Shree Guru Gobind Singh Ji Government College

Paonta Sahib, District Sirmaur, Himachal Pradesh

2nd Cycle of NAAC Accreditation

Criterion 1 Curricular Aspects

Key Indicator 1.3 Curriculum Enrichment

Metric 1.3.2 Provide the Document showing the experimental learning through project work/field work/internship as prescribed by the affiliating university / affiliating university curriculum. Minutes of the Boards of Studies/ Academic Council meetings with approvals for these courses. for the year 2016-17, 2017-18, 2018-19 , 2019-20 and 2020-21.

1.3.2 DVV (Document showing the experimental learning)

Table of Contents

PG

M COM

MC 4.6: Project Report and Viva-Voce*/Corporate Governance and Business Ethics

SCHEME AND COURSES OF READING FOR MASTER OF COMMERCE (M.COM) UNDER SEMESTER SYSTEM W.E.F 2018-19

COURSE STRUCTURE

Note: There will be nine(9) questions in all. The first question is compulsory and consist of ten (10) short questions having two (2) marks each. The candidate will be required to attempt one question from each unit and each question carries fifteen (15) marks.

For students of correspondence courses, the paper will be of 100 marks spread as 20 marks including the compulsory question.

M.Com 1st Semester

Course Code	Course Title	Ext.	Int.	Total Marks	
MC 1.1	Management & Organizational Behaviour		80	20	100
MC 1.2	Business Environment		80	20	100
MC 1.3	Managerial Economics		80	20	100
MC 1.4	Statistical Analysis for Decision Making		80	20	100
MC 1.5	Taxation Practices and Administration		80	20	100
Industry cum Educational tour (Compulsory for regular students)					
M.Com 2st Semester					
MC 2.1	Corporate Financial Accounting		80	20	100
MC 2.2	Financial Management		80	20	100
MC 2.3	Human Resource Management		80	20	100
MC 2.4	Marketing Management		80	20	100
MC 2.5	Financial Institution and Markets		80	20	100
M.Com 3rd Semester					
MC 3.1	Computer Application in Business		80	20	100
MC 3.2	Advanced Cost Accounting	80	20	100	
MC 3.3	Corporate Legal Framework	80	20	100	
MC 3.4	Strategic Management		80	20	100
MC 3.5	Research Methodology		80	20	100
M.Com 4th Semester					
MC 4.1	Advanced Financial Management		80	20	100
MC 4.2	Security Analysis and Portfolio Management		80	20	100
MC 4.3	Project Planning and Control	80	20	100	
MC 4.4	Accounting for Managerial Decision	80	20	100	
MC 4.5	E-Commerce	80	20	100	
MC 4.6	Project Report and Viva-voce*/Corporate Governance and Business Ethics**				

PG DIPLOMA
PGDCA
DCS-207: Project Work

L PRADESH UNIVERSITY
R HILL, SHIMLA-171005.

Out line of PGDCA. Course (1 year)- two semester and scheme of examination. (Effective from 2002 onwards)

SEMESTER –I

Course Code	Paper	Max. Marks Theory	Internal Assess.	Exams. Duration (Hrs.)
DCS-101	Fundamentals of Programming Using C	75	25	3
DCS-102	PC Software	75	25	3
DCS-103	Operating system	75	25	3
DCS-104	Computer Organization and Architecture	75	25	3
DCS-105	Practical-I (C Language)	50	50	3
DCS-106	Practical-I I (PC Software)	50	50	3

SEMESTER –II

DCS-201	Data and File Structure	75	25	3
DCS-202	System Analysis and Design	75	25	3
DCS-203	Object Oriented Programming & C ++	75	25	3
DCS-204	Data base Management system	75	25	3
DCS-205	Practical-III (DFS Using C ++	75	25	3
DCS-206	Practical-IV (Data base Management system)	75	25	3
DCS-207	Project Work	200	-	-

The project should be involve development of application software for some industry/ Institute

UG
ECONOMICS
ECONA312: Sec 8: Project Work

YEAR – III

Course No. **ECONA312**
Course title: **Project Work**
Nature of Course: **SEC – 8**
Number of credits: **4**
Number of Lectures (L): Practical (P): Tutorial (T): 16:28:16

Course Description

Project Work is one of the culmination point of the learning process, which will put to test the acquired ability of the candidate to independently take the charge of the project and use the understanding of economics developed in previous years to evaluate/analyze economic issues.

Course Outline

The project *must* relate to economic issues/problems. The Project report shall consist of following components:
The Project will involve an extended, independent investigation of a topic and preparation of a dissertation. The chosen research area must be of a nature that incorporates an in depth exploration of economic concepts, theories and issues so as to produce a rigorous dissertation. Primary data based projects are encouraged.

Dissertations that comprise purely descriptive material will not be acceptable.
The project report must contain between 50-60 A4 size pages printed on both sides. Font must be **"Times New Roman", font size 16 (heading), 14 (Sub**-Headings) and 12 (text). Line spacing 1.5 inches, page indent Left 1.5 inches, Right, Top and Bottom 1 inch.
Note: Font size of tables may vary as per requirement

Structure of the Project Report

Structure is important because it dictates the topics discussed and the order in which they are organized. An ideal Project Report should comprise the following sequence:

1. Cover Page 2. Title Page 3. Acknowledgements 4. Table of Contents 5. List of Tables & 6. LIST OF Figures/Illustrations 7. Abbreviations (if any) 8. Abstract 9. Introduction	10. Review of literature 11. Research Design/ Methodology 12. Results and Analysis 13. Discussion of implications 14. Conclusions and/or Recommendations for further study 15. References 16. Appendices (if any)

Evaluation of the project (for 70% marks) will be done by external examiner based on project report and presentation along with continuous evaluation by internal examiner for (30% marks).

NOTE: The 70:30 marking ratio shall be as follows: 30 marks for Internal assessment and remaining 70 marks (EYE) to be distributed as 50 marks for Dissertation + 20 marks for Viva Voce. Therefore 30 + (50 + 20) = 100 marks.
For ICDEOL students there shall be no internal assessment and the marks secured out of 70 will be rationalized using the multiplier as will be done for other theory papers (refer to course evaluation mentioned in the section titled COURSE EVALUATION above).

ENGLISH

ENG AECC 104: Aecc-2 Writing Skills

I	AECC	AECC-1 Environment Studies	
I	ENG AECC 104	**AECC-2** **Writing Skills:** i. Diary Writing ii. Paragraph Writing iii. Summary/ Note-making iv. Formal and Informal Letter Writing v. CV/Resume Writing vi. Report Writing vii. Interview/Feature Article viii. Notice Writing **Classroom Activity:** Speaking Skills, Listening Skills, Mock Interview, Speech Making Project Work **Suggested Projects:** Sports Writing, Poetry about Women/Men, Poetry in Translation, Translating a Poem, Telling a Story, Fantasy Writing, Chat Shows, The Menace of Dowry, A Success Story, Creative Writing, Theatre Groups, Interviewing a Celebrity, Writing a Newspaper Article on a Current Topic, **Today's Youth and Youth Icons, Leadership and Politics,** Examination System and Benefits of Reform, The Epics, Communalism, Gender Discrimination, Social Activism. **Recommended Reading:** *English Communication Skills: AECC under CBCS, HPU*. Meenakshi F. Paul. and Madhumita Chakraborty. Macmillan, 2017. **Suggested Readings:** 1. *Fluency in English.* Part I. Delhi: Macmillan, 2005. 2. *Fluency* in English. Part II. Delhi: OUP, 2006. Unit 1-15. 3. *El Dorado: A Textbook of Communication Skills*. Hyderabad: Orient Blackswan, 2014. Units 1-5. 4. *Interchange*. Workbook III. Fourth Edition. Delhi: Cambridge University Press, 2015. Units 1-8.	**4**

B.COM.
BC 3.7: Personal Selling and Salesmanship

Paper BC 3.7 : PERSONAL SELLING AND SALESMANSHIP

Duration: 3 hrs. **Marks: 70(Regular students)** **Lectures: 65**
70 (ICDEOL students)

Objective: The purpose of this course is to familiarize the students with the fundamentals of personal selling and the selling process. They will be able to understand selling as a career and what it takes to be a successful salesman.

Contents:

UNIT	TOPIC	DETAILS
1	**Introduction to Personal Selling**	Nature and importance of personal selling, myths of selling, Difference between Personal Selling, Salesmanship and Sales Management, Characteristics of a good salesman, types of selling situations, types of salespersons, Career opportunities in selling, Measures for making selling an attractive career.
2	**Buying Motives**	**Buying Motives**: Concept of motivation, Maslow's theory of need hierarchy; Dynamic nature of motivation; Buying motives and their uses in personal selling.
3	**Selling Process**	**Selling Process:** Prospecting and qualifying; Pre-approach; Approach; Presentation and demonstration; handling of objections; Closing the sale; Post sales activities.
4	**Sales Reports**	**Sales Reports:** reports and documents; sales manual, Order Book, Cash Memo; Tour Diary, Daily and Periodical Reports; Ethical aspects of Selling
5	**Personal Selling and Merchandising**	AIDA Model of selling, Distribution Networks relationship, Advertisement and Personal Selling.

Suggested Readings:-

1.Spiro, Stanton, and Rich, Management of the Sales force, McGraw Hill.
2. Rusell, F. A. Beach and Richard H. Buskirk, Selling: Principles and Practices, McGraw Hill
3. Futrell, Charles, Sales Management: Behaviour, Practices and Cases, The Dryden Press.
4. Still, Richard R., Edward W. Cundiff and Norman A. P. Govoni, Sales Management: Decision Strategies and Cases, Prentice Hall of India Ltd., New Delhi,
5. Johnson, Kurtz and Schueing, Sales Management, McGraw Hill
6. Pedesson, Charles A. Wright, Milburn d. And Weitz, Barton A., Selling: Principles and Methods, Richard, Irvin
7. Kapoor Neeru, Advertising and personal Selling, Pinnacle, New Delhi.

Note: Latest edition of text books may be used.

BCA0501 Operating System

L	T	P
4	0	0

UNIT –I

Operating System Concepts: Operating System Classification- Simple Monitor, Multi Programming, Time Sharing, Real Time Systems, Multiprocessor Systems, Batch Processing, Simple User, Multi User, Operating System Functions And Characteristics.

UNIT –II

Processor Management: Process Overview, Process States, Process State Transitions, Process Control Block, Operations On Processes, Suspend And Resume, Interrupt Processing, Scheduling Algorithms, Multiple Processor Scheduling.
Deadlock: Deadlock Problem, Deadlock, Deadlock Characterization, Necessary Conditions, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery From Deadlock.

UNIT –III

Memory Management: Partition, Paging, Segmentation, Types Of Memory Management Scheme , Bare Machine, Resident Monitor, Swapping, Multiple Partition, Virtual Memory, Demand Paging.

UNIT –IV

File Management: File Types, Operation On Files, File Support, Access Methods, Sequential Access, Direct Access, Index, Allocation Method (Free Space Management, Contiguous, Linked, Indexed), Directory System Single-Level, Two-Level, Tree-Structured, File Protection.

Text & Reference Books:

1. James L. Peterson And Abraham Silberschatz, "Operating System Concepts", Addison Wesley Publishing Company.
2. H.M.Deitel, "Operating Systems", Addison Wesley Publishing Company.
3. A.M.Lister, "Fundamentals Of Operating Systems", Macmillan Publishers Ltd.

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5010 parts, out of the entire syllabus. In all, five questions are to be attempted.

BCA0502 e-Commerce

L	T	P
4	0	0

UNIT-I

e-Commerce: Definition, Framework, Architecture, benefits and Impact of e-Commerce, The Anatomy of e-Commerce application, e-Commerce Consumer applications, e-Commerce Organization Application, e-commerce in India, Prospects of e-Commerce.

UNIT-II

Consumer0oriented E-Commerce: Consumer0oriented applications, mercantile Process Models, consumer's perspective, Merchant's perspective. Advertising and marketing on the Internet: The new age information based marketing, Advertising on the Internet Active or push0based advertising models, Passive or pull based advertising models. Guidelines for Internet advertising. Online marketing process.

UNIT-III

Types of Electronic Payment System: Digital token0based electronic payment systems, smart cards and electronic payment systems, credit card0based electronic payment systems, Risk and electronic payment systems. Electronic data Interchange and its applications in business.

UNIT-IV

Securing the Business on Internet: security Policy, Procedures and Practices, transaction security, CRM, what is e-CRM, it's applications, The e-CRM marketing in India, Major Trends, Global Scenario for e-CRM, CRM utility in India.

Text & Reference Books:

1. Jeffrey F.Rayport & Bernard Jaworski: Introduction to E-commerce, TMH, 2003.
2. Kalakota & Winston: Frontiers of E-commerce, Pearson Education, Mumbai, 2002.
3. David Whiteley: E-Commerce- Strategy technologies and Applications, Tata Mac-Graw Hill, New Delhi, 2000.
4. C.S.V.Murthy: E-Commerce-Concepts, Models & Strategies, Himalaya Publishing house, Mumbai, 2003.
5. Kamalesh K Bajaj & Debjani Nag: E-Commerce, the Cutting Edge of Business- Tata McGraw-Hill, New Delhi, 2002.
6. Bharat Bhaskar: Electronic Commerce, Tata Mc-Graw-Hill, New Delhi, 2003.
7. Perry: E-Commerce, Thomson Publications, New Delhi,2003.
8. Elias M.Awad: Electronic Commerce, Prentice-Hall India, New Delhi, 2002.

BCA0503 Management Information System

L	T	P
4	0	0

UNIT –I

Management Information System: Definition, Meaning and Role of Management Information System Introduction, Definition, System's Approach, Pitfalls in Management Information Systems.
Development of Organizational Theory: Management & Organizational Behaviour, Management, Information & System Approach.

UNIT –II

Data Processing: Operation of Manual Information System, Components of Computer System, Conversion of Manual to Computer Based Systems, Data Bank Concept, Types of Computer Based Applications.
Information System for Decision Making: Evolution of Information System, Decision Making & Management Information System.

UNIT –II

Strategic & Project Planning for Management Information System: Business Planning, Management Information System Responses, Management Information System Planning0 General & Details.
Conceptual System Design: Define Problem, Set System Objective, Establish System Constraints, Determine Information Needs & Sources, Develop Alternative Conceptual Design & Documentation, Prepare the Design Report.

UNIT –IV

Detailed System Design: Aim, Project Management, Define Subsystem, Input, Output & Process Design, System Testing, Software & Hardware selection, Documentation of Detailed Design.

Text & Reference Books:

1. Robert G. Murdick, Joel E. Ross, James R. Claggett, "Information System for Modern Management".
2. Surendra Basandra, "Computers Today".

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5010 parts, out of the entire syllabus. In all, five questions are to be attempted.

BCA0504 ASP.Net Technologies

L	T	P
4	0	3

UNIT – I

Introducing .NET: Microsoft web development, Move from workstation to distributed computing, Internet factor, importance of.net platform0 OS neutral environment, device independence, wide language support, internet based component services.

.NET framework: Common language runtime(CLR), code management and execution, security support, error handling and garbage collection,.net framework class libraries0System classes, data and XML classes, windows form and drawing classes, web classes.

Features of .NET framework: ASP.NET web forms and web services0 Web page authoring & server controls, ASP.NET infrastructure.

UNIT – II

VB.NET : Introduction, statement, lines, comments, operators, procedures, variables0 implicit, explicit, constants, parameters, arrays, branching, looping, objects, classes, inheritance, accessibility of inherited properties and methods, overriding methods.

System class, working with numbers, manipulating strings, DateTime arithmetic, converting values, formatting values, managing arrays.

Namespace and assemblies, Relating namespaces and DLL assemblies, creating assemblies, importing assemblies, using imported assemblies, compiling with imported namespace.

UNIT – III

ASP.NET Web Forms: Web forms code model, In-page vs. Code0behind format, web form object life cycle, handling client side events on the server, web form event handling, define and respond web form control events, AutoPostBack property, automatic state management with web forms.

HTML sever control: definition, RunAt sever attribute, HTML control class, General controls-Anchor, image, form, division, span, Table control, Input Control.

Web server Control: Web Control class, General control- Hyperlink, link button, image, label, Panel, Form Controls, Table controls.

UNIT – IV

Web form List Control: Simple List controls, Template List controls.

Validation Controls: Definition, properties and methods of validation controls, validation controls 0 RequiredFieldValidator, CompareValidator, RangeValidator, RegularExpressionValidator, CustomValidator, ValidationSummary.

User Controls: Definition, Markup0Only User Control, Custom properties, handling events and loading user controls dynamically.

Third Year (5th Semester)

Paper Code	Paper Title	Credit	ESE	CCA	Max. Marks	Exam Duration Hours
BCA0501	Operating System	4	70	30	100	3
BCA0502	eCommerce	4	70	30	100	3
BCA0503	Management Information System	4	70	30	100	3
BCA0504	ASP.net Technologies	4	70	30	100	3
BCA0505	Computer Oriented Statistical Methods	4	70	30	100	3
BCA0504(P)	ASP.net Technologies Lab-IX	3	35	15	50	3
BCA0505(P)	Computer Oriented Statistical Methods Lab-X	3	35	15	50	3
Total					**600**	

Third Year (6th Semester)

Paper Code	Paper Title	Credit	ESE	CCA	Max. Marks	Exam Duration Hours
BCA0601	Computer Networks	4	70	30	100	3
BCA0602	Numerical Methods	4	70	30	100	3
BCA0603	Multimedia Technology	4	70	30	100	3
BCA0604	Computer Graphics	4	70	30	100	3
BCA0605	Software Engineering	4	70	30	100	3
BCA0604(P)	Computer Graphics Lab-XI	3	35	15	50	3
BCA0606	Major Project	3	35	15	50	
Total					**600**	

BCA0505 Computer Oriented Statistical Methods

L	T	P
4	0	3

UNIT-I

Frequency distribution, Histogram, Frequency Polygram, Arithmetic Mean, Median, mode, geometric Mean, Harmonic Mean, Dispersion, Measures of Dispersion, Coefficients of Dispersion.

UNIT-II

Probability, Addition and multiplication Theorems of Probability, Conditional Probability, Independent events Pointwise independent events.

UNIT-III

Mathematical expectation, Expected value of function of a random variable, Properties of expectation, Properties of variance, Covariance.

UNIT-IV

Correlation, Karl Pearson's Coefficient of correlation calculation of the correlation, coefficient for a biovariate frequency distribution, rank correlation.

Text & Reference Books:

1. Gupta, S.C. & Kapoor, V.K., Fundamental of Mathematical statistics, Sultan Chand & Sons.
2. Kapur, J.N. & Sarema, H.C., Mathematical Statistics, S. Chand & Company Ltd.

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5010 parts, out of the entire syllabus. In all, five questions are to be attempted.

Third Year (5th Semester)

Paper Code	Paper Title	Credit	ESE	CCA	Max. Marks	Exam Duration Hours
BCA0501	Operating System	4	70	30	100	3
BCA0502	eCommerce	4	70	30	100	3
BCA0503	Management Information System	4	70	30	100	3
BCA0504	ASP.net Technologies	4	70	30	100	3
BCA0505	Computer Oriented Statistical Methods	4	70	30	100	3
BCA0504(P)	ASP.net Technologies Lab-IX	3	35	15	50	3
BCA0505(P)	Computer Oriented Statistical Methods Lab-X	3	35	15	50	3
Total					**600**	

Third Year (6th Semester)

Paper Code	Paper Title	Credit	ESE	CCA	Max. Marks	Exam Duration Hours
BCA0601	Computer Networks	4	70	30	100	3
BCA0602	Numerical Methods	4	70	30	100	3
BCA0603	Multimedia Technology	4	70	30	100	3
BCA0604	Computer Graphics	4	70	30	100	3
BCA0605	Software Engineering	4	70	30	100	3
BCA0604(P)	Computer Graphics Lab-XI	3	35	15	50	3
BCA0606	Major Project	3	35	15	50	
Total					**600**	

BCA0601 Computer Networks

L	T	P
4	0	0

UNIT-I

Introduction to Communication Network: Computer Networks, (Need, uses, and Advantages of Computer Network), Network Models (Peer0to0Peer0Network, Server0based Network, Client0Server Network), Network components, Network Topology (Star, Ring, Bus, Mesh, Tree, Hybrid, Advantage and Disadvantage of each types.), Types of Networks (LAN, MAN, WAN), Internet (Brief History, Internet Today, Protocol and Standard .

UNIT-II

Error Detection and Correction: Types of errors (Single–bit0error, Burst0Error), Error Detection (Redundancy, Parity check, CRC, Checksum), Error correction (FEC, Hamming code, Burst error corrections) Data Communication Channel and Media, Conductive Media (Twisted-pair cable, Coaxial cable), Fiber optics (Characteristic of light, Types of Fiber optics), Wireless Transmission, (Microwaves, Infrared, Radio waves).

UNIT-III

OSI0Reference Model: OSI Model, OSI Physical Layer Concepts, DLL, Network Layer, TL, SL, PL and AL Concepts. Internet model / TCP/IP Model and Protocols, Modem, DSL, Cable Modem, ISDN, Real world network (Ethernet, Ethernet operation, frame format, Ethernet characteristic, cabling and components) Token Ring and Token Bus networking Technology. Network Connectivity, Repeater, Hub-(Active, Passive and Intelligent), Bridge0(Local, Remote and wireless), Routers (Static and Dynamic), switches and types of switches, Brouter and Gateways.

UNIT-IV

TCP/IP Protocol: Ptortocol Suite, Internet Architecture Board, TCP/IP Protocol (TCP,UDP,IP,ARD), concept of Physical Addressing, and logical Addressing, Different Classes of IP addressing, Special IP Addressing, Classful Addressing, Sub netting, Super netting, Classless addressing, TCP/IP Service Protocol (FTP,SMTP, TELNET, DNS).

BCA0602 Numerical Methods

L	T	P
4	0	0

UNIT-I

Representation of numbers: Decimal to Binary conversion, Floating point representation of numbers, Integer and real/floating point arithmetic, different types of errors, error in the approximation of a function, error in series approximation.

UNIT-II

Solution of algebraic and transcendental equation using Bisection method, Regula-Falsi method, Newton-Raphson method.
Solution of simultaneous linear equations using Gauss Elimination method, Gauss-Jordon method, Jacobi's iterative method, Gauss-Seidel iterative method.

UNIT-III

Interpolation, Finite difference and operators, Newton Forward, Newton Backward, Games forward, Games backward.

UNIT-IV

Numerical differentiation: Differentiating a Graphical function, Differentiating a Tabulated function- Equal and Un-equal intervals, Numerical integration, Newton-Cotes formula, Trapezoidal rule, Simpson's $01/3^{rd}$ and $3/8^{th}$ rule, Weddle's rule.

Text & Reference Books:

1. B.S. Grewal, Numerical Methods in Engg & Science, Khanna Book Publishing Co., New0Delhi.
2. R.S. Salaria, Computer Oriented Numerical Methods, Khanna Book Publishing Co., New0Delhi.
3. V. Rajaraman, Computer Oriented Numerical Methods, PHI.
4. S.S. Sastry, Numerical Method, PHI.

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5010 parts, out of the entire syllabus. In all, five questions are to be attempted.

BCA0603 Multimedia Technology

L	T	P
4	0	3

UNIT-I

Introduction to Multimedia : Needs and areas of use, Development platforms for multimedia, Identifying Multimedia elements Text, Images, Sound, Animation and Video, Making simple Multimedia with PowerPoint. Concepts of plain & formatted text, RTF & HTML texts, Object Linking and Embedding concept.

UNIT-II

Sound: Sound and it Attributes, Mono V/S Stereo Sound, Sound Channels, Sound and Its Effect In Multimedia, Analog V/S Digital Sound, Overview Of Various Sound File Formats On PC WAV, MP3.

UNIT-III

Graphics: Importance of Graphics in Multimedia, Vector and Raster Graphics, Image Capturing Methods Scanner, Digital Camera Etc. Various Attributes of Images Size, Color, Depth , Resolution etc, Various Image File Format BMP, DIB, EPS, PIC, and TIF Format Their Features and imitations, Basics of animation, Software Tools for animation.

UNIT-IV

Video: Basics of Video Analog and Digital Video, How to use video on PC. Introduction to graphics accelerator cards, Brief note on various video standards NTSC, HDTV, Introduction to video capturing Media & instrument Videodisk. Virtual Reality Terminology Head Mounts Display (HMD), Boom, Cave, Input Devices and Sensual Technology

Text & Reference Books:

1. Multimedia: Making it work (4th edition), Tay vaughan, Tata McGraw Hills.
2. Multimedia in action, James E Shuman, Vikas Publishing House.
3. Multimedia basics volume / technology, Andreas hoi zinger, firewall media (Laxmi Publications Pvt. Ltd) New Delhi.

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5010 parts, out of the entire syllabus. In all, five questions are to be attempted.

BCA0604 Computer Graphics

L	T	P
4	0	3

UNIT – I

Introduction: Definition Of Computer Graphics And Its Applications, Video Display Devices, Raster Scan Displays, Random Scan Displays, Color CRT Monitors, Direct View Storage Tubes, Flat Panel Displays.
Input Devices: Keyboard, Mouse, Trackball and Spaceball, Joysticks, Digitizers, Image Scanners, Touch Panels, Light Pens, Voice Systems.

UNIT – II

Output Primitives: Line Drawing Algorithms (DDA, Bresenhaum's), Circle Generating Algorithm(Midpoint Circle Drawing Algorithm), Ellipse Generating Algorithm, Midpoint Ellipse Generating Algorithm, Character Generation.

UNIT – III

2D Transformations: Translation, Rotation, Scaling, Reflection, Shear, Composite Transformation0Translation, Rotations, Scaling. Two Dimensional Viewing: Window-To-Viewport Coordinate Transformation

UNIT – IV

Clipping: Introduction, Clipping Operations, Point Clipping, Line Clipping(Cohen-Sutherland Line Clipping, Liang-Barsky Line Clipping, Nicholl-Lee-Nicholl Line Clipping), Polygon Clipping(Sutherland-Hodgeman Polygon Clipping, Weiler-Atherton Polygon Clipping), Curve Clipping, Text Clipping.

Text & Reference Books:

1. Donald Hearn & M. Pauline Baker, "Computer Graphics." Prentice Hall India.
2. F. S. Hill Jr., "Computer Graphics", Macmillan Publishing Company.
3. David F. Rogers, "Procedural Elements for Computer Graphics", Tata MacGraw Hill.

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5010 parts, out of the entire syllabus. In all, five questions are to be attempted.

Third Year (5th Semester)

Paper Code	Paper Title	Credit	ESE	CCA	Max. Marks	Exam Duration Hours
BCA0501	Operating System	4	70	30	100	3
BCA0502	eCommerce	4	70	30	100	3
BCA0503	Management Information System	4	70	30	100	3
BCA0504	ASP.net Technologies	4	70	30	100	3
BCA0505	Computer Oriented Statistical Methods	4	70	30	100	3
BCA0504(P)	ASP.net Technologies Lab-IX	3	35	15	50	3
BCA0505(P)	Computer Oriented Statistical Methods Lab-X	3	35	15	50	3
Total					**600**	

Third Year (6th Semester)

Paper Code	Paper Title	Credit	ESE	CCA	Max. Marks	Exam Duration Hours
BCA0601	Computer Networks	4	70	30	100	3
BCA0602	Numerical Methods	4	70	30	100	3
BCA0603	Multimedia Technology	4	70	30	100	3
BCA0604	Computer Graphics	4	70	30	100	3
BCA0605	Software Engineering	4	70	30	100	3
BCA0604(P)	Computer Graphics Lab-XI	3	35	15	50	3
BCA0606	Major Project	3	35	15	50	
Total					**600**	

BCA0605 Software Engineering

L	T	P
4	0	0

UNIT – I

Software engineering: Evolving Role of Software, Software Engineering, Changing nature of Software, Software Myths, Terminologies, Role of management in software development Software Process and desired Characteristics.
Software Life Cycle Models: Build & Fix Model, Water Fall Model, Incremental Process Model, Evolutionary Process Models, Unified Process, Comparison of Models, Other Software Processes, Selection of a Model.

UNIT – II

Software Requirements Analysis & Specifications: Requirements Engineering, Types of Requirements, Feasibility Studies, Requirements Elicitation, Requirements Analysis Documentation, Validation and Management.
Software Architecture: Its Role, Views, Component & Connector View and its architecture style, Architecture Vs Design, Deployment View & Performance Analysis, Documentation, Evaluation.

UNIT – III

Function Oriented Design: Design principles, Module level Concepts, Notation & Specification, Structured Design Methodology, Verification
Object0Oriented Design: OO Analysis & Design, OO Concepts, Design Concepts, UML – Class Diagram, Sequence & Collaboration Diagram, Other diagrams & Capabilities, Design Methodology , Dynamic and Functional Modeling, Internal Classes & Operations.

UNIT – IV

Detailed Design: PDL, Logic/Algorithm Design, State Modeling of Classes, Verification: Design Walkthroughs, Critical Design Review, Consistency Checkers.
Coding: Programming Principles & Guidelines, Coding Process, Refactoring, Verification.

Third Year (5th Semester)

Paper Code	Paper Title	Credit	ESE	CCA	Max. Marks	Exam Duration Hours
BCA0501	Operating System	4	70	30	100	3
BCA0502	eCommerce	4	70	30	100	3
BCA0503	Management Information System	4	70	30	100	3
BCA0504	ASP.net Technologies	4	70	30	100	3
BCA0505	Computer Oriented Statistical Methods	4	70	30	100	3
BCA0504(P)	ASP.net Technologies Lab-IX	3	35	15	50	3
BCA0505(P)	Computer Oriented Statistical Methods Lab-X	3	35	15	50	3
Total					**600**	

Third Year (6th Semester)

Paper Code	Paper Title	Credit	ESE	CCA	Max. Marks	Exam Duration Hours
BCA0601	Computer Networks	4	70	30	100	3
BCA0602	Numerical Methods	4	70	30	100	3
BCA0603	Multimedia Technology	4	70	30	100	3
BCA0604	Computer Graphics	4	70	30	100	3
BCA0605	Software Engineering	4	70	30	100	3
BCA0604(P)	Computer Graphics Lab-XI	3	35	15	50	3
BCA0606	Major Project	3	35	15	50	
Total					**600**	

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I Year

DSC: Botany Paper I
Biodiversity (Microbes, Algae, Fungi and Archegoniates)
(BOTA 101) (Credits: Theory-4, Practicals-2)

THEORY Lectures: 60

Unit 1: Microbes **(7 Lectures)**

Viruses – Discovery, general structure, replication (general account), DNA virus (T-phage); Lytic and lysogenic cycle, RNA virus (TMV); Economic importance; Bacteria – Discovery, General characteristics and cell structure; Reproduction – vegetative, asexual and recombination (conjugation, transformation and transduction); Economic importance.

Unit 2: Algae **(12 Lectures)**

General characteristics; Ecology and distribution; Range of thallus organization and reproduction; Brief account of classification of algae; Morphology and life-cycles of the following: *Nostoc*, *Oedogonium*, *Vaucheria, Ectocarpus, Polysiphonia*. Economic importance of algae

Unit 3: Fungi **(12 Lectures)**

Introduction- General characteristics, ecology and significance, range of thallus organization, cell wall composition , nutrition, reproduction and classification; Morphology and life cycles of *Phytophthora*, *Rhizopus* (Zygomycota) *Penicillium, Venturia* (Ascomycota), *Puccinia, Agaricus* (Basidiomycota); Symbiotic Associations-Lichens: General account, reproduction and significance.

Unit 4: Bryophytes **(9 Lectures)**

General characteristics, adaptations to land habit, Range of thallus organization. Classification (up to family), morphology, anatomy and reproduction of *Marchantia* and *Funaria*. (Developmental details not to be included). Ecology and economic importance of bryophytes with special mention of *Sphagnum*.

Unit 5: Pteridophytes **(10 Lectures)**

General characteristics, Early land plants (*Cooksonia* and *Rhynia*). Classification (up to family), morphology, anatomy and reproduction of *Selaginella*, *Equisetum* and *Adiantum*. (Developmental details not to be included). Heterospory and seed habit, stelar evolution. Ecological and economical importance.

Unit 6: Gymnosperms **(10 Lectures)**

General characteristics, Classification (up to family), Morphology, anatomy and reproduction of *Cycas* and *Pinus* (Developmental details not to be included). Economic importance.

NOTE: The question paper will be divided into four sections as follows:
Section A: Algae, Section B- Fungi, Section C – Microbes and Bryophytes and Section D- Pteridophytes and Gymnosperms.

Practical (BOTA 101)

1. EMs/Models of viruses – T-Phage and TMV, Line drawing/Photograph of Lytic and LysogenicCycle.
2. Types of Bacteria from temporary/permanent slides/photographs; EM bacterium; Binary Fission; Conjugation; Structure of root nodule.
3. Gram staining
4. Study of vegetative and reproductive structures of *Nostoc, Chlamydomonas* (electron micrographs), *Oedogonium, Vaucheria, Ectocarpus* and *Polysiphonia* through temporary preparations and permanent slides.
5. *Phytophthora, Rhizopus* and *Penicillium*: Asexual stage from temporary mounts and sexual structures throughpermanent slides.
6. *Venturia:* Specimens/photographs
7. *Puccinia*: Herbarium specimens of Black Stem Rust of Wheat and infected Barberry leaves;section/tease mounts of spores on Wheat and permanent slides of both the hosts.
8. *Agaricus*: Specimens of button stage and full grown mushroom; Sectioning of gills of *Agaricus*.
9. Lichens: Study of growth forms of lichens (crustose, foliose and fruticose)
10. Mycorrhiza: ecto mycorrhiza and endo mycorrhiza (Photographs)
11. ***Marchantia***- morphology of thallus, w.m. rhizoids and scales, v.s. thallus through gemma cup,w.m. gemmae (all temporary slides), v.s. antheridiophore, archegoniophore, l.s. sporophyte (all permanent slides).
12. ***Funaria***- morphology, w.m. leaf, rhizoids, operculum, peristome, annulus, spores (temporary slides); permanent slides showing antheridial and archegonial heads, l.s. capsule and protonema.
13. ***Selaginella***- morphology, w.m. leaf with ligule, t.s. stem, w.m. strobilus, w.m. microsporophyll and megasporophyll (temporary slides), l.s. strobilus (permanent slide).
14. ***Equisetum***- morphology, t.s. internode, l.s. strobilus, t.s. strobilus, w.m. sporangiophore, w.m. spores (wet and dry)(temporary slides); t.s rhizome (permanent slide).

15. ***Adiantum***- morphology, t.s. rachis, v.s. sporophyll, w.m. sporangium, w.m. spores (temporary slides), t.s. rhizome, w.m. prothallus with sex organs and young sporophyte (permanent slide).

16. ***Cycas***- morphology (coralloid roots, bulbil, leaf), t.s. coralloid root, t.s. rachis, v.s. leaflet, v.s. microsporophyll, w.m. spores (temporary slides), l.s. ovule, t.s. root (permanent slide).

16. ***Pinus***- morphology (long and dwarf shoots, w.m. dwarf shoot, male and female), w.m. dwarfshoot, t.s. needle, t.s. stem, , l.s./t.s. male cone, w.m. microsporophyll, w.m. microspores(temporary slides), l.s. female cone, t.l.s. & r.l.s. stem (permanent slide).

17. **Field visits**

Suggested Readings

1. Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). Introductory Mycology, John Wiley and Sons (Asia), Singapore. 4th edition.
2. Bhatnagar, S.P. and Moitra, A. (1996). Gymnosperms. New Age International (P) Ltd Publishers, New Delhi, India.
3. Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West. Press Pvt. Ltd. Delhi. 2nd edition.
4. Parihar, N.S. (1991). An introduction to Embryophyta. Vol. I. Bryophyta. Central Book Depot, Allahabad.
5. Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R., (2005). Biology. Tata McGraw Hill, Delhi, India.
6. Sethi, I.K. and Walia, S.K. (2011). Text book of Fungi & Their Allies, MacMillan Publishers Pvt. Ltd., Delhi.
7. Thakur, A.K. and Bassi, S.K. (2008). Diversity of Microbes and Cryptogams. S. Chand & Co., Delhi.
8. Tortora, G.J., Funke, B.R., Case, C.L. (2010). Microbiology: An Introduction, Pearson Benjamin Cummings, U.S.A. 10th edition.
9. Vashishta, P.C., Sinha, A.K., Kumar, A., (2010). Pteridophyta, S. Chand. Delhi, India.

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Discipline Specific Elective Botany

Economic Botany and Biotechnology

(BOTA 301)

(Credits: Theory-4, Practicals-2)

THEORY Lectures: 60

SECTION A

Unit 1: Cultivated Plants (3Lectures)

Introduction, Research centres, Concept of centres of origin, their importance with reference to Vavilov's work

Unit 2: Cereals (5 Lectures)

Wheat and Rice -Origin, morphology, uses

Unit 3: Pulses & Vegetables (4 Lectures)

General account with special reference to Gram , soybean and Potato

Unit 4: Spices (3 Lectures)

General account with special reference to clove, black pepper, cinnamon, Ginger and Turmeric (Botanical name, family, part used, morphology and uses)

SECTION B

Unit 5: Beverages (4 Lectures)

Tea and Coffee (morphology, processing, uses)

Unit 6: Oils and Sugar (4 Lectures)

General description with special reference to groundnut and sugarcane

Unit 7: Fibre Yielding Plants (4 Lectures)

General description with special reference to Cotton (Botanical name, family, partused, morphology and uses)

Unit 8: Medicinal Plants

Brief account of *Ocimum, Tinospora, Aloe, Rauvolfia, Emblica* and *Cathranthus* **(3 Lecture)**

SECTION C

Unit 9: Introduction to Biotechnology (15 Lectures)

Tissue culture techniques, Micropropagation; haploid production through androgenesis and gynogenesis; brief account of embryo & endosperm culture; Applications of plant tissue culture in agriculture, horticulture and forestry.

SECTION D

Unit 10: Biotechnological Techniques (15 Lectures)

Introduction to r-DNA, Cloning vehicles, Gene transfer techniques in plants, Transgenic plants, Agarose electrophoresis, Blotting techniques: Northern, Southern and Western Blotting, DNA Fingerprinting; Molecular DNA markers i.e. RAPD, RFLP, SNPs; DNA sequencing, PCR and Reverse Transcriptase-PCR. ELISA, Hybridoma and monoclonal an tibodies, ELISA and Immunodetection. Molecular diagnosis of human disease, Human gene Therapy.

Practical (BOTA 301)

1. Study of economically important plants : Wheat, Rice, Gram, Soybean, Potato, Black pepper, Clove, Cinnamon, Ginger, Turmeric, Tea, Coffee, Cotton, Groundnut, Sugarcane and Medicinal plants through specimens, sections and microchemical tests
2. Familiarization with basic equipment used in tissue culture through videos, images or visit to nearby research Institute.
3. Study through photographs: Anther culture, somatic embryogenesis, endosperm and embryo culture; micropropagation.
4. Study of equipments used in PCR, Blotting techniques and PAGE with the help of photographs or videos.

Suggested Readings

1. Kochhar, S.L. (2017). Economic Botany, Cambridge University Press.
2. Bhojwani, S.S. and Razdan, M.K., (1996). Plant Tissue Culture: Theory and Practice. Elsevier Science Amsterdam. The Netherlands.
3. Glick, B.R., Pasternak, J.J. (2003). Molecular Biotechnology- Principles and Applications of recombinant DNA. ASM Press, Washington.

BSC CHEMISTRY
CHEM 203 TH: Basic Analytical Chemistry

CHEM 203
BASIC ANALYTICAL CHEMISTRY

Max. Marks: 70 **Time allowed: 03 Hours**
Credits: 4

Note for Examiners and Students:

1. *The question paper will consist of five sections A, B, C, D and E. Section E will be compulsory. Examiner will set nine questions in all, selecting two questions from section A, B, C, and D of **15** marks each and may contain more than one part. Section E will be of 1**0** marks and consists of 10 objective type questions (in MCQ/true and false / fill in the blanks) of **one** mark each covering the entire syllabus of the paper.*
2. *The candidate will be required to attempt five questions in all i.e. selecting one question from each section including the compulsory question. The duration of the examination will be 3 hours.*

SECTION – A

Introduction: Introduction to Analytical Chemistry and its interdisciplinary nature. Concept of sampling. Importance of accuracy, precision and sources of error in analytical measurements. Presentation of experimental data and results, from the point of view of significant figures.

Analysis of soil: Composition of soil, Concept of pH and pH measurement, Complexometric titrations, Chelation, Chelating agents, use of indicators.

a. Determination of pH of soil samples. b. Estimation of Calcium and Magnesium ions as Calcium carbonate by complexometric titration. (15 Hours)

SECTION – B

Analysis of water: Definition of pure water, sources responsible for contaminating water, water sampling methods, water purification methods.

a. Determination of pH, acidity and alkalinity of a water sample. b. Determination of dissolved oxygen (DO) of a water sample.

Analysis of food products: Nutritional value of foods, idea about food processing and food preservations and adulteration.

a. Identification of adulterants in some common food items like coffee powder, asafoetida, chilli powder, turmeric powder, coriander powder and pulses, etc. b. Analysis of preservatives and colouring matter. (18 Hours)

SECTION – C

Chromatography: Definition, general introduction on principles of chromatography, paper chromatography, TLC etc. a. Paper chromatographic separation of mixture of metal ion (Fe^{3+} and Al^{3+}). b. To compare paint samples by TLC method. Ion-exchange: Column, ion-exchange chromatography etc. Determination of ion exchange capacity of anion / cation exchange resin (using batch procedure if use of column is not feasible). (12 Hours)

SECTION – D

Analysis of cosmetics: Major and minor constituents and their function

a. Analysis of deodorants and antiperspirants, Al, Zn, boric acid, chloride, sulphate. b. Determination of constituents of talcum powder: Magnesium oxide, Calcium oxide, Zinc oxide and Calcium carbonate by complexometric titration. **Suggested Applications (Any one):**

a. To study the use of phenolphthalein in trap cases. b. To analyze arson accelerants. c. To carry out analysis of gasoline. (15 Hours)

Suggested Instrumental demonstrations:

a. Estimation of macro nutrients: Potassium, Calcium, Magnesium in soil samples by flame photometry.
b. Spectrophotometric determination of Iron in Vitamin / Dietary Tablets.
c. Spectrophotometric Identification and Determination of Caffeine and Benzoic Acid in Soft Drink

Reference Books:

1. Willard, H.H., Merritt, L.L., Dean, J. & Settoe, F.A. Instrumental Methods of Analysis. 7th Ed. Wadsworth Publishing Co. Ltd., Belmont, California, USA, 1988.
2. Skoog, D.A. Holler F.J. & Nieman, T.A. Principles of Instrumental Analysis, Cengage Learning India Ed.
3. Skoog, D.A.; West, D.M. & Holler, F.J. Fundamentals of Analytical Chemistry 6th Ed., Saunders College Publishing, Fort Worth (1992).
4. Harris, D. C. Quantitative Chemical Analysis, W. H. Freeman.
5. Dean, J. A. Analytical Chemistry Notebook, McGraw Hill.
6. Day, R. A. & Underwood, A. L. Quantitative Analysis, Prentice Hall of India.

Essential oils and their importance in cosmetic industries with reference to Eugenol, Geraniol, sandalwood oil, eucalyptus, rose oil, 2-phenyl ethyl alcohol, Jasmone, Civetone, Muscone. (12 Hours)

Reference Books:

1. E. Stocchi: Industrial Chemistry, Vol -I, Ellis Horwood Ltd. UK.
2. P.C. Jain, M. Jain: Engineering Chemistry, Dhanpat Rai & Sons, Delhi.
3. Sharma, B.K. & Gaur, H. Industrial Chemistry, Goel Publishing House, Meerut (1996).
4. Stocchi, E. Industrial Chemistry, Vol-I, Ellis Horwood Ltd. UK (1990). 2.
5. Jain, P.C. & Jain, M. Engineering Chemistry Dhanpat Rai & Sons, Delhi.
6. Sharma, B.K. & Gaur, H. Industrial Chemistry, Goel Publishing House, Meerut (1996).

CHEM 307
CHEMICAL TECHNOLOGY & SOCIETY and BUSINESS SKILLS FOR CHEMISTRY

Max. Marks: 70 **Time allowed: 03 Hours**
Credits: 4

Note for Examiners and Students:

1. *The question paper will consist of five sections A, B, C, D and E. Section E will be compulsory. Examiner will set nine questions in all, selecting two questions from section A, B, C, and D of **15** marks each and may contain more than one part. Section E will be of **10** marks and consists of 10 objective type questions (in MCQ/true and false / fill in the blanks) of **one** mark each covering the entire syllabus of the paper.*
2. *The candidate will be required to attempt five questions in all i.e. selecting one question from each section including the compulsory question. The duration of the examination will be 3 hours.*

SECTION-A

Chemical Technology

Basic principles of distillation, solvent extraction, solid-liquid leaching and liquid-liquid extraction, separation by absorption and adsorption. An introduction into the scope of different types of equipment needed in chemical technology, including reactors, distillation columns, extruders, pumps, mills, emulgators. Scaling up operations in chemical industry. Introduction to clean technology. (18 Hours)

SECTION-B

Society

Exploration of societal and technological issues from a chemical perspective. Chemical and scientific literacy as a means to better understand topics like air and water (and the trace materials found in them that are referred to as pollutants); energy from natural sources (i.e. solar and renewable forms), from fossil fuels and from nuclear fission; materials like plastics and polymers and their natural analogues, proteins and nucleic acids, and molecular reactivity and interconversions from simple examples like combustion to complex instances like genetic engineering and the manufacture of drugs. (18 Hours)

Section - C

Business Basics

Key business concepts: Business plans, market need, project management and routes to market.

Chemistry in Industry

Current challenges and opportunities for the chemistry-using industries, role of chemistry in India and global economies. (12 Hours)

Section - D

Making money

Financial aspects of business with case studies

Intellectual property

Concept of intellectual property, patents. (12 Hours)

Reference Books:

1. www.rsc.org
2. John W. Hill, Terry W. McCreary & Doris K. Kolb, Chemistry for changing times 13th Ed.

CHEM 308
PESTICIDE CHEMISTRY & PHARMACEUTICAL CHEMISTRY

Max. Marks: 70 **Time allowed: 03 Hours**

Credits: 4

Note for Examiners and Students:

1. *The question paper will consist of five sections A, B, C, D and E. Section E will be compulsory. Examiner will set nine questions in all, selecting two questions from section A, B, C, and D of **15** marks each and may contain more than one part. Section E will be of **10** marks and consists of 10 objective type questions (in MCQ/true and false / fill in the blanks) of **one** mark each covering the entire syllabus of the paper.*
2. *The candidate will be required to attempt five questions in all i.e. selecting one question from each section including the compulsory question. The duration of the examination will be 3 hours.*

SECTION-A

General introduction to pesticides (natural and synthetic), benefits and adverse effects, changing concepts of pesticides, structure activity relationship. (12 Hours)

SECTION-B

Synthesis and technical manufacture and uses of representative pesticides in the following classes: Organochlorines (DDT, Gammexene,); Organophosphates (Malathion, Parathion); Carbamates (Carbofuran and carbaryl); Quinones (Chloranil), Anilides (Alachlor and Butachlor). (15 Hours)

SECTION - C

Drugs & Pharmaceuticals Drug discovery, design and development; Basic Retrosynthetic approach. Synthesis of the representative drugs of the following classes: analgesics agents, antipyretic agents, antiinflammatory agents (Aspirin, paracetamol, lbuprofen); antibiotics (Chloramphenicol); antibacterial and antifungal agents (Sulphonamides; Sulphanethoxazol, Sulphacetamide, Trimethoprim); antiviral agents (Acyclovir), Central Nervous System agents (Phenobarbital, Diazepam),Cardiovascular (Glyceryl trinitrate), antilaprosy (Dapsone), HIV-AIDS related drugs (AZT- Zidovudine). (18 Hours)

SECTION -D

Fermentation Aerobic and anaerobic fermentation. Production of (i) Ethyl alcohol and citric acid, (ii) Antibiotics; Penicillin, Cephalosporin, Chloromycetin and Streptomycin, (iii) Lysine, Glutamic acid, Vitamin B2, Vitamin B12 and Vitamin C. (15 Hours)

Reference Books:

1. G.L. Patrick: Introduction to Medicinal Chemistry, Oxford University Press, UK
2. Hakishan, V.K. Kapoor: Medicinal and Pharmaceutical Chemistry, Vallabh Prakashan, Pitampura, New Delhi.
3. William O. Foye, Thomas L., Lemke , David A. William: Principles of Medicinal Chemistry, B.I. Waverly Pvt. Ltd. New Delhi.
5. Cremlyn, R. Pesticides. Preparation and Modes of Action, John Wiley & Sons, New York, 1978.

COMP303TH: Software Engineering

Unit-I

Software Process: Introduction ,S/W Engineering Paradigm , life cycle models (water fall, incremental, spiral, evolutionary, prototyping, object oriented) , System engineering, computer based system, verification, validation, life cycle process, development process, system engineering hierarchy.

Software requirements: Functional and non-functional , user, system, requirement engineering process, feasibility studies, requirements, elicitation, validation and management, software prototyping, prototyping in the software process, rapid prototyping techniques, user interface prototyping, S/W document. Analysis and modeling, data, functional and behavioral models, structured analysis and data dictionary.

Unit-II

Design Concepts and Principles: Design process and concepts, modular design, design heuristic, design model and document, Architectural design, software architecture, data design, architectural design, transform and transaction mapping, user interface design, user interface design principles. Real time systems, Real time software design, system design, real time executives, data acquisition system, monitoring and control system.

Unit-III

Software Configuration Management: The SCM process, Version control, Change control, Configuration audit, SCM standards.

Software Project Management: Measures and measurements, S/W complexity and science measure, size measure, data and logic structure measure, information flow measure. Estimations for Software Projects, Empirical Estimation Models, Project Scheduling.

Unit-IV

Testing: Taxonomy of software testing, levels, test activities, types of s/w test, black box testing testing boundary conditions, structural testing, test coverage criteria based on data flow, mechanisms, regression testing, testing in the large. S/W testing strategies, strategic approach and issues, unit testing, integration testing, validation testing, system testing and debugging.

Trends in Software Engineering: Reverse Engineering and Re-engineering – wrappers – Case Study of CASE tools.

Books Recommended:

1. Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill
2. Ian Sommerville, Software engineering, Pearson education Asia, 6th edition, 2000.
3. Pankaj Jalote- An Integrated Approach to Software Engineering, Springer Verlag, 1997.
4. James F Peters and Witold Pedryez, "Software Engineering – An Engineering Approach", John Wiley and Sons, New Delhi, 2000.
5. Ali Behforooz and Frederick J Hudson, "Software Engineering Fundamentals", Oxfor University Press, New Delhi, 1996.

Hill.

- Integrated Electronics, J. Millman and C.C. Halkias, 1991, Tata Mc-Graw Hill.
- Electronics: Fundamentals and Applications, J.D. Ryder, 2004, Prentice Hall.
- OP-Amps and Linear Integrated Circuit, R. A. Gayakwad, 4th edn., 2000, Prentice Hall.
- Introduction to PSPICE using ORCAD for circuits & Electronics, M.H. Rashid, 2003, PHI Learning.
- PC based instrumentation; Concepts & Practice, N.Mathivanan, 2007, Prentice-Hall of India -

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SKILL ENHANCEMENT COURSE (Any four) (Credit: 04 each)- SEC1 to SEC4

2nd Year

Part A - PHYSICS WORKSHOP SKILL - SEC1

Name of the Course	**PHYSICS – SEC1: PHYSICS WORKSHOP SKILL** **(Credits: Theory-03)** **Theory: 30 Lectures**
Code	PHYS203TH
Yearly Based Examination	**50 marks (3 Hrs)**
Continuous Comprehensive Assessment (CCA)	**30 marks**
CCA: Based on Midterm Exam, Class Test/Seminar/Assignments/Quiz and Attendance: **CCA Theory:** Midterm Exam = **10 marks,** Class Test/Seminar/Assignments/Quiz = **05 marks,** Attendance Theory = **05 marks. CCA Skill**: Project File or Dissertation Record + Seminar = **5+5 marks.**	

Part B - PHYSICS WORKSHOP SKILL EXAM - SEC1

Name of the Course	**PHYSICS – SEC1: PHYSICS WORKSHOP SKILL EXAM** **(Credits: -01)**
Maintain Project file or Dissertation to check Analytic Skill/Problem solving in skill exam.	
Code	PHYS203SE
Yearly Based Skill Examination	**20 marks (3 Hrs)**
Distribution of Marks: Hands on Skill Test = **15 Marks**, Viva Voce = **5 Marks**.	

PHYSICS – SEC1: PHYSICS WORKSHOP SKILL EXAM

- **Skill based Project or Dissertation work on any topic of syllabus mentioned under Physics Work Shop Skill (PHYS203TH) for Analytical skill/ Problem solving.**

Hands on exercises:

1. To compile a frequency distribution and evaluate mean, standard deviation etc.
2. To evaluate sum of finite series and the area under a curve.
3. To find the product of two matrices
4. To find a set of prime numbers and Fibonacci series.
5. To write program to open a file and generate data for plotting using Gnuplot.
6. Plotting trajectory of a projectile projected horizontally.
7. Plotting trajectory of a projectile projected making an angle with the horizontally.
8. Creating an input Gnuplot file for plotting a data and saving the output for seeing on the screen. Saving it as an eps file and as a pdf file.
9. To find the roots of a quadratic equation.
10. Motion of a projectile using simulation and plot the output for visualization.
11. Numerical solution of equation of motion of simple harmonic oscillator and plot the outputs for visualization.
12. Motion of particle in a central force field and plot the output for visualization.

(6 Lectures)

Reference Books:

- Introduction to Numerical Analysis, S.S. Sastry, 5th Edn., 2012, PHI Learning Pvt. Ltd.
- Computer Programming in Fortran 77". V. Rajaraman (Publisher:PHI).
- LaTeX–A Document Preparation System", Leslie Lamport (Second Edition, Addison-Wesley, 1994).
- Gnuplot in action: understanding data with graphs, Philip K Janert, (Manning 2010)
- Schaum's Outline of Theory and Problems of Programming with Fortran, S Lipsdutz and A Poe, 1986Mc-Graw Hill Book Co.
- Computational Physics: An Introduction, R. C. Verma, et al. New Age International Publishers, New Delhi(1999)
- A first course in Numerical Methods, U.M. Ascher and C. Greif, 2012, PHI Learning
- Elementary Numerical Analysis, K.E. Atkinson, 3rd Edn., 2007, Wiley India Edition.

2nd Year

Part A - ELECTRICAL CIRCUITS AND NETWORK SKILLS – SEC1/SEC2

Name of the Course	**PHYSICS-SEC1/ SEC2: ELECTRICAL CIRCUITS AND NETWORK SKILLS** **(Credits: Theory-03)** **Theory: 30 Lectures**
Code	PHYS205TH
Yearly Based Examination	**50 marks (3 Hrs)**
Continuous Comprehensive Assessment (CCA)	**30 marks**
CCA: Based on Midterm Exam, Class Test/Seminar/Assignments/Quiz and Attendance: **CCA Theory:** Midterm Exam = **10 marks,** Class Test/Seminar/Assignments/Quiz = **05 marks,** Attendance Theory = **05 marks. CCA Skill**: Project File or Dissertation Record + Seminar = **5+5 marks.**	

Part B - ELECTRICAL CIRCUITS AND NETWORK SKILLS EXAM – SEC1/SEC2

Name of the Course	PHYSICS-SEC1/SEC2: ELECTRICAL CIRCUITS AND NETWORK SKILLS EXAM (Credits: -01)
Maintain Project file or Dissertation to check Analytic skill/Problem solving in skill exam.	
Code	PHYS205SE
Yearly Based Skill Examination	**20 marks (3 Hrs)**
Distribution of Marks: Hands on Skill Test = **15 Marks**, Viva Voce = **5 Marks**.	

PHYSICS-SEC1/SEC2: ELECTRICAL CIRCUITS AND NETWORK SKILLS EXAM

- **Skill based Project or Dissertation work on any topic of syllabus mentioned under Electrical Circuits and Network Skills (PHYS205TH) for Analytical skill/ Problem solving.**

Instructions for Paper Setters and Candidates:

1. *Examiner will set seven questions in all covering the entire syllabus each of 10 marks ,*
2. *The candidate will be required to attempt five questions in all . The duration of the examination will be 3 hours.*

The aim of this course is to enable the students to design and trouble shoots the electrical circuits, networks and appliances through hands-on mode

Basic Electricity Principles: Voltage, Current, Resistance, and Power. Ohm's law. Series, parallel, and series-parallel combinations. AC Electricity and DC Electricity. Familiarization with multimeter, voltmeter and ammeter.

(3 Lectures)

Understanding Electrical Circuits: Main electric circuit elements and their combination. Rules to analyze DC sourced electrical circuits. Current and voltage drop across the DC circuit elements. Single-phase and three-phase alternating current sources. Rules to analyze AC sourced electrical circuits. Real, imaginary and complex power components of AC source. Power factor. Saving energy and money. **(4 Lectures)**

Electrical Drawing and Symbols: Drawing symbols. Blueprints. Reading Schematics. Ladder diagrams. Electrical Schematics. Power circuits. Control circuits. Reading of circuit schematics. Tracking the connections of elements and identify current flow and voltage drop.

(4 Lectures)

Generators and Transformers: DC Power sources. AC/DC generators. Inductance, capacitance, and impedance. Operation of transformers.

(3 Lectures)

Electric Motors: Single-phase, three-phase & DC motors. Basic design. Interfacing DC or AC sources to control heaters & motors. Speed & power of ac motor.

(4 Lectures)

Solid-State Devices: Resistors, inductors and capacitors. Diode and rectifiers. Components in Series or in shunt. Response of inductors and capacitors with DC or AC sources

5. Circuit tracing of Laboratory electronic equipment,
6. Winding a coil / transformer.
7. Study the layout of receiver circuit.
8. Trouble shooting a circuit
9. Balancing of bridges

Laboratory Exercises:

1. To observe the loading effect of a multimeter while measuring voltage across a low resistance and high resistance.
2. To observe the limitations of a multimeter for measuring high frequency voltage and currents.
3. To measure Q of a coil and its dependence on frequency, using a Q- meter.
4. Measurement of voltage, frequency, time period and phase angle using CRO.
5. Measurement of time period, frequency, average period using universal counter/ frequency counter.
6. Measurement of rise, fall and delay times using a CRO.
7. Measurement of distortion of a RF signal generator using distortion factor meter.
8. Measurement of R, L and C using a LCR bridge/ universal bridge.

Open Ended Experiments:

1. Using a Dual Trace Oscilloscope
2. Converting the range of a given measuring instrument (voltmeter, ammeter)

Reference Books:

- A text book in Electrical Technology - B L Theraja - S Chand and Co.
- Performance and design of AC machines - M G Say ELBS Edn.
- Digital Circuits and systems, Venugopal, 2011, Tata McGraw Hill.
- Logic circuit design, Shimon P. Vingron, 2012, Springer.
- Digital Electronics, Subrata Ghoshal, 2012, Cengage Learning.
- Electronic Devices and circuits, S. Salivahanan & N. S.Kumar, 3rd Ed., 2012, Tata Mc-Graw Hill
- Electronic circuits: Handbook of design and applications, U.Tietze, Ch.Schenk, 2008, Springer
- Electronic Devices, 7/e Thomas L. Floyd, 2008, Pearson India

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3rd Year

Part A - RADIATION SAFETY – SEC3

Name of the Course	**PHYSICS-SEC3: RADIATION SAFETY** **(Credits: Theory-03)** **Theory: 30 Lectures**
Code	PHYS307TH
Yearly Based Examination	**50 marks (3 Hrs)**
Continuous Comprehensive Assessment (CCA)	**30 marks**
CCA: Based on Midterm Exam, Class Test/Seminar/Assignments/Quiz and Attendance:	

CCA Theory: Midterm Exam = **10 marks,** Class Test/Seminar/Assignments/Quiz = **05 marks,** Attendance Theory = **05 marks. CCA Skill**: Project File or Dissertation Record + Seminar = **5+5 marks.**

Part B - RADIATION SAFETY SKILL EXAM – SEC3

Name of the Course	**PHYSICS-SEC3: RADIATION SAFETY SKILL EXAM (Credits: -01)**
Maintain Project file or Dissertation to check Analytic skill/Problem solving in skill exam.	
Code	PHYS307SE
Yearly Based Skill Examination	**20 marks (3 Hrs)**
Distribution of Marks: Hands on Skill Test = **15 Marks**, Viva Voce = **5 Marks**.	

PHYSICS-SEC3: RADIATION SAFETY SKILL EXAM

- **Skill based Project or Dissertation work on any topic of syllabus mentioned under Radiation Safety (PHYS307TH) for Analytical skill/ Problem solving.**

Instructions for Paper Setters and Candidates:

1. *Examiner will set seven questions in all covering the entire syllabus each of 10 marks ,*
2. *The candidate will be required to attempt five questions in all. The duration of the examination will be 3 hours.*

The aim of this course is for awareness and understanding regarding radiation hazards and safety. The list of laboratory skills and experiments listed below the course are to be done in continuation of the topics

Basics of Atomic and Nuclear Physics: Basic concept of atomic structure; X rays characteristic and production; concept of bremsstrahlung and auger electron, The composition of nucleus and its properties, mass number, isotopes of element, spin, binding energy, stable and unstable isotopes, law of radioactive decay, Mean life and half life, basic concept of alpha, beta and gamma decay, concept of cross section and kinematics of nuclear reactions, types of nuclear reaction, Fusion, fission. **(6 Lectures)**

Interaction of Radiation with matter: Types of Radiation: Alpha, Beta, Gamma and Neutron and their sources, sealed and unsealed sources, **Interaction of Photons** - Photo-electric effect, Compton Scattering, Pair Production, Linear and Mass Attenuation Coefficients, **Interaction of Charged Particles:** Heavy charged particles - Beth-Bloch Formula, Scaling laws, Mass Stopping Power, Range, Straggling, Channeling and Cherenkov radiation. Beta Particles-Collision and Radiation loss (Bremsstrahlung), **Interaction of Neutrons**- Collision, slowing down and Moderation. **(7 Lectures)**

Radiation detection and monitoring devices: Radiation Quantities and Units: Basic idea of

1. Aviation Meteorology, I.C. Joshi, 3rd edition 2014, Himalayan Books
2. The weather Observers Hand book, Stephen Burt, 2012, Cambridge University Press.
3. Meteorology, S.R. Ghadekar, 2001, Agromet Publishers, Nagpur.
4. Text Book of Agrometeorology, S.R. Ghadekar, 2005, Agromet Publishers, Nagpur.
5. Why the weather, Charls Franklin Brooks, 1924, Chpraman & Hall, London.
6. Atmosphere and Ocean, John G. Harvey, 1995, The Artemis Press.

3rd Year

Part A - RENEWABLE ENERGY AND ENERGY HARVESTING - SEC4

Name of the Course	**PHYSICS-SEC4: RENEWABLE ENERGY AND ENERGY HARVESTING** **(Credits: Theory-03)** **Theory: 30 Lectures**
Code	PHYS310TH
Yearly Based Examination	**50 marks (3 Hrs)**
Continuous Comprehensive Assessment (CCA)	**30 marks**
CCA: Based on Midterm Exam, Class Test/Seminar/Assignments/Quiz and Attendance: **CCA Theory:** Midterm Exam = **10 marks,** Class Test/Seminar/Assignments/Quiz = **05 marks,** Attendance Theory **= 05 marks. CCA Skill**: Project File or Dissertation Record + Seminar = **5+5 marks.**	

Part B - RENEWABLE ENERGY AND ENERGY HARVESTING SKILL EXAM – SEC4

Name of the Course	**PHYSICS-SEC4: RENEWABLE ENERGY AND ENERGY HARVESTING SKILL EXAM** **(Credits: -01)**
Maintain Project file or Dissertation to check Analytic skill/Problem solving in skill exam.	
Code	PHYS310SE
Yearly Based Skill Examination	**20 marks (3 Hrs)**
Distribution of Marks: Hands on Skill Test = **15 Marks**, Viva Voce = **5 Marks**.	

PHYSICS-SEC4: RENEWABLE ENERGY AND ENERGY HARVESTING SKILL EXAM

- **Skill based Project or Dissertation work on any topic of syllabus mentioned under Renewable Energy and Energy Harvesting (PHYS310TH) for Analytical skill/ Problem solving.**

Instructions for Paper Setters and Candidates:

1. Examiner will set seven questions in all covering the entire syllabus each of 10 marks ,

ANIMAL DIVERSITY
Code: ZOOL 101 PR

PRACTICAL **(CREDITS 2)**

1. Study of the following specimens:

Amoeba, *Euglena, Plasmodium, Paramecium, Sycon*, *Hyalonema,* and *Euplectella, Obelia, Physalia, Aurelia, Tubipora, Metridium, Taenia solium,* Male and female *Ascaris lumbricoides, Aphrodite, Nereis, Pheretima, Hirudinaria, Palaemon, Cancer*, *Limulus*, *Palamnaeus, Scolopendra*, *Julus*, *Periplaneta, Apis, Chiton, Dentalium, Pila, Unio, Loligo, Sepia, Octopus, Pentaceros, Ophiura, Echinus, Cucumaria* and
Antedon, Balanoglossus, Herdmania, Branchiostoma, Petromyzon, Sphyrna, Pristis, Torpedo, Labeo, Exocoetus, Anguilla, Ichthyophis/Ureotyphlus, Salamandra, Bufo, Hyla, Chelone, Hemidactylus, Chamaeleon, Draco, Vipera, Naja, Crocodylus, Gavialis, Any six common birds from different orders, *Sorex*, Bat, *Funambulus, Loris*

2. Study of the following permanent slides:

T.S. and L.S. of *Sycon*, Study of life history stages of *Taenia,* T.S. of Male and female *Ascaris*

3. Key for Identification of poisonous and non-poisonous snakes
4. Project on any topic from theory.

SUGGESTED READINGS

- Ruppert and Barnes, R.D. (2006). *Invertebrate Zoology*, VIII Edition. Holt Saunders International Edition.
- Barnes, R.S.K., Calow, P., Olive, P.J.W., Golding, D.W. and Spicer, J.I. (2002). *The Invertebrates: A New Synthesis*, III Edition, Blackwell Science
- Young, J. Z. (2004). *The Life of Vertebrates*. III Edition. Oxford university press.
- Pough H. *Vertebrate life,* VIII Edition, Pearson International.
- Hall B.K. and Hallgrimsson B. (2008). *Strickberger's Evolution*. IV Edition. Jones and Bartlett Publishers Inc.

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SUGGESTED READINGS

- Prost, P. J. (1962). *Apiculture*. Oxford and IBH, New Delhi.
- Bisht D.S., *Apiculture*, ICAR Publication.

SEC - III

SERICULTURE
Code: ZOOL 303 TH **(CREDITS 4)**

Unit 1: Introduction **(8)**

Sericulture: Definition, history and present status; Silk route

Types of silkworms, Distribution and Races
Exotic and indigenous races
Mulberry and non-mulberry Sericulture

Unit 2: Biology of Silkworm **(6)**
Life cycle of *Bombyx mori*
Structure of silk gland and secretion of silk

Unit 3: Rearing of Silkworms **(15)**
Selection of mulberry variety and establishment of mulberry garden
Rearing house and rearing appliances
Disinfectants: Formalin, bleaching powder, RKO
Silkworm rearing technology: Early age and Late age rearing
Types of mountages
Spinning, harvesting and storage of cocoons

Unit 4: Pests and Diseases **(10)**
Pests of silkworm: Uzi fly, dermestid beetles and vertebrates
Pathogenesis of silkworm diseases: Protozoan, viral, fungal and bacterial
Control and prevention of pests and diseases

Unit 5: Entrepreneurship in Sericulture **(6)**
Prospectus of Sericulture in India: Sericulture industry in different states, employment, potential in mulberry and non-mulberry sericulture. Visit to various sericulture centres.

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SUGGESTED READINGS

- Handbook of Practical Sericulture: S.R. Ullal and M.N. Narasimhanna CSB, Bangalore
- Appropriate Sericultural Techniques; Ed. M. S. Jolly, Director, CSR & TI, Mysore. □ □ Handbook of Silkworm Rearing: Agriculture and Technical Manual-1, Fuzi

□ Pub. Co. Ltd., Tokyo, Japan1972. □

- Manual of Silkworm Egg Production; M. N. Narasimhanna, CSB, Bangalore 1988. □
- Silkworm Rearing; Wupang—Chun and Chen Da-Chung, Pub. By FAO, Rome 1988. □
- A Guide for Bivoltine Sericulture; K. Sengupta, Director, CSR & TI, Mysore 1989. □
- Improved Method of Rearing Young age silkworm; S. Krishnaswamy, reprinted CSB, Bangalore, 1986. □

Tutorial – 01 Credit

SEC – IV
AQUARIUM FISH KEEPING
Code: ZOOL 304 (A) TH (CREDITS 4)

Unit1: Introduction to Aquarium Fish Keeping **10**

The potential scope of Aquarium Fish Industry as a Cottage Industry, Exotic and Endemic species of Aquarium Fishes

Unit 2: Biology of Aquarium Fishes **15**

Common characters and sexual dimorphism of Fresh water and Marine Aquariumfishes such as Guppy, Molly, Sword tail, Gold fish, Angel fish, Blue morph, Anemone fish and Butterfly fish

U nit 3: Food and feeding of Aquarium fishes **6**

Use of live fish feed organisms. Preparation and composition of formulated fish feeds

Unit 4: Fish Transportation **8**

Live fish transport - Fish handling, packing and forwarding techniques.

Unit 5: Maintenance of Aquarium **6**

General Aquarium maintenance – budget for setting up an Aquarium Fish Farm as a Cottage Industry

SUGGESTED READINGS

Mary Bailey, Gina Sandford; *The Complete Guide to Aquarium Fish Keeping (Practical Handbook)* Publishers: Lorenz Books

- Mills, Dick; *Keeping Aquarium Fish (Teach Yourself General)* Publisher : Teach Yourself

OR

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SEC-IV

RESEARCH METHODOLOGY

Code: ZOOL 304 (B) TH (CREDITS 4)

(3+01)

Unit 1: Foundations of Research **8**

Meaning, Objectives, Motivation: Research Methods *vs* Methodology, Types of Research: Analytical *vs* Descriptive, Quantitative *vs* Qualitative, Basic *vs* Applied

Unit 2: Research Design **15**

Need for research design: Features of good design, Important concepts related to good design- Observation and Facts, Prediction and Explanation, Development of Models. Developing a research plan: Problem identification, Experimentation, Determining experimental and sample designs

Unit 3: Data Collection, Analysis and Report Writing **15**

Observation and Collection of Data-Methods of data collection- Sampling Methods, Data Processing and Analysis Strategies, Technical Reports and Thesis writing, Preparation of Tables and Bibliography. Data Presentation using digital technology

Unit 4: Ethical Issues **7**

Intellectual property Rights, Commercialization, Copy Right, Royalty, Patent law, Plagiarism, Citation, Acknowledgement

SUGGESTED READINGS

- Anthony, M, Graziano, A.M. and Raulin, M.L. 2009. Research Methods: A Process of Inquiry, Allyn and Bacon.
- Walliman, N. 2011.Research Methods- The Basics. Taylor and Francis, London, New York.
- Wadhera, B.L.: Law Relating to Patents, Trade Marks, Copyright Designs and Geographical Indications, 2002, Universal Law publishing
- C.R.Kothari: Research Methodology, New Age International, 2009
- Coley, S.M. and Scheinberg, C.A. 1990, "Proposal writing". Stage Publications.

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IBH Pub.
8. Wolf P. R. and Dewitt B. A., 2000: Elements of Photogrammetry: With Applications in GIS, McGraw-Hill.

GEOGRAPHIC INFORMATION SYSTEM (GEOGP 301SEC)

Course Code	**(GEOGP 301SEC)**		
Credits-4	**L**	**T**	**P**
	15	**0**	**90(45)***
Course Type	**Skill Enhancement**		
Lectures to be Delivered	**60**		

Note: The CCA and Annual Examination (Theory Paper) & Annual Practical Examination is same as in paper GEOGP204SEC

Course Content and Credit Scheme

Unit	Topic	Allotted Time (Hours)

		L	T	P
I.	**Introduction** Meaning and Scope of GIS, Components of GIS, History of Geographic Information System(GIS)	3	0	10(5)*
II.	**Data Types** GIS Data Structures: Types (spatial and Non-spatial), Raster and Vector Data Structure.	4	0	20(10)*
III.	**Spatial referencing system** Concept of Georeferencing, Editing and attribute data integration	4	0	30(15)*
IV.	**GIS based Exercises on** Georeferencing, Subsetting, Extraction of Land Use/Land Cover layers of any area and thematic mapping	4	0	30(20)*
	Total Hours	**15**	**0**	**90(45)***

Practical Record: The course teacher can use Survey of India toposheets/satellite images/Google images of any area of his/her choice for practical exercises. A project file consisting of any 5 exercises using any GIS Software on above mentioned themes.

Reading List

1. Bhatta, B. (2010) Analysis of Urban Growth and Sprawl from Remote Sensing,Springer, Berlin Heidelberg.41
2. Burrough, P.A., and McDonnell, R.A. (2000) Principles of Geographical Information System-Spatial Information System and Geo-statistics. Oxford University Press
3. Chauniyal, D.D. (2010) Sudur Samvedan evam Bhogolik Suchana Pranali, Sharda Pustak Bhawan, Allahabad
4. Heywoods, I., Cornelius, S and Carver, S. (2006) An Introduction to Geographical Infromation system. Prentice Hall.
5. Jha, M.M. and Singh, R.B. (2008) Land Use: Reflection on Spatial Informatics Agriculture and Development, New Delhi: Concept.
6. Nag, P. (2008) Introduction to GIS, Concept India, New Delhi.
7. Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi
8. Singh, R.B. and Murai, S. (1998) Space Informatics for Sustainable Development, Oxford and IBH, New Delhi.

4. FIELD TECHNIQUES & SURVEY BASED PROJECT REPORT (GEOGP 302SEC)

Course Code	**(GEOGP 302SEC)**		
Credits-4	**L**	**T**	**P**
	15	**0**	**90(45)***
Course Type	**Skill Enhancement**		
Lectures to be Delivered	**60**		

Note: The CCA, Annual Theory Paper and Annual Practical Examination is same as in paper GEOG204 SEC

Course Content and Credit Scheme

Unit	**Topic**	**Allotted Time (Hrs)**		
		L	**T**	**P/FW**

I.	**Introduction** Field Work in Geographical Studies – Role, Value and Ethics of Field-Work, Defining the Field and Identifying the Case Study – Rural / Urban / Physical / Human / Environmental.	3	0	10(5)*
II.	**Field Techniques** Merits, Demerits and Selection of the Appropriate Technique; Observation (Participant / Non Participant).	4	0	20(10)*
III.	**Questionnaires** (Open/ Closed / Structured / Non-Structured); Interview with Special Focus on Focused Group Discussions; Space Survey (Transects and Quadrants, Constructing a Sketch).	4	0	30(15)*
IV.	**Designing the Field Report** Aims and Objectives, Methodology, Analysis, Interpretation and Writing the Report.	4	0	30(20)*
	Total Hours	**15**	**0**	**90(45)***

FW-Field Work

Practical Record

1. Each student will prepare an individual report based on primary and secondary data collected during field work.
2. The duration of the field work should not exceed 10 days.
3. The word count of the report should be about **8000 to 12,000** excluding figures, tables, photographs, maps, references and appendices.
4. One copy of the report on A 4 size paper should be submitted in soft binding.

Reading List

1. Creswell J., 1994: *Research Design: Qualitative and Quantitative Approaches* Sage Publications.
2. Dikshit, R. D. 2003. The Art and Science of Geography: Integrated Readings. Prentice-Hall of India, New Delhi.
3. Evans M., 1988: "Participant Observation: The Researcher as Research Tool" in *Qualitative Methods in Human Geography*, eds. J. Eyles and D. Smith, Polity.
4. Mukherjee, Neela 1993. Participatory Rural Appraisal: Methodology and Application. Concept Publs. Co., New Delhi.
5. Mukherjee, Neela 2002. Participatory Learning and Action: with 100 Field Methods. Concept Publs. Co., New Delhi
6. Robinson A., 1998: "*Thinking Straight and Writing That Way*", in *Writing Empirical Research Reports: A Basic Guide for Students of the Social and Behavioural Sciences*, eds. by F. Pryczak and R. Bruce Pryczak, Publishing: Los Angeles.
7. Special Issue on "Doing Fieldwork" *The Geographical Review* 91:1-2 (2001).
8. Stoddard R. H., 1982: *Field Techniques and Research Methods in Geography*, Kendall/Hunt.
9. Wolcott, H. 1995. The Art of Fieldwork. Alta Mira Press, Walnut Creek, CA.

Discipline Specific Elective Papers (2 Compulsory Papers)

1. GEOGRAPHY OF INDIA (GEOGP 303-1DSE)

Course Code	**(GEOGP 303-1DSE)**		
Credits-6	**L**	**T**	**P**
	65	**25**	**0**
Course Type	**Discipline Specific Elective**		
Lectures to be Delivered	**90**		

Note: CCA and Annual Examination ESE scheme is same as in Paper GEOGP 101 CC

Course Content and Credit Scheme

Unit	**Topic**	**Allotted Time (Hours)**		
		L	**T**	**P**

Unit	Topic	Allotted Time (Hours)		
		L	T	P
I.	**Introduction** Hazards, Risk, Vulnerability and Disasters: Definition and Concept.	16	7	0
II.	**Disasters in India:** Causes , Impact and Distribution of Flood and Flash Flood, Earthquake and Cyclone	16	6	0
III.	**Human Induced Disasters** Causes, Impact, Distribution and Mapping.	16	6	0
IV.	**Disaster Risk Reduction** Mitigation and Preparedness NDMA and NIDM Community-Based Disaster Management Do's and Don'ts During Disasters	17	6	0
	Total Hours	**65**	**25**	**0**

L-Lecture, T-Tutorial and P-Practical and Practices

Reading List

1. Government of India. (1997) Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.
2. Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.
3. Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.
4. Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi. Chapter 1, 2 and 3
5. Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.
6. Sinha, A. (2001). Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.
7. Stoltman, J.P. et al. (2004) International Perspectives on Natural Disasters, Kluwer Academic Publications. Dordrecht.
8. Singh Jagbir (2007) "Disaster Management Future Challenges and Oppurtunities", 2007. Publisher- I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com).

2. SUSTAINABILITY AND DEVELOPMENT (GEOGP 306-GE2)

Course Code	**(GEOGP 306-GE2)**		
Credits-6	**L**	**T**	**P**
	65	**25**	**0**
Course Type	**Generic Elective**		
Lectures to be Delivered	**90**		

Note: CCA and Annual Examination scheme is same as in Paper GEOGP101 CC

Course Content and Credit Scheme

Unit	Topic	Allotted Time (Hours)

		L	T	P
I.	**Introduction** Sustainability: Concept, Components	16	7	0
II.	**The Millennium Development Goals:** National Strategies and International Experiences Sustainable Development: Need and its realization in Indian context	16	6	0
III.	**Inclusive Development:** Education, Health Role of higher education in achieving sustainability Policies and Global Cooperation for Climate Change	16	6	0
IV.	**Sustainable Development Policies and Programmes:** Rio+20, Financing for Sustainable Development; National Environmental Policy	17	6	0
	Total Hours	**65**	**25**	**0**

L-Lecture, T-Tutorial and P-Practical and Practices

Reading List

1. Agyeman, Julian, Robert D. Bullard and Bob Evans (Eds.) (2003) Just Sustainabilities: Development in an Unequal World. London: Earthscan. (Introduction and conclusion.).
2. Ayers, Jessica and David Dodman (2010) "Climate change adaptation and development I: the state of the debate". Progress in Development Studies 10 (2): 161-168.
3. Baker, Susan (2006) Sustainable Development. Milton Park, Abingdon, Oxon; New York, N.Y.: Routledge. (Chapter 2, "The concept of sustainable development").
4. Brosius, Peter (1997) "Endangered forest, endangered people: Environmentalist representations of indigenous knowledge", Human Ecology 25: 47-69.
5. Lohman, Larry (2003) "Re-imagining the population debate". Corner House Briefing 28.
6. Martínez-Alier, Joan et al (2010) "Sustainable de-growth: Mapping the context, criticisms and future prospects of an emergent paradigm" Ecological Economics 69: 1741-1747.
7. Merchant, Carolyn (Ed.) (1994) Ecology. Atlantic Highlands, N.J: Humanities Press. (Introduction, pp 1-25.)
8. Osorio, Leonardo et al (2005) "Debates on sustainable development: towards a holistic view of reality". Environment, Development and Sustainability 7: 501-518.
9. Robbins, Paul (2004) Political Ecology: A Critical Introduction. Blackwell Publishing.

I.	**Introduction** Definition, Approaches and Fundamental Concepts of Economic Geography. Locational Theories – Agriculture (Von Thunen) and Industrial (Weber).	16	6	0
II.	**Primary Activities** Intensive Subsistence Farming, Commercial Grain Farming, Plantation, Commercial Dairy Farming, and Mining (Coal and petroleum).	16	6	0
III.	**Secondary Activities** Major Industries : Iron and Steel, Cotton Textile Major Industrial Regions: Eastern North American Region, Western European Region	16	6	0
IV.	**Tertiary and Quaternary Activities** Major Oceanic Routes: Atlantic, Pacific and Indian Ocean International Trade: Concept, Volume and Direction	16	8	0
	Total Hours	**64**	**26**	**0**

L-Lecture, T-Tutorial and P-Practical and Practices

Reading List

1. Alexander J. W., 1963: *Economic Geography*, Prentice-Hall Inc., Englewood Cliffs, New Jersey.
2. Bagchi-Sen S. and Smith H. L., 2006: *Economic Geography: Past, Present and Future*, Taylor and Francis.
3. Coe N. M., Kelly P. F. and Yeung H. W., 2007: *Economic Geography: A Contemporary Introduction*, Wiley-Blackwell.
4. Combes P., Mayer T. and Thisse J. F., 2008: *Economic Geography: The Integration of Regions and Nations*, Princeton University Press.
5. Durand L., 1961: *Economic Geography*, Crowell.
6. Hodder B. W. and Lee R., 1974: *Economic Geography*, Taylor and Francis.
7. Wheeler J. O., 1998: *Economic Geography*, Wiley.
8. Willington D. E., 2008: *Economic Geography*, Husband Press.

3. DISASTER MANAGEMENT (GEOGP 304-1DSE)

Course Code	**GEOGP 304-1DSE)**		
Credits-6	**L**	**T**	**P**
	65	**25**	**0**
Course Type	**Discipline Specific Elective**		
Lectures to be Delivered	**90**		

Note: CCA and Annual Examination scheme is same as in Paper GEOGP101 CC

Course Content and Credit Scheme

Unit	**Topic**	**Allotted Time**		
		L	**T**	**P**

I.	**Introduction** Definition and Concepts.: Hazards, Risk, Vulnerability and Disasters	16	6	0
II.	**Disasters in India:** Causes, Impact, Distribution: Landslide, Earthquake, and Cyclone	16	6	0
III.	**Human Induced Disasters:** Causes, Impact, Distribution: Forest Fire, Road Accidents	16	6	0
IV.	**Response and Mitigation to Disasters:** Mitigation and Preparedness, NDMA and NIDM Community Based Disaster Management Do's and Don'ts During Disasters	16	8	0
	Total Hours	64	26	**0**

L-Lecture, T-Tutorial and P-Practical and Practices

Text Book(s):

Reading List

1. Government of India. (1997) Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.
2. Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.
3. Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.
4. Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi. Chapter 1, 2 and 3
5. Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.
6. Sinha, A. (2001). Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.
7. Stoltman, J.P. et al. (2004) International Perspectives on Natural Disasters, Kluwer Academic Publications. Dordrecht.
8. Singh Jagbir (2007) "Disaster Management Future Challenges and Oppurtunities", 2007. Publisher- I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com).

2. GEOGRAPHY OF TOURISM (GEOGP 304-2DSE)

Course Code	**(GEOGP 304-2DSE)**		
Credits-6	**L**	**T**	**P**
	65	**25**	**0**
Course Type	**Discipline Specific Elective**		
Lectures to be Delivered	**90**		

Note: CCA and Annual Examination scheme is same as in Paper GEOGP 101 CC

Course Content and Credit Scheme

B. A. SECOND YEAR (SEC I)
SEC-1: HIST (A) 213
Historical Tourism

I. Defining tourism & heritage

Art and architecture in India: an overview

II. Understanding built heritage

Temple architecture: Kandariya Mahadeva temple Khajuraho

Stupa architecture: Sanchi

Indo-Persian architecture: Taj Mahal, Agra; Red Fort, Delhi

III. Temple architectures in Himachal Pradesh as tourist attractions: A study of Chamba Kangra and Mandi

Colonial architecture: Shimla

IV. Tourism in Himachal Pradesh

Popular tourist destinations: Shimla, Kullu-Manali & beyond

A visit/field work/survey of/to a heritage/ historical/ popular tourist destination/socio-cultural importance site (the best nearby) is part of this course. Total weightage & distribution of marks for evaluation of the field report/survey would be at par with tutorial/home assignments.

Recommended Books

1. Agarwal, V.S., *Indian Art*, Varanasi, 1972. (Also available in Hindi)
2. Barr, Pat and Ray Desmond, *Simla: A Hill Station in British India*, London, 1978.
3. Bernier, Ronald M., *Himalayan Architecture*, London, 1997.
4. Bhowmik, S. K., *Heritage Management: Care, Understanding & Appreciation of Cultural Heritage,* Jaipur, 2004.
5. Brown, Percy, *Indian Architecture,* Bombay, 1940.
6. Desai, Devangana, *The Religious Imagery of Khajuraho*, Mumbai, 1997.
7. Ghosh, B., *Tourism and Travel Management,* New Delhi, 1998.
8. Goetz, Hermann, *The Early Wooden Temples of Chamba*, Leiden, 1955.
9. Handa, O. C., *Temple Architecture of the Western Himalaya*: *Wooden Temples,* Delhi, 2001.
10. Harle, J., *The Art and Architecture of the Indian Subcontinent,* London, 1994.
11. Howard, Peter, *Heritage: Management, Interpretation, Identity*, London, 2003.
12. Kanawar, Pamela, *Imperial Shimla: The Political Culture of the Raj*, Delhi, 1990.
13. Kennedy, Dane Keith, *The Magic Moutains Hills Stations and the British Raj*, London, 1996.
14. Mian, Goverdhan Singh, *Wooden Temples of Himachal Pradesh,* New Delhi, 2003.
15. Pradhan, Queeny, *Empire in the Hills: Simla, Darjeeling, Ootacamund, and Mount Abu*, 1820-1920, Delhi, 2017.
16. Thakur, Laxman S., *The Architectural Heritage of Himachal Pradesh: Origin and Development of Temple Styles*, Delhi, 1996.

B. A. SECOND YEAR (SEC III)
SEC-2: HIST (A) 215
An Introduction to Archaeology

I. Archaeology in India: origins and development

Managing archaeological evidences: documentation, codification, classification and analysis; findings and publications

II. Discovering human experience through archaeology: environment, technology, subsistence, society, trade and ways of thinking

III. Numismatic & Epigraphic sources: significance and limitation
A case study of the coins of Audumbaras and Kunindas (from the region of Himachal Pradesh)

IV. Method of surveying and techniques of excavation
A study of the Harappan site of Kalibangan and Rakhigarhi

A study/survey of the archaeology sites of Himachal Pradesh: a case study of Kot Kangra/or Nagarkot (Kangra)

A visit/field work/survey of/to a site/museum (the best nearby) is part of this course. Total weightage & distribution of marks for evaluation of the field report/survey would be at par with tutorial/home assignments.

Recommended Books

1. ASI report on Kalibangan: http://asijaipurcircle.nic.in/publication/publication/pdf
2. ASI Report on Rakhigarhi excavation: https://www.scribd.com/document/262303592/xcavations-at-Rakhigarhi-1997-98-to-1999-2000-Full-text-of-ASI-Report-Dr-Amarendra-Nath-Former-Director-Archaeology-ASI Also available on: https://www.rarebooksocietyofindia.org/book_archive/196174216674_10153813006761675.
3. Chakravarti, Dilip K., *History of Indian Archaeology: The Beginning to 1947*, Delhi, 1995.
4. Chakrabarti, Dilip K., 'The Development of Archaeology in the Indian Subcontinent', *World Archaeology*, Vol. 13, No. 3, Feb., 1982, pp. 326-344. (For online: http://adcacs.in/pdf/pdf/ArticlePastoral%20Nomadism%20in%20the%20Archaeology%20of%20India%20and%20Pakistan1%20(2).pdf
5. Cunningham, Alexander, *Archaeological Survey Reports of Years 1872-73*, Calcutta, 1875, vol.5, pp.155-169. For online : https:// /archive.org/details/report01cunngoog/page/n6
6. Dubey, Satya Narayan, *Bhartiya Puratatva ke Mool Tatva*, New Delhi, 2018.
7. Fergusson, James, *Archaeology in India*, London, 1884. (For online : https://archive.org/details/archaeologyinin01ferggoog/page/n6

B. A. THIRD YEAR (SEC V)
SEC-3: HIST (A) 317
Indian History and Culture

I. Environment; Culture, Tradition & Practices:
- Historical overview
- Oral & codified information on medicinal Plants
- Water & Water Bodies

II. Urbanization and Urbanism:
- Issues of settlements & Landscapes
- Social differentiations
- Communication networks

III. Social inequality and Gender:
- Status within Households: An overview
- Present context
- Issues of Violence
- Employment, distribution of resources

IV. Cultural Heritage:
- Main components
- Built Heritage
- Fairs & Festivals

A visit/field work/survey of/to an exhibition /water bodies/ local fairs & festivals/ is part of this course. Total weightage & distribution of marks for evaluation of the field report/survey would be at par with tutorial/home assignments.

Recommended Books

1. Banga, Indu (ed.), *The City in Indian History: Urban Demography, Society & Polity*, Delhi, 1991.
2. Bhattacharya, Bimalendu, *Urban Development in India: Since Pre-Historic Time*, Darjeeling, 2006.
3. Chaudhary, R. R., *Traditional Medicine in Asia,* New Delhi, 2002.
4. Koch, E. *Mughal, Art & Imperial Ideology*, New Delhi, 2001.
5. Kumar, Radha, *History of Doing: An Illustrated Account of Movements for Women's Rights & Feminism in India, 1880-1990*, Delhi, 2007.
6. Maity S. K., *Cultural Heritage of Ancient India*, New Delhi, 1983.
7. N.Mehta (ed.), *Television in India*, New York, 2008.

B. A. THIRD YEAR (SEC VI)
SEC-4: HIST (A) 319
Introduction to Indian Art

I. Understanding key terms in art appreciation: art, craft, sculpture, relief, painting, miniature, mural, fresco, rangoli, folk art

II. Indian Sculpture

Iconography: Hindu, Buddhist and Jaina

III. Architecture

Temple architecture: Nagara, Dravida and Vesara

Mosques and Mausoleums: Qutb Complex; Humayun's tomb; Jama Masjid; Taj Mahal

Rock-Cut Temple of Masrur and Colonial architecture in Shimla

IV. Indian Painting: understanding it historically

Mural painting: Ajanta

Mughal: miniature styles

Pahari School of Painting: Guler-Kangra Paintings

A visit/field work/survey of/to a temple/ mosque & mausoleum /museum/ art gallery/ important architectural site (the best nearby) is part of this course. Total weightage & distribution of marks for evaluation of the field report/survey would be at par with tutorial/home assignments.

Recommended Books

1. Agarwal, V.S., *Indian Art*, Varanasi, 1972. (Also available in Hindi)
2. Anand, Mulk Raj, *Splendours of Himachal Heritage,* New Delhi, 1997.
3. Asher, Catherine, *Architecture of Mughal India*, Cambridge, 1992.
4. Beach, M.C., *The New Cambridge History of India: Mughal and Rajput Painting,* Delhi, 1992.
5. Bleach,M. C., *Early Mughal Painting*, Boston, 1987.
6. Brown, Percy, *Indian Architecture (Islamic Period)*, Bombay, 1981.
7. Dehejia, V., *Looking Again At Indian Art,* New Delhi, 2012.
8. Dhar, P.P. (ed.), *Indian Art History Changing Perspectives,* New Delhi, 2011.
9. Fergusson, James, *A History of Indian and Eastern Architecture*, New Delhi, 1972.
10. Goswamy, B.N., *Essence of Indian Art*, San Francisco, 1986.
11. Goswamy, B.N., *Pahari Master: Court Painter of Northern India*, Delhi, 2000.
12. Goswamy, B.N., *Nainsukh of Guler: A Great Indian Painter from a Small Hill-state,* New Delhi, 2011.
13. Goswamy, B. N., *Nala and Damayanti: A Great Series of Paintings of an Old Indian Romance,* New Delhi, 2015.

COURSE CODE MUSA301PR
SEC-III
B.A.3rd Year, SKILL ENHANCEMENT COURSE-III
HINDUSTANI MUSIC(VOCAL/INSTRUMENTAL)
Title-Presentation and Documentation-III

Credits-4 **2 Lectures per week**

1. Power point presentation by the students on the Contemporary Classical Music Performance.
2. Basic technique of Harmonium and Tabla Playing.
3. Visit to All India Radio/Doordarshan, State festival and TV Channels.

COURSE CODE MUSA302PR
SEC-IV
B.A.3rd Year, SKILL ENHANCEMENT COURSE-IV
HINDUSTANI MUSIC(VOCAL/INSTRUMENTAL)
Title-Presentation and Documentation-IV

Credits-4

1. Composing Music for Patriotic songs.
2. Powerpoint presentation on the Life and Contributions of great Musicians.
3. Attending Music Conferences/Listening of Radio SangeetSammelans and listening of Audio/Visual adds National Programmes of Music and writing reviews or reports of the same.

4) Skill Enhancement Course - SEC-I, SEC-II, SEC-III, SEC-IV
(Value based and practical oriented courses as per the information given)

[Note: the above SEC courses have been designed in such a way that the performance aptitude or skill of the students is enhanced with the help of field visits, recording techniques and guided listening sessions]

2 Lectures per week

COURSE CODE MUSA301PR
SEC-III
B.A.3rd Year, SKILL ENHANCEMENT COURSE-III
HINDUSTANI MUSIC(VOCAL/INSTRUMENTAL)
Title-Presentation and Documentation-III

Credits-4 **2 Lectures per week**

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COURSE CODE MUSA302PR
SEC-IV
B.A.3rd Year, SKILL ENHANCEMENT COURSE-IV
HINDUSTANI MUSIC(VOCAL/INSTRUMENTAL)
Title-Presentation and Documentation-IV

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2. Powerpoint presentation on the Life and Contributions of great Musicians.
3. Attending Music Conferences/Listening of Radio SangeetSammelans and listening of Audio/Visual adds National Programmes of Music and writing reviews or reports of the same.

4) Skill Enhancement Course - SEC-I, SEC-II, SEC-III, SEC-IV
(Value based and practical oriented courses as per the information given)

[Note: the above SEC courses have been designed in such a way that the performance aptitude or skill of the students is enhanced with the help of field visits, recording techniques and guided listening sessions]

2 Lectures per week

PHYSICAL EDUCATION
PED 204(TH): Sports Training

Year-II

THEORY COURSE

COURSE CODE: PED204TH **(SEC-2)**

Credits: 4 **(L=44+T=16+P=0) =60**

Marks: (ETE=70+CCA=30) =100

SPORTS TRAINING

Unit-I

1. Sports Training: Introduction, Meaning and Definition of Sports Training.
2. Aim and Objectives of Sports Training.
3. Principles of Sports Training, System of Sports Training.
4. Basic Performance, Good Performance and High Performance Training.

Unit-II

1. Concept of warming-up and cooling down.
2. Physiological basis of warming-up and cooling down.
3. Training Components: Speed, Strength, Endurance, Flexibility and Co-ordinative Abilities.
4. Types and methods for the development of training components.

Unit-III

1. Training Process: Training Load, Definition and Types of Training Load.
2. Principles of Intensity and Volume.
3. Technical Training: Meaning and Methods of Technical Training.
4. Tactical Training: Meaning and Methods of Tactical Training.

Unit-IV

1. Training Programming and Planning: Periodization, Meaning and types of Periodization.
2. Aim and Content of Periods-Preparatory, Competition and Transitional.
3. Planning a training session.
4. Talent Identification and Development.

References:

1. Baechle, T. R, & Earle, R. W. (2000). Essentials of Strength Training and Conditioning. Human Kinetics, USA.
2. Bompa, T. O. (1994). Theory and Methods of Training-A Key to Athletic Performance (3rd Ed.), Kandwall, Hunt Publication Co.

3. Bompa. T.O. and G. Gregory Hett (2009). Periodization: Theory and Methodology of Training.
4. Dick, F. W. (1999). Sport Training Principles, A and C Black. London.
5. Singh, Hardayal (1991). Science of Sport Training, D.V.S Publication, Delhi.
6. Singh, M. K. (2008). Comprehensive Badminton (Scientific Training), Friends Publication: New Delhi.

PUBLIC ADMINISTRATION
PUBA303: Local Governance

17

BA-III Year
Course : DSE-1-A(Option -I) Discipline Specific Elective
CODE;PUBA303-A
Course: Local Government in India

Course Code	CODE:PUBA303A	
Credits-6	L (L=Lecture)	T(T=Tutorial)
	L-5,	T-1
Course Type	Core Course/Major	

Term End Examination System:

Maximum Marks Allotted	Minimum Pass Marks	Time Allowed
70	32	3.00 Hrs

Continuous Comprehensive Assessment (CCA) Pattern:

Attendance	Class Test	House Test	Assignments, Tutorials and General Behaviour of students	Total Marks
05	05	10	10	30

Unit	Topic
I	i. Evolution of Local Government in India ii. Local Government under British Rule and Post Independent period iii. Local Self government- Meaning, Nature and significance
II	i. Organization and Functions of Gram Panchyat ii. Panchyat Samiti-Organisation, Structure and Function iii. Zila Parishad- Organisation, Structure and Function iv. 73rd Constitutional Amendment Act- Main Features
III	i. Municipal Corporation: Organisation, Structure and Functions ii. Power and Function of Mayor and Municipal Commissioner iii. Municipal Committee/Council/Nagar Panchyat Organization and functions. iv. Main Features of 74th Constitution Amentment
IV	i. Finance of Local Self Bodies ii. Reasons for Poor Financial Position and suggestion iii. Machinery for Supervision & Control over Local Bodies

Public Administration Syllabus
BA-III Year
Code : GE-2;PUBA308-A option (I)
Course: Disaster Management

Course Code	CODE:PUBA308-A	
Credits-6	L (L=Lecture)	T(T=Tutorial)
	L-5	T-1
Course Type	Core Course/Major	

Term End Examination System:

Maximum Marks Allotted	Minimum Pass Marks	Time Allowed
70	32	3.00 Hrs

Continuous Comprehensive Assessment (CCA) Pattern:

Attendance	Class Test	House Test	Assignments, Tutorials and General Behaviour of students	Total Marks
05	05	10	10	30

Unit	Topic
I	Disaster- Meaning, Types, Causes of disaster and effects of disaster
II	Classification of Disasters- Hazard, Risk and Vulnerability-Natural and Man Made Disasters-Disaster Profile of India. Organizational structure for Disaster management at National & State Level, Role of NDRF
III	Disaster Management: Act, Policy and Institutional Framework- Disaster Management Cycle with focus of Preparedness. Prevention and mitigation-Disaster Relief and Response-Damage Assessment-Rehabilitation, Reconstruction and Recovery
IV	Relevance of Indigenous Knowledge-Community based Disaster Management-Disaster Management Strategies-Disaster Management Case Studies

SOCIOLOGY

SOCL-A 203: Techniques of Social Research

Sociology Syllabus
BA- 2nd Year

Skill Enhancement Course (SEC-1)
Code: SOCL-A 203

Course: Techniques of Social Research

Course Code	Code: SOCL-A 203	
Credits-4	L (L=Lecture)	T (T=Tutorial)
	L-3	T-1
Course Type	Skill Enhancement Course	
Lecture to be Delivered	(1 hr. each), (L=75, T=15)	

Examination Marks Distribution

Maximum Marks	Internal Assessment (IA)	Term End Examination (TEE)	Pass Marks		
			IA	TEE	Aggregate
100	30	70	11	25	40

Note: Minimum passing marks will be 40% in aggregate. However, 35% each in Internal Assessment and final examinations will be compulsory

Term End Examination System

Maximum Marks Allotted	Time Allowed
70	3.00 Hrs

Continuous Comprehensive Assessment (CCA) Pattern

Class Test (Marks)	House Test (Marks)	Tutorials/Assignments/General Behavior of Students, etc. (Marks)	Attendance (Marks)	Total Marks
05	10	10	5	30

Note: Class test to be taken by teacher on the completion of 40% syllabus and house test on the completion of 75% syllabus

Course Contents

Course Objective:

This course aims to enhance the skills of students to understand and use techniques employed by social scientists to investigate social phenomena. With emphasis on formulating research design, methods of data collection, and data analysis, it will provide students with some elementary knowledge on how to conduct both, quantitative and qualitative research. The focus is on understanding through suggested exercises.

Unit	Topics
I	**Research Design:** (i) Meaning, Characteristics, Types and Need of Research Design (ii) Hypothesis (Meaning, Characteristics and Types)
II	**Data Collection:** (i) Primary and Secondary Sources of Data Collection (ii) Sampling (Meaning, Characteristics and Types)
III	**Data Analysis:** (i) Coding and Tabulation (ii) Analysis and Interpretation of Data
IV	**Statistical Analysis:** (i) Measures of Central Tendency: Mean, Median and Mode (ii) Measures of Dispersion: Standard Deviation

Suggested Readings

1. ***Agarwal, B.L.*** 2000. *Basic Statistics*. New Delhi: New Age International Pvt.
2. ***Ahuja, Ram.*** 2010. *Research Methods.* Jaipur: Rawat Publications.
3. ***Bailey, K.*** 1994. *Methods of Social Research*. New York: The Free Press.
4. ***Bhandarkar, P.L. & T.S. Wilkinson.*** 2010. *Methodology and Techniques of Social Research.* New Delhi: Himalaya Publishing House.
5. ***Black, James A. and Dean J. Champion.*** 1976. Methods and Issues in Social Research. New York: Wiley.
6. ***Bryman, A.*** 2008. *Social Research Methods*. Oxford: Oxford University Press.
7. ***Goode, William J. & Paul K. Hatt.*** 2006. *Methods in Social Research*. Delhi: Surjeet Publications.
8. ***Gupta, S.C.*** 1981. *Fundaments of Statistics.* Bombay: Himalayan Publishing House.
9. ***Gupta, S.P***. 1969. *Statistical Methods.* New Delhi: Sultan Chand & Sons.
10. ***Kerlinger, Fred N.*** 1964. *Foundations of Behavioral Research*. Delhi: Surjeet Publications.
11. ***Kothari, C.R.*** 1985. *Research Methodology: Methods & Techniques*. New Delhi: New Age International Publishers.
12. ***Kumar, Ranjit***. 2014. *Research Methodology: A Step-by-Step Guide for Beginners.* New Delhi: Sage Publications.
13. ***Lofland, J. and Lofland L.*** 1984. *Analysing Social Settings: A Guide to Qualitative Observation and Experiment*. California: Wadsworth.
14. ***Majumdar, P.K.*** 2002. *Statistics: A Tool for Social Sciences*. New Delhi: Rawat Publications.
15. ***Marvasti***, ***Amir B.*** 2004. *Qualitative Research in Sociology*. London: Sage Publications.
16. ***Morgan, David L***. 1996. '*Focus Groups'*, Annual Review of Sociology.
17. ***Neuman, W.L***. 2009. Social Research Methods: Qualitative and Quantitative Approaches. New Delhi: Pearson Publications.
18. ***Seltiz, Claire et al.*** 1962. *Research Method in Social Relations.* London: Weinhart and Winston.
19. ***Walsh, A.*** 1990. *Statistics for the Social Sciences.* New York: Harper and Row.
20. ***Young, Pauline V.*** 1966. *Scientific Social Surveys and Research*. New Delhi: Prentice Hall.

(Note: Students may also use any standard Hindi Medium book available in Sociology)