page, pageContext, application, session, config, exception, JSP tag elements- Declarative, Declaration, scriplet, expression, action., Java Bean- Advantages & Disadvantages, useBean tag- setProperty and getProperty, Bean In Jsp, JSTL core tag: General purpose tag, conditional tag, networking tag, JSTL SQL tags, Custom tag: empty tag, body content tag, iteration tag, simple tag

Unit -4:- Hibernate and Struts (10)

Introduction Hibernate(HB), Architecture of HB, Generator classes, Steps to create application of HB:- HB with annotation, Insert ,Delete,update,retrive records from database in HB, HB web application

Struts:- Introduction to struts, What is struts, Use of struts, Features of Struts, Architecture of struts, Steps to create application of struts

Outcomes:-

Students will be able to:

1. Use database connectivity using JDBC.
2. Develop web applications using servlet.
3. Develop web applications using JSP.
4. To use the concept of hibernate and struts.

Reference Books

1. Java The complete Reference by Herbert Schildt
2. Java Servlet Programming by Jasan Hunter
3. Beginning Java EE5 from Novice to Professionals by K. Makhar & C. Zelenk
4. Java Server Programming by Bayross & Shah
5. Thinking in java by Brucel

Paper XVI:-Data Communication and Networking

Objective: -

Students will try to learn:

1. Study the basic taxonomy and terminology of the computer networking and enumerate the layers of OSI model and TCP/IP model.
2. Acquire knowledge of Application layer and Presentation layer paradigms and protocols.
3. Study Session layer design issues, Transport layer services, and protocols.
4. Study data link layer concepts, design issues, and protocols.
5. Read the fundamentals and basics of Physical layer, and will apply them in real time applications.

Unit 1. Introduction to Data Communication & Networking (10)

Data Communication: Components, Data Flow, Protocols & Standards, Design Issues of Layers, Connection oriented and connection less services, Network models :- ISO-OSI reference model, TCP/IP reference model.

Unit 2. Physical layer (10)

Signals: Analog & Digital Signals, Period, Frequency, Phase, Amplitude, Bandwidth, Bit Rate, Bit Length, Fourier analysis. Transmission Impairment: Attenuation, Distortion, Noise, Nyquiest Theorem, Shannon Capacity Theorem.

Transmission Media:-Guided Media-Magnetic Media, Twisted Pair, Coaxial Cable, Fiber Optic Cable,

Unguided Media:- Wireless- Radio Waves, Microwaves, Infrared, Satellite Communication

Digital Transmission: Manchester & Differential Manchester Coding, Pulse Code Modulation

Modulation:- Amplitude Modulation, Frequency Modulation, Phase Modulation

Transmission Mode: Parallel, Serial, Synchronous Transmission, Asynchronous Transmission.

Multiplexing- Frequency Division Multiplexing, Time Division Multiplexing, Wavelength Division Multiplexing.

Switching- Circuit Switching, Message Switching, Packet Switching.

Unit 3. Data link layer (15)

Error Detection & Correction: Types of Errors, Hamming Distance, Error Detection: Parity Check, Cyclic Redundancy Check, Checksum Check, hamming code

Data Link Control: Framing, Flow & Error Control,

Protocols: Simplex, Stop and Wait, Stop and Wait ARQ, Go Back N ARQ, Selective repeat ARQ,

HDLC, Point to Point protocol.

Multiple Access Protocol: ALOHA, CSMA, CSMA/CD,

CSMA/CA Channelization, FDMA, TDMA, CDMA

Unit 4. Network layer , Transport, Session, Presentation & Application layers (10)

Network layer Design issues, Routing Algorithm: Optimality Principle, Shortest Path Routing, Distance Vector Routing, Link State Routing.

Congestion Control Algorithm: General principle of congestion control, Congestion prevention policies, Congestion Control in Virtual-Circuit Subnets, Congestion Control in Datagram Subnets

Network Devices-Hubs, Switches, Repeaters, Bridges, Routers, Gateways

Transport, Session, Presentation & Application layers (5)

TCP/IP protocol suite :- UDP,TCP,SCTP, IP, RTP, FTP, DNS, TELNET, SMTP, POP, HTTP, WWW, SNMP,ARP, RARP.

Data Compression:-Audio Compression, Video Compression

Outcomes:-

Students will able to:

1. Describe the functions of each layer in OSI and TCP/IP model.
2. Explain the functions of Application layer and Presentation layer paradigms and Protocols.
3. Describe the Session layer and Transport layer.
4. Describe the functions of data link layer and explain the protocols.
5. Explain the types of transmission media with real time applications

Reference Books:

1. Computer Networking by Tannenbaum.
2. Data communication and networking by William Stallings
3. Data communication and networking by B A Forouzan
4. Data communication and networking by Jain

Paper XVII:- Advance Python

Objective:-

Students will try to learn:

1. Windows application development in python using Tkinter.
2. MySql open source database.
3. Web application development using Django framework.
4. Concept of XML in python and network programming in Python

Unit – I:- Windows Applications using Tkinter (10)

GUI Programming GUI in Python, Advantages of GUI, Introduction to GUI library, Basic Operations using Tkinter, Root Window, Working with Containers: Frame, Canvas Layout Management, Events and Bindings, Font, Colors, drawing on Canvas (line, oval, rectangle, etc.) Widgets: Label, Button, Checkbutton, Entry, Listbox, Message, Radiobutton, Text, Spinbox, Scrollbar, Menu etc. Writing Python Programs for GUI applications

Unit – II:- Database Connectivity using MySQL (10)

Installation of MySQL Database Software, Installing MySQL Connector, Steps for Database Connectivity, Working with MySQL Database : Inserting, Retrieving, Deleting and Updating the data Working with Stored Procedure

Unit – III:- Web Application using Django (15)

What Is a Web Framework? The MVC Design Pattern, Django's History, Advantages of Django, Understanding Django environment, Installing Django, Setting Up a Database

Django architecture, The Development Server, Django Commands Overview, Starting a Project, Django apps, Difference between app and project, The Project Structure, Setting Up Your Project, Create an Application

Migration, Admin Panel. Views in Django, URL Routing, Template in Django, Models in Django, Forms in Django.

Unit – IV- XML and Networking (10)

Introduction to XML, XML Parser Architecture and API's, Parsing XML with SAX API's, Parsing XML with DOM API's

Network Programming:- Introduction to Sockets Programming, Server Socket Methods, Client Socket Methods, IP Address, URL, TCP/IP Server, TCP/IP Client, Sending E-mail Application

Outcomes:-

Students will able to:

1. Develop windows application in python using Tkinter library.
2. Basic and advance concept of MySql open source database.
3. Develop web application and web project using Django framework.
4. Understand Concept of XML in python and network programming in Python

Reference Books:

1. MySQL for Python: Database Access Made Easy- A. Lukaszewski
2. Beginning Django: Web Application Development and Deployment with Python-Daniel Rubio-Apress
3. Django Unleashed- Andrew Pinkham-SAMS
4. Practical Django Projects- James Bennett-Apress
5. Python GUI Programming with Tkinter- Alan D. Moore-Packt
6. Tkinter GUI Application Development H TSHOT - Bhaskar Chaudhary -Packt

Paper XVIII:- Software Testing

Objective:-

Students will try to learn:

1. Basic software debugging methods.
2. White box testing methods and techniques.
3. Black Box testing methods and techniques.
4. Designing test plans.
5. Different testing tools (familiar with open source tools)

Unit 1:-Introduction To Software Testing: (10)

What is Software Testing?, Use or need of software testing. ,Software Development Life Cycle (SDLC) :- Water Fall Model, Spiral Model, V- Model, Prototype Model, Hybrid Model

Unit- 2 White Box and Black Box Testing: (10)

Introduction to White box testing, Advantages and Disadvantages of White box testing, Loop Testing, Path Testing , Condition testing , Memory Testing , Performance Testing

Black Box Testing:

Introduction to black box testing , Advantages and Disadvantages of black box testing , unctional Testing- Integration Testing (Incremental Integration Testing) ,Top Down Incremental Integration Testing , Bottom Up Incremental Integration Testing , Non Incremental Integration Testing , System Testing , Acceptance Testing , Smoke Testing , Exploratory Testing , Adhoc Testing , Performance Testing – Load Testing, Stress Testing, Volume Testing, Soak Testing, Regression Testing-Unit Regression Testing/Retest, Regional Regression Testing, Full Regression Testing

Unit- 3 Test cases and its design Techniques: (15)

Introduction to Test Case , Characteristics Of Good Test Case , Test Case Template, How To Write A Test Case, How To Ensure The Test Coverage Is Good , How To Identify whether It Is a Good Test Case Or Not, Review Process/Peer Review , Preparing Review Report, Examples On Writing Test Cases, Test Cases Design Techniques-Error Guessing, Equivalence Partitioning, Boundary Value Analysis

Unit- 4 Software Test Life cycle and Defect Life Cycle: (10)

Software Test Life Cycle-Writing Test Plan, Preparing Traceability Matrix, Writing Test Execution Report, Summary Report, Retrospect Meeting /Triage Meetings, Defect Life Cycle-Concept of Defect life cycle, Difference between Bug, Defect, Failure, Error

Outcomes:-

Students will able to:

1. Investigate the reason for bugs and analyze the principles in software testing to prevent and remove bugs.
2. Implement various test processes for quality improvement
3. Design test planning.
4. Manage the test process
5. Use practical knowledge of a variety of ways to test software and an understanding of some of the tradeoffs between testing techniques.

Reference Books:

1. The art of Software Testing– Glenford J. Myers
2. Lessons learned in Software Testing – CemKaner, James Bach, Bret Pettichord
3. A Practitioner's Guide to Software Test Design- Lee Copeland
4. Software Testing Techniques, 2nd edition- Boris Beizer
5. How to Break Software: A Practical Guide to Testing- James Whittaker

Sample Assignments on Visual Programming

1. Write a menu driven of a] Face value b]Armstrong c]Palindrome.
2. Write a program that implement features of cross language support.
3. Write a program to overload method
4. Write a program that method should return object, Array.
5. Write a program for static class and partial class.
6. Write a program for static property.
7. Write a program for indexer.
8. Write a program to implement inheritance.
9. Write a program to overloading operator.
10. Write a program that implement interface.
11. Write a program that implement hash table.
12. Write a program that implement arraylist by using windows application.
13. Write a program that implement data structure by using windows application.
14. Write a program for delegate and event.
15. Write a program for Reading/Writing file by using byte stream class.
16. Write a program for copy one file to another file.
17. Write a program creating files & directories & display the following attribute- 1] Name 2] Size 3] Getcreationtime by using windows application.
18. Write a program for thread.
19. Design windows application which demonstrate common controls.
20. Design windows application which demonstrate Dialog group.

Sample Assignment on Java Practical

1. To find the factorial of a given number
2. To learn use of single dimensional array by defining the array dynamically.
3. To check if a number is prime or not, by taking the number as input from the keyboard
4. Write a program that show working of different functions of String and StringBufferclasss like setCharAt(), setLength(), append(), insert(), concat()and equals().
5. Write a program to create a "distance" class with methods where distance is computed in terms of feet and inches, how to create objects of a class and to see the use of this pointer
6. Modify the "distance" class by creating constructor for assigning values (feet and inches) to the distance object. Create another object and assign second object as reference variable to another object reference variable. Further create a third object which is a clone of the first object.
7. Write a program to show that during function overloading, if no matching argument is found, then java will apply automatic type conversions (from lower to higher data type)
8. Write a program to show the difference between public and private access specifiers. The program should also show that primitive data types are passed by value and objects are passed by reference and to learn use of final keyword
9. Create a multi-file program where in one file a string message is taken as input from the user and the function to display the message on the screen is given in another file (make use of Scanner package in this program).
10. Write a program to create a multilevel package and creates a reusable class to generate Fibonacci series, where the function to generate Fibonacci series is given in a different file belonging to the same package.
11. Write a program "Divide by Zero that takes two numbers a and b as input, computes a/b, and invokes Arithmetic Exception to generate a message when the denominator is zero.
12. Write a program to show the use of nested try statements that emphasizes the sequence of checking for catch handler statements.
13. Write a program to create your own exception types to handle situation specific to your application (Hint: Define a subclass of Exception which itself is a subclass of Throwable).
14. Write a program to demonstrate priorities among multiple threads.
15. Write a program to demonstrate multithread communication by implementing synchronization among threads (Hint: you can implement a simple producer and consumer problem).

16. Write a program to demonstrate different mouse handling events like mouseClicked(), mouseEntered(), mouseExited(), mousePressed, mouseReleased() and mouseDragged().
17. Write a program to demonstrate different keyboard handling events.
18. Write a program to demonstrate the use of push buttons.
19. Write a program to demonstrate collection classes.
20. Write a program to implement interface.

Sample Assignment on Python

1. Write a program to print strings, numbers and perform simple mathematical calculations.
2. Write a program to implement command line arguments.
3. Write a program to implements conditional statements -if, if-else, nested if.
4. Write a program to implement loops.
5. Write a program which demonstrate random module.
6. Write a program which create file and the content of file will be DNA sequence created by random module.
7. Write a program to demonstrate date related module.
8. Write a program to manipulate strings like string copy, string concatenation, string comparison, string length, string reverse etc.
9. Write program to show use of Lists and Tuples.
10. Write program which uses dictionaries
11. Write program to implement functions & Modules
12. Write program to implement Package.
13. Write a program to implement Constructors.
14. Write a program to implement types of Inheritance and Interfaces.
15. Write a program to implement Method Overloading and Method Overriding.
16. Write a program to implement Operator Overloading.
17. Write a program in to read and write contents in a file.
18. Write a program to demonstrate Exception handling
19. Write a program to demonstrate user defined exception.
20. Write a program to demonstrate the use of regular expressions

Sample Assignment on Web technology

1. Write a JavaScript for Addition, Subtraction, Division, and Multiplication of two numbers.
2. Design Webpage for employee registration form using all HTML controls and CSS.
3. Design web page for simple calculator By using class. Command name property. Button event.
4. Design web page of online shopping form which used textbox, label, buttons, and all type list controls.
5. Design Application for cross page posting.
6. Design This year calendar with all holidays in red color.
7. Design web page for image map by using Both method.
8. Design Advertisement web page.
9. Design web page which uses Multiview & View control. Wizard control. File upload control
10. Design web page for all validation control & validation Groups.
11. Create nested master pages.
12. Design web site which uses all site navigation Control.
13. Design web page which shows list of employees in selected dept.
14. Create XML & it's styles Sheet file.
15. Create Master Detail Form.
16. Create web page demonstrate insert, update, delete and select record.
17. Create web page demonstrate insert record and find sum of sal using stored procedure.
18. Design web page for grid view control.
19. Design web page which shows 10 events in calendar control.
20. Design web page which demonstrate wizard control.

Sample Assignments on Advanced Java

1. Write a java socket programming in which client sends a text and server receives it.
2. Write a program to demonstrate URL class.
3. Write a program to demonstrate InetAddress class.
4. Write a program to demonstrate use of Datagram Socket.
5. Write a program to create Student registration form using Swing Component.
6. Write the following program using Swing component. An Election is conducted between 3 candidates. There are N number of voters. By clicking Next Voter Button textboxes and RadioButtons need to be cleared. By clicking Results, the votes obtained by each candidate and the winner candidate to be displayed in text area. Exit button should exit program.
7. Write a program for inserting data into table using PreparedStatement.
8. Write a program for updating data into table using PreparedStatement.
9. Write a program for deleting data into table using PreparedStatement.
10. Write a program to demonstrate callable statement.
11. Write a Servlet program to check that life cycle methods are called by web container.
12. Write a program to create simple servlet for displaying welcome message.
13. Write a program to create servlet for session management using cookies.
14. Write a program to create servlet for session management using Hidden Form Field.
15. Write a program to create servlet for session management using URL Rewriting.
16. Write a simple program of authenticating user using filter.
17. Write a simple program to demonstrate the use of request dispatcher.
18. Write a simple program to demonstrate the use of Send Redirect.
19. Write a JSP program to count number of visitors.
20. Write a program for communication between HTML & JSP.

Sample Assignment on Advance Python

1. Write a program to draw different shapes
2. Write a program to develop GUI applications
3. Write a program to show database connectivity using MySQL to perform Insert, update and delete operations.
4. Write a program to implement Thread Synchronization.
5. Write a program to demonstrate use of XML file
6. Write a program to create simple Django app
7. Write a program to create simple Django project.
8. Write a program to create Django project which add, delete, update records.
9. Write windows application which demonstrate all layouts used in Tkinter.
10. Write windows application which demonstrate any 10 Tkinter controls.

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

पुण्यश्लोक अहिल्यादेवी होळकर
सोलापूर विद्यापीठ
।। विद्यया संपन्नता ।।
NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty: For All Faculties

Environmental Studies
(Non-Credit)

CHOICE BASED CREDIT SYSTEM

Syllabus: ENVIRONMENTAL STUDIES

(Syllabus to be implemented w.e.f. June 2020)

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

All UG for Fourth Semester Compulsory Paper

Environmental Studies

(CBCS - Syllabus) - 2020

1) **Title of the Paper:** Environmental Studies
2) **Pattern:** Semester and Credit system
3) **Total Contact Hours:** 45 hours

Structure for Environmental Studies

Class & Semester	Code	Name and type of the paper		L/P	Credits	Total Marks	UA	CA
		Type	Name					
		For All UG Semester IV (Second year)						
All UG Second Year (4th Semester)	EVS	Ability Enhancement Course (AECC) and Non Credit	Environmental Studies	50	NC	50	40	10
Compulsory: *Unit Test / Assignment/ Seminar/ Nature Visits / Field Work / Field Tour/ Industrial visits of 1-2 days and submission of report is compulsory under internals marks (CA)								

1. The credit earned by student with this course shall not be considered for calculation of SGPA/CGPA
2. This course is not considered as a passing head for counting passing heads for ATKT
3. Student must pass this subject for award of the degree

Evaluation Scheme:

Theory paper has 50 marks out of which 40 marks will be for Term End examination and 10 marks for College Internal Assessment. The candidate has to appear for internal evaluation of 10 marks and external evaluation (University Examination) of 40 marks.

A) College Internal Evaluation:

In case of theory paper, internal examination has to conduct by department / college.

Marks for internal assessment shall be given based on Unit Test / Assignment/ Seminar/ Nature Visits / Field Work / Field Tour/ Industrial visits of 1-2 days and submission of report is compulsory under internals marks (CA).

B) External Evaluation (End of Term University Examination):

I) Nature of Theory question paper:

1) Theory paper is of 40 marks.
2) Theory paper will be of 2 hours duration
3) There shall be 05 questions each carrying 08 marks.
4) Students have to attempt all the questions.

Syllabus As Per UGC Guidelines

UGC Letter – File No. 13-01/2000 (EA/ENV/COS-01 Dated 14th May, 2019)

Environment Studies (AECC)

Theory Lectures - (45)

Unit 1 : **Introduction to environmental studies (**2 lectures)

- Multidisciplinary nature of environmental studies;
- Scope and importance; Concept of sustainability and sustainable development

Unit 2 : **Ecosystems** (6 lectures)

- What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem: food chains, food webs and ecological succession. Case studies of the following ecosystems :
  a) Forest ecosystem
  b) Grassland ecosystem
  c) Desert ecosystem
  d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Unit 3 : **Natural Resources** : **Renewable and Non-renewable Resources** (8 lectures)

- Land resources and land use change; Land degradation, soil erosion and desertification.
- Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.
- Water: Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state).
- Energy resources : Renewable and non- renewable energy sources, use of alternate energy sources, growing energy needs, case studies.

Unit 4 : **Biodiversity and Conservation** (8 lectures)

- Levels of biological diversity : genetic, species and ecosystem diversity; Biogeographic zones of India; Biodiversity patterns and global biodiversity hot spots
- India as a mega-biodiversity nation; Endangered and endemic species of India
- Threats to biodiversity : Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity.
- Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.

Unit 5 : **EnvironmentalPollution (**8 lectures)

- Environmental pollution : types, causes, effects and controls; Air, water, soil and noise pollution
- Nuclear hazards and human health risks
- Solid waste management : Control measures of urban and industrial waste.
- Pollution case studies.

Unit 6 : **Environmental Policies & Practices** (7 lectures)

- Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture
- Environment Laws: Environment Protection Act, Air (Prevention, & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act. International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD).
- Nature reserves, tribal populations and rights, and human wildlife conflicts in Indian context.

Unit 7 : **Human Communities and the Environment** (6 lectures)

- Human population growth: Impacts on environment, human health and welfare.
- Resettlement and rehabilitation of project affected persons; case studies.
- Disaster management : floods, earthquake, cyclones and landslides.
- Environmental movements : Chipko, Silent valley, Bishnois of Rajasthan.
- Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.
- Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi).

Unit 8 : **Field work** (Equal to 3 lectures)

- Visit to an area to document environmental assets: river/ forest/ flora/fauna, etc.
- Visit to a local polluted site-Urban/Rural/Industrial/Agricultural.
- Study of common plants, insects, birds and basic principles of identification.
- Study of simple ecosystems-pond, river, dam, pond, ocean / marine etc.

Suggested Readings:

1. Environmental Studies E - Text Book (Marathi and English Medium) Solapur University Solapur (2017).
2. Carson, R. 2002. *Silent Spring*. Houghton Mifflin Harcourt.
3. Gadgil, M., & Guha, R. 1993. *This Fissured Land: An Ecological History of India*. Univ. of California Press.
4. Gleeson, B. and Low, N. (eds.) 1999. *Global Ethics and Environment*, London, Routledge.
5. Gleick, P. H. 1993. *Water in Crisis*. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
6. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. *Principles of Conservation Biology*. Sunderland: Sinauer Associates, 2006.
7. Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. *Science*, 339: 36-37.
8. McCully, P. 1996. *Rivers no more: the environmental effects of dams* (pp. 29-64). Zed Books.
9. McNeill, John R. 2000. Something New Under the Sun: An Environmental History of the Twentieth Century.

10. Odum, E.P., Odum, H.T. & Andrews, J. 1971. *Fundamentals of Ecology*. Philadelphia: Saunders.
11. Pepper, I.L., Gerba, C.P. & Brusseau, M.L. 2011. Environmental and Pollution Science. Academic Press.
12. Rao, M.N. & Datta, A.K. 1987. *Waste Water Treatment*. Oxford and IBH Publishing Co. Pvt. Ltd.
13. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012. *Environment*. 8th edition. John Wiley & Sons.
14. Rosencranz, A., Divan, S., & Noble, M. L. 2001. *Environmental law and policy in India*. *Tripathi 1992*.
15. Sengupta, R. 2003. *Ecology and economics*: An approach to sustainable development. OUP.
16. Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi.
17. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. *Conservation Biology: Voices from the Tropics*. John Wiley & Sons.
18. Thapar, V. 1998. *Land of the Tiger*: A Natural History of the Indian Subcontinent.
19. Warren, C. E. 1971. *Biology and Water Pollution Control*. WB Saunders.
20. Wilson, E. O. 2006. *The Creation: An appeal to save life on earth*. New York: Norton.
21. World Commission on Environment and Development. 1987. *Our Common Future*. Oxford University Press.

Nature of Question Paper for CBCS Semester Pattern

All UG and all Faculties

Paper: Environmental Studies (Compulsory)

Time: - 2 hrs. **Total Marks: - 40**

Instructions:

1. ***All questions are compulsory***
2. ***Draw Neat diagram and give equations wherever necessary***
3. ***Figures to the right indicate full marks***

Q. 1	**Multiple choice questions (One Marks each)**	**08**
1)	…… a) b) c) d)	
2)		
3)		
4)		
5)		
6)		
7)		
8)		
Q. 2	**Answer any FOUR of the followings.**	**08**
	i)	
	ii)	
	iii)	
	iv)	
	v)	
	vi)	
Q. 3	**Write short notes on any TWO of the following**	**08**
	i)	
	ii)	
	iii)	
Q. 4	**Answer any TWO of the following**	**08**
	i)	
	ii)	
	iii)	
Q. 5	**Answer any ONE of the following**	**08**
	i)	
	ii)	
