Open Elective-III

1. Multimedia Technologies
2. Organizational Behavioral
3. Open Source Systems
4. Industrial Safety
5. Foundations Of Blockchain Technology
6. Intellectual Property Rights & Cyber Laws
7. Multimedia Technology
8. Digital Signal Processing
9. ENGLISH OF PROFESSIONALS

MULTIMEDIA TECHNOLOGIES

Semester	VII				
Course code					
Category	Open Elective Courses				
Course title	Multimedia Technology				
Scheme and Credits	L	T	P	Credits	
	3	0	0	3	
Classwork	30 Marks				
Exam	70 Marks				
Total	100 Marks				
Duration of Exam	03 Hours				

Note: The examiner will set nine questions in total. Question one will be compulsory. Question one will have seven parts of 2 marks each from all units, and the remaining eight questions of 14 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, the first being compulsory and selecting one from each unit.

COURSE OBJECTIVE:

1. To understand the characteristics of different multimedia systems.
2. To identify the encoding and quantization mechanisms for images.
3. To explore the audio and video processing mechanisms.
4. To know the practical applications of multimedia systems.

COURSE OUTCOMES:

At the end of this course, students will demonstrate the ability to

CO1: Get familiar with the characteristics of different multimedia systems.

CO2: Learn the encoding and quantization mechanisms for images.

CO3: Understand the audio and video processing mechanisms.

CO4**:** Learn the practical applications of multimedia systems.

CO5: Exploring the concepts of multimedia servers and databases.

UNIT - I

Basics of Multimedia Technology: Computers, communication and entertainment; multimedia an introduction; framework for multimedia systems; multimedia devices; CD- Audio, CD-ROM, CD- I, presentation devices and the user interface; multimedia presentation and authoring; professional development tools; LANs and multimedia; internet, World Wide Web & multimedia distribution network-ATM & ADSL; multimedia servers & databases; vector graphics; 3D

graphics programs; animation techniques; shading; anti-aliasing; morphing; video on demand.

UNIT - II

Image Compression & Standards: Making still images; editing and capturing images; scanning images; computer color models; color palettes; vector drawing; 3D drawing and rendering; JPEG-objectives and architecture; JPEG-DCT encoding and quantization, JPEG statistical coding, JPEG predictive lossless coding; JPEG performance; overview of other image file formats as GIF, TIFF, BMP, PNG etc.

UNIT - III

Audio & Video: Digital representation of sound; time domain sampled representation; method of encoding the analog signals; subband coding; fourier method; transmission of digital sound; digital audio signal processing; stereophonic & quadraphonic signal processing; editing sampled sound; MPEG Audio; audio compression & decompression; brief survey of speech recognition and generation; audio synthesis; musical instrument digital interface; digital video and image compression; MPEG motion video compression standard; DVI technology; time base media representation and delivery.

UNIT - IV

Virtual Reality: Applications of multimedia, intelligent multimedia system, desktop virtual reality, VR operating system, virtual environment displays and orientation making; visually coupled system requirements; intelligent VR software systems. Applications of environment in various fields.

TEXT AND REFERENCE BOOKS:

1. An introduction, Villamil & Molina, Multimedia Mc Milan, 1997
2. multimedia: Sound & Video, Lozano, 1997, PHI, (Que)
3. Multimedia: Production, planning and delivery, Villamil & Molina,Que, 1997
4. Multimedia on the PC, Sinclair,BPB
5. Multimedia: Making it work, Tay Vaughan, fifth edition, 1994, TMH.
6. Multimedia in Action by James E Shuman, 1997, Wadsworth Publ.,
7. Multimedia in Practice by Jeff coate Judith, 1995,PHI.
8. Multimedia Systems by Koegel, AWL
9. Multimedia Making it Work by Vaughar, etl.

ORGANIZATIONAL BEHAVIOR

Semester	VII				
Course code					
Category	HSMC				
Course title	Organizational Behavior				
Scheme and Credits	L	T	P	Credits	
	3	0	0	3	
Classwork	30 Marks				
Exam	70 Marks				
Total	100 Marks				
Duration of Exam	03 Hours				

Note: The examiner will set nine questions in total. Question one will be compulsory. Question one will have seven parts of 2 marks each from all units, and the remaining eight questions of 14 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, the first being compulsory and selecting one from each unit.

COURSE OBJECTIVE:

The objective of this course is to expose the students to basic concepts of management and provide insights necessary to understand behavioral processes at individual, team and organizational level.

COURSE OUTCOMES:

At the end of this course, students will demonstrate the ability to

CO1: Students will be able to apply the managerial concepts in practical life.

CO2: The students will be able to understand the concept of organizational behavior at individual level and interpersonal level.

CO3: Students will be able to understand the behavioral dynamics in organizations.

CO4: Students will be able to understand the organizational culture and change.

UNIT - I

Introduction of Management- Meaning, definitions, nature of management; Managerial levels, skills and roles in an organization; Functions of Management: Planning, Organizing, staffing, Directing & Controlling, Interrelationship of managerial functions, scope of management & Importance of management. Difference between management and administration.

UNIT - II

Introduction of organization: - Meaning and process of Organization, Management v/s Organization;

Fundamentals of Organizational Behavior: Concepts, evolution, importance and relationship with other Fields; Contemporary challenges and opportunities of OB.

Individual Processes and Behavior-Personality- Concept, determinants and applications;

Perception- Concept, process and applications,

Learning- Concept (Brief Introduction);

Motivation- Concept, techniques and importance.

UNIT - III

Interpersonal Processes- Teams and Groups- Definition of Group, Stages of group development, Types of groups, meaning of team, merits and demerits of team; difference between team and group, **Conflict-** Concept, sources, types, management of conflict;

Leadership: Concept, function, styles & qualities of leadership.

Communication – Meaning, process, channels of communication, importance and barriers of communication.

UNIT - IV

Organizational Processes: Organizational structure - Meaning and types of organizational structure and their effect on human behavior;

Organizational culture - Elements, types and factors affecting organizational culture.

Organizational change: Concept, types & factors affecting organizational change, Resistance to Change.

TEXT AND REFERENCE BOOKS:

1. Robbins, S.P. and Decenzo, D.A. Fundamentals of Management, Pearson Education Asia, New Delhi.
2. Stoner, J et. al, Management, New Delhi, PHI, New Delhi.
3. Satya Raju, Management – Text & Cases, PHI, New Delhi.
4. Kavita Singh, OrganisationalBehaviour: Text and cases. New Delhi: Pearson Education.
5. Pareek, Udai, Understanding OrganisationalBehaviour, Oxford University Press, New Delhi.
6. Robbins, S.P. & Judge, T.A., OrganisationalBehaviour, Prentice Hall of India, New Delhi.
7. GhumanKarminder, Aswathappa K., Management concept practice and cases, Mc Graw Hill education.
8. Chhabra T. N., Fundamental of Management, Sun India Publications

OPEN-SOURCE SYSTEMS

Semester	VII				
Course code					
Category	Open Elective Courses				
Course title	Open-Source Systems				
Scheme and Credits	L	T	P	Credits	
	3	0	0	3	
Classwork	30 Marks				
Exam	70 Marks				
Total	100 Marks				
Duration of Exam	03 Hours				

Note: The examiner will set nine questions in total. Question one will be compulsory. Question one will have seven parts of 2 marks each from all units, and the remaining eight questions of 14 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, the first being compulsory and selecting one from each unit.

COURSE OUTCOMES:

At the end of this course, students will demonstrate the ability to

CO1: Students shall be able to understand the importance of FOSS.

CO2: Ability to create and manipulate non-relational data bases.

CO3: Ability to write programs using PHP, Python and manipulate SQL data base.

CO4: Ability to configure and use Apache web services

CO5: Acquire knowledge to develop software models using MDA.

U

NIT - I FOSS PHILOSOPHY AND LINUX PACKAGE

Introduction to Software Terminologies - Overview of Free/Open Source Software - Definition of FOSS & GNU - History of GNU/ Linux and the Free Software Movement, Advantages of Free Software and GNU/Linux, FOSS usage , trends and potential - global and Indian-Free Software Licenses(GPL, LGPL, AGPL). Installing software - from source code as well as using binary packages - Understanding build systems - constructing make files and using make, using autoconf and autogen to automatically generate make files tailored for different

development environments.

UNIT -II

OPEN-SOURCE NON-RELATIONAL DATABASES

NoSQL definition - relational Vs non-relational database - working with NoSQL - Running MongoDB - Getting A Database Connection - Inserting Data into A Collection - Accessing Data From a Query - CouchDB-Developing with CouchDB - Example application - Deploying CouchDB.

UNIT - III

OPEN-SOURCE PROGRAMMING LANGUAGES

PHP: Introduction - Programming in web environment - variables - constants - data types -operators

- Statements - Functions - Arrays - OOP - String Manipulation and regular expression - File handling and data storage - PHP and SQL database - PHP and LDAP - PHP Connectivity - Sending and receiving E-mails - Debugging and error handling - Security - Templates.

PYTHON: Syntax and Style - Python Objects - Numbers - Sequences - Strings - Lists and Tuples - Dictionaries - Conditionals and Loops - Files - Input and Output - Errors and Exceptions - FunctionsModules - Classes and OOP - Execution Environment.

UNIT – IV

OPEN-SOURCE OPEN SOURCE TOOLS AND TECHNOLOGIES

Web Server: Apache Web server -Google Web server- Working with Web Server - Configuring and Using apache web services MDA: Introduction to MDA - Genesis of MDA - Meta Object Facility - UML -UML Profiles - MDA Applications- case studies.

TEXT AND REFERENCE BOOKS:

1. Mike McGrath, "Linux in easy steps, Sixth Edition", Tata McGraw-Hill, Sixth Edition 2010.
2. N. B. Venkateshwarlu, "Introduction to Linux: Installation and Programming", First Edition, BS Publishers, 2006.
3. Steve Suchring, "MySQL Bible", John Wiley, 2007.
4. Steven Holzner, "PHP: The Complete Reference", TMH Edition; 2007
5. J.Chris Anderson, "CouchDB : Definitive Guide", First Edition, O'Reilly series, 2010.
6. Wesley J.Chun, "Core Python Programming", Prentice Hall, 2007
7. Stephen J. Mellor, Marc Balces, "Executable UMS: A foundation for MDA", Addison Wesley, 2002.

INDUSTRIAL SAFTEY

Semester	VII				
Course code					
Category	Open Elective Courses				
Course title	Industrial Saftey				
Scheme and Credits	L	T	P	Credits	
	3	0	0	3	
Classwork	30 Marks				
Exam	70 Marks				
Total	100 Marks				
Duration of Exam	03 Hours				

Note: The examiner will set nine questions in total. Question one will be compulsory. Question one will have seven parts of 2 marks each from all units, and the remaining eight questions of 14 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, the first being compulsory and selecting one from each unit.

COURSE OBJECTIVE:

1. To teach the students the concept of industrial safety and provide useful practical knowledge for workplace safety.
2. To identify, evaluate control the hazards to prevent or mitigate harm or damage to people, property and the environment.
3. To understand about fire and explosion, preventive methods, relief and its sizing methods
4. To analyze industrial hazards and its risk assessment

COURSE OUTCOMES:

At the end of this course, students will demonstrate the ability to

CO1: Analyze the effect of release of toxic substances.

CO2: Understand the industrial laws, regulations and source models.

CO3: Understand the methods of hazard identification and preventive measures

CO4: Develop safety programs to prevent the damage or loss

CO5: Conduct safety audits and improve safety practices.

UNIT - I

Introduction: Concept of loss prevention, origin of process hazards, types of process hazards, acceptable risks, accident and loss statics, nature of accident process, concepts of inherent safety in plants or Factories, dose Vs response curve, toxicants entry route, thresh limit values, safety regulations.

UNIT - II

Hazards: Fire, Chemical (industrial and laboratory scale), electrical, mechanical, biohazards (natural and anthropogenic), toxic materials, their types and preventive measures, Liquid and vapor phase hazardous methods, storage and handling, containment, precautions, Personal safety precautions.

UNIT - III

Risk management principles, risk analysis techniques, risk control, hazards operability studies, hazard analysis, Fault tree analysis, Consequences analysis, human error analysis, accidental error analysis, economics of risk management, check list, reliability theory, event tree, HAZOP, safety reviews, what if analysis.

UNIT - IV

Safety audit, procedure for safety auditing, audit report, safety report, safety training, emergency planning and disaster management, introduction to security risk factors tables.

TEXT AND REFERENCE BOOKS:

1. Chemical Hazards and safety, 2nd Edition, DawandeDenet& Co. , 2012
2. Loss preventions in process industries, Lees Butterworth-Heinemann, 1980.
3. Industrial safety Handbook, William and Handley, McGraw Hill.
4. Safety and Hazard management in Chemical Industries, Vyas, Atlantic 2013.
5. Industrial safety, health environment & Security, Basudev Panda, Laxmi publication ISBN- 97893-81159-43-9
6. Industrial Safety and Health Management, 4th Edition, C. Ray Asfahl, Prentice Hall International Series, 1984

FOUNDATION OF BLOCKCHAIN TECHNOLOGY

Semester	VII				
Course code					
Category	Open Elective Courses				
Course title	**Foundation of Blockchain Technology**				
Scheme and Credits	L	T	P	Credits	
	3	0	0	3	
Classwork	30 Marks				
Exam	70 Marks				
Total	100 Marks				
Duration of Exam	03 Hours				

Course Objective:

1. Understand how blockchain systems work,
2. To securely interact with them,
3. Design, build, and deploy smart contracts and distributed applications,
4. Integrate ideas from blockchain technology into their own projects

Unit I

Introduction: The consensus problem - Asynchronous Byzantine Agreement and its analysis,Abstract Models for BLOCKCHAIN - GARAY Model - RLA Model Prepared by : iGAP/IQAC Page 594 C Proof of Work (PoW) as random oracle - formal treatment of consistency, liveness and fairness - Proof of Stake (PoS) based Chains - Hybrid models (PoW + PoS)

Unit II

Cryptographic Basics for Cryptocurrency a Short Overview of Hashing,Signature Schemes, Encryption Schemes

Unit III

Bitcoin - Wallet A Merkley Tree - Hardness of MiningTransaction Verifiability - Anonymity - Forks - Double Spending Mathematical Analysis of Properties Of Bitcoin

Unit IV

Ethereum A Ethereum Virtual Machine (EVM) - Wallets for Ethereum Smart Contracts - some attacks on smart contracts Vulnerability, Attacks, Sidechain

Unit V

Application and future of Blockchain Zero Knowledge proofs and protocols in Blockchain Succinct non interactive argument for Knowledge (SNARK) Applications: Internet of Things, Medical Record Management System, DomainName Service and future of Blockchain, Zcash Course Outcomes

1. Explain Abstract model of blockchain and consensus problem.
2. List and describe differences between proof-ofwork and proof-of-stake consensus.
3. Summarizing the benefits of cryptographic basics for cryptocurrency in case of various attacks
4. Analyzing properties of Bitcoin and Ethereum
5. List Ethereum Virtual Machine (EVM) and its benefits
6. List topics like SNARK and zcash along with various applications of blockcahin technology

Text book/s*

1.Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller, and StevenGoldfeder. Bitcoin and cryptocurrency technologies: a comprehensive introduction.Princeton University Press, 2016.

2. Joseph Bonneau et al, SoK: Research perspectives and challenges for Bitcoin andcryptocurrency, IEEE Symposium on security and Privacy, 2015 (article availablefor free download) {curtain raiser kind of generic article, written by seasonedexperts and pioneers}.
3. J.A.Garay et al, The bitcoin backbone protocol - analysis and applicationsEUROCRYPT 2015 LNCS VOl 9057, (VOLII), pp 281-310. (Also available ateprint.iacr.org/2016/1048).(Serious beginning of discussions related to formalmodels for bitcoin protocols).
4. R.Pass et al, Analysis of Blockchain protocol in Asynchronous networks,EUROCRYPT 2017, (eprint.iacr.org/2016/454) . A significant progress andconsolidation of several principles).

INTELLECTUAL PROPERTY RIGHTS

Semester	VII				
Course code					
Category	Open Elective Courses				
Course title	**Intellectual property rights & cyber law**				
Scheme and Credits	L	T	P	Credits	
	3	0	0	3	
Classwork	30 Marks				
Exam	70 Marks				
Total	100 Marks				
Duration of Exam	03 Hours				

Course Objectives:

1. To familiarize the students with basic concepts in each type of IPR together with historical developments in the subject & its importance in modern times.

Unit I

Introduction: Concept of IPR, Historical development, kinds of IPR,brief description of patent, trademark, copyright, industrial design, importance of IPR, IPR authorities.
PATENTS:Introduction, Indian Patent Act 1970 &2002, Protectable subject matter--patentable invention, Procedure for obtaining patent, Provisional and complete specification Rights conferred on a patentee, transfer of patent, Revocation and surrender of patents, Infringement of patents, Action for infringement, Patent agents, Patent in computer programs.

Unit II

Trademark: Introduction, Statutory authorities, principles of registration of trademarks, rights conferred by registration of trademarks, Infringement of trademarks and action against infringement, procedure of registration and duration,licensing in trademark

Unit III

Copyright: Introduction, Author and ownership of copyright, rights conferred by copyright,term of copyright, assignment/licence of copyright, Infringement of copyright ,remedies against infringement of copyright, registration of copyright, copyright enforcement and societies

Unit IV

Industrial design: The design act-2000, registerability of a design, procedure of registration of a design, piracy of a registered design, Case law on designs

International IPR & case laws: World intellectual property organization, WCT, WPPT, TRIPS, Copyright societies, international IPR dispute resolution mechanism. Case laws.

Text/Reference Books:

1. Law Relating to Intellectual property, fourth edition by B.L.Wadehra .Universal law publishing co. pvt. Ltd , 2007. ISBN 978-81-7534-588-1
2. Intellectual property: Patents, copyright ,trademarks and allied rights. Fifth edition by W.R. Cornish. Sweet & Maxwell publisher, 2003. ISSN 9780421781207
3 Law and practice of intellectual property in India by VikasVashishth, 2006 ISBN: 81-7737-119-3
4 Patents ,copyrights, trade marks and design by B L Wadhera, 2014
5 Dr. B. L. Wadhera, "Intellectual Property Law Handbook". Universal Law Publishing, 2002.

MULTIMEDIA TECHNOLOGY

Semester	VII				
Course code					
Category	Open Elective Courses				
Course title	**Multimedia Technology**				
Scheme and Credits	L	T	P	Credits	
	3	0	0	3	
Classwork	30 Marks				
Exam	70 Marks				
Total	100 Marks				
Duration of Exam	03 Hours				

Course Objectives

1. To understand the characteristics of different multimedia systems.
2. To identify the encoding and quantization mechanisms for images.
3. To explore the audio and video processing mechanisms.
4. To know the practical applications of multimedia systems.

UNITI

Basics of Multimedia Technology: Computers, communication and entertainment; multimedia an introduction; framework for multimedia systems; multimedia devices; CD- Audio, CD-ROM, CD-I, presentation devices and the user interface; multimedia presentation and authoring; professional development tools; LANs and multimedia; internet, World Wide Web & multimedia distribution network-ATM & ADSL; multimedia servers & databases; vector graphics; 3D graphics programs; animation techniques; shading; anti aliasing; morphing; video on demand.

UNITII

Image Compression & Standards: Making still images; editing and capturing images; scanning images; computer color models; color palettes; vector drawing; 3D drawing and rendering; JPEG-objectives and architecture; JPEG-DCT encoding and quantization, JPEG statistical coding, JPEG predictive lossless coding; JPEG performance; overview of other image file formats as GIF, TIFF, BMP, PNG etc.

UNITIII

Audio & Video: Digital representation of sound; time domain sampled representation; method of encoding the analog signals; subband coding; fourier method; transmission of digital sound; digital audio signal processing; stereophonic & quadraphonic signal processing; editing sampled sound; MPEG Audio; audio compression & decompression; brief survey of speech recognition and generation; audio synthesis; musical instrument digital interface; digital video and image compression; MPEG motion video compression standard; DVI technology; time base media representation and delivery.

UNITIV

Virtual Reality: Applications of multimedia, intelligent multimedia system, desktop virtual reality, VR operating system, virtual environment displays and orientation making; visually coupled system requirements; intelligent VR software systems. Applications of environment in various fields.

Course Outcomes:

After successful completion of the course, a student should be able to:

1. Get familiar with the characteristics of different multimedia systems.
2. Learn the encoding and quantization mechanisms for images.
3. Understand the audio and video processing mechanisms.
4. Learn the practical applications of multimedia systems.

TEXT /REFERENCE BOOKS:

1. An introduction, Villamil & Molina, Multimedia Mc Milan, 1997
2. multimedia: Sound & Video, Lozano, 1997, PHI, (Que)
3. Multimedia: Production, planning and delivery, Villamil & Molina,Que, 1997
4. Multimedia on the PC, Sinclair,BPB
5. Multimedia: Making it work, Tay Vaughan, fifth edition, 1994, TMH.
6. Multimedia in Action by James E Shuman, 1997, Wadsworth Publ.,
7. Multimedia in Practice by Jeff coate Judith, 1995,PHI.
8. Multimedia Systems by Koegel, AWL

ENGLISH OF PROFESSIONALS

Semester	VII				
Course code					
Category	Open Elective Courses				
Course title	**English of Professionals**				
Scheme and Credits	L	T	P	Credits	
	3	0	0	3	
Classwork	30 Marks				
Exam	70 Marks				
Total	100 Marks				
Duration of Exam	03 Hours				

Course Objectives:

The course aims at developing the desired language (English) skills of students of engineering and technology so that they become proficient in communication to excel in their professional lives. The course aims at developing competence for report writing with a focus on its complex writing techniques and procedures.

UNIT I

Communication Process Types and Levels, Scopes and significance, Technical and Tools of Effective communication

UNIT II

Speaking files and Personality Development Oral Presentation, Body Language, Voice Modulation, Negotiation, Group Discussion, Interview techniques

UNIT III

Advanced Technical Writing Job Application, CV writing, Business Letters, Memos, Minutes, Notices, Report Writing and structure, Blog writing.

UNIT IV

Communication and Media Recent Developments in Media, Context of Communication

SUGGESTED READING

1. Borowick, Jerome. N. Technical Communication and its Applications. New Delhi: PHI, 2000

2. Guffey, Mary Ellen. Business Communication: Process & Product. USA: South western College Publishing, 2000.

3. Kumar, Sanjay and Pushp Lata. Communication Skills. Delhi: OUP, 2011