Open Elective Course-II

1. Disaster Management
2. System Programming and System Administration
3. Foreign Language
4. Technical English and Report Writing
5. Wireless Communication
6. Industrial Safety
7. Disaster Management

DISASTER MANAGEMENT

Semester	VI				
Course code					
Category	Open Elective Courses				
Course title	Disaster Management				
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 OBJECTIVES:

1. To provide basic conceptual understanding of disasters and its relationships with development.
2. Provide an understanding of the social nature of natural hazards and disasters
3. Increase awareness of hazards and disasters around the world and the unequal social consequences stemming from disaster events.

COURSE OUTCOMES:

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

CO1: To know natural as well as manmade disaster and their extent and possible effects on the economy.

CO2: To Plan national importance structures based upon the previous history.

CO3: To acquaint with government policies, acts and various organizational structures associated with an emergency.

CO4: To know the simple dos and don'ts in such extreme events and act accordingly.

UNIT - I

Introduction: Definition of Disaster, hazard, Global and Indian scenario, role of engineer, importance of study in human life, long term effects of disaster. Geological Mass Movement and land disasters, Atmospheric disasters, Disaster

Mitigation

UNIT - II

Natural Disaster: Meaning and nature of natural disaster, Flood, Flash flood, drought, cloud burst, Earthquake, Landslides, Avalanches, Volcanic eruptions, Mudflow, Cyclone, Storm, Storm Surge, climate change, global warming, sea level rise, ozone depletion

Man-made Disasters: Chemical, Industrial, Nuclear and Fire Hazards. Role of growing population and subsequent industrialization, urbanization and changing lifestyle of human beings in frequent occurrences of manmade disasters.

UNIT - III

Case Studies: Damage profile analysis- Uttarkashi/Bhuj/Latur earthquakes, Kedarnath landslide, Kerala floods, cyclone Fani and Amphan, Bihar floods, Covid 19, Forest Related disasters, Mining disasters, Atmospheric disasters.

UNIT - IV

Disaster Management: Importance of public awareness, Preparation and execution of emergency management programme. Scope and responsibilities of National Institute of Disaster Management (NIDM) and National disaster management authority (NDMA) in India. Use of Internet and software for effective disaster management. Applications of GIS, Remote sensing and GPS in this regard.

TEXT AND REFERENCE BOOKS:

1. Singhal J.P. Disaster Management, Laxmi Publications, 2010. ISBN-10: 9380386427 ISBN-13: 978-9380386423
2. Tushar Bhattacharya, Disaster Science and Management, McGraw Hill India Education Pvt. Ltd., 2012. ISBN-10: 1259007367, ISBN-13: 978-1259007361]
3. Gupta Anil K, Sreeja S. Nair. Environmental Knowledge for Disaster Risk Management, NIDM, New Delhi, 2011

SYSTEM PROGRAMMING AND SYSTEM ADMINISTRATION

Semester	VI				
Course code					
Category	Professional Elective Courses				
Course title	System Programming and System Administration				
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. Evolution of the components of system programming.
2. To learn working and different stages of complitaion process.
3. To learn basic of assembler and loading schemes.
4. To learn basics of file structure.
5. To know about filters and pipeline.
6. To learn shell programming

COURSE OUTCOMES:

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

CO1: To understand various file statistics.
CO2: To work on wildcards.
CO3: To know about shell programming and AWK utility
CO4: To maintain user accounts with their roles and permissions
CO5: To apply different compiler modules for different tasks

UNIT - I

Evolution of Components Systems Programming, Assemblers, Loaders, Linkers, Macros, Compilers. software tools, Text editors, Interpreters and program generators, Debug Monitors, Programming environment.
Compiler: Brief overview of compilation process, Incremental compiler, Assembler: Problem statement, symbol table; Loader schemes, compile and go Loader, general loader schemes, absolute loader, Reallocating loader, Direct linkage Loader, Binders, overlays.

UNIT - II

Theoretical Concept of Unix Operating System: Basic features of operating system; File structure: CPU scheduling; Memory management: swapping, demand paging; file system: block and fragments, inodes, directory structure; User to user communication

UNIT - III

Getting Started with Unix: User names and groups, logging in; Format of Unix

commands; Changing your password; Characters with special meaning; Unix documentation; Files and directories; Current directory, looking at the directory contents, absolute and relative pathnames, some Unix directories and files; Looking at the file contents; File permissions; basic operation on files; changing permission modes; Standard files, standard output; Standard input, standard error; filters and pipelines; Processes; finding out about processes; Stopping background process; Unix editor vi.

UNIT - IV

Shell Programming: Programming in the Borne and C-Shell; Wild cards; Simple shell programs; Shell variables; interactive shell scripts; Advanced features.
System Administration: Definition of system administration; Booting the system; Maintaining user accounts; File systems and special files; Backups and restoration; Role and functions of a system manager. Overview of the Linux operating system

TEXT AND REFERENCE BOOKS:

1. Systems Programming by Donovan, TMH.
2. The unix programming environment by Brain Kernighen& Rob Pike, 1984, PHI & Rob Pike.
3. Design of the Unix operating system by Maurich Bach, 1986, PHI.
4. Introduction to UNIX and LINUX by John Muster, 2003, TMH.

FOREIGN LANGUAGE-GERMAN

Semester	VI				
Course code					
Category	Open Elective Course				
Course title	Foreign Language-German				
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 OBJECTIVES:

1. To improve the proficiency of students in German language.
2. To create awareness of using vocabulary among students
3. To expose them to correct grammatical forms of the language.
4. To empower them for successful communication in social and academic contexts.

COURSE OUTCOMES:

On completion of the course, students will be able to

1. Show their proficiency in German Language.
2. Use appropriate vocabulary in real life contexts.
3. Use appropriate grammatical forms while communicating with people.
4. Effectively use the language in social and academic contexts.

UNIT-I

Introduction to German alphabets, phonetics and pronunciation- Introducing themselves and others using simple sentences and answer to some basic personal questions-: Introduction to different types of articles and verbs, Nouns

UNIT-II

Understanding and responding to everyday queries like instruction, questions, - number & gender, pronouns, present and past tense.

UNIT-III

Short telephone messages, requests etc., if spoken slowly and clearly-- Detailed overview of articles, adjectives with/without articles, Prepositions

UNIT-IV

Ask and giving directions using simple prepositions- Ability to fill basic information on forms while registering for courses / classes. Ability to extract and understand relevant information in a public announcement, broadcast, newspaper, radio etc-- dative & accusative. Ability to describe about people, work, immediate environment, education and other topics related to personal needs in a concise manner-- Understanding of matters that are familiar and are encountered regularly like instances at school, work, at public places, places of leisure etc.

TEXT BOOKS:

1. Course book : Tangram aktuell 1 – Lektion 1–4 (Kursbuch + Arbeitsbuch mit Audio-CD zum Arbeitsbuch), Rosa-Maria Dallapiazza, Eduard von Jan, Til Schönherr, Hueber Publisher, ISBN 978-3-19-001801-7

2. Practice book: Tangram aktuell 1 – Lektion 1–4 (Kursbuch + Arbeitsbuch mit Audio-CD zum Arbeitsbuch), Rosa-Maria Dallapiazza, Eduard von Jan, Til Schönherr, Hueber Publisher, ISBN 978-3-19-001801-7.

3. NETZWERK A1 TEXTBOOK, Deutsch als Fremdsprache,Stefanie Dengler,Paul Rusch, Helen Schmitz, Tanja Sieber, Langenscheidt and Klett, ISBN : 9788183076968

4. STUDIO D A1 (SET OF 3 BOOKS + CD), Hermann Funk. Cornelsen, ISBN: 9788183073509

5. Willkommen! Beginner's course. Paul Coggle, Heiner Schenke. 2nd edition. (chapter 1 - 6), ISBN: 9781444165159

TECHNICAL ENGLISH AND REPORT WRITING

Semester	VI				
Course code					
Category	Open Elective Courses				
Course title	Technical English and Report Writing				
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 OBJECTIVES:

The Students will be able to:

1. Strengthen their listening skill which will help them comprehend lectures and talks in their areas of specialisation. 2. Develop their speaking skills to make technical presentations, participate in group discussions.
3. To help them develop their reading skills by familiarizing them with different types of reading strategies.
4. To equip with writing skills needed for academic as well as workplace contexts.
5. Foster their ability to write convincing job applications and effective reports.

COURSE OUTCOMES:

The students after undergoing this course will be able to:

1. Communicate effectively in different situations by using specific, technical vocabulary.
2. Write letters and reports effectively in formal and business situations.
3. Speak convincingly, express their opinions clearly, initiate a discussion, negotiate and argue using appropriate communicative strategies.
4. Write effectively and persuasively and produce different types of writing such as narration, description, exposition and argument as well as creative, critical, analytical and evaluative writing.

5. Read different genres of texts, infer implied meanings and critically analyse and evaluate them for ideas as well as for method of presentation.
6. Face the challenges in the interviews at global level.

UNIT-I

LISTENING SKILLS : Listening process and practice- exposure to recorded and structured talks, problems in comprehension and retention, note taking practice, listening tests, importance of listening in the corporate world, organization- spatial organization, chronological organization, order of increasing and decreasing importance, styles of communication, accuracy, brevity, clarity, objectivity, impersonal language, professional speaking ability, listening process, hearing and listening, types of listening- superficial, appreciative, focused, evaluative, attentive, empathetic. Barriers to listening- physical, psychological, linguistic, cultural. Speech decoding, oral discourse analysis, effective listening strategies, listening in conversational interaction, listening to structured talks, pre-listening analysis, predicting, links between different parts of the speech, team listening, listening to a telephone conversation, viewing model interviews (face-to-face, telephonic and video conferencing) listening to situation based dialogues, identifying the characteristics of a good listener.

UNIT-II

SPEAKING SKILLS: The speech process, message, audience, speech style, feedback, conversation and oral skills, fluency and self-expression, body language phonetics and spoken English, speaking techniques, word stress, correct stress patterns, voice quality, correct tone, types of tones, barriers to speaking, building self-confidence and fluency, Job interview, interview process, characteristics, of the job interview, pre-interview preparation techniques, interview questions and answers, positive image projection techniques. Group discussion-characteristics, subject knowledge, oral and leadership skills, team management, strategies, and individual contribution. Presentation skills-planning, preparation, organization, delivery. Conversation practice in real life situations, asking for directions (using polite expressions), giving directions (using imperative sentences), Purchasing goods from a shop, Discussing various aspects of a film (they have already seen) or a book (they have already read) Conversation skills with a sense of stress, intonation, pronunciation and meaning –seeking information – expressing feelings (affection, anger, regret, etc.) Speaking – Role play practice in telephone skills – listening and responding, -asking questions -note taking – passing on messages, role play and mock interview for grasping interview skills.

UNIT-III

READING SKILLS : Introduction to different kinds of reading material: technical and nontechnical-the reading process, purpose, different kinds of texts, reference material,

scientific and technical texts, active and passive reading, reading strategies-vocabulary skills, eye reading and visual perception,, prediction techniques, scanning skills, distinguishing facts and opinions, drawing inferences and conclusions, comprehension of technical material-scientific and technical texts, instructions and technical manuals, graphic information. Note making- tool for study skills, topicalising, organization and sequencing. Making notes from books, or any form of written materials. Summarizing and paraphrasing. Reading a short story or an article from newspaper, Critical reading, Extensive reading activity (reading stories / novels) Speed reading – reading passages with time limit Reading the job advertisements and the profile of the company concerned.

UNIT-IV

REFERENCING & WRITING SKILLS: Methods of referencing, book references, user guides, references for reports, journal references, magazines and newspapers, unpublished sources, internet references, explaining and elucidating. Writing skills- Effective writing-vocabulary expansion- Effective sentence structure, brevity and clarity in writing- cohesion and coherence in writing, emphasis. Paragraph writing. Letter writing skills - form and structure, style and tone. Inquiry letters, Instruction letters, complaint letters, Routine business letters, Sales letters. Reports, Resumes and Job Applications: Introduction to report writing-Types of reports, information and analytical reports, oral and written reports, formal and non-formal reports, printed forms, letter and memo format, manuscript format, proposals, technical articles, journal articles and conference papers, review and research articles. E-mails, Business Memos, Employment Communication- resume design, resume style. Writing a review / summary of a story / article, Personal letter (Inviting your friend to a function, congratulating someone for his / her success, thanking one's friends / relatives) Writing minutes of meeting – format and practice in the preparation of minutes – Writing summary after reading articles from journals – Format for journal, articles – elements of technical articles (abstract, introduction, methodology, results, discussion, conclusion, appendices, references) Writing strategies.

TEXT BOOKS:

1. Technical Communication- Principles & Practice by Meenakshi Raman and Sangeeta Sharma, Oxford.
2. Technical writing- B.N. Basu, PHI learning.
3. Professional Communication Skills- Alok Jain, Pravin S.R. Bhatia, A.M. Sheikh. S Chand.
4. Basic Communication Skills for technology- Andrea J Rutherford, Pearson.

WIRELESS COMMUNICATION

Semester	VI				
Course code					
Category	Open Elective Courses				
Course title	**Wireless Communication**				
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 know about the evolution of wireless communication systems and various generations of cellular systems.
2. To understand the basic design principles of cellular systems.
3. To understand the advanced multiple access techniques.
4. To understand the diverse reception techniques and applications of cellular networks.

UNIT I

INTRODUCTION TO WIRELESS COMMUNICATION SYSTEMS: Evolution of mobile radio communications, examples of wireless comm. systems, paging systems, Cordless telephone systems, comparison of various wireless systems.

MODERN WIRELESS COMMUNICATION SYSTEMS: Second generation cellular networks, third generation wireless networks, wireless in local loop, wireless local area networks, Blue tooth and Personal Area networks.

UNIT II

INTRODUCTION TO CELLULAR MOBILE SYSTEMS: Spectrum Allocation, basic Cellular Systems, performance Criteria, Operation of cellular systems, analog cellular systems, digital Cellular Systems.

CELLULAR SYSTEM DESIGN FUNDAMENTALS: Frequency Reuse, channel assignment strategies, handoff Strategies, Interference and system capacity, tracking and trade off service, improving coverage and capacity.

UNIT III

MULTIPLE ACCESS TECHNIQUES FOR WIRELESS COMMUNICATION: Introduction to Multiple Access, FDMA, TDMA, Spread Spectrum multiple Access, space division multiple access, packet ratio, capacity of a cellular systems.

UNIT IV

WIRELESS NETWORKING: Difference between wireless and fixed telephone networks, development of wireless networks, fixed network transmission hierarchy, traffic routing in wireless networks, wireless data services, common channel signaling, ISDN (Integrated Services digital Networks), advanced intelligent network.

INTELLIGENT CELL CONCEPT AND APPLICATION: Intelligent cell concept, applications of intelligent micro-cell Systems, in-Building Communication, CDMA cellular Radio Networks.

Course Outcomes

1. Understand the evolution of wireless communication systems and various generations of cellular systems.
2. Understand the basic design principles of cellular systems.

3. Understand the advanced multiple access techniques.
4. Understand the diverse reception techniques and applications of cellular networks.

TEXT/REFERENCE BOOKS:
1. Wireless Communications: Theodore S. Rappaport; Pearsons.
2. Mobile Cellular Telecommunication: W.C.Y.Lee; McGraw Hill
3. Mobile Communications: Jochen Schiller; Pearson

INDUSTRIAL SAFETY

Semester	VI				
Course code					
Category	Open Elective Courses				
Course title	**Industrial Safety**				
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 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**

UNITI

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.

UNITII

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.

UNITIII

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.

UNITIV

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

Course Outcomes:
Students will be able to:

1. **Analyze the effect of release of toxic substances.**
2. **Understand the industrial laws, regulations and source models.**
3. **Understand the methods of hazard identification and preventive measures and develop safety programs to prevent the damage or loss.**
4. **Conduct safety audits and improve safety practices.**

TEXT BOOKS/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**
7. **Industrial Accident Prevention : A Safety Management Approach, Herbert William Heinrich**

DISASTER MANAGEMENT

Semester	VI				
Course code					
Category	Open Elective Courses				
Course title	**Disaster Management**				
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

UnitI

Introduction to Disaster Management: Disaster, Emergency, Hazard, Mitigation, Disaster Prevention, Preparedness and Rehabilitation, Risk and Vulnerability, Classification of Disaster, Natural and Man-made Disasters, International day and Decade of Disaster Reduction.

Risk and Vulnerability to disaster mitigation and management options: Warning and Forecasting.

UnitII

Hydro-meteorological based disasters I: Disaster Management Act 2005, Role of NDMA, NDRF, NIDM, Tropical Cyclones, Floods, droughts, mechanism, causes, role of Indian Metrological Department, Central Water Commission, structure and their impacts, classifications, vulnerability, Early Warning System, Forecasting, Flood Warning System, Drought Indicators, recurrence and declaration, Structural and Non-structural Measures.

Hydro-meteorological based disasters II: Desertification Zones, causes and impacts of desertification, Characteristics, Vulnerability to India and Steps taken to combat desertification, Forest Fires; Causes of Forest Fires; Impact of Forest Fires, Prevention.

UnitIII

Geological based disasters: Earthquake, Reasons, Compression, Shear, Rayleigh and Love Waves; Magnitude and Intensity Scales, Direct and Indirect Impact of Earthquake; Seismic Zones in India, Factors, Indian Standards Guidelines for RCC and Masonry Structures, Prevention and Preparedness for Earthquake, Tsunamis, Landslides and avalanches: Definition, causes and structure; past lesson learnt and measures taken; their Characteristic features, Impact and prevention, Atlas (BMTRPC); structural and non-structural measures.

UnitIV

Manmade Disasters I: Chemical Industrial hazards; causes and factors, pre- and post-disaster measures; control; Indian Standard Guidelines and Compliance;

Traffic accidents; classification and impact, Fire hazards; Classification as per Indian Standards;

Fire risk assessment; Escape routes; fire-fighting equipment; classification of buildings, fire zones, occupancy loads; capacity and arrangements of exits,

Use of remote sensing and GIS in disaster mitigation and management.

Course Outcomes:

At the end of the course, the student will be able to:

1. **Knowledge of the significance of disaster management,**
2. **Analyze the occurrences, reasons and mechanism of various types of disaster**
3. **Understand the preventive measures as Civil Engineer with latest codal provisions**
4. **Apply the latest technology in mitigation of disasters**

Text Books/Reference Books:

1. **Thomas D. Schneid., Disaster Management and Preparedness, CRC Publication,**

USA, 2001

2. **Patrick Leon Abbott, Natural Disasters, Amazon Publications, 2002**
3. **Ben Wisner., At Risk: Natural Hazards, People vulnerability and Disaster, Amazon Publications, 2001**
4. **Oosterom, Petervan, Zlatanova, Siyka, Fendel, Elfriede M., "Geo-information for Disaster Management", Springer Publications, 2005**
5. **Savindra Singh and Jeetendra Singh, Disaster Management, Pravalika Publications, Allahabad**
6. **NidhiGaubaDhawan and AmbrinaSardar Khan, Disaster Management and Preparedness, CBS Publishers & Distribution**
7. **Selected Resources Published by the National Disaster Management Institute of Home Affairs, Govt. of India, New Delhi.**