KARNATAKA STATE OPEN UNIVERSITY

PROGRAMME GUIDE

M.Sc in Information Technology



DEPARTMENT OF POST GRADUATE STUDIES AND RESEARCH IN INFORMATION TECHNOLOGY

Mukthagangothri, Mysore – 570 006

VICE CHANCELLOR'S MESSAGE

Dear Learner,

The family of KSOU welcomes you to pursue the academic programmes you have chosen to achieve not only academic excellence but also to fulfill the desire of your career. The University, established by the Act of State Legislature has created wonderful academic ambience. The programmes offered by the University have been recognized by University Grants Commission. Therefore, the degrees are valid for employment opportunities across the country. The 'core values' of the University are derived from its vision 'Higher Education to Everyone, Everywhere'. The ultimate touchstone of quality higher education is the motto of the University. Today, higher education stands at the crossroads of keeping pace with the emerging needs of the country.

The University has adopted a school concept in its functioning. The school of science headed by a Director offers academic programmes in basic and applied sciences. It combines an inter disciplinary and professional approach to pedagogy and research. The University believes that rigors of the contemporary world require competent quality human resources to create knowledge based society. The academic activities of B.Sc. programmes are initiated through well-established department/s led by the Chairperson/s. Well-qualified teaching faculty with equally dedicated non-academic team is an asset to the University, which is always, committed for the welfare of the students.

The University functions in a 3-tier system of student support service, namely Headquarters, Regional Centres and Learners Support Centres spread all over Karnataka. The learners can undergo teaching-learning process in the notified Regional Centres/Learner Support Centres. The University has adopted a mechanism to deliver Self Learning Material by print, limited audio visual and Counseling/Personal Contact Programme. As a learner, you will have greater opportunity to gain knowledge and skill through those mechanisms. The academic counselors will play a strategic role and supports you from the enrollment of the programme till you accomplish the goal. A proper blending of the knowledge and skill will be imparted so that you will be transformed as a good citizen to contribute to the development of society and the country.

The UGC in its Public Notice dated: 23.02.2018 stated that the Degree/Diploma/Certificate Programme awarded through distance mode are at par with corresponding Degree/ Diploma/ Certificate Programme obtained through conventional universities. The degrees acquired through distance education are recognized for the purpose of employment in State/Central Government, MNCs, Private Sector etc. and also for pursuing higher education in other educational institutes. Therefore, you have greater opportunity of pursuing Higher Education without any kind of fear about your career.

I am sure you will enjoy good experience with services rendered by the university through its Regional centres and Learner Support Centres, besides Headquarters. I wish you all the best in your academic endeavors.

Prof. Vidyashankar S

MESSAGE FROM DEAN (ACADEMIC)

Dear learner,

As you know education imparts knowledge and skills which empowers all to build civilized society. Higher education policy which was once a priority sector is no longer maintaining the same, due to General Agreements and Trade in Services (GATS). The education policy of the government provides a greater opportunity to accelerate Gross Enrolment Ratio (GER).

Higher education is imparted both by conventional system and ODL system. The former education has inbuilt rigidity where ODL enjoy flexibility. Presently the GER in higher education around is 27%, thanks to the role played by ODL system. The ODL system operates under access, flexibility and success.

The Karnataka State Open University, which came up in 1996 under the Act of state legislation 1992 play a stupendous role in imparting quality education. As one of the premier institution in ODL system of the country, the university strive hard to empower various disadvantaged sections of the society like, house wives, economically and culturally backward, tribal, senior citizens, working groups, differently abled, professionals, technocrat, jail inmates etc., The University cater to the needs of students ranging from the age of 18 years to 80 years.

The programmes offered by KSOU are strictly in conformity with quality and standards set by regulatory bodies UGC/AICTE etc., The Karnataka State Open University was established on 1st June 1996 vide Government Notification No. EDI/ UOV/ 95 dated 12th February 1996-KSOU Act 1992, keeping in view the educational needs of our country, in general, and the state in particular. The University has a long and rich experience in the field of Distance Education as the erstwhile Institute of Correspondence Course and Continuing Education. University Grants Commission (UGC) New-Delhi vide order No: F.No 14-5/2018 (DEB-I) Dated : 14th August 2018 for the period from 2018-19 to 2022-23. The KSOU operates on dictum quality first and students foremost. Further the university is highly committed to provide need based education to the door steps of the students.

The KSOU has students' support services which work in 3 tiers - head office; regional centres and study centres within the jurisdiction of state. The admissions, counseling and the examinations are conducted in different places, hence, education at the door steps.

The dedicated staffs in various department and state of the art student support services create a conducive environment for teaching learning. The university put in places all possible efforts to keep the learners happy from the stage of enrolment till they get employed. I am confident that, as a learner in the university, you will enjoy good experience in the system.

I wish you all the best in your academic endeavors.

Truly yours,

Dean (Academic)

A WORD FROM CHAIRPERSON

Dear Learner,

The Department of Information Technology extends a very warm welcome to you to study two years MSc Information Technology programme. The Department of Information Technology was established in the year 2011. Highly equipped faculty members in the department are dedicating themselves and creating a very conducive academic atmosphere for teaching and learning.

The Karnataka State Open University, a premier ODL institution supports highly disadvantaged group of students to study the programme by distance mode. It is needless to say that the ODL institution empower the mass whereas the conventional system target the class. The M.Sc. (Information Technology) programme is tightly scheduled and highly structured, client centered programme that aims at developing the software professionals to keep abreast of the most recent development in the field of information science for the requirements of the dynamic and highly global environment of the present era. The curriculum based on the feedback from the best programmes available in the market, aims at enriching and sharpening software developing skills.

The Department provides you the study materials both in print and audio visuals. The information and communication technology will be employed extensively to reach the unreached. The material is in the form of self learning and revolves around the learners centric. As a student you have to study MSc Information Technology in two years with the credit assigned by the UGC. The university has a state of art library. You are advised to avail the facility to enrich your knowledge. The department has made a very sincere effort to give you exhaustive study material wherever required in order to augment to advise a certain suggested reading. Happy Learning and Best Wishes !!!

Chairperson,

Department of Studies in Information Technology.

1. DEPARTMENT OF STUDIES IN INFORMATION TECHNOLOGY

The Department of Information Technology was established in the year 2001. The department offers post graduate and diploma programmes that develops core competencies in Information Technology to meet the needs of higher education. The department is committed to bring quality in all the academic programmes. The ambition of the department is to provide the quality education and practical training and conduct the research of international standards and repute. The department has highly qualified faculty members who have rich experience in the area of Data Science, Machine Learning and Computational Intelligence. Faculty members of the department have produced more than 14 research articles in the reputed Journals and Conference proceedings. The published papers have high citation index. The department faculties regularly participates in workshops, seminars, symposiums, and faculty development programme to keep update with emerging technologies. Alumni of the department pursue their higher studies within the country as well as abroad and some of the Alumnus are successful entrepreneurs.

The Department of Information Technology comes under the ambit of **School of Sciences**. The various programmes offered by the department are as follows:

- Master of Science in Information Technology (M.Sc IT)
- Bachelor of Science in Information Technology (B.Sc IT)
- Post Graduation Certificate in Information Technology(PGCIT)
- Diploma in Information Technology (DIT)
- Under Graduation Certificate Programme in Information Communication Technology (UGCICT)

a. Faculty Details

			Ov			
Sl. No.	Name of the Faculty	Designation	Qualification	Specialization	Experience in Years	Mobile Number
1	Dr. Rashmi B.S	Assistant Professor & Chairperson	M.Sc. M.Phil. Ph.D.	Pattern Recognition	15	9880983081
2	Ms. Nandini.H.M	Assistant Professor	M.Sc.	Image Processing	12	8123745149
3	Dr. V. Umesh	Assistant Professor (Contract Basis)				

a. Department of Information Technology

2. PROGRAMME: MASTER OF SCIENCE IN INFORMATION TECHNOLOGY

Master in Information Technology is a postgraduate degree course that offers learners with comprehensive educational programs in the field of information Technology producing highly accomplished postgraduates to meet the demands of the industry. Information Technology is an interdisciplinary science primarily concerned with analysis, collection, classification, manipulation, storage, retrieval, dissemination and protection of information. Master in Information Technology is designed under annual scheme for two years.. The syllabus of the course is divided into 4 semesters.

The MSc Information Technology programme will be delivered through counseling / contact classes, and also with blended audio-visual aids. The experienced faculty members from different parts of the state have been pressed into action to develop SLM and also audio-visual aids. After completing this course, the candidate will be able to handle digital commerce, software development and can achieve organizational goals objectives. Also, they can control the maintenance of software network to handle the technological challenges. Candidates who are interested in pursuing higher education can opt for research and allied fields. Candidates can also clear NET, K-SET conducted by UGC to get into the teaching profession both in private and public colleges and universities.

In short, the programme will facilitate a variety of research and development and teaching skills that will lend a new edge and force to their own skills to handle myriads of challenges in the ever changing scenario of modern software developing field. After successful completion of this programme, the candidates can be employed as Information Systems Manager, Teaching professionals, Information Security Analyst, Technical Operations Analyst, Software developer, Quality Information Manager, Application Programmer etc., at various public and private sector organizations.

2.1 MISSION AND OBJECTIVES

a. Mission:

- Empower the learners with domain specific knowledge and creative thinking in information and technology revolution.
- \blacktriangleright To create wide angle exposure to the stakeholder on emerging thrust areas.
- To impart skills to learners through distance learning to promote their technological and professional growth.
- > To prepare learners with research and entrepreneurship attitude having high moral and ethical values.

The ambition of the department is to provide the quality education with practical training and conduct the research of international standards.

b. Objectives :

- To provide the learners an advanced learning process that develops core competencies in information technology to meet the needs of the higher education and industry.
- To create an environment for learner to innovative thinking and self-learning employing ICT enabled services to abreast with the challenges of changing technology.
- > To equip learners with the knowledge and expertise to contribute significantly to the information industry and to continue to grow professionally.
- To offer learner with comprehensive educational programs in the field of information technology producing highly accomplished postgraduates.

2.2 Programme outcomes:

- Provide students with core competence in mathematics, scientific, and fundamentals to develop software applications.
- Train students with knowledge and skills in core areas of system engineering, information processing and application development.
- Inculcate students to excel in IT profession, entrepreneurship, and research with ethical standards

3. DELIVERY MECHANISM

The delivery mechanism followed in this University is different from that of conventional universities. The Open University system is more learners centric, and is geared to cater to the needs of motivated students assuming that the student is an active participant in the teaching-learning process. Instruction to student is imparted through-

- * Printed Self-Learning Material.
- * Audio visuals.
- * Counselling/PCP

a. SLM by Print Media

SLM takes the role of a teacher in distance education system. The study material in English provided to you along with this programme guide are called self-learning material as it facilitates learning on your own. The study material is exhaustive and easy to understand. The SLM have been divided into blocks and units. Each block has one credit value which denote 30 hours of study for one block, be it studying, discussing with counsellors, attending classes, writing assignment and so on.

Objectives are given in the beginning of each unit which tells what is expected of you by learning that unit. Check your progress questions are given in content so that you can measure your progress while studying the material. References are given at the end of each unit which gives you sources for furtherance of your study.

b. Audio-visuals

In an endeavor to impart education to reach the unreached, the university has a system to provide information by audio-visuals. The Department has developed various audio lectures on various topics by involving well experienced academicians. The study material will be broadcasted by FM radio and other channels. The limited visuals are also pressed into action to clarify many issues during teaching learning process.

c. Counseling/ PCP

The university delivers the instructions **in English** through counseling/PCP; counseling may be weekend, while the PCP will be conducted for a period around 10 or more days at stretch. Well experienced teachers working in the department and from other universities will deliver lectures; thereby they clear many intricacies which may occur on the SLM. The academic counselors will help you to prepare yourself not only to face the examination with confidence besides, your carrier also.

Se m	Course Course Title Code			¢/PCP	Max.	Mark	Min Pass Mar	f Exam		
			Credits	Counseling Hours	Internal Assessme	Term end exam	Total Marks	Internal Assessme	Term end exam	Duration o
	MITDSC-1.1	Computational Mathematics	4	12	20	80	100	08	32	3
	MITDSC-1.2	Advanced Data Structures		12	20	80	100	08	32	3
	MITDSC-1.3	Computational Mathematics Lab	2	60	10	40	50	04	16	3
	MITDSC-1.4	Advanced Data Structure Lab	2	60	10	40	50	04	16	3
т	MITDSE-1.5	Unix System Programming	3	09	20	80	100	08	32	3
1	MITDSE-1.6	C Programming								5
	MITDSE-1.7	Computer Organization and		09			100			3
	MITDSE-1.8	Operating System			20	80		08	32	
	ELMIT –01	Interdisciplinary Elective-1	2	06	10	40	50	04	16	$1^{1/2}$
		Total	20	168	110	440	550	44	176	-

4. Programme Structure and Syllabus

Note: Non-IT Students are recommended to opt MITDSE-1.6 and MITDSE-1.8 IT students are recommended to opt MITDSE-1.5 and MITDSE-1.7

Sem	Course Code	Course Title		CP	Max	x. Mai	Min Pass Mar	xam		
			Credits	Counseling/P Hours	Internal Assessment	Term end exam	Total Marks	Internal Assessment	Term end exam	Duration of E
	MITDSC-2.1	Database Management	4	12	20	80	100	08	32	3
	MITDSC-2.2	Analysis and Design of Algorithms	4	12	20	80	100	08	32	3
	MITDSC-2.3	Database Management System Lab	2	60	10	40	50	04	16	3
п	MITDSC-2.4	Analysis and Design of Algorithms Lab	2	60	10	40	50	04	16	3
	MITDSE-2.5	OOPS with JAVA	3	09	20	80	100	08	32	3
	MITDSE-2.6	Computer Graphics								5
	MITDSE-2.7	Software Engineering	3	00			100			
	MITDSE-2.8	Distributed Systems	5	0)	20	80	100	08	32	3
	ELMIT-02	Interdisciplinary Elective-2	2	06	10	40	50	04	16	$1^{1/2}$
		Total	20	168	110	440	550	44	176	-

Note: Non-IT Students are recommended to opt MITDSE-2.5 and MITDSE-2.7 IT students are recommended to opt MITDSE-2.6 and MITDSE-2.8.

Se m	Course Code	Course Course Title		PCP	Max. Marks			Min. Passir Mark	Exam	
			Cred	Counseling/ Hours	Internal Assessmen	Term end exam	Total Marks	Internal Assessmen	Term end exam	Duration of
	MITDSC-3.1	Advanced Java	4	12	20	80	100	08	32	3
	MITDSC-3.2	Computer Networks	4	12	20	80	100	08	32	3
	MITDSC-3.3	Advanced Java Lab	2	60	10	40	50	04	16	3
	MITDSC-3.4	Computer Networks Lab	2	60	10	40	50	04	16	3
III	MITDSE-3.5	Data Mining	3	09			100			3
	MITDSE-3.6	User Interface Design			20	80		08	32	5
	MITDSE-3.7	Python Programming	3	09	20		100			2
	MITDSE-3.8	Digital Image Processing	-	~ ~		80		08	32	3
	MITSEC-1	Web Technology 1	2	06	10	40	50	04	16	$1^{1/2}$
		Total	20	168	110	440	550	44	176	-

Note: Students are recommended to opt any one from MITDSE-3.5/MITDSE-3.6 and any one from MITDSE-3.7/MITDSE-3.8

Sem	Course Code	ourse Course Title		PCP	Ma	ax. Ma	Min. Pass Mar	ing ks	Exam	
			Cred	Counseling/ Hours	Internal Assessme	Term end exam	Total Marks	Internal Assessmen	Term end evam	Duration of
	MITDSC-4.1	Machine Learning	4	12	20	80	100	08	32	3
	MITDSC-4.2	Internet of Things	3	09	20	80	100	08	32	3
	MITDSC-4.3	Machine Learning Lab	2	60	10	40	50	04	16	3
IV/	MITDSC-4.4	Dissertation	8	240	30	120	150	12	48	3
1 V	MITDSE-4.5	Cloud Computing		00			100			
	MITDSE-4.6	Information and Network Security	3	09	20	80	100	08	32	3
	MITSEC-2	Web Technology 2	2	06	10	40	50	04	16	1 ^{1/2}
			22	336	110	440	550	44	176	-

Note: Students are recommended to opt any one from MITDSE-4.5/MITDSE-4.6 MITDSC-4.4: Dissertation / Project work (Implementation)

INTERDISCIPLINARY COURSES FOR POST GRADUTE PROGRAMMES (OPEN ELECTIVES)

SL No	Department	Sub Code	I Semester	Sub Code	II Semester
1	KANNADA	ELK-01	ಆಧುನಿಕ ಕನ್ನಡ	ELK-02	ಪ್ರಾಚೀನ ಕನ್ನಡ ಸಾಹಿತ್ಯದ
			ಸಾಹಿತ್ಯದ ಇತಿಹಾಸ		ಇತಿಹಾಸ
2	ENGLISH	ELE-01	Indian Literature -I	ELE-02	Indian Literature -II
3	HINDI	ELH-01	Vyavaharik Hindi Vyakaran	ELH-02	Hindi Cinema
4	TELUGU	ELT-01	Tilak	ELT-02	Telugu Samskruthi – Samaajam
5	HISTORY	ELHS-01	Ancient World Civilisations (Egypt, Mesopotamia, Greek, Roman, Inca, Chinese)	ELHS-02	Social Reform Movement in India
6	ECONOMICS	ELEC-01	Economic Policies of India Since 1991	ELEC-02	Institutions for International Development
7	POLITICAL SCIENCE	ELP-01	Local Government in India.	ELP-02	Indian Constitution
8	PUBLIC ADMINISTRATION	ELPA-01	Indian Polity-1	ELPA-02	Indian Polity-2
9	SOCIOLOGY	ELS-01	Invitation to Sociology	ELS-02	Study of Indian Society

10	JOURNALISM AND MASS	ELJ-01	Aspects of Journalism and Mass	ELJ-02	Aspects of Journalism and Mass
11	ANCIENT HISTORY AND ARCHEOLOGY	ELA-01	World heritage sites of India	ELA-02	Cultural History of Hoysalas
12	EDUCATION	ELED-01	Foundations of Education	ELED-02	Higher Education
13	COMMERCE	ELC01	Personal Financial Planning	ELC02	Entrepreneurship Development
14	MANAGEMENT	ELM01	Disaster Management	ELM02	E-Commerce
15	BIOCHEMISTRY	ELMBC -01	Basics of Bioinorganic and Biophysical chemistry for Biology graduates.	ELMBC -02	Basic Bioorganic chemistry for Biology graduates.
16	BIOTECHNOLOGY	ELMBT01	Biotechnology Principles and applications	ELMBT02	Fundamentals of Biotechnology
17	CHEMISTRY	ELMC -01	Open Elective I	ELMC -02	Open Elective II
18	CLINICAL NUTRITION AND DIETETICS	ELMCND -01	Healthy lifestyles and nutrition	ELMCND-02	Nutraceuticals and health foods
19	COMPUTER SCIENCE	ELMCS –01	Mobile App Development	ELMCS –02	E-Commerce
20	ENVIRONMENTAL SCIENCE	ELMES -01	Basics of Environmental Science	ELMES –02	Advances in Environmental Science
21	GEOGRAPHY	ELMG01	Introduction to Physical Geography	ELMG -02	Geography of Karnataka
22	MATHEMATICS	ELMM -01	Fundamentals of Mathematics	ELMM –02	Combinatorics and Graph Theory
23	MICROBIOLOGY	ELMMB -01	Microbial World and Microbial Diversity	ELMMB -02	Microbes in Sustainable Agriculture and Development
24	PHYSICS	ELMP-01	Mechanics	ELMP-02	Waves and Optics
25	PSYCHOLOGY	ELMPSY-01	Introduction to Psychology	ELMPSY -02	Psychology in Everyday Life
26	INFORMATION TECHNOLOGY	ELMIT –01	Green Computing	ELMIT –02	E-Commerce
27	BOTANY (NEW)	ELMBOT01	Plant-Microbe Interactions	ELMBOT – 02	Plant Diversity and Human Welfare
28	ZOOLOGY (NEW)	ELMZ –01	Parasites Vectors & communicable diseases	ELMZ-02	Essential of Reproductive Health
29	FOOD AND NUTRITION SCIENCES	ELMFNS01	Food Psychology	ELMFNS -02	Nutritional Management in Disaster Conditions

Note:

- A. I and II Semester Open elective (Interdisciplinary Electives) syllabus are attached in Annexure I and Annexure II respectively.
- B. The Students may contact respective department chairperson in case of any queries regarding open elective course. The contact details available in the university website.

MSc Information Technology Syllabus (Tentative)

I Semester

MITDSC-1.1- Computational Mathematics

Block IT 1 : Linear Algebra

Unit 1: Introduction, solving linear systems equations, vector spaces.

Unit 2: Orthogonality and GramSchmidt algorithm,

Unit 3: Determinants, Eigen values and Eigenvectors

Unit 4: linear transforms.

Block IT 2 : Graph Theory

Unit 1- Basics, Representation, Applications of graph theory, Types of graphs, Matrix representations

Unit 2- Isomorphism, Connectedness, Paths, Circuits, Walks, Eulerian graphs, Hamiltonian circuits, Travelling salesman problem

Unit 3- Planar graphs and graph coloring

Unit 4- Graph Algorithms: Minimum Spanning tree algorithms, graphs, Breadth first and depth first searching algorithms.

Block IS 3 : Number Theory and Cryptography

Unit 1- Divisibility, Prime Numbers, Division, Greatest Common Divisor
Unit 2- he Euclidean Algorithm137 The Fundamental Theorem Primes Distribution of Primes
Unit 3- Perfect Numbers and Mersenne Primes2912 Congruences3113 Divisibility Tests3514
More Properties of Congruences3715 Residue Classes The Chinese Remainder Theorem
Unit 4- Introduction, Basic Concepts, Modes of ciphers, Information Theory

Block IS 4 : Algebraic Structures

Unit 1- Semi groups, Monoids, Groups, Properties, Examples

Unit 2- Subgroups, Cosets, Lagrange's theorem, Normal subgroups

Unit 3-Homomorphism, Isomorphism, Algebraic system with two binary operations

Unit 4- Group codes, Error detecting codes, Error correcting codes

References

1. Tremblay JP, Manohar R. Discrete mathematical structures with applications to computer science. New York: McGraw-Hill; 1975 Jan.

2. Kolman B, Busby RC, Ross SC. Discrete mathematical structures. Prentice Hall PTR; 1999 Nov 1., PHI.

3. BL Agarwal, Basic Statistics, New Age international, 2013

1.5

	MITDSC-1.2 - Advanced Data Structures						
Course Co	ode: MSCIT1.2 Title: Advanced Data Structures Credit: 4						
	Block-I: Overview of Data Structures						
Unit-1:	Introduction, concept of data type, primitive data types, non-primitive data types, classification of data structures, abstract data types.						
Unit-2:	Primitive data structures such as integer, real, character & Boolean, and their representation.						
Unit-3:	Non-primitive data structures such as arrays, their representations, operations and applications.						
Unit-4:	Linked lists, types of linked lists, operations on linked lists and their applications.						
	Block-II: Stack and Queue Data Structures						
Unit-5:	Introduction to stacks, representation of stacks and various operations on stacks						
Unit-6:	Applications of stacks with illustrations.						
Unit-7:	Introduction to queues, representation of queues and various operations on queues.						
Unit-8:	Types of queues, their representations, operations and applications.						
	Block-III: Graph and Tree Data Structures						
Unit-9:	Introduction to graphs, representation of graphs and various operations on graphs.						
Unit-10:	Applications of graphs with illustrations.						
Unit-11:	Introduction to trees, representation of trees and various operations on queues.						
Unit-12:	Types of trees, their representations, operations and applications.						
Blo	ck-IV: Balanced Search Trees and Tree Structures for Sets of Intervals						
Unit-13	Introduction, Height balanced trees, Weight balanced trees, B-trees, B+ trees, representations, operations and applications.						
Unit-14:	Red-Black trees, Splay trees and Skip lists, representations, operations and applications.						
Unit-15:	Interval trees, Segment trees, Orthogonal range trees, operations and applications.						
Unit-16:	KD-trees, Quad trees and related structures with their applications.						

Reference Books

- 1. Horowitz and Sahni, Fundamentals of Data Structures, W H Freeman & Co (June 1983).
- 2. Tenenbaum, Langsam, Augenstein, Data Structures Using C, PHI.
- 3. Aho, Ullman and Hopcroft, Data Structures and Algorithms, Addison Wesley (January 1983).
- 4. Peter Brass, Advanced Data Structures, Cambridge University Press, New York, 2008.
- 5. Jean-Paul, Tremblay and Sorenson, An introduction to data structures with applications, McGraw-Hill, 2nd Edition.
- 6. Debasis Samantha, Classic Data Structures, PHI Learning Pvt. Ltd. 2nd Edition.

MITDSE-1.5- Unix System Programming (3 Credits)

Course Objective: This course focuses on the principles and techniques of Unix Systems Programming and POSIX standards. Making use of API's to access the resources of the system. Obtaining knowledge regarding file system and file Manipulations, process operations and process management, Daemon Processes, signal management, parallel programming, Interprocess communication and network programming. Client-Server Connection Functions. Block 1:Introduction, Unix Files and API's

Unit-1 :UNIX and ANSI Standards

UNIX and ANSI Standards: The ANSI C Standard, The ANSI/ISO C++ Standards, Difference between ANSI C and C++, The POSIX Standards, The POSIX.1 FIPS Standard, UNIX and POSIXAPIs:ThePOSIX APIs,The X / Open standards The UNIX and POSIX Development Environment, API Common Characteristics.

Unit-2 :UNIX Files and APIs

File Types, The UNIX and POSIX File System, The UNIX and POSIX File Attributes, Inodes in UNIX System V, Application Program Interface to Files, UNIX Kernel Support for Files, Relationship of C StreamPointersandFileDescriptors,DirectoryFiles,HardandSymbolicLinks. UNIX File APIs: General File APIs, File and Record Locking, Directory File APIs, Device File APIs, FIFO File APIs, Symbolic Link File APIs.General File class,Regular file class for regular file.

Block 2:Processes ,Process control

Unit-3 :UNIX Processes and Process Control

The Environment of a UNIX Process: Introduction, main function, Process Termination, Process Attributes, Change Process Attributes, Command-Line Arguments, Environment List, Memory Layout of a C Program, Shared Libraries, Memory Allocation, Environment Variables, setjmp and longjmp Functions, getrlimit, setrlimit Functions, UNIX Kernel Support for Processes

Unit-4 :Process Control

Functions, Race Conditions, exec Functions, Changing User IDs and Group IDs, Interpreter Files, system Function, Process Accounting, User Identification, Process Times, I / O Redirection. Process Relationships : Introduction, Terminal Logins, Network Logins, Process Groups, Sessions, Controlling Terminal, tcgetpgrp and tcsetpgrp Functions, JobControl.

Block 3:Signals, Interprocess Communication.

Unit-5 :Signals and Daemon Processes

Signals: The UNIX Kernel Support for Signals, signal, Signal Mask, sigaction, The SIGCHLD Signal and the waitpid Function, The sigsetjmp and siglongjmp Functions, Kill, Alarm, Interval Timers, POSIX.lb Timers.Daemon Processes: Introduction, Daemon Characteristics, Coding Rules,Error Logging, Client-Server Model.

Unit-6 :Interprocess Communication

InterprocessCommunication:OverviewofIPCMethods,Pipes,popen,pclose Functions,Coprocesses,FIFOs,SystemVIPC,MessageQueues,Semaphores.SharedMemory,Clien t-Server Properties, Stream Pipes, Passing FileDescriptors, An Open Server-Version1, Client-Server Connection Functions.

TextBooks:

 Unix System Programming Using C++ - Terrence Chan, PHI,1999.
 Advanced Programming in the UNIX Environment - W.Richard Stevens, Stephen A. Rago, 3rd Edition, Pearson Education / PHI,2005.

Reference Books:

- 1. Advanced Unix Programming- Marc J. Rochkind, 2nd Edition, Pearson Education, 2005.
- 2. The Design of the UNIX Operating System Maurice.J.Bach, Pearson Education / PHI,1987.
- 3. Unix Internals UreshVahalia, Pearson Education, 2001

MITDSE-1.6: - C Programming (3 Credits)

Block 1:Introduction to Problem Solving

Unit 1- Problem Solving concepts using C:Introduction to C language, C language standards features of C, Program Concept, Characteristics of Programming, Structure of C program, Introduction to C compilers, Creating and compiling C Programs, IDE features of Turbo C compiler, Command line options to compile C program in TC

Unit 2- Fundamentals of C:Keywords, Identifiers, Variables, constants, Scope and life of variables - local and global variable. Data types and sizes, C tokens, keywords and identifiers, Constants, Variables, Data types, Declaration of variables, Assigning values to variables, Defining symbolic constants

Unit 3- Input/Output statements:Basic input/output library functions: Single character input/output i.e.getch(), getchar(), putchar(). Formatted input/output i.e. printf() and scanf(),Library functions - concepts mathematical and character functions

Unit 4–Operators and Expressions: Introduction to Operators, Arithmetic operators, Relational operators, Logical operators, Assignment operators, Increment and decrement operators, Conditional operators, Bitwise operators, Special operators, Arithmetic expressions, Evaluation of expressions. Precedence of arithmetic operators, some computational problems, Type conversions in expressions, Operator precedence and Associativity, Mathematical functions.

Block 2: Control Flow statement, Functions and Arrays

Unit 5 –Control Statements: Introduction to control flow, Statements and Block, If-Else, Else-If, Nesting of If -Else Statement, Else If Ladder, The ?: Operator Switch Statement, Compound Statement, Loop Controls – For, While, Do-While Loops, Break Continue, Exit, Goto Statement and Labels

Unit 6- Storage Classes:Scope of variable, Global and Local variables, Automatic, external, register and static variables

Unit 7- Functions in C:Introduction to functions, The Need of a Function, User Defined and Library Function, Prototype of a Function, Calling of a function, Function Argument, Passing arguments to function, Return Values, Nesting of Function, main(),Command Line Argument, Recursion. Storage Class specifier – Auto, Extern, Static, Register

Unit 8- Arrays and its types:Basis of Arrays, One-dimensional arrays, Two-dimensional arrays, initializing two-dimensional arrays, Multidimensional arrays, Array as function arguments

Block 3 :Strings, Pointers and Structures

Unit 9- Strings: Declaring and initializing string variables, Reading strings from terminal, Writing strings to screen, Arithmetic operations on characters, Putting strings together, Comparison of two strings, String-Handling functions

Unit 10- Introduction to Pointers: Declarations, The& and * Operators, Passing pointers to a function, Operations on pointers, Pointer Arithmetic, Pointers and arrays

Unit 11- Pointers types: Pointer to functions, Function returning pointers. Static and dynamic memory allocation in C, DMA functions: Malloc(), Calloc(), Sizeof(), Free(), Relloc(). Bitwise operator, Preprocessor Directive

Unit 12- Structure and Unions: Functions Structure and Union-Defining Structure, Declaration of Structure Variable, Accessing Structure Members, Nested Structures, Array of Structures, Structure Assignment, Structure as Function Argument, Function That Return Structure, Pointer to Structures, Typedef, Unions, Bit-fields

References

- 1. Balagurusamy E. programming in ANSI C. Tata McGraw-Hill Education; 2002..
- 2. Rajaraman V, ADABALA N. Fundamentals of computers. PHI Learning Pvt. Ltd.; 2014 Dec 15.
- 3. Wang PS. Standard C++: with Object-Oriented Programming. Brooks/Cole Publishing Co.; 2001 Jan 1.
- 4. Ritchie DM, Kernighan BW, Lesk ME. The C programming language. Englewood Cliffs: Prentice Hall; 1988.

MITDSE-1.7: Computer Organization and Architecture

<u>Block 1</u>:Computer Evolution, Machine Instructions, Processor Organization, Basic Arithmetic Operations

Unit 1: Computer Evolution: Brief history of Computer, Classification of Computer, Functional Units, Basic Performance Equation, and Bus Structure.

Unit 2: Machine Instructions: Register Transfer Notation, Assembly Language Notation, Basic Instruction Types, Instruction Execution and straight line sequencing, branching, condition codes, Addressing Modes

Unit 3: Processor Organization: Some Fundamental Concepts: Register Transfers, Performing an Arithmetic or Logic Operation, Fetching a word from Memory, Storing a word in memory; Execution of a complete Instruction: Branch Instructions; Multiple Bus Organization,

Unit 4: Basic Arithmetic Operations: Signed numbers, Binary Arithmetic, 1's and 2's Complements Arithmetic , Integer Addition and Subtraction , IEEE format Floating point representation, Booths Algorithm, Integer Division

Block 2: Memory Organization, I/O Organization-1, I/O Organization-2, Pipelining

Unit 5: Memory Organization: Memory Locations and Addresses, Memory Operations Internal organization of Memory chips, Static Memory, Read-only Memory, Speed, Size and Cost, Memory system considerations, High Speed Memories: Cache Memory, Mapping Function

Unit 6: I/O Organization-1: Access of I/O devices, Interrupts, Direct Memory Access, Buses,

Unit 7: I/O Organization-2: I/O interfaces - Serial port, Parallel port, Standard I/O Interfaces: PCI, SCSCI, USB

Unit 8 :Pipelining : Defining Computer Architecture -Instruction Set Architecture , Pipelining: What Is Pipelining?, The Basics of a RISC Instruction Set, A Simple Implementation of a RISC Instruction Set, The Classic Five-Stage Pipeline for a RISC Processor, The Major Hurdle of Pipelining—Pipeline Hazards.

Block 3: Multicore computing

UNIT – 9 : Introduction to Computer Architecture, Four decades of Computing, Flynns taxonomy of Computer Architecture, SIMD Architecture, MIMD Architecture, Interconnection networks

UNIT – 10 : Multiprocessors Interconnection Networks Interconnection Networks Taxonomy Bus-Based Dynamic Interconnection Networks Switch-Based Interconnection Networks Static Interconnection Networks Analysis and Performance Metrics

UNIT – 11: Computational Models An Argument for Parallel Architectures Interconnection Networks Performance Issues Scalability of Parallel Architecture

UNIT – 12: Shared Memory Architecture Classification of Shared Memory Systems Bus-Based Symmetric Multiprocessors Basic Cache Coherency Methods Snooping Protocols Directory Based Protocols Shared Memory Programming

Text books:

1. Computer Organization, Carl Hamacher, Zvonko Vranesic, Safwat Zaky, 5th Edition, TMH,2002

2. Computer architecture: A quantitative approach, John L. Hennessy and David. A. Patterson, 4th edition, Elsevier

Reference books:

1. Computer Organization & Architecture, William Stallings, 9thEdition, PHI, 2015

MITDSE-1.8: Operating System (3 Credits)

The main objective of operating system is to make the computer system convenient to use in an efficient manner. This book mainly describes the basics of operating system with services, structure, operations along with different functionalities to manage resources. Process management, memory management, file management with secondary storage structure are briefly explained with Linux as a case study. At the end of study students will be able to demonstrate the need for OS, apply suitable techniques for management of different resources, use processor, memory, storage, file system commands and realize the different concepts of OS in platform of usage through case studies.

<u>Block 1:</u> Introduction to operating system. structures, Process Management and Multi threading

UNIT – 1

Introduction to Operating Systems: What operating systems do; Computer System organization; Computer System architecture; Operating System structure; Operating System operations; Process management; Memory management; Storage management; Protection and security; Distributed system; Special-purpose systems; Computing environments.

UNIT - 2

Operating System Structures: Operating System Services; User - Operating System interface; System calls; Types of system calls; System programs; Operating System design and implementation; Operating System structure; Virtual machines; Operating System generation; System boot.

UNIT – 3

Process Management: Process concept; Process scheduling; Operations on processes; Interprocess communication.

UNIT – 4

Multi-Threaded Programming: Overview; Multithreading models; Thread Libraries; Threading issues.

<u>Block 2:</u> Process scheduling, synchronization, deadlock and Memory management UNIT – 5

Process Scheduling: Basic concepts; Scheduling criteria; Scheduling algorithms; Multiple-Processor scheduling; Thread scheduling.

UNIT – 6

Process Synchronization : Synchronization: The Critical section problem; Peterson's solution; Synchronization hardware; Semaphores; Classical problems of synchronization; Monitors.

UNIT – 7

Deadlocks: Deadlocks: System model; Deadlock characterization; Methods for handling deadlocks; Deadlock prevention; Deadlock avoidance; Deadlock detection and recovery from deadlock.

UNIT – 8

Memory Management: Memory Management Strategies: Background; Swapping; Contiguous memory allocation; Paging; Structure of page table; Segmentation.

Block 3 : Virtual Memory, File system, Secondary storage with Linux as case study

UNIT – 9

Virtual Memory Management: Background; Demand paging; Copy-on-write; Page replacement; Allocation of frames; Thrashing. **UNIT – 10** **File System, Implementation of File System:** File System:File concept; Access methods; Directory structure; File system mounting;Implementing File System: File system structure; File system implementation; Directory implementation; Allocation methods; Free space management **UNIT – 11**

Secondary Storage Structures, Protection : Mass storage structures; Disk structure; Disk attachment; Disk scheduling; Disk management; Swap space management.

UNIT – 12

Case Study: The Linux Operating System: Linux history; Design principles; Kernel modules; Process management; Scheduling; Memory management; File systems, Input and output; Interprocess communication.

Text Books:

1.AbrahamSilberschatz, Peter Baer Galvin, Greg Gagne: Operating System Principles, 7th edition, Wiley India, 2006.

(Listed topics only from Chapters 1 to 12, 17, 21)

Reference Books:

- 1 D.M Dhamdhere: Operating systems A concept based Approach, 2nd Edition, Tata McGraw-Hill, 2002.
- 2 P.C.P. Bhatt: Operating Systems, 2nd Edition, PHI, 2006.
- 3 Harvey M Deital: Operating systems, 3rd Edition, Pearson Education, 1990.

Semester II

MITDSC-2.1 Advance DBMS

Block 1: Introduction to Databases

Unit 1 - Introduction, Characteristics of database approach, Advantages of using the DBMS approach, History of database applications.

Unit 2 - Data Models, Schemas, and Instances. Three schema architecture and data independence, database languages, and interfaces, The Database System environment.

Unit 3 - Entity types, Entity sets, attributes, roles, and structural constraints, Weak entity types,

Unit 4 - ER diagrams, examples, Specialization and Generalization.

Block 2: Normalization and Advance Queries

Unit 5 - Functional Dependency, Anomalies in a Database, The normalization process: Conversion to first normal form, Conversion to second normal form, Conversion to third normal form,

Unit 6 - The Boyce-code normal form(BCNF), Fourth Normal form and fifth normal form, More complex SQL retrieval queries, Specifying constraints as assertions and action triggers, Views in SQL, Schema change statements in SQL.

Unit 7 - Accessing databases from applications, An introduction to JDBC, JDBC classes and interfaces, SQLJ, Stored procedures, Case study: The internet Bookshop.

Unit 8 - The Three-Tier application architecture, The presentation layer, The Middle Tier

Block 3: Relational Model joins and Views

Unit 9 - Relational Model Concepts, Relational Model Constraints and relational database schemas, Update operations, transactions, and dealing with constraint violations.

Unit 10 - Equi Joins, Non Equi Joins, Self Joins, Outer Joins. Using Set Operators- Union, Intersect; Minus.

Unit 11 - Views and Indexes: Definition and Advantages Views, Creating and Altering Views, Using Views, Indexed Views, Definition and Advantages of Indexes.

Unit 12 - Database Objects: Sequences, Creating Sequences; Referencing Sequences; Altering a Sequence; Dropping a Sequence

Block 4: Transaction processing and PL/SQL

Unit 13 - Introduction to Transaction Processing, Transaction and System concepts, Desirable properties of Transactions, Characterizing schedules based on recoverability,

Unit 14 - Characterizing schedules based on Serializability, Transaction support in SQL.

Unit 15 - Introduction to PL/SQL.: Advantage of PL/SQL; The Generic PL/SQL Block; The Declaration Section; The Begin Section; The End Section; PL/SQL Data types. Logical Comparison;

Unit 16 - Conditional Control in PL/SQL; Iterative Control;

References

- 1. Fundamentals of Database Systems, Ramez Elmasri and Shamkant B. Navathe, 7th Edition, 2017, Pearson.
- 2. Database management systems, Ramakrishnan, and Gehrke, 3rd Edition, 2014, McGraw Hill
- 3. An introduction to Database Systems : Bipin C. Desai, Galgotia Poblications Pvt. Ltd.
- 4. Ivan Bayross : SQL,PL/SQL The programming language of Oracle, 3rd revised edition, BPB Publications

MITDSC-2.2 Analysis and Design of Algorithms

Block 1 Basics of Algorithms and Mathematics: What is an algorithm?, Mathematics for Algorithmic Sets, Functions and Relations, Vectors and Matrices, Linear Inequalities and Linear Equations. Analysis of Algorithm: The efficient algorithm, Average, Best and worst case analysis, Amortized analysis, Asymptotic Notations, Analyzing control statement, Loop invariant and the correctness of the algorithm, Sorting Algorithms and analysis: Bubble sort, Selection sort, Insertion sort, Shell sort Heap sort, Sorting in linear time : Bucket sort, Radix sort and Counting sort 08 10

Block 2 Divide and Conquer Algorithm: Introduction, Recurrence and different methods to solve recurrence, Multiplying large Integers Problem, Problem Solving using divide and conquer algorithm - Binary Search, Max-Min problem, Sorting (Merge Sort, Quick Sort), Matrix Multiplication, Exponential. Dynamic Programming: Introduction, The Principle of Optimality, Problem Solving using Dynamic Programming – Calculating the Binomial Coefficient, Making Change Problem, Assembly Line-Scheduling, Knapsack problem, All Points Shortest path, Matrix chain multiplication, Longest Common Subsequence.

Block 3 :Greedy Algorithm General Characteristics of greedy algorithms, Problem solving using Greedy Algorithm - Activity selection problem, Elements of Greedy Strategy, Minimum Spanning trees (Kruskal's algorithm, Prim's algorithm), Graphs: Shortest paths, The Knapsack Problem, Job Scheduling Problem, Huffman code.

Block 4 Exploring Graphs: An introduction using graphs and games, Undirected Graph, Directed Graph, Traversing Graphs, Depth First Search, Breath First Search, Topological sort, Connected

components, 04 10 7 Backtracking and Branch and Bound: Introduction, The Eight queens problem, Knapsack problem, Travelling Salesman problem, Minimax principle 03 5 8 String Matching: Introduction, The naive string matching algorithm, The Rabin-Karp algorithm, String Matching with finite automata, The Knuth-Morris-Pratt algorithm. 03 8 9 Introduction to NP-Completeness: The class P and NP, Polynomial reduction, NP- Completeness Problem, NP-Hard Problems. Travelling Salesman problem, Hamiltonian problem, Approximation algorithms

Reference Books:

1. Introduction to Algorithms, Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein, PHI.

2. Fundamental of Algorithms by Gills Brassard, Paul Bratley, PHI.

3. Introduction to Design and Analysis of Algorithms, Anany Levitin, Pearson.

MITDSC-2.5 OOPS with JAVA

Block 1: Introduction to Object Programming and Basics of Java

Unit-1: Introduction, Object oriented paradigm, OOPs Concepts, Characteristics of object oriented programming, Applications of OOPs, Benefits, Object oriented languages

Unit-2 : Introduction to Java – History, Features of Java, Java and internet, JDK, Java API, General structure of java program, character set, Java tokens, Statements in java, JVM, Command line arguments

Unit-3: Data types, Constants - Types of constants, Variables, Operators in Java,

Unit-4: Control structures – Decision making statements – If statement, different forms of If statements, Switch statement, Looping statements – For, While and do statements, Nested loops and Labelled loop

Block 2 : Objects, Classes and Interface

Unit-5: Classes and Object – Defining a class, Object creation, Accessing class members, Constructors, Static members, Method overloading, Abstract methods and class, Access specifiers, Final methods and variables, Inheritance, Method overriding

Unit-6: Interface – Defining interface Extending and implementing interface

Unit-7: Array, Vectors and String – Creating and working with array, Vector class and methods, String class and methods, String buffer class and methods

Unit-8 : Packages – Introduction, API packages, Creating and accessing package, Adding and hiding classes to package

Block-3: Mutlithreading, Exception handling and Applets

Unit-9: Introduction to threads, Creating a thread, Thread class, Thread methods, Thread life cycle, Thread priority

Unit-10: Exception handling – Errors, Types of error, Exception – Try and catch block, Multiple catch blocks, Throwing user defined exception, Writing and executing applets, Applet life cycle, Applet tab, Adding applet to html file, Accepting user inputs

Unit-11: Graphics application – Graphic class, Drawing different geometric shapes, Drawing line and bar charts

Unit-12: Stream class – Different types of stream class, Introduction to files – Creating and working with files, Random access files

Reference Books

- 1. Programming with Java E. Balagurusamy, Tata McGraw Hill, 6th Edition
- 2. Java The Complete Reference Herbert Schildt, McGraw Hill, Tenth Edition
- 3. Object Oriented Programming with Java M.T. Somashekara, D.S Guru, K.S.Manjunatha, PHI, First Edition
- 4. Core Java An Integrated Approach R. Nageswara Rao, Dreamtech press, First Editio

MITDSC-2.6 Computer Graphics

Block-1

Introduction – applications of computer graphics, operations of computer graphics, graphics software

packages. Graphical input – output devices- graphical input devices, graphical output devices, raster scan video principles- raster scan monitors, color raster scan systems, plasma panel display, LCD panels, hard copy raster devices. Random scan devices- monitor tube displays, plotters.

Scan conversion – scan conversion methods, polynomial method for line, polynomial method for circle,

DDA algorithm for line, circle and ellipse, Bresenham's algorithm for line drwing and circle. Midpoint

methods for line and circle, problems of scan conversion.

Block -2

Scan conversion for solids- solid areas or polygons, inside-outside test – odd even method, winding number method. Solid area filling algorithms- boundary fill algorithm, scan line fill algorithm, scan line seed fill algorithm, ordered edge list algorithm. 2D geometrical transformations – basic transformations- translation, rotation, scaling, homogeneous coordinate system – transformations in homogeneous notation, inverse of basic transformations, scaling about a reference point, rotation about an arbitrary point. Other transformations – reflection about any arbitrary line, shearing, combined transformation- computational efficiency, visual reality, inverse of combines' transformations. 3D geometrical transformations- basic 3D transformation-3D translation, 3D scaling. 3D rotation, rotation about an arbitrary axis in space, other 3D transformations- 3D reflection, reflection about any

arbitrary plane, 3D shearing.

Block -3

Projection – introduction, parallel projection- orthographic projection, axonometric projection, oblique projection, perspective projection – standard perspective projection, vanishing points. Image formation inside a camera. 2D viewing and clipping- windows and viewports, viewing transformation, clipping of lines in 2D- cohensutherland clipping algorithm, midpoint subdivision method, polygon clipping – Sutherland – hogman polygon clipping. Curve design – classical techniques for designing curves and object surfaces, modern curve representations.

Reference Book:

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

MITDSC-2.7 Software Engineering

Block 1: Introduction

Unit 1: Introduction to Software Engineering: The role of software engineering in system design, software products, emergence of software engineering, notable changes in software development practices, the changing nature of software, the software engineering challenges

Unit 2: Software process: Desired characteristics of software process, the software life

cycle, software development process models, comparison of process models

Unit 3: Software Requirements: Requirement analysis and specification need for SRS, characteristics of SRS, organization of SRS document. Techniques for representing complex logic, functional specification with Use Cases, formal system development techniques

Unit 4: System models: Data-flow models, semantic data models, object models, data dictionaries

Block 2: Software Project Management

Unit 5: Software Project Management: Main objectives of SPM, responsibility of software project managers, project planning, structure of software project management document

Unit 6: Project Estimation Techniques: Project size estimation metrics, project estimation techniques (empirical, heuristic, analytical), Halstead's software science

Unit 7: Project scheduling and staffing: work break down structure, Gantt charts, PERT charts, organization and team structures, attributes of a good software engineer

Unit 8: Risk management plan and configuration management plan: Risk management activities, Risk assessment, Risk containment, Risk leverage, Risk related to schedule slippage, Software configuration management

Block 3: Software Design Concepts

Unit 9: Software design concepts: Introduction, cohesion and coupling, software design approaches, design principles, module level concepts

Unit 10: Function-oriented software design: Overview of the structured analysis and structured design methodology, data flow diagrams, extending DFD to real time systems, structure design Unit 11: Object oriented software design concepts: Overview UML object oriented design

Unit 11: Object-oriented software design concepts: Overview, UML, object-oriented design methodology, OOD metrics and goodness criteria

Unit 12: User-interface design: Characteristics, basic concepts, command language based interface, menu-based interface, direct manipulation interfaces, windowing systems, types of widgets, overview of X window

Block 4: Coding and Testing, Software Reliability and Quality, Maintenance and CASE tools

Unit13: Coding and Testing: Coding standards, guidelines, code walkthroughs, code inspections, software documentation, unit testing, black box testing, white box testing

Unit 14: Debugging: approaches and guidelines, program analysis tools, integration testing, system testing, general issues associated with testing

Unit 15: Software reliability: metrics, software reliability specification, reliability growth modeling, software quality factors, quality metrics, software quality management system

Unit 16: Software maintenance: Maintenance process, software reverse engineering, software maintenance process models, estimation of maintenance costs, maintainability measurement.

CASE and its scope, CASE support in software life cycle, characteristics of CASE tools, architecture of CASE environment

References

- 1. Sommerville I. Software Engineering. International computer science series. ed: Addison Wesley. 2004 Feb.
- 2. Jalote P. An integrated approach to Software Engineering. Springer Science & Business Media; 2012 Dec 6.
- 3. Mall R. Fundamentals of software engineering. PHI Learning Pvt. Ltd.; 2014 Apr 2.
- 4. Pressman RS. Software engineering: a practitioner's approach. Palgrave Macmillan; 2005.
- **5.** Ghezzi C, Jazayeri M, Mandrioli D. Fundamentals of software engineering. Prentice Hall PTR; 2002 Mar 1.

MITDSC-2.8 Distributed Systems

Block 1: Introduction

Unit 1: Introduction to Distributed Systems: Examples of distributed systems, Resource sharing and challenges

Unit 2: System Models: Architecture Models, Fundamental Models

Unit 3: Architecture of distributed systems: Data access architecture, Execution architecturevertical sluice-two-tiered client/server, stored procedure, Three tiered architecture

Unit4: Networking and Internetworking: Types of network, Internet protocols

Block 2 : Synchronization and Communication

Unit 5: Interprocess communication: The API for the internet protocols

Unit 6: External data representation: External data representation and marshalling, Client server communication, Group communication

Unit 7: Distributed objects and remote invocation: Communication between distributed objects Unit 8: Remote procedure call, Events and notifications: RMI, Events and Notification

Block 3: Operating System Support and Security

Unit 9: Operating Systems: Operating system layer, Protection, Process and threads

Unit 10: Communication and invocation: Operating system architecture

Unit 11: Overview of security techniques: Cryptographic algorithms

Unit 12: Digital signatures: Cryptography pragmatics

Block 4: Distributed File Systems and Name Services

Unit 13: File service architecture: case study, Enhancement and further development

Unit 14: Name Services: Domain name system, directory services, global name services

Unit 15: Peer-to-Peer systems: routing overlays, application and case study

Unit 16: Time and Clocks: Time and global states, clocks, events and process states, synchronizing physical clocks

References

- 1. Coulouris GF, Dollimore J, Kindberg T. Distributed systems: concepts and design. pearson education; 2005.
- 2. Tanenbaum AS, Van Steen M. Distributed systems: principles and paradigms. Prentice-Hall; 2007.

Semester III

MITDSC-3.1 Advanced Java

Block 1 : Object Oriented Programming Class Fundamentals , Object & Object reference , Object Life time & Garbage Collection, Creating and Operating Objects , Constructor &

initialization code block, Access Control, Modifiers, methods Nested, Inner Class & Anonymous Classes, Abstract Class & Interfaces Defining Methods, Argument Passing Mechanism, Method Overloading, Recursion, Dealing with Static Members, Finalize() Method, Native Method. Use of "this " reference, Use of Modifiers with Classes & Methods, Design of Accessors and Mutator Methods Cloning Objects, shallow and deep

cloning, Generic Class Types.

Extending Classes and Inheritance Use and Benefits of Inheritance in OOP, Types of Inheritance in Java, Inheriting Data members and Methods, Role of Constructors in

inheritance, Overriding Super Class Methods, Use of "super", Polymorphism in inheritance ,Type Compatibility and Conversion Implementing interfaces. Package

Organizing Classes and Interfaces in Packages, Package as Access Protection, Defining Package, CLASSPATH Setting for Packages, Making JAR Files for Library Packages Import and Static Import Naming Convention For Packages.

Block 2 : Exception Handling:

The Idea behind Exception ,Exceptions & Errors ,Types of Exception ,Control Flow In Exceptions, JVM reaction to Exceptions ,Use of try, catch, finally, throw, throws in Exception Handling ,In-built and User Defined Exceptions, Checked and Un-Checked Exceptions. Array & String : Defining an Array, Initializing & Accessing Array, Multi –Dimensional Array, Operation on String, Mutable & Immutable String, Using Collection Bases Loop for String, Tokenizing a String, Creating Strings using StringBuffer .

Thread :

Understanding Threads, Needs of Multi-Threaded Programming ,Thread Life-Cycle, Thread Priorities ,Synchronizing Threads, Inter Communication of Threads ,Critical Factor in Thread – DeadLock,

A Collection of Useful Classes

Utility Methods for Arrays ,Observable and Observer Objects , Date & Times ,Using Scanner Regular Expression, Input/Output Operation in Java(java.io Package),Streams and the new I/O Capabilities ,Understanding Streams, The Classes for Input and Output, The Standard Streams, Working with File Object, File I/O Basics, Reading and Writing to Files, Buffer and Buffer Management, Read/Write Operations with File Channel, Serializing Objects .

Block 3: GUI Programming

Designing Graphical User Interfaces in Java, Components and Containers, Basics of Components, Using Containers, Layout Managers, AWT Components, Adding a Menu to Window, Extending GUI Features Using Swing Components, Java Utilities (java.util Package) The Collection Framework : Collections of Objects , Collection Types, Sets , Sequence, Map, Understanding Hashing, Use of ArrayList & Vector.

Event Handling

Event-Driven Programming in Java, Event- Handling Process, Event Handling Mechanism, The Delegation Model of Event Handling, Event Classes, Event Sources, Event Listeners, Adapter Classes as Helper Classes in Event Handling. Database

Block 4: Programming using JDBC

Introduction to JDBC, JDBC Drivers & Architecture, CURD operation Using JDBC, Connecting to non-conventional Databases. Java Server Technologies

Servlet Web Application Basics, Architecture and challenges of Web Application, Introduction to servlet, Servlet life cycle, Developing and Deploying Servlets, Exploring Deployment, Descriptor (web.xml), Handling Request and Response.

MITDSC-3.2 Computer Networks

Block 1:Introduction, Physical Layer, Data Link Layer, Network Layer and Logical Addressing

Unit 1: Introduction to computer network: topology, applications of networks, LAN, MAN, WAN, OSI model

Unit 2: Physical layer : Analog and Digital signals, Transmission impairment, Digital to Digital conversion, Analog to Digital conversion, Analog to Analog conversion, Digital to Analog conversion, Transmission media

Unit 3: Data link layer: error detection, Hamming code, CRC, checksum

Unit 4: Network layer: The OSI Model-Layered Architecture; TCP/IP Model; Logical Addressing: Ipv4 Addresses – Address Space, Notations, Classful and Classless addressing, NAT; IPv6 Addresses – Structure, Address space

Block 2:Internet Protocol, Transport Layer, UDP

Unit 5: Internet protocol: Internetworking; IPv4 – Datagram, Fragmentation, Checksum Unit 6: Address Mapping : IPv6 – Advantages, Packet formats, Extension headers; Transitionform IPv4 to IPv6

Unit 7: IGMP : ICMP, FORWARDING, ROUTING: Address Mapping; ICMP – Types, Message Format, Error reporting, Query. IGMP – Group Management, IGMPMessages, Format, IGMP Operation, Encapsulation; Forwarding; Unicast Routing Protocols; Multicast Routing Protocols

Unit 8:Transport layer and User Datagram: Introduction: Process to Process Delivery; UDP – Ports for UDP, User Datagram, Checksum, UDP operation, Use of UDP; TCP – Services, Features, Segment, Connection, Flow, Error

Block 3: Application Layer, Remote Login, Network Management System and Multimedia Streaming

Unit 9: Congestion Control; SCTP –Services, Features, Format, Congestion control and qos: Data Traffic; Congestion; Congestion Control – Open Loop, Closed Loop; Two Examples; Quality of Service(QOS); Techniques to improve QOS – Scheduling, Traffic shaping, Resource Reservation, Admission Control.

Unit 10: Domain Name System: Application layer, Namespace, DNS, Distribution of Namespace, DNS in the Internet, Resolution

Unit 11: Electronic Mail : Remote Logging; Electronic Mail; File Transfer; WWW and HTTP, Unit 12 :Network management System and Multimedia :SNMP – Concept, SNMP, Multimedia – Streaming stored Audio/Video; Streaming Live Audio/Video; RTP; VOIP

References:

1. Forouzan AB. Data communications & networking (sie). Tata McGraw-Hill Education; 2006.

2. Data and Computer Communication - William Stallings, Pearson Education, 8th Edition, 2007.

3. Computer Networks: A Systems Approach - Larry L. Peterson and Bruce S. David, Elsevier, 4th Edition, 2007.

MITDSE-3.5 Data Mining

Block 1

Data Mining: Data–Types of Data–, Data Mining Functionalities– Interestingness Patterns– Classification of Data Mining systems– Data mining Task primitives –Integration of Data mining system with a Data warehouse–Major issues in Data Mining–Data Preprocessing.

Block 2

Association Rule Mining: Mining Frequent Patterns–Associations and correlations – Mining Methods– Mining Various kinds of Association Rules– Correlation Analysis– Constraint based Association mining. Graph Pattern Mining, SPM.

Classification: Classification and Prediction – Basic concepts–Decision tree induction–Bayesian classification, Rule–based classification, Lazy learner.

Block 3

Clustering and Applications: Cluster analysis–Types of Data in Cluster Analysis–Categorization of Major Clustering Methods– Partitioning Methods, Hierarchical Methods– Density–Based Methods, Grid–Based Methods, Outlier Analysis.

Block 4

Advanced Concepts: Basic concepts in Mining data streams-Mining Time-series data-Mining sequence patterns in Transactional databases- Mining Object- Spatial- Multimedia-Text and Web data - Spatial Data mining- Multimedia Data mining-Text Mining- Mining the World Wide Web.

TEXT BOOKS:

1. Data Mining – Concepts and Techniques – Jiawei Han & Micheline Kamber, 3rd Edition Elsevier.

2. Data Mining Introductory and Advanced topics – Margaret H Dunham, PEA. REFERENCE BOOK:

1. Ian H. Witten and Eibe Frank, Data Mining: Practical Machine Learning Tools and Techniques (Second Edition), Morgan Kaufmann, 2005.

Block 1

MITDSE-3.6 User Interface Design

The User Interface-Introduction, Overview, The importance of user interface – Defining the user interface, The importance of Good design, Characteristics of graphical and web user interfaces, Principles of user interface design Textbook 1: Ch. 1,2 RBT: L1, L2

Block 2

The User Interface Design process- Obstacles, Usability, Human characteristics in Design, Human Interaction speeds, Business functions-Business definition and requirement analysis, Basic business functions, Design standards. Textbook 1: Part-2 RBT: L1, L2

Block 3

Windows – Characteristics, Components of window, Window presentation styles, Types of window, Window management, Organizing window functions, Window operations, Web systems, Characteristics of device based controls. Textbook 1: Part-2 RBT: L1, L2

Block 4

Screen based controls- Operable control, Text control, Selection control, Custom control, Presentation control, Windows Tests-prototypes, kinds of tests. Textbook 1: Part-2 RBT: L1, L2 Textbooks:

 Wilbert O. Galitz, The Essential Guide to User Interface Design, John Wiley &Sons, Second Edition 2002

MITDSE-3.7 Python Programming

Block 1

Basics of Python: Python Installation and Working of it, get familiar with python variables and data types, Operator understanding and its usage, detail study of python blocks, Structure Types and mutability: Hands on with conditional blocks using if, else and elif, Hands on examples and study of looping with range, list and dictionaries. hands on to organize python code with function, modular approach in python.

Block 2

Exception, Testing and Debugging: Handling if exceptions to handle the code cracks, handling and helping file operations, coding with the exceptional handling and testing Anonymous method, Properties, Indexers, Exception Handling

Block 3

Classes and OOP Concepts: Procedural and Object-Oriented Programming, Classes and working with instances, Method overloading, Polymorphism, importing internal module as well as external modules in the code Packages understanding and their usage, hands on with Lamba function in python coding with the use of functions, modules and external packages Block 4

Algorithm and Data Structure: Stack, Queue, Tree, ordered list, Introduction to Recursion, Divide and Conquer Strategy, Greedy Strategy, Graph Algorithms.

References:

1. Starting Out with Python (2009) Pearson, Tonny Gaddis

2. Beginning Pyhton Wrox Publication Peter Norton, Alex Samuel

3. Python Algorithms Apress, Magnus Liet Hetland,

MITDSE-3.8 Digital Image Processing

Block 1

Introduction – Image Processing, Applications, Stages, Architecture of Image Processing System, Sampling and Quantization, Pixel Neighborhood and Connectivity, Distance Measures.

Block 2

Image Enhancement – Enhancement in the Spatial Domain, Transformation Functions, Histogram Processing – Equalization, Matching, Local Histogram Processing, Spatial Domain Filters – Smoothing and Sharpening Filters, Enhancement in the Frequency Domain - Fourier Transforms, One-D and Two-D discrete Fourier Transforms, Lowpass and Highpass Frequency Domain Filters – Ideal, Butterworth and Gaussian, Fast Fourier Transforms

Block 3

Image Restoration – Image Degradation and Restoration Model, Noise Properties, Noise

Probability Density Junction, Noise Reduction using Spatial and Frequency Domain Filtering,

Color Image Processing – Color Models, Pseudo Color Image Processing

Block 4

Image Morphology – Fundamentals, Erosion and Dilation, Opening and Closing, Hit–or-Miss Transformation, Basic Morphological Algorithms

Image Segmentation – Point, Line and Edge detection, Image thresholding, Region Based

Segmentation – Region Growing, Merging and Splitting

Representation – Chain Code, Polygon Approximation, Boundary Descriptors – Shape Number, Regional

Descriptor

Reference Book:

1. Digital Image Processing, Rafael C Gonzalez, Richard E Woods, Pearson

2. Digital Image Processing - Anil K Jain

3. Image analysis and Pattern recognition by Earl Gose, Richard Johnsonbaugh, Steve Jost, PHI

MITSEC-1 Web Technology 1

Block 1 : Overview

Unit 1: Web Fundamentals: Fundamentals of Web, Internet, WWW, Web Browsers, and Web Servers; URLs

Unit 2: Web Security: MIME;HTTP; Security; The Web Programmers Toolbox

Unit3: Evolution of HTML: XHTML, Origins and evolution of HTML and XHTML; Basic syntax; StandardXHTML document structure

Unit 4: Hypertext and Markup Languages: Basic Text markup.Images; Hypertext Links; Lists; Tables; Forms; Frames; Syntactic differences between HTML and XHTML

Block 2 :Sheet properties

Unit5: Style Sheet :Introduction; Levels of style sheets; Style specification formats; Selector forms; Property value forms

Unit6: Web Page properties and formatting :Font properties; List properties; Color; Alignment of text; The Box model; Background images

Unit7: Tags: The and <div> tags; examples

Unit 8: Conflict resolution: Conflict resolution examples

Block 3 : Overview of Javascript

Unit 9:Javascript :Overview of Javascript; Object orientation and Javascript; General syntactic characteristics; Primitives, operations, and expressions

Unit 10:Fundamental of Programming :Screen output and keyboard input; Control statements; Object creation and modification; Arrays

Unit 11: Advanced JAVA Script: Functions; Constructor; Pattern matching using regular expressions; Errors in scripts; Examples

Unit 12:XML: Syntax; Document structure; Document Type definitions; Namespaces; XML schemas; Displaying raw XML documents; Displaying XML documents with CSS

Block 4 : PERL, CGI and Servlets

Unit 13: Perl and CGI Programming: Perl, CGI Programming, Origins and uses of Perl; Scalars and their operations; Assignment statements and simple input and output

Unit 14: Perl and CGI ProgrammingLanguage Basics: Control statements; Fundamentals of arrays; Hashes; References; Functions

Unit 15: Advanced Programming in Perl and CGI Programming: Pattern matching; File input and output; Examples. The Common Gateway Interface CGI linkage; Query string format; CGI.pm module; A survey example; Cookies

Unit 16: Servlets and Java Server Pages: Overview of Servlets; Servlet details; A survey example; Storing information on Clients; Java Server Pages

References

- 1. Sebesta RW. Programming the world wide web. Pearson Education India; 2013.
- 2. Deitel HM, Deitel PJ, Nieto TR. Internet &world wide web. Prentice Hall; 2002.
- 3. 2Bates C. WEB PROGRAMMING: BUILDING INTERNET APPLICATIONS. John Wiley & Sons; 2007 Jun 1.
- 4. Bai X, Zak D, Ekedahl M, Farrell J, Gosselin D. The web warrior guide to web programming. Course Technology Ptr; 2003 Mar 1.

MITDSC-4.1 Machine Learning

Block-1 Introduction, Machine learning definition, importance of machine learning, machine learning framework, types of machine learning, relation to other fields, examples of machine learning applications, designing a learning system, issues in machine learning.

Block -2 Introduction to Supervised Learning, Decision tree based classifier, Bayesian theory based classifier, Neural network based classifier, Nearest neighbour classifier, Support vector classifier, performance evaluation.

Block -3 Introduction to Unsupervised Learning, Clustering methods, Criteria functions for clustering, Similarity measures, Component analysis, Low dimensional analysis and multidimensional scaling.

Block -4 Additional topics, Reinforcement learning, Genetic algorithms, Analytical learning, Ensemble of classifiers, Design and analysis of machine learning experiments. Reference Books

• Machine Learning: a Probabilistic Perspective by Kevin Patrick Murphy, MIT Press, March 2014.

• Introduction to Machine Learning by Alex Smola and S.V.N. Vishwanathan, Cambridge University Press.

• Understanding Machine Learning: From Theory to Algorithms by Shai Shalev-Shwartz and Shai BenDavid Published 2014 by Cambridge University Press.

MITDSC-4.2 Internet of Things

Block–1 Introduction to IoT: Definition and Characteristics, Physical Design of IoT, Logical Design of IoT, IoT Enabling Technologies. M2M and IoT: Introduction to M2M, Difference between IoT and M2M, SDN and NFV for IoT. IoT Protocols: IEEE 802.15.4, BACNet Protocol, Modbus, KNX, Zigbee Architecture, 6LoWPAN, RPL

Block–2 Developing Internet of Things: IoT Platforms Design Methodology, Python packages of Interest for IoT, IoT Physical Devices and Endpoints IoT and Cloud: IoT Physical Servers and Cloud Offerings, IoTTools:Chef,Puppet

Block–3 Data Analytics for IoT: Big Data Platforms for the IoT, Hadoop Map Reduce for Batch Data Analysis, ApacheOozie Workflows for IoT Data Analysis, In-Memory Analytics using Apache Spark, Apache Storm for Real Time Data Analysis, Sustainability Data and Analytics in Cloud based M2M Systems, Fog Computing: A Platform for IoT and Analytics

Block–4 Domain Specific IoTs: Home Automation, Cities, Environment, Energy, Retail, Logistics, Agriculture, Industry, Health and Lifestyle, Virtual Reality Internet Advertising, Intelligent Transportation Systems, Health Information System: Genomics Driven Wellness Tracking and Management System (Go-WELL)

Reference Books :

1. ArshdeepBahga, Vijay Madisetti, Internet of Things: A Hands-on Approach, 2015, 1st Edition, Universities Press.

2. Olivier Hersent, David Boswarthick, Omar Elloumi, The Internet of Things – Key applications and Protocols, 2012, Wiley Publication.

3. Honbo Zhou, The Internet of Things in the Cloud: A Middleware Perspective, 2012, CRC Press.

4. Dieter Uckelmann; Mark Harrison; Florian Michahelles Architecting the Internet of Things, 2011, Springer.

MITDSE-4.5 Cloud Computing

Block 1: Introduction: Cloud models-Evolution of Cloud Computing –System Models for Distributed and Cloud Computing – NIST Cloud Computing Reference Architecture – Ondemand Provisioning – Elasticity in Cloud – deployment models – service models-cloud service providers Virtualization: Basics of Virtualization -Types of Virtualization – Implementation Levels of Virtualization, Virtualization Structures - Tools and Mechanisms – resource sharing and resource pooling Desktop Virtualization – Server Virtualization.

Block 2: Cloud Infrastructure: Architectural Design of Compute and Storage Clouds – Layered Cloud Architecture Development – Design Challenges - Inter Cloud Resource Management – Resource Provisioning and Platform Deployment – Global Exchange of Cloud Resources.

Block 3 Programming Model: Parallel and Distributed Programming Paradigms – Map Reduce, Twister and Iterative Map Reduce – Hadoop Library from Apache – Mapping Applications -Programming Support. Security in the Cloud: Security Overview – Cloud Security Challenges – Access control mechanisms – Security Governance – Risk Management – Security Monitoring – Security Architecture Design – Virtual Machine Security.

Block 4: Enterprise Cloud-Based High Performance Computing (HPC): Overview of High Performance Computing (HPC) on Cloud-Enterprises HPC applications (high-performance grid computing, high-performance big data computing/analytics, high performance reasoning)-HPC Cloud vendor solutions: compute grids (Windows HPC, Hadoop, Platform Symphony ,Gridgain), data grids (Oracle coherence, IBM Object grid, Cassendra, HBase, Memcached, HPChardware (GPGPU, SSD, Infiniband, Non-blocking switches) Setting up own Cloud:Cloud setup-How to build private cloud using open source tools - Understanding various cloud plugins-Setting up your own cloud environment-Auto provisioningCustom images-Integrating tools like Nagio-Integration of Public and Private cloud.

Reference Books:

1. Kai Hwang, Geoffrey C Fox, Jack G Dongarra, Distributed and Cloud Computing, From

2. Parallel Processing to the Internet of Things, 2012, 1st Edition, Morgan Kaufmann Publishers.

3. Katarina Stanoevska-Slabeva, Thomas Wozniak, SantiRistol, Grid and Cloud Computing – A usiness Perspective on Technology and Applications, 2010, Springer.

4. John W.Rittinghouse and James F.Ransome, Cloud Computing: Implementation, Management, and Security", 2010, CRC Press.

MITDSE-4.6 Information and Network Security

Block 1

Symmetric Cipher Model, Cryptography, Cryptanalysis and Attacks; Substitution and Transposition techniques Stream ciphers and block ciphers, Block Cipher structure, Data Encryption standard (DES) with example, strength of DES, Designprinciples of block cipher, AES with structure, its transformationfunctions, key expansion, example and implementation

Block 2

Multiple encryption and triple DES, Electronic Code Book, Cipher Block Chaining Mode, Cipher Feedback mode, Output Feedback mode, Counter mode Public Key Cryptosystems with Applications, Requirements and Cryptanalysis, RSA algorithm, its computational aspects and security, Diffie-Hillman Key Exchange algorithm, Man-in-Middle attack

Block 3

Cryptographic Hash Functions, their applications, Simple hash functions, its requirements and security, Hash functions based on Cipher Block Chaining, Secure Hash Algorithm (SHA) Message Authentication Codes, its requirements and security, MACs based on Hash Functions, Macs based on Block Ciphers Digital Signature, its properties, requirements and security, various digital signature schemes (Elgamal and Schnorr), NIST digital Signature algorithm

Block 4

Key management and distribution, symmetric key distribution using symmetric and asymmetric encryptions, distribution of public keys, X.509 certificates, Public key infrastructure 9 Remote user authentication with symmetric and asymmetric encryption, Kerberos Web Security threats and approaches, SSL architecture and protocol, Transport layer security, HTTPS and SSH

Reference Books:

1. Cryptography And Network Security, Principles And Practice Sixth Edition, William Stallings, Pearson

2. Information Security Principles and Practice By Mark Stamp, Willy India Edition

3. Cryptography & Network Security, Forouzan, Mukhopadhyay, McGrawHill

4. Cryptography and Network Security Atul Kahate, TMH

5. Cryptography and Security, C K Shyamala, N Harini, T R Padmanabhan, Wiley-India

MITSEC-2 Web Technology 2

Block 1 : Overview

Unit 1: Web Fundamentals: Fundamentals of Web, Internet, WWW, Web Browsers, and Web Servers; URLs

Unit 2: Web Security: MIME;HTTP; Security; The Web Programmers Toolbox

Unit3: Evolution of HTML: XHTML, Origins and evolution of HTML and XHTML; Basic syntax; StandardXHTML document structure

Unit 4: Hypertext and Markup Languages: Basic Text markup.Images; Hypertext Links; Lists; Tables; Forms; Frames; Syntactic differences between HTML and XHTML

Block 2 :Sheet properties

Unit5: Style Sheet :Introduction; Levels of style sheets; Style specification formats; Selector forms; Property value forms

Unit6: Web Page properties and formatting :Font properties; List properties; Color; Alignment of text; The Box model; Background images

Unit7: Tags: The and <div> tags; examples

Unit 8: Conflict resolution: Conflict resolution examples

Block 3 : Overview of Javascript

Unit 9:Javascript :Overview of Javascript; Object orientation and Javascript; General syntactic characteristics; Primitives, operations, and expressions

Unit 10:Fundamental of Programming :Screen output and keyboard input; Control statements; Object creation and modification; Arrays

Unit 11: Advanced JAVA Script: Functions; Constructor; Pattern matching using regular expressions; Errors in scripts; Examples

Unit 12:XML: Syntax; Document structure; Document Type definitions; Namespaces; XML schemas; Displaying raw XML documents; Displaying XML documents with CSS

Block 4 : PERL, CGI and Servlets

Unit 13: Perl and CGI Programming: Perl, CGI Programming, Origins and uses of Perl; Scalars and their operations; Assignment statements and simple input and output

Unit 14: Perl and CGI ProgrammingLanguage Basics: Control statements; Fundamentals of arrays; Hashes; References; Functions

Unit 15: Advanced Programming in Perl and CGI Programming: Pattern matching; File input and output; Examples. The Common Gateway Interface CGI linkage; Query string format; CGI.pm module; A survey example; Cookies

Unit 16: Servlets and Java Server Pages: Overview of Servlets; Servlet details; A survey example; Storing information on Clients; Java Server Pages

References

- 1. Sebesta RW. Programming the world wide web. Pearson Education India; 2013.
- 2. Deitel HM, Deitel PJ, Nieto TR. Internet &world wide web. Prentice Hall; 2002.
- 3. 2Bates C. WEB PROGRAMMING: BUILDING INTERNET APPLICATIONS. John Wiley & Sons; 2007 Jun 1.
- 4. Bai X, Zak D, Ekedahl M, Farrell J, Gosselin D. The web warrior guide to web programming. Course Technology Ptr; 2003 Mar 1.

5. EVALUATION SYSTEM

Students of MSc. Information Technology are assessed by both internal assessment and term end examination. The weightage given are 20 and 80 percent respectively. The internal assessment covers:

- ➢ Class test
- Student seminars
- Project works, dissertation, and viva-voce component
- MCQ's Google forms

The assignment questions will be uploaded in the university website. The term end examination will be conducted to assess the knowledge, skill and attitude of the student on the curriculum.

Annexure I

INTER- DISCIPLINARY COURSE

(Open Elective) for First Semester

ಪತ್ರಿಕೆ–೬: ಆಧುನಿಕ ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಇತಿಹಾಸ EL 1.1 (ಕ್ರೆಡಿಟ್–೩)

ಬ್ಲಾಕ್-೧೯: ಆಧುನಿಕ ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಮುಖ್ಯ ಘಟ್ಟಗಳು

ಘಟಕ-೭೩: ಆಧುನಿಕ ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಹಿನ್ನೆಲೆ ಮತ್ತು ಪ್ರೇರಣೆಗಳು.

ಘಟಕ–೭೪: ನವೋದಯ ಪೂರ್ವ, ನವೋದಯ– ಬಿ.ಎಂ.ಶ್ರೀ., ಕುವೆಂಪು, ದ.ರಾ.ಬೇಂದ್ರೆ, ಶಿವರಾಮಕಾರಂತ, ಮಾಸ್ತಿವೆಂಕಟೇಶ್ ಅಯ್ಯಂಗಾರ್, ಕೆ.ಎಸ್. ನರಸಿಂಹಸ್ವಾಮಿ.

ಘಟಕ–೭೫: ಪ್ರಗತಿಶೀಲ ಮತ್ತು ನವ್ಯ: ಅನಕೃ, ಕಟ್ಟೀಮನಿ, ನಿರಂಜನ, ಚದುರಂಗ, ವಿ.ಕೃ. ಗೋಕಾಕ, ಅಡಿಗ, ಜಿ.ಎಸ್. ಶಿವರುದ್ರಪ್ಪ, ಶಾಂತಿನಾಥ ದೇಸಾಯಿ, ಅನಂತಮೂರ್ತಿ, ಯಶವಂತ ಚಿತ್ತಾಲ, ಲಂಕೇಶ್, ತೇಜಸ್ವಿ, ವೈದೇಹಿ, ವೀಣಾ ಶಾಂತೇಶ್ವರ, ವಿಜಯಾದಬ್ಬೆ.

ಘಟಕ-೭೬: ಬಂಡಾಯ ಮತ್ತು ದಲಿತ:

ಬರಗೂರು ರಾಮಚಂದ್ರಪ್ಪ, ಬಿ.ಟಿ. ಲಲಿತಾನಾಯಕ, ಸಾರಾ ಅಬೂಬಕ್ಕರ್, ದೇವನೂರು ಮಹಾದೇವ, ಸಿದ್ದಲಿಂಗಯ್ಯ, ಅರವಿಂದ ಮಾಲಗತ್ತಿ, ಮೊಗಳಿ ಗಣೇಶ.

ಬ್ಲಾಕ್-೨೦: ಆಧುನಿಕ ಕನ್ನಡ ಕಾವ್ಯ ಮತ್ತು ಸಾಹಿತ್ಯ ಪ್ರಕಾರಗಳು

ಘಟಕ-೭೭: ಕಾವ್ಯ ಪ್ರಕಾರಗಳು: ಭಾವಗೀತೆ, ಸುನೀತ, ಶೋಕಗೀತೆ, ಪ್ರಗಾಥ.

ಘಟಕ-೭೮: ಕಥನ ಕಾವ್ಯ, ಖಂಡ ಕಾವ್ಯ, ಮಹಾಕಾವ್ಯ.

ಘಟಕ-೭೯: ಸಾಹಿತ್ಯ ಪ್ರಕಾರಗಳು: ಕಥೆ, ಕಾದಂಬರಿ, ನಾಟಕ ಜೀವನ ಚರಿತೆ,

ಘಟಕ-೮೦: ಲಲಿತ ಪ್ರಬಂಧ, ಆತ್ಮಕತೆ, ಪ್ರವಾಸ ಸಾಹಿತ್ಯ, ಸಂಪಾದನೆ, ವಿಚಾರ ಸಾಹಿತ್ಯ, ವಿಜ್ಞಾನ ಸಾಹಿತ್ಯ

ಪರಾಮರ್ಶನ ಗಂಥಗಳು

೧. ಹೊಸಗನ್ನಡ ಸಾಹಿತ್ಯ: ಎಲ್.ಎಸ್. ಶೇಷಗಿರಿರಾವ್, ಕನ್ನಡ ಸಾಹಿತ್ಯ ಪರಿಷತ್, ಬೆಂಗಳೂರು, ೧೯೯೨

೨. ಯುಗಧರ್ಮ ಮತ್ತು ಸಾಹಿತ್ಯ ದರ್ಶನ: ಕೀರ್ತಿನಾಥ ಕುರ್ತಕೋಟಿ, ಮನೋಹರ ಗ್ರಂಥ ಮಾಲೆ, ಧಾರವಾಡ, ೧೯೯೧

೩. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಇತಿಹಾಸ: ರಂ.ಶ್ರೀ. ಮಗುಳಿ, ಗೀತಾ ಬುಕ್ ಹೌಸ್, ಮೈಸೂರು, ೨೦೧೮

೪. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಸಂಗಾತಿ: ಕೀರ್ತಿನಾಥ ಕುರ್ತಕೋಟಿ, ಕನ್ನಡ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ, ಹಂಪಿ, ಹೊಸಪೇಟೆ, ೧೯೯೫

೫. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಸಂಗಾತಿ: (ಪ್ರ.ಸಂ) ಬರಗೂರು ರಾಮಚಂದ್ರಪ್ಪ, ಕರ್ನಾಟಕ ಸಾಹಿತ್ಯ ಅಕಾಡೆಮಿ, ೨೦೧೮

೬. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ: ತ.ಸು. ಶಾಮರಾಯ, ತಳುಕಿನ ವೆಂಕಣ್ಣಯ್ಯ ಸ್ಮಾರಕ ಗ್ರಂಥಮಾಲೆ, ಮೈಸೂರು, ೨೦೧೪

೭. ಹೊಸಗನ್ನಡ ಕಾವ್ಯ ಪ್ರಕಾರಗಳು: ಪ್ರಧಾನ ಸಂಪಾದಕರು, ಎ.ರಂಗಸ್ವಾಮಿ, ಲೇ. ಮ. ರಾಮಕೃಷ್ಣ, ಪ್ರಸಾರಂಗ, ಕರಾಮುವಿ, ಮೈಸೂರು, ೨೦೧೦

36
೮. ಆಧುನಿಕ ಸಾಹಿತ್ಯ ಪ್ರಕಾರಗಳು: ಪ್ರಧಾನ ಸಂಪಾದಕರು, ಎ. ರಂಗಸ್ವಾಮಿ, ಲೇ. ಡಾ. ಜಿ.ಆರ್. ತಿಪ್ಪೇಸ್ವಾಮಿ, ಪ್ರಸಾರಂಗ, ಕರಾಮುವಿ, ಮೈಸೂರು, ೨೦೧೦

DEPARTMENT - ENGLISH

EL-1.1: INTER- DISCIPLINARY COURSE-I (OPEN ELECTIVE)

INDIAN LITERATURE-I

OBJECTIVES

- To help to understand the contribution of Kalidasa to Sanskrit drama as a playwright
- To create an awareness of the importance of Shakuntala and Mrichhakatika as classical Indian texts
- To evaluate Lord Macaulay and Raja Ram Mohan Roy writers of English Prose.
- To introduce the role of Autobiographies in Indian writing in English

BLOCK –I

Kalidasa: Shakuntala Shudraka: Mrichhakatika

BLOCK -II

Jawaharlal Nehru: An Autobiography Ram Mohan Roy: Letter to Lord Amherst Macaulay: Minutes on Indian Education Vivekananda: Address to the Parliament of Religions

Suggested Reading:

- M.K.Naik: Critical Essays on Indian Writing in English. Sahitya Akademi, 1969.
- •Narasimhaiah. C.D: The Swan and the Eagle. Indian Institute of Advanced Study, 1987.
- Meenakshi Mukherjee: The Twice Born Fiction. Heinemann Educational Publishers, 1972.
- Chirantan Kulshrestha. Contemporary Indian English Verse: An Evaluation. Arnold-Heinemann, 1981.

DEPARTMENT - HINDI

व्यावहारिक हिंदी एवं व्याकरण

वर्ण विचार

- वर्ण •
- स्वर और उसका वर्गीकरण
- व्यंजन और उसका वर्गीकरण
- वर्णों का उच्चारण स्थान
- संधि •
- समास

शब्द विचार

- शब्द के भेद
- अर्थ के आधार पर शब्द भेद
- व्युत्पत्ति के आधार पर शब्द भेद
- रचना के आधार पर शब्द भेद
- प्रयोग के आधार पर शब्द भेद
- विकारी और अविकारी शब्द भेद
- अव्यय •

- संज्ञा और उसके भेद •
- वचन- उसके भेद, वचन परिवर्तन के नियम •
- लिंग- उसके भेद, लिंग परिवर्तन के नियम •
- काल और उसके भेद •
- कारक और विभक्ति- उसके प्रकार, •
- सर्वनाम और उसके भेद •
- विशेषण और उसके भेद
- क्रिया और उसके भेद
- क्रिया विशेषण और उसके भेद
- समुच्च्य बोधक और उसके भेद
- संबंधबोधक और उसके भेद
- विस्मयादिबोधक और उसके भेद
- परसर्ग और उपसर्ग
- वाच्य और उसके प्रकार

वाक्य विचार

- वाक्य का अर्थ और परिभाषा
- वाक्य के प्रकार **आदि**

DEPARTMENT - TELUGU

E. L. 1.1 Thilak Prathyeka Adhyayanam

Block - 1:Thilak Kavithvam - 1

Unit - 1: Amrutham Kurisina Raathri

Unit - 2:Thilak Padhya Kavithaa Vaibhavam

- Unit 3:Thilak Abhiruchulu Alavaatlu
- Unit 4: Thapala bantrothu

Block - 2: Thilak Kavithvam

- Unit 1: Thilak Sahithya Parichayam 1
- Unit 2: Thilak Sahithya Parichayam 2
- Unit 3:Thilak vachana kavithaa Vaibhavam 1
- Unit 4: Thilak Vachana Kavithaa Vaibhavam 2

DEPARTMENT - HISTORY

ANCIENT WORLD CIVILIZATIONS

(Egypt, Mesopotamia, Greek, Roman, Inca, Chinese)

- **Objective:** The course is aims to understand major world civilizations. It is to provide a global historical perspective of ancient world which special reference to Egypt, china, Greek, Roman, Inca civilizations.
- **Pedagogy:** personal contact programmes, audio video programmes, online lectures Assignments, etc

Credits: 2.

Examination Duration: 11/2 hours and Maximum Marks:40

Course outcomes:

After completing this course the students should be able to

- > Discuss the Egyptian and Mesopotamian civilizations.
- Analyse the political socio economic conditions of Greek Roman civilizations.
- > Evaluate the Chinese contributions to ancient world.

Block – I

Unit-1

Egyptian Civilization: Importance of the Nile, Geographical importance, Gift of Nile, Political conditions.

Unit-2

Social, Economic and religious conditions, Literature and learning, arts and architecture.

Unit-3

Mesopotamian Civilization, Sumer and Babylonian, Hammurabi's code, Society and Culture, Economic conditions, art and literature, Assyrian Empire.

Unit - 4

Greek Civilization, Political Organizations, the city, State, Alexander the Great, Greek political theory, Religion, Philosophy, art and architecture, Characteristic of Hellenistic Civilization.

Block – II

Unit - 5

Roman Civilization, The Land and the people, the Government, Roman Republic, Roman Empire, Roman Republic, The Empire, The Patricians and Plebeians, Punic wars.

Unit – 6

Julius Caesar, his wars, fall Augustus Caesar, Social Economic Conditions, Roman art and architecture.

Unit - 7

Painting, Sculpture, Roman Law, Roman Religion, Philosophy, Roman literature, Decline of the Roman Empire.

Unit - 8

Inca Civilisation, Socio – economic Political conditions, Chinese Civilisation, Socio – economic Political conditions.

Suggested readings:

- 1. Breasted, J.H. : Ancient Times, A History of the early world.
- 2. Rostovzeff, M.S. : History of Ancient World
- 3. Schvider.H : The History of Civilization
- 4. Swain.J.E. : A History of World Civilization
- 5. Breasted.J.H. : History of Egypt
- 6. Jastorow.M : The Civilization of Babylonia and Austria
- 7. Bury.J.E. & OTHERS: The Hellenistic Age
- 8. Bailey.C : The Legacy of Rome and others
- 9. Abot.F.F.: Society and Politics of Ancient Rome

DEPARTMENT – ECONOMICS

EL1.1: Economic Policies of India Since 1991.

- **Objective:** To enable the Students to understand the economic policies of India in the era of new economic policy.
- **Pedagogy:** A Combination of Lectures, Group Discussion, Assignments.
- Credits: 2 ; Examination Duration: 1¹/₂and Maximum Marks: 50 (Internal Assessment Marks = 10 and Semester-end Examination =40)

Course Inputs

- BLOCK I: India's Economic Policies
- UNIT : 1 Economic Policies in India Since 1991

Economic reforms in India – Economic Scenario in India during 1990-91 – Domestic Financial Crisis – Balance of Payment Crisis – Extent of External debt and debt Trap Problem.

UNIT: 2 Need for Reforms

Measures Taken – Devaluation – Privatization – Liberalization – Globalization.

UNIT: 3 Monetary Policy and Fiscal Policy

Narasimhan Committee on Banking and Financial Sector Reforms Since 1998 – Fiscal Reforms: Raja Chellaiah Committee and Tax Reform Policies – Fiscal Prudence and Policies.

UNIT : 4 Structural Adjustments and External Sector in India Foreign Trade: Trends in Exports and Imports – Balance of Payment and its Crisis

 – Export Import Policy – In Defence of Import Substitution – Foreign Exchange Policy.

BLOCK : II FDI and the Role of State

UNIT : 5 Foreign Direct Investment (FDI)

Trends in FDI – FDI Policy – Its Impact on the Domestic Economy – Labour Migration: causes and Consequences on Indian Economy – Information and Communication Revolution and India.

UNIT : 6 Challenges to Development in India

Poverty – Unemployment – Poverty alleviation Programmes - urban Poverty and Problems – Income Inequality – Employment Generating Schemes.

UNIT: 7 The Role of State

Parallel Economy in India – Black Money – Corruption – Slams – Redefining the Role of the State and the Markets – Balance between Economic and Socio - Political Goals.

UNIT: 8 Administrative Reforms

Rights to Information – Measures Towards Good Governance – NITI Ayoga and aftermath – Digitalized India – Demonetization – GST – Make in India.

References:

- 1. Acharya Shankar, (2003) India's Economy: Some Issues and Answers, Academic Foundation, New Delhi.
- 2. Byres J Terence (Ed.,) (1999) The Indian Economy, Major Debates since Independence, OUP,New Delhi.
- 3. Datt Ruddar, (2002) Economic Reforms in India A Critique, S.Chand and Co, New Delhi.
- 4. Kapila Uma (Ed) (2015) Indian Economy since Independence, Academic Foundations, New Delhi.
- 5. Kapila Uma, (2005) Understanding the Problem of Indian Economy, Academic Foundation, New Delhi.
- 6. Misra S.K. & V.K. Puri, (2011) Indian Economy-Its Development Experience, Himalaya Pub., House, Mumbai.
- 7. NCAER, Economic and Policy Reforms in India, NCAER, New Delhi.
- 8. Rangarajan C, (1998) Indian Economy- Essays on Money and Finance, UBSPD, New Delhi.
- 9. Sachs D.Jeffrey, A.Varshney & N Bajpai (Ed)(1999) India in the Era of Economic Reforms, OUP, New Delhi.
- 10. Vaidyanathan A, India's Economic Reforms and Development, OUP, New Delhi

DEPARTMENT - POLITICAL SCIENCE

(OEL-I) Local Government in India

Block-I

Unit:1	Meaning, Nature	and Scope of Local	Governments.
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Unit:2 Evolution of Panchayat Raj Institution in India.

- a) Constitute Assembly and Village Panchayat.
- b) Balavanth Roy Mehta Committee Report
- c) Ashok Mehta Committee Report.
- d) G.V.K. Rao Committee Report.

Unit:3 Constitutional Amendments and Panchayat Raj Institutions:

- a) Basis of Constitutional Amendment.
- b) 73rd and 74th Constitutional Amendment.

- c) Karnataka Panchayat Raj At of 1983.
- d) Karnataka Panchayat Raj Act of 1993.

Unit:4 Zilla Panchayat: Structure, Functions and Sources of Revenue.

Block-II

- Unit:5 Taluk Panchayat : Structure, Functions, Executive Officer, Powers and Functions.
- Unit:6 Gram Panchayat: Gram Sabha, Ward Sabha: Structure, Functions and Sources of Revenue.
- Unit:7 Panchayat Development Officer and Secretary: Powers and Functions.
- Unit:8 Role of Panchayat Raj Institutions in Development (with Reference to Karnataka)
 - a) Panchayat Raj in Rural Development.
 - b) Social Change: Empowerment of the Weaker Sections.

References:

- 1. Verma B. M, Social justice and Panchayath Raj
- 2. Mutarib-M.A. and Others, Theory of Local Government,
- 3. Dr. Arjun darshankar, Panchayath Raj aani Nagari.
- 4. V. B. Patil, Pancayath Raj.
- 5. A.N. Kulkarni, Bharatiya Sthanik Swashasan,
- 6. Shantaram Bhosale, Bharatiya Sthanik Shasan,
- 7. Kikherji. S, Essays on Rural Development.
- 8. Balaramu. C. H. Administration of Anty Poverty Programmes.
- 9. 73rd Constitutional Amendment Act, Government of India, 1993.
- 10. Karnataka Panchayatraj Acts, 1985, 1995.

DEPARTMENT – PUBLIC ADMINISTRATION

INDIAN POLITY – I

BLOCK – 1

- UNIT 1 Indian Constitution.
- UNIT 2 Preamble Meaning and Importance.
- UNIT 3 Fundamental Rights and Duties.
- UNIT 4 Directive Principles of State Policy and Relation with Fundamental Rights.

BLOCK – 2

- UNIT 5 Indian Federalism and Parliamentary system of Government.
- UNIT 6 Centre State Relations. Legislative Administrative and Financial

- UNIT 7 Union Executive President Elections, Powers and Positions.
- UNIT 8 Council of Ministers and Prime Ministers Powers and Functions

DEPARTMENT - SOCIOLOGY

Invitation to Sociology

(02 Credits)

Course Description

This course introduces learners to the basic concepts of sociology. It is particularly designed to orient the learners from interdisciplinary background about the essence of sociology and intends to inculcate sociological imagination.

Course Objectives

- To introduce the learner to the basic concepts and processes of sociology
- to comprehend the structural and organizational aspects of society
- to examine the process of social change

Learning Outcomes and Competencies

After successfully completing the course, following outcomes and competencies are possible among the learners. Learner will have/can

- Conceptual precision and clarity about the basic sociological concepts
- Develop sociological imagination and apply to analyze the contemporary events
- explain major social processes of society
- analytical view about Indian social structure
- explicate major process of social change and can conceptualize the changing aspects of Indian society

Course Contents

Block-1 Basic Concepts and Processes

- Unit-1 Emergence of Sociology-Factors and Early Thinkers-Sociological Imagination
- Unit-2 Society, Community-Associations and Institutions- Culture and Socialization
- Unit-3 Social System, Structure and Function
- Unit-4 Social Processes-Cooperation, Competition, Conflict, Accommodation and Assimilation

Block-2 Social Organization and Social Change

Unit-5 Caste and Class System-Changes in Caste

Unit-6 Social Mobility and Types

Unit-7 Factors of Social Change

Unit-8 Process of Social Change in India (Sanskritization, Westernization, Modernization and Globalization)

References

- 1. Berger, Peter L. 1978. An Invitation to Sociology, Allen and Unwin, London. Davis, Kingsley. Human Society, Macmilan, New Delhi.
- 2. Dumont, Louis, 1988, Homo Hierarchicus. Oxford University Press. Giddens, Anthony. 2009. Sociology. Politi Press, Malden.
- 3. Inkles, Alex. 2002. What is Sociology, Prentice Hall India, New Delhi. Jayaram, N, 1990, Introductory Sociology, Macmilan, New Delhi.
- 4. Johnson Harry M., 2011: Sociology: A Systematic Introduction: Allied Publishers, New Delhi.
- 5. MacIver, R.M and C.H. Page. Society Introduction to Sociology, Macmilan, New Delhi
- 6. Samuel, Koenig. 1957. Sociology: An Introduction to Science of Society, Barnes & Nobel Books, London.
- 7. Singh, Yogendra. 1993: Social Change in India: Crisis and Resilience, Har-Anand, New Delhi.

DEPARTMENT – ANCIENT HISTORY AND ARCHEOLOGY

AHA OE 1.1	World Heritage Sites of India
Block - 1	Introduction
Unit - 1	Nature - Scope - Criteria for incorporation of World Heritage sites
Unit - 2	Types of World Heritage sites in India
Block - 2	Archaeological and Cave Heritage sites
Unit - 3	Bimbetka - Sanchi- Nalanda – Champaner - Dholavira
Unit – 4	Ajanta – Ellora - Elephant
Block - 3	North Indian World Heritage Sites

- Unit 5 Bodh Gaya Kajuraho–Konarak–Rani kivav– Jaipur,
- Unit 6 Agra Fort Red Fort FathepurSikri–Taj Mahal Humayun's Tomb Ahamadabad, Qutub Minar

Block - 4	South Indian World Heritages Sites
Unit – 7	Mahabalipuram – Pattadakallu – Chola temples
Unit - 8	Monuments of Hampi – Churches and Convents of Old Goa – Ramappa Temple

References:

- *1*. Marco Canneo, Jasmina: The world heritage sites of UNESCO TheTreasure of Art
- 2. ASI: World Heritage Sites Series
- 3. Individual guide: Books on respective city Individual

DEPARTMENT - EDUCATION

IDC – 1 FOUNDATIONS OF EDUCATION

BLOCK-1 FOUNDATIONS OF EDUCATION – I

Unit-1 Philosophical Foundations Unit-2 Basic Concepts of Philosophy Unit-3 Psychology as a Science Unit-4 Basic Concept in Psychology related to Education

BLOCK-2 FOUNDATIONS OF LEARNING – II

Unit-5 Sociological bases of Education Unit-6 Educational Issues in Indian Society Unit-7 Cultural and Historical Foundations Unit-8 Political and Economic bases of Education

References:

- 1. Harison and Myers (1970), Education, Manpower and Economic Growth, McGrothill, Oxfords, IBH Publishing Co., New Delhi.
- 2. Kamala Bhatia & Baldev Bhatia, (1974) The Philosophical and Sociological Foundations of Education, Doaba House, New Delhi.
- 3. Bhatia B.D, (1974), 'Theory and Principles of Education, Doaba House, Delhi'.
- 4. Sorokim .P, (1947) 'Society, Culture and Personality', Harper and Brothers Publishers, New York.

DEPARTMENT – COMMERCE

EL1.1: Personal Financial Planning

Objective: To enable the Students to understand about the different Investment Avenues, Saving Schemes designed by various agencies particularly for the individuals.Pedagogy: A Combination of Lectures, Group Discussion, Assignments.

Credits: 2

Examination Duration: $1^{1}/_{2}$ and Maximum Marks: 50

(Internal Assessment Marks = 10 and Semester-end Examination = 40)

Course Inputs

Block I

- Unit -1: Introduction to Financial Planning: Introduction The Process Financial Planning – Client Interactions – Time Value of Money Applications – Personal Financial Statements – Cash Flow ad Debt Management – Planning to Finance Education.
- Unit -2: Financial Planning Process: Introduction Setting Goals Informal Budget Preparation Investment Opportunities Financial Vs Physical Investments Role of a Financial Planner.
- Unit -3: Savings Plans: Introduction Setting Goals Savings Instruments Savings Plan Tax Savings Schemes.
- Unit -4: Investment Planning: Introduction Risk Return Analysis Mutual Fund Derivatives Asset Allocation Investment Strategies and Portfolio Construction and Management.

Block II

- Unit -5: Risk Analysis and Insurance Planning: Introduction Risk Management and Insurance Decision in Personal Financial Planning – Various Insurance Policies and Strategies for General Insurance – Life Insurance – Motor Insurance – Medical Insurance.
- Unit -6: Retirement Planning and Benefits: Introduction Retirement Need Analysis Techniques – Savings and Investment Plans for Retirement –Employee Provident Fund – Public Provident Fund – Superannuation Fund – Gratuity – Annuity Plans.
- Unit -7: Tax Planning: Introduction Income-tax Computation for Individuals Companies - Trust and other bodies – Statutory Provisions Pertaining to Capital Gains and Indexation – House Property – Deduction and Allowances.
- Unit -8:Health Financing: Introduction Health Financing Models Financing of Health in India National Rural Health Mission Challenges of Access to Health Care and Service Quality Health Insurance Mechanism & Financial Protection.

Books Recommended for Reference

- 01. Khan M.Y, Financial Services, Tata MacGraw Hill.
- 02. Singhanar V.K, Students' Guide to Income Tax, Taxmann.
- 03. Ranganathan and Madhuamathi, Investment Analysis and Portfolio Management, Pearson Publications.
- 04. Gordon and Natarajan, Emerging Scenario of Financial Services, Himalaya Publishing House.
- 05. George Rejda, Principles of Risk Management and Insurance, Pearson.

DEPARTMENT - MANAGEMENT

COURSE: OE-1 : Disaster Management - Credit: 2 MBAS 459: DISASTER MANAGEMENT

Objectives	: The course aims at familiarizing the students with the concepts of disaster						
	managemen	it, need for disa	ister manage	ement a	nd its	relevance.	
Pedagogy	: Lectures, discussions	assignments,	Industrial	visits	and	practical	exercises,

- 1. Understanding Disasters · Meaning, nature, characteristics and types of Disasters, Causes and effects, Disaster: A Global View, Disaster Profile of India, The Disaster Management cycle.
- Geological and Mountain Area Disasters · Earthquakes · Volcanic Eruption · Landslides Snow Avalanches, Wind and Water Related Natural Disaster · Floods and Flash Floods · Droughts · Cyclones · Tsunamis, Man Made Disasters · Understanding Man-Made Disasters · Fires and Forest Fires · Nuclear, Biological and Chemical disaster · Road Accidents
- 3. Introduction to disaster Preparedness · Disaster Management: Prevention, Preparedness and Mitigation · Disaster Preparedness: Concept & Nature · Disaster Preparedness Plan · Disaster Preparedness for People and Infrastructure · Community based Disaster Preparedness Plan
- 4. Roles & Responsibilities of Different Agencies and Govt. · Roll of Information, Education, Communication & Training · Role and Responsibilities of Central, State, District and local administration. · Role and Responsibilities of Armed Forces, Police, Para Military Forces. Role and Responsibilities of International Agencies, NGO's, Community Based Org. (CBO's)
- 5. Technologies for Disaster Management · Role of IT in Disaster Preparedness · Remote Sensing, GIS and GPS · Use and Application of Emerging Technologies · Application of Modern Technologies for the Emergency communication. · Application and use of ICST for different disasters.
- 6. Disaster Mitigation · Disaster Mitigation: meaning and concept · Disaster Mitigation Strategies · Emerging Trends in Disaster Mitigation · Mitigation management · Role of Team and Coordination
- Disaster Management in India Disaster Profile of India Mega Disasters of India and Lessons Learnt Disaster Management Act 2005 – Institutional and Financial Mechanism National Policy on Disaster Management, National Guidelines and Plans on Disaster

Management; Role of Government (local, state and national),Non-Government and Inter-Governmental Agencies. National Disaster management Authority.

References

- 1. Bryant Edwards (2005): Natural Hazards, Cambridge University Press, U.K.
- 2. Carter, W. Nick, 1991: Disaster Management, Asian Development Bank, Manila.
- 3. Central Water Commission, 1987, Flood Atlas of India, CWC, New Delhi.
- 4. Central Water Commission, 1989, Manual of Flood Forecasting, New Delhi.
- 5. Government of India, 1997, Vulnerability Atlas of India, New Delhi.
- 6. Sahni, Pardeep et.al. (eds.) 2002, Disaster Mitigation Experiences and Reflections, Prentice Hall of India, New Delhi.

DEPARTMENT - BIO CHEMISTRY

Basics of Bioinorganic and Biophysical chemistry for Biology graduates.

Bioinorganic chemistry

Coordination Compounds: Transition metals, properties (Colour, Oxidation states, Magnetic properties) Coordinate bond, double and complex salts– differences with examples.

Postulates of Warner's theory. Types of ligands: For examples: uni, bi, polydentate ligands. Coordination number, examples.

Porphyrin nucleus and their classification. Important metallo-porphyrins occurring in nature. Structure and biological importance of Heme, cytochrome, chlorophyll,Vitamin B_{12} .

Nitrogen, Fixation of atmospheric nitrogen – Symbiotic and non-symbiotic. Nitrogen cycle. Environmental pollution by nitrogen compounds. Phosphorous: Importance of Phosphorous compounds in biological system, phosphorous cycle

Oxygen, Formation of ozone in atmosphere. Role of ozone in maintenance of life on earth. Effect of environmental pollutants on ozone layer.

Sulphur and Selenium, Importance of compounds of Sulphur and Selenium in biological systems. Effect of sulphur compounds on environmental pollution.

Biophysical chemistry.

Units in chemistry, Avogadro's number, Mole, Mole fraction, Molarity, Equivalent weight, Normality, Molality. Colligative Properties, Osmotic pressure and its measurements. Hypo-, Hyper- and isotonic solutions. Effect of osmotic pressure on living cells.

Donnan membrane equilibrium. Relative lowering of vapour pressure, Raoult's law. Elevation of boiling point, depression in freezing point.

Adsorption: Freundlich and Langmuir's adsorption isotherm. Applications of adsorption.

Viscosity: Definition, determination of viscosity of liquids & solutions by Ostwald's viscometer (solutions of gum and protein to be taken as examples).

Distribution law, Distribution law, partition coefficient, application of distribution law.

Acids, bases and buffers- Lewis concept of acids and bases. Ionic product of water. pH scale, buffers, Henderson- Hasselbach equation, buffer capacity Choice of buffers. Theory of acid base indicators. pH titration curve and iso-electric pH of amino acids.

Selected References:

- 1. Basic Principles of Organic Chemistry, Roberts and Caserio, W. A. Benjamin, Inc. (1964).
- 2. Organic Chemistry, Morrison and Boyd, Allyn and Bacon Inc (1992).
- 3. Principles of Inorganic chemistry by Cotton & Wilkinson, Wiley (1999).
- 4. Textbook of Organic chemistry by Ahluwalia V K & Madhuri G Narosa publications (2001).
- 5. Physical chemistry by Castellan G W, Narosa Publications (2004).
- 6. Physical chemistry by Chakraborthy D K, Narosa Publications (2004).

DEPARTMENT - BIOTECHNOLOGY

MBT EL –I- Biotechnology and its Applications

Introduction to biotechnology. Principles of biotechnology, classification. **Recombinant DNA Technology**

Introduction, outline of genetic engineering procedure, restriction endonucleases, cloning & expression vectors- plasmids, cloning in plasmid, transformation and detection of transformants- lacZ, genomic and cDNA libraries, gene analysis techniques-hybridization: Southern, Northern, Western, in situ, Polymerase chain reaction.

Microbial and food and environmental Biotechnology

Basics of fermentation technology: Types of microbial culture- batch, continuous and fed-batch. Microbial production: Use of microbes in production of vitamins, enzymes, organic acids, amino acids, polysaccharides, flavors, sweeteners, proteins and antibiotics.

Fermented food products- yogurt, cheese, tempeh, sauerkraut; beverages- wine and beer. Pre- and Pro-biotics, single cell proteins, Genetically modified foods, designer foods.

Current status of biotechnology in environment. Bioconservation, biofuels, gasohol, biogas.Bioremediation: Concepts and principles, bioremediation using microbes, in situ and ex situ bioremediation, biosorption and bioaccumulation of heavy metals.

Plant Biotechnology

Landmarks in Plant tissue culture. Types of cultures- embryo, organ, callus and cell cultures, Somatic embryogenesis, Haploid Production, Androgenesis, Protoplast culture and somatic hybridization. Micropropagation- Methods and stages, applications. Synthetic seeds, somaclonal variation. Production of secondary metabolites by plant cells, Biotransformation.

Plant transformation techniques: Direct and indirect methods of gene transfer in plants. Transgenic plants and crop improvement- herbicide tolerance, disease resistance, abiotic stress tolerance, delayed ripening, improvement of nutritional quality, molecular pharming.

Animal Biotechnology

Basics of animal cell culture techniques, cell lines, physical conditions for culturing animal cells, equipments required, scale-up of culture methods.

Application of animal cell culture- Hybridomas, production of therapeutic antibodies, stem cell technology, cell and tissue engineering.

Genetic engineering of animals: Methods for gene transfer in animals, microinjection, nuclear transplantation, retrovirus-mediated gene transfer, gene knockdown techniques. Transgenic- animals- sheep, pigs, cattle, chickens; applications of transgenic animals.

Block-1	Title: Periodic Table and chemical Periodicity
Unit-1	Elements, atomic structure, atomic number, atomic mass, quantum numbers,
	electronic configuration,
Unit-2	Periodic properties of elements, State of Matter, their resources. Important
	periodic properties of the elements, covalent radii, ionic radii, ionization potential,
	electron affinity and electronegativity
Unit-3	Concepts of Acids and Bases: Review of acid base concepts. Lux-Flood and
	solvent system concepts. Hard-soft acids and bases. Applications.
Unit-4	Solutions: Concentration units, solutions of liquids in liquids, Raoult's law, ideal
	and non-ideal solutions.

DEPARTMENT - CHEMISTRY

Block-2	Title: Bonding and molecular structure
Unit-5	Calcification of matter: (elements, compounds, substance and mixture), The
	three states of matter, physical and chemical properties of matter, fundamental
	particles of atoms, atomic number, atomic mass, atomic structure of atom
	molecular formula, empirical formula, molecular mass.
Unit-6	Ions and ionic compounds, properties of ionic compounds, formation of ionic
	compounds, covalent compounds, properties of covalent compounds, properties
	of covalent compounds
Unit-7	Metals, properties of metals, theory of metallic bond formation, types of metals
	conductor, semiconductor and insulators, n-type semiconductors and p-type
	semiconductors, alloys and superconducting materials.
Unit-8	Acids and bases, general properties of acid and bases, Acid base reactions,
	oxidation reduction reactions, oxidation number, types of redox reactions,
	balancing oxidation-reduction equation, exothermic and endothermic reactions

DEPARTMENT : CLINICAL NUTRITION

AND DIETETICS

OEL-1: HEALTHY LIFESTYLES AND NUTRITION 3 Credits

BLOCK 1: INTRODUCTION TO FOOD AND NUTRITION

Unit 1.- Factors affecting food habits, choices and dietary patterns – Definition of Food, Nutrition, Health, Fitness. Interrelationship between nutrition and health, concept of a desirable dietfor optimum nutrition, health and fitness.

- Unit 2-. A brief review of nutrients in general -
 - Energy and macronutrients Carbohydrates, Protein, Fat functions, sources deficiency disorders and recommended intakes.
 - Micronutrients: Minerals calcium, Iron, Iodine, and other elements, Vitamins FatSoluble & Water Soluble.
- **Unit 3:** Nutritional assessment- Anthropometric, biochemical, clinical, dietary and Biochemical assessments

Unit 4: Basic principles of planning diet –, RDA for Indians, Food groups, Dietary guidesand balanced diets.

BLOCK 2: PLANNING OF DIET

Unit 5: Principles of planning a normal diet: characteristics of a normal diet, meeting

nutrientrequirements of individuals and family. Use of Dietary guidelines for Indians.

Unit 6: Objectives of diet therapy- Regular diet and rationale for modifications in

energyand other nutrients, texture, fluid, soft diets etc.

Unit 7: Role of dietician in hospital- specific functions, team approach in patient care, psychological consideration, interpersonal relationship with patients. Nutrition and medicalethics. Hospital dietary- scope and importance, types of food service, quality management.

Unit 8: Nutrition counseling: definition, concept, role of clinical dietician, the recipient and counseling environment and goals of counseling. An overview of systems approach to nutritional care and its components (planning, implementation and evaluation).

REFERENCES

- Srilakshmi B (2004) Nutrition Science. New Age International (P) Ltd, Publishers.
- Kango M (2005) Normal Nutrition, Curing diseases through diet. First Edition CBS Publications. Paul S (2003) Text Book of Bio-Nutrition, Fundamental and Management. RBSA Publishers.
- Williams SR (2000) Nutrition and Diet Therapy. Sixth Edition C.V. Melskey Co.
- Mudambi SR and Rajagopal MV (1997) Fundamentals of Foods and

Nutrition. New AgeInternational (P) Ltd, Publishers.

- Swaminathan M (1999) Essential of Food and Nutrition. Vol I and II, Bappco publications, Madras.
- Corinne, H. Robinson 2010– "Normal and Therapeutic nutrition", Oxford and IBH publishingcompany, Bombay.
- •

Srilakshmi – 2012"Dietetics", 4th edition, New age international publisher,Chennai

Β.

DEPARTMENT - COMPUTER SCIENCE

ELMCS-01 Mobile App Development: Credit 2

Block – I

- **Unit-1:** Introduction to Mobile Computing: applications, a simplified reference model, Wireless Transmission:
- **Unit-2:** Frequencies of radio transmission, signals, antennas, signal propagation, multiplexing, modulation, spread spectrum, cellular system.
- **Unit-3** Media Access Control: motivation for a specialized MAC, SDMA, FDMA, TDMA, CDMA ,and Comparisons.
- Unit-4: GSM, DECT, Wireless LAN: Infrared vs. radio transmission, Infrastructure and ad-hoc networks,

IEEE 802.11, HPERLAN, Bluetooth.

Block – II

Unit-5: Mobile Network Layer: mobile IP, dynamic host configuration protocol,

- Unit-6: ad-hoc networks. Mobile Transport Layer: Traditional TCP, classical TCP improvements,
- Unit-7: TCP over 2.5/3G wireless networks. File Systems, World Wide Web,

Unit-8: Wireless Application Protocol (WAP) and WAP 2.0.

Text book:

1. Jochen H. Schiller, Mobile Communications(2e)

Reference

- 1. Raj Kamal, Mobile Computing
- 2. Asoke K. Talukder, Roopa R. Yavagal, Mobile Computing
- 3. Mazliza Othman, Principles of Mobile Computing and Communications
- 4. Prasant Kumar Pattnaik, Rajib Mall, Fundamentals of Mobile Computing
- 5. Ivan Stojmenovic, Handbook of Wireless Networks and Mobile Computer
- 6. David Taniar, Mobile Computing Concepts, Methodologies, Tools, and Applications

DEPARTMENT - ENVIRONMENTAL SCIENCE

ESOEL-1: Basics of Environmental Science

Block I: Ecology and Environment

- **Unit 1:** Definition, Principles and Scope. Biotic and abiotic factors of environment. Ecosystems: pond, forest, river, grassland and estuary ecosystems
- Unit 2: Ecosystem trophic structure, energy flow, food chain, food web, Ecological pyramids.
- **Unit 3:** Population dynamics: Definition, population density, Natality, Mortality, Age structure, Growth pattern, population dispersion.
- **Unit 4:** Biogeochemical cycle types, sedimentary and gaseous cycles, N, C, S, P, O cycles. Rock and hydrological cycles.

Block II: Biodiversity and Conservation

- Unit 5: Biodiversity, Definition, Types of Biodiversity, importance and roles.
- **Unit 6:** Needs and benefits of biodiversity, Loss of biodiversity- causes and consequences, Need for conservation of biodiversity
- **Unit 7:** Conservation strategies, endemic and exotic species, Red Data book, National parks, wildlife sanctuaries, biosphere reserves, biodiversity hotspots, wildlife protection act, biodiversity act, wetland conservation and management, Hotspots of biodiversity.
- **Unit 8:** Project Tiger, Project elephant, Ramsar site and other conservation projects. Experts Committee Reports on Environmental conservation

DEPARTMENT - GEOGRAPHY

ELMG -01, Introduction to Physical Geography (Credit-2)

Block-1

Origin, Shape and Size of the Earth, Movement of the Earth- Rotation and Revolution, Effects of the movement of Earth, Coordinates -Latitude, Longitude and Time; Structure of the Earth, Rocks - types, significance, Weathering –types; Agents of Denudation - River, Glacier, Windand Under Ground water; Structure and Composition of Atmosphere, Weather and Climate

Block-2

Atmospheric Pressure, Winds and Precipitation; Distribution of Land and Sea, Submarine Relief of the Ocean, Temperature and Salinity of Sea Water; Ocean Tides and Oceanic Currents- Atlantic, Pacific and Indian Oceans; Biosphere- Elements, Ecology, Ecosystem, World's Biomes, Biodiversity – Importance, Types and Conservation

References

- 1. B.S. Negi (1993) Physical Geography. S.J. Publication, Meerut
- 2. D.S.Lal (1998) Climatology.Chaitnya publishing house, Allahabad
- 3. K. Siddhartha (2001) Atmosphere, Weather and Climate.Kisalaya publication, New Delhi
- 4. R.N.Tikka (2002) Physical Geography. KedarnathRamnath&co, Meerut
- 5. Willian D. Thornbury (1997) Principle of Geomorphology. New Age Internatinal (Pvt Ltd.)New Delhi.

DEPARTMENT - MATHEMATICS

ELMM -01 - FUNDAMENTALS OF MATHEMATICS (2 Credits)

Block-I: Number Theory: Natural numbers, integers, Real numbers, GCD, LCM, Prime numbers. Surds, Indices, Logarithms, Progressions, Arithmetic Progression, Geometric Progression, Harmonic Progression,

Block-II: Set Theory: Operations of Union, Intersection, Complementation. Relations & Functions: Types of relations One-one, onto, Many-one functions, graphs of functions. Mathematical Logic: Propositions, logical connectives, Methods of proofs.

Books for Reference:

- 1. Kolman and Busby: Discrete Mathematics, PHI.
- 2. S. L. Loney: The Elements of Coordinate Geometry, London Macmillan & Co.
- 3. B. S. Grewal: Higher Engineering Mathematics, 36th Ed., Khanna Pub.
- 4. S. Lipschutz and M. Lipson: Theory and Problems of Discrete Mathematics. Schaum Series. 2nd Ed. Tata McGraw Hill.

DEPARTMENT - MICRO BIOLOGY

Microbial World and Microbial Diversity

- i. Introduction to microbial world, Physiochemical and biological characteristics; Characteristics of Acellular microorganisms (Viruses); Baltimore classification, general structure with special reference to viroids and prions.
- ii. Binomial Nomenclature, Whittaker's five kingdom and Carl Woese's three kingdom classification systems and their utility.
- iii. Difference between prokaryotic and eukaryotic microorganisms
- i. General characteristics of Cellular microorganisms, types archaebacteria, eubacteria, wall-less forms MLO (mycoplasma and spheroplasts) with emphasis on distribution and occurrence, morphology, mode of reproduction and economic importance.
- ii. Structure, reproduction and economic importance of Mycoplasma.
- i. General concept of Phytoplanktons and Zooplanktons. Characteristics, occurrence, thallus organization and classification of Algae.
- ii. Cyanobacteria occurrence, thallus organization, cell ultra structure, reproduction and economic importance. Applications of algae in agriculture, industry, environment and food.
- i. Historical developments in the field of Mycology including significant contributions of eminent mycologists.
- ii. General characteristics of fungi including habitat, distribution, nutritional requirements, fungal cell ultra- structure, thallus organization and aggregation, mode of reproduction and
- iii. Economic importance of fungi with examples in agriculture, environment, Industry, medicine and food.

- i. General characteristics, structure, mode of reproduction and economic importance of Actinomycetes with special reference to its application in medicine and industry.
- ii. General characteristics, occurrence, classification structure, reproduction and economic importance of Protozoa.

References:

1. Singh, R.P. General Microbiology. Kalyani Publishers, New Delhi (2007).

2. Aneja, K.R. Experiments in Microbiology, Plant pathology and Biotechnology, Fourth edition, NewAge International publishers.

3. Dubey, R.C. and Maheshwary, D.K. Text book of Microbiology. S.chand and company (1999).

4. Powar, C.B. and Daginawal, H.F. General Microbiology. Vol-I and Vol- II, Himalaya Publishing House.

5. Chakraborty P. A Textbook Of Microbiology. New central book Agency (2005).

6. Prescott, M.J., Harley, J.P. and Klein, D.A. Microbiology. 5th Edition WCB Mc Graw Hill, New York, (2002).

7. Tortora, G.J., Funke, B.R. and Case, C.L. Microbiology: An Introduction. Pearson Education, Singapore, (2004).

8. Alcomo, I.E. Fundamentals of Microbiology. VI Edition, Jonesand Bartlett Publishers. Sudbury. Massachusetts, (2001).

9. Black J.G. Microbiology-Principles and Explorations. JohnWiley &Sons Inc. New York, (2002).

10. Pelczar, MJ Chan ECS and Krieg NR, Microbiology McGraw-Hill.

11. Willey, Sherwood, Woolverton. Prescott, Harley, and Klein's Microbiology McGraw-Hill publication

12. Tortora, Funke, Case. Microbiology. Pearson Benjamin Cummings.

13. JACQUELYN G. BLACK. Microbiology Principles and explorations. JOHN WILEY & SONS, INC.

14. Madigan, Martinko, Bender, Buckley, Stahl. Brock Biology of Microorganisms. Pearson

15. Tom Besty, D.C Jim Koegh. Microbiology Demystified Mc GRAW-HILL.

DEPARTMENT - PHYSICS

MP-EL1: Mechanics

BLOCK-A

Unit-1: Laws of Motion: Frames of reference, Newton's Laws of motion, Dynamics of a system of particles, Centre of Mass.

- **Unit-2: Momentum and Energy:** Conservation of momentum, Work and energy, Conservation of energy, Motion of rockets.
- Unit-3: Rotational Motion: Angular velocity and angular momentum, Torque, Conservation of angular momentum.
- **Unit-4: Gravitation:** Kepler's Laws (statement only), Newton's Law of gravitation, motion of a particle in a central force field, satellite in circular orbit and applications, geosynchronous orbits, weightlessness, basic idea of global positioning system (GPS).

BLOCK-B:

- **Unit-5: Oscillations:** Simple harmonic motion, differential equation of SHM and its solutions, kinetic and potential energy, total energy and their time averages, damped oscillations.
- **Unit-6: Elasticity-1:** Hooke's law, stress-strain diagram, elastic moduli-relation between elastic constants, Poisson's ratio, expression for Poisson's ratio in terms of elastic constants, work done in stretching and work done in twisting a wire.
- **Unit-7: Elasticity-2:** Twisting couple on a cylinder determination of rigidity modulus by static torsion, torsional pendulum-determination of rigidity modulus and moment of inertia q,η and □ by Searles method.
- **Unit-8: Special Theory of Relativity:** constancy of speed of light, postulates of special theory of relativity, length contraction, time dilation.

DEPARTMENT - PSYCHOLOGY

EL-1 Introduction to Psychology 2 Credits

Block 1: Introduction to Psychology-I

Unit 1: Introducing Psychology -Definition, Scope, and goals

- Unit 2: Branches of Psychology
- Unit 3: Motivation

Unit 4: Emotions

Block 2: Introduction to Psychology-II

Unit 5: Sensation, Attention and PerceptionUnit 6: Learning, Memory and ForgettingUnit 7: IntelligenceUnit 8: Personality

References:

1. Charles G.Morris. Albert A. Maisto Psychology an Introduction, Prentice Hall. New Jersy.

- 2. Feldman, A. R., Understanding Psychology IV th Ed, 1996, McGraw Hill, New Delhi.
- 3. Morgan, King, Weisz &Schopler, Introduction to Psychology-V11 Ed,1993, Tata McGraw Hill, New Delhi.
- 4. Ernest R Hilgard, Richard C Atkinson ,Rita L Atkinson Introduction to Psychology Oxford Publication, New Delhi.

DEPARTMENT -BOTANY

Plant-Microbe Interactions

Overview of plant microbes interactions,

Introduction, beneficial microbes, Rhizobium bacterium and nitrogen fixation, mycorrhizal fungi.

Plant pathogens, Agrobacterium tumefaciens and crown gall disease,

Mechanisms of plant disease mechanism, some bacterial plant diseases,

Plant viruses and mechanism of plant against viruses attacks.

Fungal pathogen- mechanism of plant disease,

Omycete pathogens, Fungal mediated plant.

General concept of plant immunity,

PAMP-triggered immunity (PTI) and effectors-triggered immunity (ETI).

Transcription activator like effector and their role in virulence and disease resistance.

References

1. Lautenberg, B. (2015). Principles of Plant-Microbes Interactions: Microbes for sustainable Agriculture, Springer.

2. Stacey, G. and Keen, N. T. (1997). Plant-Microbes Interactions, Vol 4, . Springer.

3. Ramasamy, K, (2015). Plant Microbes Interactions, New India Publishing Agency.

4. Martin, F. and Kamoun, S. (2014). Effectors in Plant-Microbes Interactions 1st Edition, Wiley Blackwell.

DEPARTMENT -ZOOLOGY

MZO-IE-1: Parasites, Vectors & Communicable Diseases

Introduction to parasites.

Distribution, types, origin and evolution of parasites. Parasitism.

Types: Ecto-parasites, Endo-parasites and their adaptations.

Pathogenic micro-organisms, brief outline and classification of parasitic protozoan's: Entamoeba, Balantidium, Giardia, Trichomonus, Plasmodium, Leishmania and Trypanosoma and their diseases.

Control measures, diagnosis and therapy.

Pathogenic helminthes and vectors.

Etiology, epidemiology, pathogenesis, diagnosis, prevention and control of disease due to *Trichinella spiralis, Ancylostoma duodenale, Fasciola hepatica*, Schistosoma species.

Pathogenic Cestodes: Life cycle, treatment of diseases caused by Echinococcus, Hymenolepis and Diphyllobothrium. Scope and importance of vectors. Origin and evolution of vectors. Habitat, life cycle, pathogenicity of fleas, mites, ticks, lice's and mosquitoes.

Historical perspectives and scientists involved in the discovery of vectors and communicable Diseases.

Epidemiology, bio-ecology, life cycle of biological and mechanical Vectors. Vector-hostparasites interactions, Host-pathogen interaction, insects transmitting Bacteria and viruses.

Control and management of vectors and vector borne diseases

Control measures: cultural, chemical, biological, genetic and environmental Methods of vectors. Management of biological and mechanical vectors during Different seasons. Integrated Vector Control and Management.

Insecticide resistance in vectors, Drug resistance in pathogens.

Importance of education, awareness among public on communicable diseases and community participation. Covid-19 pandemics. Epidemiology of corona virus and its mutants. Vaccination against corona virus in India and other parts of the world.

DEPARTMENT –FOOD AND NUTRITION SCIENCE

ELMFNS-01 FOOD PSYCHOLOGY

Credits: 2

BLOCK 1: FOOD: PREFERENCES AND CHOICES

- **Unit 1: Food:** Physiological definition and significance, meaning of food, food classification, Food as statement of self-identity, Social interaction, Cultural identity
- Unit 2: The Role of Food and Eating on Personality and Social Development: Psychology of eating, Food and emotion regulation, Food in daily living, Food Socialization, Food and control of others
- **Unit 3: Food Preferences and Fluctuations:** Developmental Models, Cognitive Models & Psychophysiological Models, Physiology of food choice, Likes and Dislikes, acquired food preferences, Attitudes towards change, Food and sensory stimulus, Factors influencing eating behavior (biological, environmental, individual, food characteristics,

culture etc., Effect of eating on food selection and preferences, Understanding of the body and self – selection of the diet.

Unit 4: Food choices across lifespan and influence of society: The changing role of the senses in food choice and food intake across lifespan, Food in security and health across lifespan, Influence of media and advertisements, Digital platform and influence on food choices

BLOCK 2: EATING DISORDERS AND TREATMENTS

- Unit 5: Mood, Emotions, food cravings and addictions: relation with food preferences, Connection between mood and eating, Biological and physiological aspects of food cravings, Stress and eating behavior, Food addiction - description, neurobiology of food addiction
- Unit 6: Eating disorders and treatment: Anorexia nervosa, Bulimia nervosa and binge eating Disorder-Definition, Symptoms, believed causes, Classification, Risk factors, Common myths of eating disorders, Treatment & dietary management
- Unit 7: Overeating, Obesity and Weight management: Definition, Prevalence, Classification of Body Mass Index, Types & patterns, Etiology, Physiological component, Fad diets, Risk factors, Treatment Weight management (Behavior & Cognitive), Lifestyle modifications, Dietary modification (calorie restricted diet)
- Unit 8: You are what you eat- Approaches to change the dietary behavior: Multidisciplinary approach, Strategies to support healthy dietary behavior: Encouraging healthy eating, Selection of food, Meal & portion size, developing education materials, Motivation & economics, Benefits of exercise, Stage classification for change, Barriers affecting the clinical outcome

REFERENCES:

 <u>Smith John L.</u> (2002), The Psychology of Food and Eating (English, Hardcover, Smith John, Publisher: Palgrave MacmillanL.), ISBN: 9780333800201, 0333800206.

Alexandra W. LogueOct 2017, The Psychology of Eating and Drinking Fourth Edition.

Annexure II INTER- DISCIPLINARY COURSE

(Open Elective) for Second Semester

ವಿಭಾಗ– ಕನ್ನಡ

ಪತ್ರಿಕೆ–೬: ಪ್ರಾಚೀನ ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಇತಿಹಾಸ EL-2.1 (ಕ್ರೆಡಿಟ್–೨) ಬ್ಲಾಕ್–೩೮: ಸಾಹಿತ್ಯ ಚರಿತ್ರೆಯ ಉಗಮ ಮತ್ತು ವಿಕಾಸ ಘಟಕ–೧೪೯: ಸಾಹಿತ್ಯದ ಉಗಮ, ಬೆಳವಣಿಗೆ, ಉದ್ದೇಶ.

ಘಟಕ-೧೫೦: ಪ್ರಾಚೀನ ಪೂರ್ವ ಶಾಸನಸಾಹಿತ್ಯ.

ಘಟಕ-೧೫೧: ಪಂಪ ಪೂರ್ವ ಯುಗದ ಸಾಹಿತ್ಯ.

ಘಟಕ-೧೫೨: ಕನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆಯ ವಿಭಾಗಕ್ರಮ.

ಬ್ಲಾಕ್-೩೯: ಪ್ರಾಚೀನ ಕನ್ನಡ ಸಾಹಿತ್ಯ

ಘಟಕ-೧೫೩: ಪ್ರಾಚೀನ ಕನ್ನಡ ಸಾಹಿತ್ಯ ರೂಪಗಳು; ಚಂಪೂ, ವಚನ, ರಗಳೆ, ಷಟ್ಪದಿ, ಸಾಂಗತ್ಯ ಇತ್ಯಾದಿ.

- **ಘಟಕ–೧೫೪**: ಪ್ರಾಚೀನ ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪರಿಕಲ್ಪನೆಗಳು; ಚರಿತ್ರೆ–ಪುರಾಣ, ಧರ್ಮ–ಕಾವ್ಯಧರ್ಮ, ಹಿಂಸೆ–ಅಹಿಂಸೆ, ಮಾರ್ಗ–ದೇಶಿ, ಲೌಕಿಕ–ಆಗಮಿಕ, ವಸ್ತುಕ–ವರ್ಣಕ, ಪ್ರಭುತ್ವ–ಪ್ರತಿರೋಧ.
- **ಘಟಕ–೧೫೫**: ಪ್ರಾಚೀನ ಕನ್ನಡ ಕವಿ–ಕೃತಿ–ಕಾಲ–ದೇಶ–ಭಾಗ ೧. ಪಂಪ, ರನ್ನ, ಮೊನ್ನ, ೧ನೆ ಚಾವುಂಡರಾಯ, ನಾಗವರ್ಮ ೨ನೆಯ ಚಾವುಂಟರಾಯ, ನಾಗಚಂದ್ರ, ನಯಸೇನ, ದುರ್ಗಸಿಂಹ, ಬ್ರಹ್ಮಶಿವ, ಕರ್ಣಪಾರ್ಯ, ಜನ್ನ.
- ಘಟಕ–೧೫೬: ಪ್ರಾಚೀನ ಕನ್ನಡ ಕವಿ–ಕೃತಿ–ಕಾಲ–ದೇಶ–ಭಾಗ ೨. ಆಂಡಯ್ಯ, ನೇಮಿಚಂದ್ರ, ರುದ್ರಭಟ್ಟ ಪ್ರಮುಖ ವಚನಕಾರರು – ಜೇಡರ ದಾಸಿಮಯ್ಯ, ಬಸವಣ್ಣ, ಅಕ್ಕ ಮಹಾದೇವಿ, ಅಲ್ಲಮಪ್ರಭು, ಚನ್ನಬಸವಣ್ಣ, ಹರಿಹರ, ರಾಘವಾಂಕ, ಕುಮಾರವ್ಯಾಸ, ಲಕ್ಷ್ಮೀಶ, ಪ್ರಮುಖ

ಕೀರ್ತನಕಾರರು, ಚಾಮರಸ, ಕುಮಾರವಾಲ್ಮೀಕಿ, ಸರ್ವಜ್ಞ, ಷಡಕ್ಷರಿ, ಸಂಚಿ ಹೊನ್ನಮ್ಮ, ನಂಜುಂಡ, ರತ್ನಾಕರವರ್ಣಿ, ಮುದ್ಗಣ, ಕೆಂಪುನಾರಾಯಣ.

ಪರಾಮರ್ಶನ ಗ್ರಂಥಗಳು

- ೧. ಗತಿಬಿಂಬ : ಜಿ.ಎಸ್. ಶಿವರುದ್ರಪ್ಪ, ಬೆಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ, ಬೆಂಗಳೂರು
- ೨. ಕಾವ್ಯ ವಿಹಾರ : ಕುವೆಂಪು, ಉದಯರವಿ ಪ್ರಕಾಶನ, ಮೈಸೂರು, ೧೯೬೯
- ೩. ಸಮಗ್ರ ಕನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ : ಬೆಂಗಳೂರು, ವಿಶ್ವವಿದ್ಯಾನಿಲಯ ಬೆಂಗಳೂರು, ೨೦೦೨
- ೪. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ : ಕೆ. ವೆಂಕಟರಾಮಪ್ಪ, ಪ್ರಸಾರಾಂಗ, ಮೈಸೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ, ಮೈಸೂರು
- ೫. ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿ: ದೇವುಡು, ಶಾರದಾ ಪ್ರಕಾಶನ, ಮೈಸೂರು, ೧೯೩೫
- ೬. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಸಂಗಾತಿ : ಕೀರ್ತಿನಾಥ ಕುರ್ತಕೋಟಿ, ಮನೋಹರ ಗ್ರಂಥಮಾಲೆ, ಧಾರವಾಡ
- 2. ಶೈಲಿ : ಎಸ್.ವಿ.ರಂಗಣ್ಣ, ಮೈಸೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ, ಮೈಸೂರು, ೧೯೭೬
- ೮. ಶತಮಾನದ ಕನ್ನಡ ಸಾಹಿತ್ಯ : ಸಂಪಾದಕರು, ಜಿ.ಎಸ್. ನಾಯಕ, ಕನ್ನಡ ಸಾಹಿತ್ಯ ಅಕಾಡೆಮಿ, ಬೆಂಗಳೂರು
- ೯. ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಇತಿಹಾಸ : ರಂ. ಶ್ರೀ. ಮುಗಳಿ, ಕೇಂದ್ರ ಸಾಹಿತ್ಯ 🛛 ಅಕಾಡೆಮಿ, ನವದೆಹಲಿ, ೧೯೬೩

೧೦. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ : ರಂ.ಶ್ರೀ. ಮುಗಳಿ, ಉಷಾ ಸಾಹಿತ್ಯ ಮಾಲೆ, ಮೈಸೂರು, ೧೯೭೧

೧೧. ಬಿಂಬ: ಚದುರಂಗ, ಸಂವಹನ ಪ್ರಕಾಶನ, ಮೈಸೂರು

೧೨. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ ಸಂಪುಟಗಳು : ಕುವೆಂಪು ಕನ್ನಡ ಅಧ್ಯಯನ ಸಂಸ್ಥೆ, ಮೈಸೂರು. ವಿಶ್ವವಿದ್ಯಾನಿಲಯ, ಮೈಸೂರು, ೧೯೮೨

- ೧೩. ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಾಚೀನತೆ: ಪ್ರಧಾನ ಸಂಪಾದಕರು, ಎ. ರಂಗಸ್ವಾಮಿ, ಲೇ. ಎಚ್.ಪಿ. ಗೀತಾ, ಜನಪ್ರಿಯ ಕನ್ನಡ ಮಾಲೆ, ಕನ್ನಡ ಅಧ್ಯಯನ ಮತ್ತು ಸಂಶೋಧನಾ ವಿಭಾಗ, ಕರಾಮುವಿ, ಮೈಸೂರು, ೨೦೧೧
- ೧೪. ಪ್ರಾಚೀನ ಕನ್ನಡ ಕಾವ್ಯ ಸ್ಥಿರತೆ ಮತ್ತು ಚಲನ ಶೀಲತೆ : ಪ್ರಧಾನ ಸಂಪಾದಕರು, ಎ. ರಂಗಸ್ವಾಮಿ, ಲೇ. ಶಿವರಾಮಯ್ಯ, ಜನಪ್ರಿಯ ಕನ್ನಡ ಮಾಲೆ, ಕನ್ನಡ ಅಧ್ಯಯನ ಮತ್ತು ಸಂಶೋಧನಾ ವಿಭಾಗ, ಕರಾಮುವಿ, ಮೈಸೂರು, ೨೦೧೨ ೧೫. ಕನ್ನಡ ಕೈಪಿಡಿ: ಸಂಪುಟ ೨, ಪ್ರಸಾರಂಗ, ಮೈಸೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ, ಮೈಸೂರು, ೨೦೦೭

DEPARTMENT - ENGLISH

EL-2.1: INDIAN LITERATURE-II

OBJECTIVES

- To appreciate artistic values in Hayavadana and the use of myth
- To know the importance of Indian English historical plays
- To appreciate Sri Aurobindo as a poet and critic
- To comprehend the different theories of aesthetic experience of art

<u>BLOCK -I</u>

Girish Karnad: Hayavadana Gurucharan Das: Larin Sahib

<u>BLOCK –II</u>

M. Hiriyanna: Art Experience

Sri Aurobindo: Selections: The Poets of the Dawn and The Poets of the Dawn 3 (The Future Poetry)

Suggested Reading:

- K.R.Srinivas Iyengar: Indian Writing in English .Macmillan, 1979.
- M.K.Naik: Critical Essays on Indian Writing in English.Sahitya Akademi, 1969.
- Narasimhaiah C.D: The Swan and the Eagle. Indian Institute of Advanced Study, 1987.
- Meenakshi Mukherjee: The Twice Born Fiction. Heinemann Educational Publishers, 1972.

DEPARTMENT - HINDI

<u>हिंदी सिनेमा</u>

- सिनेमा का उद्भव और विकास
- मूक चलचित्र और दादा साहब फाल्के य्ग
- दूसरा पढाव, सवाक चलचित्र अथवा आलमआरा
- रंगीन सिनेमा का य्ग
- सामाजिक सिनेमा एक विवेचन
- धर्म एवं सांस्कृतिक सिनेमा एक विवेचन
- राजनैतिक सिनेमा एक विवेचन
- आर्थिक सिनिमा एक विवेचन
- हास्य एवं व्यंग्य सिनेमा एक विवेचन
- बाल सिनेमा
- सिनेमा एवं संवेदना
- सिनेमा एव भाषा-शिल्प सिनेमा एवं गायन
- सिनेमा एवं पात्र संयोजना
- सिनेमा एवं नैतिक मूल्य
- अनूदित सिनेमा
- सिनेमा का तुलनात्मक अध्ययन
- फिल्म समीक्षा.....**आदि**

- सिनेमा साहित्य और समाज- प्रहलाद अग्रवाल, अनामिका प्रकाशन, नई दिल्ली
- कथाकार कमलेश्वर और हिंदी सिनेमा- उज्ज्वल अग्रवाल, राजकमल प्रकाशन, नई दिल्ली
- बॉलिव्ड पाठ विमर्श के संदर्भ- ललित जोशी, वाणी प्रकाशन, नई दिल्ली
- फ्लैशबैक, प्रभुनाथ आज़मी, शिल्पायन, नई दिल्ली
- नाटक के सौ बरस, हरिश्चंद्र अग्रवाल और अजित पुष्कल, शिल्पायन, नई दिल्ली

DEPARTMENT - TELUGU

E. L. 2.1 TELUGU SAMSKRUTHI - SAMAJAM

Block - 1: ANDHRULA CHARITHRA - SAMSKRUTHI

- Unit 1:Samskruthi Vaisistyam
- Unit 2: Andhrula Charithra Samskruthi Paraspara Prabhavam
- Unit 3:Andhrula kalalu
- Unit 4: Andhrula basha samajam

Block - 2: ANDHRULA AACHARALU -SAMPRADHAYALU

- Unit 1: Andhrula Pandugalu
- Unit 2: Sthrela Nomulu Vrathalu
- Unit 3: Andhrula Sangikaacharalu
- Unit 4: Andhrula Sampradhayalu

DEPARTMENT - HISTORY

OEL2.1 Social Reform Movements in Modern India

Objective: The course is aims to trace the causes for the division of society in various sections and need for reformation. Further it explains age old social evils which crippled Indian society.

Pedagogy: personal contact programmes, audio video programmes, online lectures

Assignments, etc

Credits: 2. Examination Duration: 1 1/2 hours and Maximum Marks: 40

Course outcomes

After completing this course the students should be able to

- Understanding the contributions of the Raja ram Mohan Roy Dayananda Sarawathi towards the Indian modernity
- Analyse the Jyothibai pule Savithribai Pule Ambedkar's contributions to Indian social reform movements
- Evalute the works of Sahu Maharaj and Krishna raja wadiyar IV patronage to social Justice.

Block-I

Unit:1

Colonial Discovery of India : Orientalism, Anglicism, Evangelism-Understanding Indian Society, Meaning of Social Reform. The Concept of Modernity : Western Impact – Indian Response.

Unit : 2

Rajaram Mohan Roy and Brahmo Samaj, Dayananda Sarawathi and Arya Samaj-Nationalism and Society – Prarthana Samaj.

Unit:3

Jyothi Ba- Phle and Savithri Ba Pule, Social and education reforms.

Unit:4

Communalism, Eradication of Communalism, Muslim League, Wahhabi and Pan Islamism-Syed Ahmed and Aligarh Movement.

Block-II

Unit:5

The debate over the interpretation of Shastras – Ishwar Chandra Vidya Sagar - B.M.Malabari – Vivekananda – M.G. Ranade – Bal Gangadhar Tilak.

Unit :6

Dr. B.R.Ambedkar-, His views on Society, A caste and its annihilation, Religion and Economy, M.K.Gandhi- E.V.Ramswamy Periyar and Sri.Narayanguru, Ayyan kali.

Unit:7

The reformers – Kandukuri Veereshalingam – Pandit Shivanatha Shastry – Gopal Ganesh Agarkar-K.T.Telang-Maharma.

Unit :8

D.K.Karve, Maharaj Saiyyaji Rao Gaekwad of Baroda – Chatrapathi Shahu Maharaj of Kolhapur and Maharaja Krishnaraja Wodeyar IV of Mysore.

Suggested readings:

- 1. Nararajan : A Century of Social Reform in Indian.
- 2. Seetharam Singh : Nationalism and Social Reform in India
- 3. Dhananjaya Keer : Ambedkar, Life and Mission
- 4. Dhananjaya Keer :Mahatma Jyoti Rao Phule : Father of Social Revolution in India
- 5. Charless Heimsath R : Indian Nationalism and Hindu social Reform
- 6. A.S.Altekar : Position of Women In Hindu Civilization.
- 7. Gail Omvedt : Cultural Revolt in a Colonial Society The Non Brahmin Movements in Western India.
- 8. Gail Omvedt : Dalits and Democratic Revolution.
- 9. Ravindrakumar : Selected Documents of B.G.Tilak.
- 10. S. Ramkrishna : Social Reform Movements in Andhra
- 11. M.K.Gandhi : Women and Social Injustice.

ವಿಜಯ ಪೊಣಚ್ಚು ತಂಬಂಡ (ಸಂ), ಭಾರತ ಉಪಖಂಡದ ಆಧುನಿಕ ಪೂರ್ವ ಚರಿತ್ರೆ ವಿವಿಧ ಆಯಾಮಗಳು – ಸಂಪುಟ–03, ಪ್ರಸಾರಾಂಗ, ಕನೃಡ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ, ಹಂಪಿ.

DEPARTMENT - ECONOMICS

EL2.1: Institutions for International Development

- **Objective:** To enable the Students to understand the need and importance of various International Institutions.
- **Pedagogy:** A Combination of Lectures, Group Discussion, Assignments.
- Credits: 2 ; Examination Duration: 1¹/₂ and Maximum Marks: 50 (Internal Assessment Marks = 10 and Semester-end Examination =40)

Course Inputs

Block – I Economic Issues at Global and National Level

Unit – 1 Globalisation

Globalisation – Forces Driving Globalisation – Income Inequality – National Integrity – Impact on Labour – Multinational corporations – Global Business Environment – National Business Environment.

Unit - 2Legal Issues of Business at Global and National LevelPolitical Risks - Legal System - Business Ethics - Centrally Planned Economy -
Mixed Economy - Market Economy - Human Development

Unit – 3 International Trade Importance – Volume – Direction – Composition – Trends – Theories of Trade Mercantilism – Absolute Advantage – Comparative Advantage – International Product Life Cycle – Political, Economic and Cultural Motives behind Government Intervention.

Unit – 4 GATT and WTO

Importance – objectives – Functions - GATT and W.T.O – India and WTO.

Block – II Economic Integration and International Business Issues

Unit – 5 Regional Economic Integration

Meaning – Effects – Integration in Europe: European Union – Integration in Americans : North American Free Trade Agreement (NAFTA) – Latin American Integration Association (LAIA) – Free Trade Area of Americans (FTAA) and Transatlantic Economic Partnership.

Unit – 6 Integration in Asia

Association of Southern East Asian Nations (ASEAN) - Asia Pacific Economic Cooperation (APEC) – Integration in middle East : Gulf Cooperation Council (GCC) – BRICS – SAARC.

Unit – 7 International Financial Markets International capital markets – Foreign Exchange markets – Currency

Convertibility - International Monetary System.

Unit – 8 Issues in International Business Trade War – Balance of Payment – Terrorism – Oil Crisis – Smuggling – Dumping – Environmental Degradation – Exhibit of Nuclear power – Covid 19 and other pandemics.

References:

01. Apte A.N. (2011) International Financial Management, Tata McGraw Hill Pub., Co. Ltd., New Delhi.

- 02. Bhambari C.P, (1980) The World Bank and India, Vikas Publishing House, New Delhi.
- 03. International Development Association, Annual Reports.
- 04. International Finance Corporation, Annual Reports.
- 05. International Monetary Fund, Annual Reports.
- 06. World Bank, (1995) The Evolving Role of the World Bank in the First Half Century, Washington D.C.
- 07. World Bank, World Bank in India, Washington, D.C. USA
- World Bank, World Development Reports, and Annual Reports.
 Palle Krishna Rao, (2005) WTO, Text and Cases, PSG Excel Series, New Delhi.

DEPARTMENT - POLITICAL SCIENCE

(OEL-I) Indian Constitution Block-I

Framing of the Indian Constitution.
Preamble and Salient Features of the Indian Constitution.
Fundamental Rights and Duties.
Directive Principles of the State Policy.
Union Legislature : Composition, Powers and Functions.
Union Executive : President and Vice-President - Election, Powers and
Functions, Prime ministers and Council of Minister - Powers and
Functions.
State Legislature : Composition, Powers and Functions, State Executive
-Governor and Chief Minister.
The Judiciary : Supreme Court and High Court - Composition, Jurisdiction and Functions.

References:

- 1. Andre Beteille, 1965. Caste, class, and Power. Berkley: University of California Press.
- 2. Appadorai, A 1968. india: Studies In Social And Political Development 1947-1967. New Delhi: Aisa Publishing House.
- 3. Desai, A R. 2016. Social Background of Indian Nationalism. Los Angeles: Papular Prakashan.
- 4. Granville Austin, 2000. The Indian Constitution: Cornerstone of a Nation. Melbourne: Oxford University Press.
- 5. Hanson and Douglas, 1972. India's Democracy. New York city: W W Norton & Co Inc.
- 6. Johari J C 1974. Indian Government and Politics. New Delhi: Vishal Publications.
- 7. Karunakaran, K.P 1964. Continuity and Change in Indian Politics. New Delhi: People`s Pub. House.
- 8. Kochanek. A. 1968. The Congress Party of India: the Dynamics of a One-Party Democracy. New Jersey: Princeton University Press.
- 9. Morris Jones, 1967. The Government and Politics of India. London: Hutchinson University Library.
- 10. Myron Weiner, 1957. Party Politics in India. New Jersey: Princeton University Press.
- 11. Myron Weiner, 1967. Party Building in New Nation. Chicago: University of Chicago Press.

- 12. Palmer, N D 1971. The Indian Political System. Boston: Houghton Mifflin.
- 13. Partha Chatterjee, 1998. State and Politics in India. University of Michigan: Oxford University Press.
- 14. Pylee, M V 1960. Constitutional government in India. Bombay: Asia Pub. House.
- 15. Rajni Kothari, 1970. Politics in india. The University Of Michigan: Little Brown
- 16. Rajni Kothari, 1995. Caste in Indian Politics. Telangana: Orient Blackswan.
- 17. Venkatarangaiya: M Shiviah, 1975. Indian Federalism. New Delhi: Arnold-heinemann Publishers.
- 18. Zoya Hasan, 2000. The State in Indian Politics. Landon: Sage publication.

DEPARTMENT - SOCIOLOGY

Study of Indian Society -02 Credits

Course Description

Every science has its own classical theories, which stand as eternal in their explanatory power and prowess to transcend the time and region. This course intends to introduce the learners to the classical period of sociology which is not just a bundle of theories but a consistent tradition and formative period, even contemporary theories cannot eschew from being inspired. After studying this course, following learning outcomes can be expected.

Course Objectives

- 1. To appreciate the organizational framework of Indian society
- 2. To appreciate the aspects unity and diversity of Indian society
- 3. Examine the social issues in contemporary India

Learning Outcomes

Following outcomes are expected from the learners after successfully completing the course. Learner can/has

LOC-1: sociological insights about the social structural and organizational aspects of Indian society

LOC-2: present the changes in institutional framework of Indian society

LOC-3: recognize the causes for major social issues and present realistic remedies

Course Content

Block-1 Social Organizations

Unit-1 Unity and Diversity-Problem of Integration

Unit-2 Caste-Characteristics and Recent Changes

Unit-3 Marginalization-SC, ST, OBC and Minorities

Unit-4 Changes in Family and Concerns of the Aged

Block-2 Social Issues in Contemporary India

Unit-5 Environmental Sanitation and Ecological Degradation

Unit-6 Educated Unemployment and Employability

Unit-7 Social Unrest-Terrorism, Naxalism, Communalism and Corruption

Unit-8 Child Rights and Right to Education (RTE)

References

• Ahuja, Ram. 2002. Study of Social Problems. Jaipur & New Delhi: Rawat Publications

- Atal, Yogesh. 1979. The Changing Frontiers of Caste. National Publishing House: Delhi
- Beteille, Andre. 1971. Caste, Class and power. Berkeley: University of California.
- Betteille, Andre. 1974. Social Inequality, New Delhi: Oxford University Press.
- Betteille, Andre. 1992. Backward Classes in Contemporary India. New Delhi: Oxford University Press.
- Berreman, G.D. 1979. Caste and Other Inequalities: Essays in Inequality. Meerut: Folklore Institute.
- Dube, Leela. 1997. Women and Kinship, Comparative Perspectives on Gender
- Southern South Asia.
- Das, Veena. 2006. Oxford Handbook of Indian Sociology. New Delhi: Sage
- Dube, S C. 1990. Study of Indian Society. New Delhi: National Book Trust
- Jha, Hetukar. 2015. Sanitation in India. Delhi: Gyan Books.
- Karve, Iravathi. 1990. Kinship Organization in India.
- Pais, Richard. 2015. Sociology of Sanitation. Delhi: Kalpaz Publications.
- Pathak, Bindeshwar. 2015. Sociology of Sanitation. Delhi: Kalpaz Publications.
- Singer, Milton & Cohen, Bernards. 1996. Structure and change in Indian Society. Jaipur: Rawat
- Singh, Yogendra, Modernization of Indian Tradition. Jaipur & New Delhi: Rawat
- Srinivas, M N. 1995. Social Change in Modern India: Orient Blackswan
- Srinivas, M. N. 1962. Caste in Modern India and Other Essays. Asia Publishing House: Delhi

DEPARTMENT – ANCIENT HISTORY AND ARCHEOLOGY

AHA OE 2.1	Cultural History of Hoysalas (OE)
Block - 1	Early Kings
Unit 1	Archaological and Literary Sources

Unit - 1	Archeological and Literary Sources
Unit - 2	Theories of Origin of Hoysalas – Sala – Nripakama – Ereyanga
Block - 2	Important Rulers
Unit - 3	Vishnuvardhana - VeeraNarasimha – I
Unit - 4	Ballala – II - Narasimha – II - Narasimha III and Ballala – III
Block - 3	Cultural Contributions
Unit - 5	Hoysala polity - Economy
Unit –6	Hoysala Society – Religion – Education - literature
Block - 4	Art and Architecture
Unit - 7	Hoysala Architecture
Unit – 8	Hoysala Art

References:

- 1. Epigraphia Carnatica: Relevant Volumes
- 2. Derrett Duncan, M.J: The Hoysalas, 1957
- 3. Dhakey M.A: Encyclopedia of Indian Temple Architecture
- 4. Desai P.B: History of Karnataka
- 5. Foekema Gerard: A Complete Guide to Hoysala Temples
- 6. Gopinatha Rao T.A: Elements of Hindu Iconography, Vols
- 7. Kelleson Collyer: The Hoysala Artists Their Identity Style
- 8. Krishna Murthy M.S: The Hoysala Art, Kuppam, 2007
- 9. Padmnabha K: Hoysala Sculptures : A cultural Study

10.Sheik Ali B (Ed): The Hoysala Dynasty , 1972 11.William Cohelo: The HoysalaVamsha, 1950

12. Annual Reports of the Department of Archaeology, Mysore 1939 – 46

- 13.Settar S: Hoysala Temples
- 14. Marg: In Praise of Hoysala Art
- 15. Narasimhachar R; Lakshmidevi Temple at Doddagaddhavalli
- 16. Shastri KAN: The Cholas, 17. Shastri KAN: History of South India

DEPARTMENT - EDUCATION

IDC - 2 HIGHER EDUCATION

BLOCK - 1 HIGHER EDUCATION – ORGANIZATION AND TEACHING – LEARNING

Unit-1 Higher Education

Unit-2 Teaching Learning in Higher Education – I

Unit-3 Teaching-Learning in Higher Education – II

Unit-4 Problems and Innovations in Higher Education

BLOCK - 2 HIGHER EDUCATION – SOCIO-PSYCHOLOGICAL AND MANAGEMENT DIMENSIONS

Unit-5 Socio-Psychological Background of College Students Unit-6 Problems of College Students Unit-7 Higher Education – Management Dimensions Unit-8 Higher Education Teacher

References:

- 1. Shills Edward (1989) 'The modern university Liberal Democracy'.
- 2. Abraham, Abu (1988) The Penguin, Book of Indian cartoons, New Delhi.
- 3. Chandra, Bipan (1984) Communalism Modern India, New Delhi.
- 4. Chauhan S.S (1989) Innovations in Teaching Learning Process, New Delhi, Vikas.
- 5. Srivastva A.B and Sharma K.K (1985) Elementary Statistics in Psychology and Education, New Delhi, Sterling Publishers Pvt. Ltd.,

DEPARTMENT - COMMERCE

Elective Course – EL2.1: Entrepreneurship Development

- **Objective:** To enable the Students to understand about the different aspects of Entrepreneurship Development.
- **Pedagogy:** A Combination of Lectures, Group Discussion, Assignments.
- **Credits:** 2 ; Examination Duration: 1¹/₂and Maximum Marks: 50 (Internal Assessment Marks = 10 and Semester-end Examination =40)

Course Inputs

Block I

- Unit -1: Entrepreneur and Entrepreneurship: Introduction Evolution Characteristics Distinction between Entrepreneur and Manager Functions Types Entrepreneur Concept of Entrepreneurship Growth of Entrepreneurship in India Role of Entrepreneurship in Economic Development
- Unit 2: Women Entrepreneurship: Introduction Concept Statistical Evidence New Age Women Functions Growth Problems Recent trends in Development of Women Entrepreneurship.
- Unit -3: Rural Entrepreneurship: Introduction Meaning Need Rural Industrialisation in Retrospect Problems Development of Rural Entrepreneurship NGOs and Rural Entrepreneurship.
- Unit -4: Conceptual Models of Entrepreneurship: Introduction Models of John Kao Udai Pareek and Nadakarni– NISIET.

Block II

- Unit 5: Factors Affecting Entrepreneurial Growth And Competencies: Introduction

 Economic Factors Non-Economic Factor Government Actions Entrepreneurial Competencies: Meaning – Major Entrepreneurial Competencies – Developing Competencies.
- Unit -6: Entrepreneurial Motivation and Mobility: Introduction Motivation Motivation Theories Motivating Factors Achievement Motivation Factors Influencing Mobility Occupational Mobility Locational Mobility.
- Unit 7: Entrepreneurship Development Programes: Introduction Need for EDPs Objectives of EDPs Course Contents and Curriculum of EDPs Phases of EDPs Evaluation of EDPs.
- Unit -8: Institutional Support System for Entrepreneurship: Introduction DICs SISIs SIDCOs NISIET EDIT NIESBU TCOs- A Broad Overview of Central and State Level Financing Institutions.

Books Recommended for Reference

- **a.** Vasanth Desai, The Dynamics of Entrepreneurial Development and Management, Himalaya Publishing House.
- **b.** A. N Desai, Entrepreneurship Management, Ashish Publishing House.
- c. Chandra Prasanna, Project Preparation, Appraisal and Implementation, Tata McGraw Hill.
- **d.** Khanka, S.S, Entrepreneurial Development, S. Chand Publications.
- e. Prasanna Chandra, Projects: Planning, Analysis, Selection, Implementation and Review, Tata McGraw Hill.

DEPARTMENT - MANAGEMENT

E-COMMERCE

Credits: 2

Module 1: E-commerce and its Technological Aspects:

Overview of developments in Information Technology and Defining E-Commerce: The scope of E commerce, Electronic Market, Electronic Data Interchange, Internet Commerce, Benefits and limitations of E-Commerce, Produce a generic framework for E-Commerce, Architectural framework of Electronic Commerce, Web based E Commerce Architecture.

Module 2: Electronic Data Interchange: Benefits of EDI, EDI technology, EDI standards, EDI communications, EDI Implementation, EDI Agreements, EDI Security. Electronic Payment Systems, Need of Electronic Payment System: Study and examine the use of Electronic Payment system and the protocols used, Study Electronic Fund Transfer and secure electronic transaction protocol for credit card payment. Digital economy: Identify the methods of payments on the net – Electronic Cash, cheques and credit cards on the Internet.

References:

1. Elias. M. Awad, " Electronic Commerce", Prentice-Hall of India Pvt Ltd.

2. Ravi Kalakota, Andrew B. Whinston, "Electronic Commerce-A Manager's guide", Addison-Wesley.

3. Efraim Turban, Jae Lee, David King, H.Michael Chung, "Electronic Commerce–A Managerial Perspective", Addison-Wesley.

4. Elias M Award, "Electronic Commerce from Vision to Fulfilment", 3rd Edition, PHI, Judy Strauss, Adel El-Ansary, Raymond Frost, "E-Marketing", 3RDEdition, Pearson Education

DEPARTMENT - BIO CHEMISTRY

Basics of Bioorganic chemistry for Biology graduates.

- Introduction to Organic chemistry: Classification of organic compounds, unique characteristics, IUPAC nomenclature of organic compounds (including bifunctional).
- Reaction mechanisms: Classification of organic reactions: substitution, addition, elimination and rearrangement with one example for each. Concepts of the following carbon anions, carbon cations, free radicals, carbenes, nucleophiles and electrophiles.
- Cycloalkanes: Reactivities and relative stability, Bayer's strain theory. Sachse-Mohr theory. Boat and chair form of cycloalkanes. Axial and equatorial bonds.
- Arenes: Structue of Benzene–resonance and molecular orbital theories. Aromaticity. Mechanism of Nitration and Friedel-Craft's reaction. Electronic interpretation of the orienting influence of substituents in the electrophilic substitution of Toluene, Chlorobenzene, Nitrobenzene and Phenol. Polynuclear hydrocarbons–Resonance structures of Naphthalene, Anthracene and phenanthrene.
- S_N1 and S_N2 reactions, mechanism with an example for each. Concept of elimination reactions. Example –n-butyl chloride.
Alcohols: Classification, monohydric, alcohols-distinguishing reactions for primary, secondary and tertiary alcohols.

Trihydric alcohols: Glycerol, Properties, (KHSO₄, HNO₃, Oxalic acid and HI)

Phenols: Acidity of phenols, Effect of substitution on acidity

Stereochemistry: Stereoisomerism, types, Fischer-projection formulae, asymmetric carbon atom, molecular dissymmetry, chirality, optical isomerism: ex. Glyceraldehyde, Lactic acid, Tartaric acid. Nomenclature of enantiomers. D- and L- system, Recemisation and resolution.

Heterogeneous and Homogenous hydrogenation of oils.

Selected References:

- 1. Basic Principles of Organic Chemistry, Roberts and Caserio, W. A. Benjamin, Inc. (1964).
- 2. Organic Chemistry, Morrison and Boyd, Allyn and Bacon Inc (1992).
- 3. Principles of Inorganic chemistry by Cotton & Wilkinson, Wiley (1999).
- 4. Textbook of Organic chemistry by Ahluwalia V K & Madhuri G Narosa publications (2001).
- 5. Physical chemistry by Castellan G W, Narosa Publications (2004).
- 6. Physical chemistry by Chakraborthy D K, Narosa Publications (2004).

DEPARTMENT - BIOTECHNOLOGY

MBT EL-2 FUNDAMENTAL OF BIOTECHNOLOGY

Scope and Introduction to Biotechnology History & Introduction to Biotechnology What is Biotechnology? Definition of Biotechnology, Traditional and Modern Biotechnology, Branches of Biotechnology

Plant, Animal Biotechnology, Marine Biotechnology, Agriculture, Healthcare, Industrial Biotechnology, Pharmaceutical Biotechnology, Environmental Biotechnology.

Applications Biotechnology Applications of Biotechnology in Agriculture : GM Food, GM Papaya, GM Tomato, Fungal and Insect Resistant Plants BT Crops, BT Cotton and BT Brinjal Pros and Cons Biotechnological applications in Crop and Livestock Improvements Modifications in Plant Quality Golden Rice, Molecular Pharming, Plant Based Vaccines Ethics in Biotechnology and IPR 15 lectures

Food and Fermentation Biotechnology Food Biotechnology Biotechnological applications in enhancement of Food Quality Unit Operation in Food Processing Quality Factors in Pre processed Food Deterioration and its Control Rheology of Food Products Microbial role in food products Yeast, Bacterial and other Microorganisms based process and products Fermentation Technology Definition, Applications of Fermentation Technology Microbial Fermentations Overview of Industrial Production of Chemicals (Acetic Acid, Citric Acid and Ethanol), Antibiotics, Enzymes and Beverages Molecular Biology - Replication DNA Replication in Prokaryotes and Eukaryotes Semiconservative DNA replication, DNA Polymerases and its role, E.coli Chromosome Replication, Bidirectional Replication of Circular DNA molecules. Rolling Circle Replication, DNA Replication in Eukaryotes DNA Recombination – Holliday Model for Recombination Transformation

Mutation and DNA Repair Definition and Types of Mutations. Mutagenesis and Mutagens. (Examples of Physical, Chemical and Biological Mutagens) Types of Point Mutations, DNA REPAIR Photo reversal, Base Excision Repair, Nucleotide Excision Repair, Mismatch Repair, SOS Repair and Recombination Repair.

Genetic Engineering Experimental evidences for DNA and RNA as Genetic Material. Genetic Engineering in Ecoli and other Prokaryotes, Yeast, Fungi and Mammalian Cells Cloning Vectors-Plasmids (pBR 322, pUC) Vectors for Plant and Animal Cells, Shuttle Vectors, YAC Vectors, Expression Vectors Enzymes- DNA Polymerases, Restriction Endonucleases, Ligases, Reverse Transcriptase's, Nucleases, Terminal Transferees, Phosphatases Isolation and Purification of DNA (Genomic, Plasmid) and RNA,, Identification of Recombinant Clones

Block-1	Title: Physical parameters of molecules
Unit-1	Thermodynamics: First and second laws of thermodynamics. Concept of entropy and free energy, entropy as a measure of unavailable energy. Entropy and free energy changes and spontaneity of process.
Unit-2	Chemical kinetics: Rate and order of reaction. Factor affecting the rate of reaction. And determination Order of reaction. Energy of activation and its determination. Brief account of collision and activated complex theories.
Unit-3	Ionic equilibria: pH scale, buffer solutions, calculation of pH of buffer solutions, buffer capacity and buffer index, buffer mixtures.
Unit-4	Electrochemistry: Electrolytic conductance, specific, equivalent and molar conductance, ionic mobility and transference number, factors affecting the electrolytic conductance, Arrhenius theory of strong and weak electrolytes, assumptions of DebyeHuckel theory of strong electrolytes.

DEPARTMENT - CHEMISTRY

Block-2	Title: Organic molecules		
Unit-5	Introduction to organic chemistry, atomic orbitals, sigma and pi bond		
	formation-molecular orbital (MO) method, sp, sp2 and sp3		
	hybridization, bond length, bond dissociation energies and bond angles		
Unit-6	Electronegativity and polarity of the bonds. Classifications and		
	reactions of organic compounds (with examples).		
Unit-7	Biological importance of natural products: Amino acids, proteins,		
	carbohydrates (cellulose, starch, glycogen), lipids (fats and oils, phospholipids),		
	nucleic acids, steroids, alkaloids, vitamins, flavonoids.		
Unit-8	Applications of synthetic products: Dyes, drugs, polymers (plastics), soaps and		

DEPARTMENT – CLINICAL NUTRITION AND DIETETICS

OEL - 2: NUTRACEUTICALS AND HEALTH FOODS

2 Credits

BLOCK 1. NUTRACEUTICALS:

- Unit 1: Introduction to Nutraceutical
- Unit 2: Use of Nutraceuticals in Traditional Health Sciences
- Unit 3: Functional Foods
- Unit 4: Development of Nutraceutical and Functional Foods

BLOCK 2: FUNCTIONAL FOODS AND NUTRACEUTICALS OF PLANT, ANIMAL AND MIRCIBIAL ORIGIN

- Unit 5: Prebiotics and Probiotics
- Unit 6: Bio Active Peptides and Phyto- Chemicals
- Unit 7: Fats and Oils- Omega 3 Fatty Acids:
- Unit 8: Sugar Substitutes / Sweeteners

REFERENCES:

- Tai Hu Guan, (2018), text book of Nutraceuticals and Health, Scitus Academics Publisher, Wilmington DE 19804, United States of America.
- Wildman REC, (2016), Handbook of Nutraceuticals and Functional Foods, 2nd edition, CRC Press publishers, Boca Raton, Florida (USA).
- Athapol Noomhorm, Imran Ahmad, Anil Kumar Anal (2014), Functional Foods and Dietary Supplements Processing, Effects and Health Benefits, first edition, published by John Wiley & Sons, Ltd. UK 111 River Street, Hoboken, NJ 07030-5774, USA
- Wildman REC, (2001) Handbook of Nutraceutical and Functional Foods, CRC Press, USA.Ghosh D et al, (2012) Innovations in Healthy and Functional Foods, CRC Press, USA. Pathak YV (2011) Handbook of nutraceuticals Volume 2, CRC Press, USA.

DEPARTMENT - COMPUTER SCIENCE

ELMCS- 02: E -Commerce

BLOCK-1

UNIT-1: Overview of developments in Information Technology and Defining E-Commerce: The scope of E commerce, Electronic Market, Electronic Data Interchange, Internet Commerce, Benefits and limitations of E-Commerce, Produce a generic framework for E-Commerce,

UNIT-2: Architectural framework of Electronic Commerce, Web based E Commerce Architecture. Consumer Oriented E Commerce E-Retailing: Traditional retailing and e retailing, Benefits of e retailing,

UNIT-3: Key success factors, Models of e retailing, Features of e retailing. E services: Categories of e-services, Web-enabled services, matchmaking services,

UNIT-4: Information-selling on the web, e entertainment, Auctions and other specialized services. Business to Business Electronic Commerce

BLOCK-2

UNIT-5: Electronic Data Interchange: Benefits of EDI, EDI technology, EDI standards, EDI communications, EDI Implementation, EDI Agreements, EDI Security. Electronic Payment Systems, Need of Electronic Payment System:

UNIT-6: Study and examine the use of Electronic Payment system and the protocols used, Study Electronic Fund Transfer and secure electronic transaction protocol for credit card payment. Digital economy: Identify the methods of payments on the net – Electronic Cash, cheques and credit cards on the Internet.

UNIT-7: Security in E Commerce Threats in Computer Systems: Virus, Cyber Crime Network Security: Encryption, Protecting Web server with a Firewall, Firewall and the Security Policy, Network Firewalls and Application Firewalls, Proxy Server. Issues in E Commerce Understanding Ethical,

UNIT-8: Social and Political **issues in E-Commerce**: A model for Organizing the issues, Basic Ethical Concepts, Analyzing Ethical Dilemmas, Candidate Ethical Principles Privacy and Information Rights: Information collected at E-Commerce Websites, The Concept of Privacy, Legal protections Intellectual Property Rights: Types of Intellectual Property protection, Governance.

References:

- 1. Elias. M. Awad, " Electronic Commerce", Prentice-Hall of India Pvt Ltd.
- 2. RaviKalakota, Andrew B. Whinston, "Electronic Commerce-A Manager's guide", Addison-Wesley.
- 3. Efraim Turban, Jae Lee, David King, H.Michael Chung, "Electronic Commerce–A ManagerialPerspective", Addison-Wesley.
- 4. Elias M Award, "Electronic Commerce from Vision to Fulfilment", 3rd Edition, PHI, Judy Strauss, Adel
- 5. El-Ansary, Raymond Frost, "E-Marketing", 3RDEdition, Pearson Education.

DEPARTMENT - GEOGRAPHY

ELMG –02 Regional Geography of Karnataka (Credits – 2)

Block-1

Physical setting - Location, Administrative divisions, Geology, Physiographic divisions of the Karnataka; Climate and Rivers; Soils and Vegetation; Irrigation in Karnataka, Major Multipurpose River Valley Projects, Major water problems and Issues - Yetthinahole, Linganamakki, Mekedatu, Krishna-Cauvery valley-linking Rivers.

Block-2

Agriculture - Major of Crops: Rice, Jowar, Ragi, Wheat, Oil seeds, Sugarcane, Cotton, Tobacco and Coffee; Minerals Resources - Iron ore, Manganese, Bauxite, Copper, Gold; Major Power Projects - Hydel, Thermal and Atomic Energy power plants; Industries - Cotton Textile, Silk Textile, Sugar, Iron and Steel, Cement and Paper industries, Industrial Regions of Karnataka; Transportation - Roads, Railway, Water way, Ports/Harbors and Airways; Population - growth, distribution and density

References:

- 1. Directorate of Information and Tourism, Government of KarnatakaKarnataka State Gazetteer
- 2. Mallappa, P., (2014) Geography of Karnataka, Chethana book publishers, Mysuru
- 3. N.B.K Reddy & G.S. Murthy, (1967) Regional Geography of Mysore State
- 4. R.P. Misra, (1973) Geography of Mysore
- 5. Ranganath, (2018) Geography of Karnataka, Mysore Book House, Mysuru

DEPARTMENT - MATHEMATICES

Combinatorics and Graph Theory (ELMM –02) 2 Credits

Block-I: Permutations and Combinations, Pigeon-hole principle, Principle of inclusion and exclusion. **Block-II:** Graphs, Vertices of graphs, Walks and connectedness, Degrees, Operations on graphs, Blocks – Cutpoints, bridges, Block graphs and Cutpoint graphs. Trees - Elementary properties of trees,

Books for Reference:

- 1. C. L. Liu Elements of Discrete Mathematics, McGraw-Hill, 1986.
- 2. Kenneth H. Rosen Discrete Mathematics and its Applications, McGraw-Hill, 2002.
- 3. F. Harary Graph Theory, Addition Wesley Reading Mass, 1969.
- 4. N. Deo Graph Theory With Applications to Engineering and Computer Science, Prentice Hall of India, 1987.
- 5. K. R. Parthasarathy Basic Graph Theory, Tata McGraw-Hill, New Delhi, 1994.
- 6. G. Chartand and L. Lesniak Graphs and Diagraphs, wadsworth and Brooks, 2nd Ed.,
- 7. Clark and D. A. Holton A First Look at Graph Theory, Allied publishers.
- 8. D. B. West Introduction to Graph Theory, Pearson Education Inc., 2001, 2nd Ed.,
- 9. J. A. Bondy and U. S. R. Murthy Graph Theory with applications, Elsevier, 1976.

DEPARTMENT - MICROBIOLOGY

Microbes in Sustainable Agriculture and Development

- i. Soil Microbiology: Soil as Microbial Habitat, Soil profile and properties,
- ii. Soil formation, Diversity and distribution of microorganisms in soil.
- iii. Microbial Activity in Soil and Green House Gases- Carbon dioxide, methane, nitrous oxide, nitric oxide production and control
- i. Mineralization of Organic & Inorganic Matter in Soil: Mineralization of cellulose, hemicelluloses, lignocelluloses, lignin and humus, phosphate, nitrate, silica, potassium
- ii. Microbial Control of Soil Borne Plant Pathogens: Biocontrol mechanisms and ways, Microorganisms used as biocontrol agents against Microbial plant pathogens, Insects, Weeds.
- iii. Biofertilization, Phytostimulation,
- iv. Bioinsecticides: Plant growth promoting bateria, biofertilizers symbiotic (Bradyrhizobium, Rhizobium, Frankia),
- v. Non Symbiotic (Azospirillum, Azotobacter, Mycorrhizae, MHBs, Phosphatesolubilizers,algae),
- vi. Novel combination of microbes as biofertilizers, PGPRs
- i. Secondary Agriculture Biotechnology: Biotech feed, Silage, Biomanure, biogas, biofuels – advantages and processing parameters.
- ii. GM crops: Advantages, social and environmental aspects, Bt crops, golden rice, transgenic animals.

References:

1. EldorA.Paul. SoilMicrobiology. EcologyandBiochemistry.VIEdition:Academic Press, (2007).

2. EugeneL. Madsen. Environmental Microbiology:FromGenomestoBiogeochemistry. IEdition,Wiley-BlackwellPublishing. (2008).

3. Agrios, G.N. Plant pathology. Harcourt Asia Pvt. Ltd. (2000).

4. Buchanan. B.B., Gruissem, W. and Jones, R.L Biochemistry and Molecular Biology of Plants. I.K. International Pvt. Ltd. (2000).

5. Mehrotra R S and Ashok Agrawal. Plant Pathology. Tata Mc Graw Hill ,6th reprint (2006).

6. K. S. Bilgrami, H. C. Dube. A textbook of modern pathology. 6th Edition, Vani Educational Books, a division of Vikas, (1984).

7. K.R. Aneja .Experiments in Microbiology, Plant Pathology and Biotechnology . New Age

Publications.2017

DEPARTMENT - PHYSICS

MP-EL2: Waves and Optics

BLOCK-A:

- **Unit-1:** Superposition of Two Collinear Harmonic oscillations: linearity & superposition principle. (i) Oscillations having equal frequencies and (ii) oscillations having different frequencies (Beats).
- Unit-2: Waves Motion- General: Transverse waves on a string, travelling and standing waves on a string, normal modes of a string, group velocity, phase velocity, plane waves, Spherical waves, wave intensity.
- Unit-3: Fluids: Surface tension: synclastic and anticlastic surface excess of pressure application to spherical and cylindrical drops and bubbles. viscosity rate flow of liquid in a capillary tube Poiseuille's formula determination of coefficient of viscosity of a liquid.
- **Unit-4: Sound:** Simple harmonic motion forced vibrations and resonance intensity and loudness of sound, intensity levels, musical notes, musical scale, acoustics of buildings: reverberation and time of reverberation, absorption coefficient, Sabine's formula measurement of reverberation time.

BLOCK-B:

- **Unit-5: Wave Optics:** electromagnetic nature of light, definition and properties of wave front, Huygen's Principle.
- **Unit-6: Interference:** Interference: division of amplitude and division of wavefront. Young's double slit experiment, interference in thin films: parallel and wedge-shaped films, Newton's Rings: measurement of wavelength and refractive index.
- **Unit-7: Diffraction:** Fraunhofer diffraction- single slit and double Slit, multiple slits and diffraction grating, Fresnel diffraction: half-period zones, zone plate, Fresnel diffraction pattern of a straight edge, a slit and a wire using half-period zone analysis.
- **Unit-8: Polarization:** Transverse nature of light waves, plane polarized light production and analysis, circular and elliptical polarization.

DEPARTMENT - PSYCHOLOGY

EL-2 Psychology in Everyday Life 2 Credits

Block 1: Applications of Psychology-I

- Unit 1: Psychology as a Profession
- Unit 2: Memory Improving Techinques
- Unit 3: Stress and Emotional Management
- **Unit 4**: Personality Development

Block 2: Applications of Psychology-II

- **Unit 5:** Psychology in Educational Settings
- Unit 6: Psychology in Health Setting
- Unit 7: Psychology in Organizational Setting
- Unit 8: Adjustment to Family and Work Place

References:

- 1. Charles G.Morris. Albert A. Maisto Psychology an Introduction, Prentice Hall. New Jersy.
- 2. Feldman, A. R., Understanding Psychology IV th Ed, 1996, McGraw Hill, New Delhi.

- 3. Morgan, King, Weisz &Schopler, Introduction to Psychology-V11 Ed,1993, Tata McGraw Hill, New Delhi.
- 4. Ernest R Hilgard, Richard C Atkinson ,Rita L Atkinson Introduction to Psychology Oxford Publication, New Delhi.

DEPARTMENT - BOTANY

Plant Diversity and Human Welfare

Plant Diversity and its Scope Levels of biodiversity: Genetic, Species and Ecosystem; Agrobiodiversity and cultivated plant taxa and related wild taxa.

Values and uses of Biodiversity, Methodologies for valuation, Ethical and aesthetic values, Uses of plants; Ecosystem services.

Loss of Biodiversity Loss of biodiversity- causes and implications, Hot spots of biodiversity, extinction of species, projected scenario for biodiversity loss.

Management of Plant Biodiversity Organizations associated with biodiversity management, IUCN, UNEP, WWF, UNESCO, NBPGR; Methodology for execution;

Biodiversity legislation; Information management and communication.

Conservation of Biodiversity, Role of Plants in Relation to Human Welfare Conservation of genetic, species and ecosystem diversity,

In situ and ex situ conservation strategies, India's biodiversity and its conservation Social approaches to conservation,

Biodiversity awareness programmes, Sustainable development.

Importance of forestry their utilization and commercial aspects; Avenue trees; Ornamental plants of India; Alcoholic beverages; Fruits and nuts; Wood and its uses; their commercial importance.

References

1. Krishnamurthy, K.V. (2004). An Advanced Text Book of Biodiversity - Principles and Practices.Oxford and IBH Publications Co. Pvt. Ltd. New Delhi

2. Singh, J.S., Singh, S.P. and Gupta, S. (2006). Ecology Environment and Resource Conservation. Anamaya Publications, New Delhi, India.

3. Reddy, K.V. and Veeraiah, S. (2010). Biodiversity and Plant Resources. Aavishkar publication, New Delhi.

4. Heywood, V. H. and Watson, R. T. (1995). Global biodiversity and Assessment. Cambridge University Press.

DEPARTMENT –FOOD AND NUTRITION SCIENCE

OEL-2: NUTRITIONAL MANAGEMENT IN DISASTER CONDITIONS

BLOCK- I: NATURAL / MANMADE DISASTERS

- Unit-1: Emergency Situations-Famine, Drought, Flood, Earthquake, Cyclone, War, Civil and Political Emergencies.
- Unit-2: Nutrition in Emergencies, Nutritional Problems and Communicable Diseases.
- Unit-3: Feeding Programs during Emergencies.
- Unit-4: Assessment and monitoring of Nutritional Status and relief measures during emergencies.

BLOCK- I: NUTRITIONAL RELIEF AND REHABILITATION

- Unit-5: Assessment of Food needs in emergency situations, Food Distribution Strategy, Local food rehabilitation.
- Unit-6: Special Foods/ Rations for Nutritional Relief, Organizations for Mass Feeding/ Food Distribution, and Supplementary Feeding.
- Unit-7: Transportation, Storage, Feeding Centres, Sanitation, Hygiene and Identifying Reaching the Vulnerable Group.
- Unit-8: Public Nutrition Approach to Tackle Nutritional and Health Problems in Emergencies, food security.

REFERENCES:

Jaspars, S. & Young, H. (1996), General Food Distribution in Emergencies: from Nutritional Needs to Political Priorities. Good Practice Review 3. 1996. Relief and Rehabilitation Network, Overseas Development Institute. London.

Young H., Jaspars S., Brown R., Frize J. & Khogali H (2001), Food Security and Assessments in Emergencies: A Livelihoods Approach. Humanitarian Practice Network, Overseas Development Institute. London

ANNEXURE -	III
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A. Question Paper Pattern

IS 2.3

II Semester M.Sc (IS) Examination January 2016 Information Organization and Retrieval (Freshers)

Time: 3 Hours

Max. Marks: 80

PART – A

Answer any four questions. Each question carries 5 marks:	4x5=20
1.	
2.	
3.	
4.	
5.	
6.	

PART - B

Answer any three questions. Each question ca	rries 10 marks: 3x10=30
7.	
8.	
9.	
10.	
11.	
PAR	$\mathbf{C} - \mathbf{C}$
Answer any two questions:	2x15=30
12.	
13.	
14.	
15.	

B. Model Question Paper

IS 3.3

Sl.No.: 0181

Total No. of Pages : 2

III Semester M.Sc. Degree Examination, October - 2021 (SIM Old) INFORMATION TECHNOLOGY Software Engineering (2013-14 to 2015-16 batches)

Time : 3 Hours

Max. Marks : 80

PART - A

Answer any four questions. Each question carries 5 marks. $[4 \times 5 = 20]$

- **Q1)** What is the aim of software engineering? Briefly explain the challenges faced by software engineering.
- Q2) Define the term cohesion in the context of software design, mention its types.
- Q3) Explain any two techniques used for project scheduling.
- Q4) Briefly explain the important of stress testing.
- Q5) Write a note on stubs and driver modules used in unit testing.
- Q6) What is COCOMO? How it is useful in project cost estimation? Explain.

PART - B

Answer any three questions. Each question carries 10 marks. $[3 \times 10 = 30]$

- Q7) What is meant by requirement engineering process? Explain the four generic activities involved in requirement engineering process.
- Q8) Describe the various activities involved in project scheduling and staffing.
- Q9) Distinguish between software risk management and software configuration management.
- Q10) Briefly discuss the low level and high level activities involved in software design.
- Q11) What is meant by code inspection? Explain the various types of errors normally identified during code inspection process.

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P.T.O.

IS 3.3

PART - C

Answer any two questions. Each question carries 15 marks. $[2 \times 15 = 30]$

- Q12) Explain spiral model of software development in detail highlighting their merits and demerits.
- Q13) Describe in detail, the various UML building blocks used in the high level software design process.
- Q14) What is meant by integration testing? Explain the various integration testing techniques with an illustrative example and comment on their merits.
- Q15) Explain the three dimensions of software quality and the metrics associated with each dimension.

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