Program Structure for B.E. Computer Engineering

Third Year (Computer) (Semester VI)

(REV 2012)

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract	Tut	Theory	TW/ Pract	Tut	Total
CPC601	System Programming and Compiler Construction	4	2	-	4	1	-	5
CPC602	Software Engineering	4	2	-	4	1	-	5
CPC603	Distributed Databases	4	2	-	4	1	-	5
CPC604	Mobile Communication and Computing	4	2	-	4	1	-	5
CPE6011	Elective-I	3	-	-	-	2	-	2
CPL601	Network Programming Laboratory	-	4	-	-	2	-	2
	Total	**19**	**12**	**-**	**16**	**8**	**-**	**24**

Course Code	Course Name	Examination Scheme							
		Internal Assesment							
		Internal Assesment			End Sem Exam	Exam Duration (in Hrs)	TW	oral / pract	Tot
		Test 1	Test 2	Avg					
CPC601	System Programming and Compiler Construction	20	20	20	80	03	25	25 (pract)	150
CPC602	Software Engineering	20	20	20	80	03	25	25 (oral)	150
CPC603	Distributed Databases	20	20	20	80	03	25	25 (oral)	150
CPC604	Mobile Communication and Computing	20	20	20	80	03	25	25 (pract)	150
CPE601X	Elective-I	-	-	-	-	-	50	-	50
CPL601	Network Programming Laboratory	-	-	-	-	-	25	50 (oral	75
	Total	**-**	**-**	**80**	**320**	-	**175**	**150**	**725**

Elective I Sem 6

CPE6011 Operation Research

CPE6012 Project Management

CPE6013 Foreigh Language – German

CPE6014 Foreigh Language – French

Course Code	Course/Subject Name	Credits
CPC601	**System Programming Compiler Construction**	05

Objectives:

1. To help students appreciate the role and functioning of various system programs over application program
2. To initiate an understanding of compilers in general and brief about phases of compiler.
3. To provide a theoretical framework for optimizing the code.
4. To familiarize and encourage the students to use various software tools for Developing System programs.

Outcomes: Learner will be able to…

1. Identify different system software
2. Use Lex tool used for generating lexical analyser.
3. Write macros as and when required to increase readability and productivity
4. Design hand written lexical analyzer
5. Design new language structures with the help of grammars
6. Appreciate the role of Operating System functions such as memory management as pertaining to run time storage management
7. Appreciate role of Intermediate Code Generation in connection with language designing
8. Apply optimization principles on given code
9. Implement various parser types and use YACC.

Module	Detailed Contents	Hours
01	**System Software** 1.1 Concept, introduction to various system programs such as assemblers, loaders , linkers ,macro processors, compilers, interpreters, operating systems, device drivers	01
02	**Assemblers** 2.1 General Design Procedure , Design of Assembler (Single Pass – Assembler IBM PC , multi pass Assembler - IBM 360/370 Processor), Statement of Problem , Data Structure , format of Databases , Algorithm , Look for modularity	06
03	**Macros & Macro processors** 3.1 Macro instructions, Features of Macro facility, Design of 2 pass macroprocessor	04
04	**Loaders and Linkers** 4.1 loader schemes, Design of Absolute loader , Design of Direct linking loader	04
05	**Software Tools** 5.1 Software Tools for Program development, Editors: Types of Editors , Design of Editor ,Debug Monitors	02

06	**Compilers** 5.1 Introduction to Compilers, Phases of a compiler, comparison of compilers and interpreters.	02
07	**Lexical Analysis** 5.1 Role of a Lexical analyzer, input buffering, specification and recognition of tokens, Designing a lexical analyzer generator, Pattern matching based on NFA's.	02
08	**Syntax Analysis** 5.1 Role of Parser, Top-down parsing, Recursive descent and predictive parsers (LL), Bottom-Up parsing, Operator precedence parsing, LR, SLR and LALR parsers.	08
09	**Syntax Directed Translation** 9.1 Syntax directed definitions, Inherited and Synthesized attributes, Evaluation order for SDDs , S attributed Definitions , L attributed Definitions	3
10	**Intermediate Code Generation** 10.1 Intermediate languages: declarations, Assignment statements, Boolean expression, case statements, back patching , procedure calls.	04
11	**Code Generation** 11.1 Issues in the design of Code Generator **,** Basic Blocks and Flow graphs, code generation algorithm , DAG representation of Basic Block	04
12	**Code Optimization** 12.1 Principal sources of Optimization, Optimization of Basic Blocks , Loops in Flow graph **,**Peephole Optimization	03
13	**Run Time storage** 11.1 Storage Organization **,** storage allocation strategies, parameter passing , Symbol table , introduction to garbage collection and compaction	04
14	**Compiler-compilers** **11.1** JAVA compiler environment, YACC compiler-compiler	01

Term Work:

Journal should include at least 10 experiments (out of which at least 7 from suggested list below) and at least 2 assignments. .

The final certification and acceptance of term work ensures that satisfactory performance of laboratory work and minimum passing marks in term work.

The distribution of marks for term work shall be as follows:

- Laboratory work (experiments): …….. (15) Marks.
- Assignment:……..…… (05) Marks.
- Attendance ……. (05) Marks

TOTAL: ……. (25) Marks.

Practical/Oral examination:

Practical examination will be conducted based on above syllabus

Theory Examination:

In question paper, weight age of each module will be proportional to number of respective lecture hours as mentioned in the syllabus.

1. Question paper will comprise of total 6 questions, each of 20 Marks.
2. Only 4 questions need to be solved.
3. Question 1 will be compulsory and based on maximum part of the syllabus.
4. Remaining questions will be mixed in nature (for example suppose Q.2 has part (a) from module 3 then part (b) will be from any module other than module 3)

Text Books:

1. J. J Donovan: Systems Programming Tata McGraw Hill Publishing Company
2. A. V. Aho, R. Shethi and J.D. Ulman; Compilers - Principles, Techniques and Tools, *Pearson Education*
3. A. V. Aho, R. Shethi, Monica Lam , J.D. Ulman : Compilers - Principles, Techniques and Tools , Pearson Education , Second Edition.
4. D. M Dhamdhere: Systems programming, *Tata McGraw Hill*

Reference Books:

1. lex & yacc, 2nd Edition by John R. Levine, Tony Mason & Doug Brown O'Reilly

2. D.M. Dhamdhere : Systems programming ,*Tata McGraw Hill*

Syllabus for LAB

Experiments can be conducted based on the suggested topics below:

However list is not limited to mentioned topics.

Use of Open source tools is suggested.

1. Lexical analyzer tool : flex
2. Parser generator tool : Yacc.
3. Find first() , follow() set of given grammer
4. removing left recursion direct as well as indirect given the set of production rule
5. Assemblers : 2 pass Assembler .
6. Macroprocessor : 2 pass Macro processor.
7. Syntax Analysis : (any 1 of LL(1) , LR(0) , LR(1) , LALR(1) , operator precedence parser.)
8. Create your library in Linux environment and using it.
9. Code Generation algorithm.
10. Code Optimization techniques.
11. Study ld command in Unix/Linux.

Course Code	Course/Subject Name	Credits
CPC602	**Software Engineering**	05

Objectives:

The main objective is to introduce to the students about the product that is to be engineered and the process that provides a framework for the engineering technology.

1. To provide knowledge of software engineering discipline.
2. To analyze risk in software design and quality.
3. To introduce the concept of advance software methodology.

Outcomes: Learner will be able to…

1. Students will demonstrate basic knowledge in software engineering.
2. Students will be able to plan, design, develop and validate the software project.
3. Students will be apply advance software methodology to create high quality WebApps.
4. Students will have an understanding of impact of sound engineering principles.

Module	Detailed Contents	Hrs
01	**Introduction** 1.1 Software Engineering Process Paradigms 1.2 Process Models – Incremental and Evolutionary models, 1.3 Typical Application for each model, 1.4 Agile methodology 1.5 Process and Project Metrics.	06
02	**Software project scheduling, Control & Monitoring** 2.1 Software estimation – Empirical estimation models – Cost/Effort estimation 2.2 Planning – Work breakdown Structure, Gantt Chart. Discuss schedule and cost slippage.	04
03	**Risk Management** 3.1 Risk Identification, Risk Assessment, Risk Projection, RMMM	04
04	**Software Configuration Management** 4.1 Software Configuration items, SCM process, Identification of objects in software configuration, version and change control, configuration audit , status reporting, SCM standards and SCM issues.	04
05	**Software Design Specification** 5.1 Software Design – Abstraction , Modularity 5.2 Software Architecture – Effective modular design, Cohesion and Coupling, Example of code for cohesion and coupling.	08

	5.3 User Interface Design – Human Factors, Interface standards, Design Issues – User Interface Design Process.	
06	**Software Quality** 6.1 Software Quality Assurance – Software standards , Quality metrics Software Reliability ,Quality Measurement and Metrics	04
07	**Software Testing** 7.1 Basic concept and terminology, Verification & validation, White Box Testing- Path Testing, Control Structures Testing , DEF-USE testing, 7.2 Black Box Testing –BVA Integration, Validation and system testing. 7.3 OO testing methods-Class Testing, Interclass testing, testing architecture, Behavioral testing. 7.4 Software Maintenance – Reverse Engineering.	12
08	**Web Engineering** 8.1 For web based applications – attributes, analysis and design, testing. 8.2 Security Engineering, 8.3 Service-Oriented Software Engineering. 8.4 Test Driven Development 8.5 Software engineering with aspects	06

Term Work:

Term work shall consist of at least 10 Laboratory assignments and two written tests.

The final certification and acceptance of Term Work ensures the satisfactory performance of laboratory Work and Minimum Passing in the term work.

Practical/Oral examination:

Oral examination will be conducted based on above syllabus.

Suggested List of Experiments:

1. SRS in IEEE format for any case study.
2. Use project management tool to schedule project plan.
3. RMMM plan for case study.
4. Develop test cases for white box testing.
5. Assignment / code for stubs and drivers.
6. Change specifications and make different versions using any SCM tool.
7. For one scenario- Implement TDD

Text Books:

1. Roger Pressman, Software Engineering: A Practitioners Approach, (6th Edition), McGraw Hill, 2010
2. Ian Somerville, Software Engineering, 9th edition, Addison Wesley, 2011

Reference Books:

1. Eric J. Braude and Micheal E. Bernstein, Software Engineering Modern Approach, 2nd edition, Wiley, 2011.
2. Ali Behforooz Fredrick Hudson, Software Engineering Fundamentals, Oxford University Press, 2006.
3. James F. Peters and Witold Pedrycz, " Software Engineering – An Engineering Approach", Wiley.
4. Mouratidis and Giorgini. "Integrating Security and Software Engineering – Advances and Future", IGP. ISBN – 1-59904-148-0

Course Code	Course/Subject Name	Credits
CPC603	**Distributed Databases**	05

Objectives:

1. To introduce principles and foundations of distributed databases, including architecture, design issues, integrity control, query processing and optimization, transactions, and concurrency control.
2. To enable students to understand the difference between different database system and integrate the.

Outcomes: Learner will be able to…

1. Design and implement distributed database for enterprise application.
2. Provides solutions for heterogeneous database
3. Use XML for schema integration.

Module	Detailed Contents	Hrs.
01	**Concept and Overview Distributed Database system** 1.1 What is Distributed Database System (DDBS), Features of DDBS, promises of DDBS, Design issue in DDBS, Distributed DBMS architecture: Client/server System, Peer-to-Peer, Mutli-Database system.	08
02	**Distributed Database Design** 2.1 Distributed database design concept, objective of Data Distribution, Data Fragmentation, The allocation of fragment , Transparencies in Distributed Database Design	08
03	**Distributed Transaction and concurrency control** 3.1 Basic concept of Transaction management, objective Distributed transaction management, Model for Transaction management 3.2 Distributed Concurrency control: Objective, concurrency control anomalies, Distributed Serializability, Locking based algorithm, Timestamp based algorithm.	08
04	**Distributed Deadlock and Recovery** 4.1 Introduction to Deadlock, Distributed Deadlock prevention, avoidance, detection and recovery, Two-Phase and Three-Phase Commit Protocol.	06
05	**Distributed query processing and optimization** 5.1 Concept, objective, and phases of distributed query processing; join strategies in fragment relation , Global query optimization	04
06	**Heterogeneous Database** 6.1 Architecture of Heterogeneous Database, Database Integration: Schema Translation and schema Integration, Query processing issues in Heterogeneous database.	06

07	**XML** 7.1 XML for data integration, structure of XML, XML document schema, Querying and Transformation, storage of XML data, XML application.	08

Term Work:

Assign a case study for group of 2/3 students and each group to perform the following experiments on their case-study:

- Creation of centralized database (Global Schema).
- Perform Fragmentation (PHF, DHF, VF, and HF) and allocation in DDBS design.
- Implementation of concurrency control.
- Implementations of two phase or three phases commit protocol.
- Implementations of three deadlock detection.
- Simulation of distributed query processor.
- Implementation of query optimization.
- Implementation any two experiment on XML

The distribution of marks for term work shall be as follows:

- Laboratory work (experiments/assignments): …….. (10) Marks.
- Course project:…… (10) Marks.
- Attendance ……. (05) Marks

TOTAL: ……. (25) Marks.

Practical/Oral examination:

An oral exam will be held based on the above syllabus.

Text Books:

1. Chhanda Ray , "Distributed Database System", Pearson Education India.
2. A. Siberschatz, H. Korth, "Database System", Six Edition, Mc-Graw Hill.
3. Seed K. Rahimi and Frank S. Haug, "Distributed Database Management System", Wiley India.

Reference Books:

1. M. Tamer Ozsu , Patrick Valduriez, “Principles of Distributed Database”, Pearson Education India.
2. Elmasri and Navathe, “Fundamentals of Database Systems”, 6th Edition, Pearson Education India.

Course Code	Course/Subject Name	Credits
CPC604	**Mobile Communication and Computing**	05

Objectives:

1. To introduce the basic concepts and principles in mobile computing. This includes the major techniques involved, and networks & systems issues for the design and implementation of mobile computing systems and applications.
2. To explore both theoretical and practical issues of mobile computing.
3. To provide an opportunity for students to understand the key components and technologies involved and to gain hands-on experiences in building mobile applications.

Outcomes: Learner will be able to…

1. Understand GSM and CDMA Cellular architecture.
2. Setup and configure wireless access points.
3. Use Network Simulator tool to simulate mobile network.
4. Implement small android based applications.

Module	Detailed Contents	Hrs.
01	**Introduction to Mobile Computing** 1.1 Wireless Communication, Applications, Cellular Systems, Antennas, satellite system, GEO, LEO, MEO, GPRS:-Architecture, Network nodes, GPRS support nodes.	05
02	**GSM cellular telephony-architecture and system aspects** 2.1 Introduction, Basic GSM architecture, Basic radio transmission parameters of the GSM system, Logical channel description, GSM time hierarchy, GSM burst structures, Description of the call set-up procedure, Handover, Ensuring privacy and authentication of a user, Modifications and derivatives of GSM	08
03	**Mobile Network** 3.1 Mobile IP, IP Packet Delivery, Agent Advertisement and Discovery, Registration, Tunneling and Encapsulation, Optimization, Reverse Tunneling, Mobile TCP, Fast Retransmit/ Fast Recovery, Transmission/Timeout Freezing, Selective Retransmission.	06
04	**Third and Fourth Generation Systems** 4.1 W-CDMA, CDMA 2000; Improvements on Core Networks; Quality of Services in 3G ; Wireless Local Loop; Wireless Local Loop Architecture; Deployment Issues; TR-45 Service Description; Wireless Local Loop technologies. TETRA, UMTS and IMT-2000;UMTS Basic Architecture, UTRA FDD mode, UTRA TDD mode, 4G Architecture, Comparison between 3G and 4G.	06

05	**Mobility Management** 5.1 Co- channel Interference, Mobility: Types of Handoffs; Location Management, HLR-VLR scheme, Hierarchical scheme, Predictive Location management schemes, cellular IP, PSTN.	04
06	**Wireless Local Area Networks** 6.1 Introduction, Types of WLANs, Hidden station problem, HIPERLAN Type 1: HIPERLAN/1 MAC sublayer, HIPERLAN/1 CAC layer, HIPERLAN/1 physical layer. IEEE 802.11 WLAN standards: IEEE 802.11 physical layer, IEEE 802.11 MAC sublayer. IEEE 802.11 and HIPERLAN standards for 5 GHz band: HIPERLAN/2 physical layer, HIPERLAN /2 data link control layer. Bluetooth: Introduction, User Scenario, Architecture, protocol.	08
07	**Introduction to Android** 7.1 Layers, android components, mapping application to process. Android development basics. Hardware tools, Software tools, Android SDK features	05
08	**Security Issues In Mobile Computing** 8.1 Security Issues, Authentication, Encryption, Cryptographic Tools: Hash, Message Authentication Code (MAC), Digital Signature, Certificate. Secure Socket Layer (SSL). Characteristics of SIM, Equipment Identification.	06

Term Work:

Term work shall consist of minimum assignments and course project. The distribution of marks for term work shall be as follows:

- Laboratory work (experiments/assignments): …….. (20) Marks.
- Attendance ……. (05) Marks

TOTAL: ……. (25) Marks.

Practical/Oral examination:

Practical exam will be held based on the above syllabus.

Suggested Laboratory Exercises of Mobile Computing:

1. Setup & Configuration of Wireless Access Point (AP)
2. Implementation of WLAN : Ad Hoc & Infrastructure Mode
3. Implementation of Bluetooth Protocol and Applications
4. GSM modem study (Android based mobile) and SMS client-server application
5. Implementation of Mobile Network using Network Simulator (NS2)
6. Mobile Internet and WML
7. J2ME Program for Mobile Node Discovery

8. Mobile protocol study using GNS3.
9. Design and Program Income Tax and Loan EMI Calculator for Mobile Phones.
10. Wireless Network Security: kismet and Netstumbler

Text Books:

1. Jochen Schilller ,"Mobile Communication ", Addision wisely,Pearson Education
2. Krzysztof Wesolowski, "Mobile Communication Systems", Wiley publication
3. W. Frank Ableson,Robi sen, Chris King, " Android IN ACTION ", Third Edition, Dreamtech Press
4. Mobile Computing By Rajkamal (Oxford).

Reference Book:

1. Uwe Hansmann, Lothar Merk, Martin S. Nicklous, Thomas Stober, "Principles of Mobile Computing", Springer
2. Rappaort, "Wireless Communcations Principles and Practices"
3. Yi Bang Lin, "Wireless and Mobile Network Architecture", John Wiley
4. P. Nicopolitidis, "Wireless Networks", John Wiley
5. K. Pahlavan, P.Krishnamurthy, "Principles of Wireless Networks"
6. Introduction to Wireless Telecommunication System and Networks by Mullet (Cengage Learning).
7. Beginning for Android 4 Application Development By Wei- Meng Lee, Wiley –India Edition.

Course Code	Course/Subject Name	Credits
CPE6011	**Operations Research**	**02**

Outcomes: Learner will be able to

1. model and solve problem using linear programming techniques
2. Implement algebric solution using simplex method
3. Define transportation model and apply transportation algorithm in a known situation.
4. Use montecarlo simulation technique.
5. Use the spreadsheet as a tool effectively for OR topics

Module	Detailed Contents	Hrs.
01	**What is Operations Research** 1.1 Introduction.	02
02	**Modeling with Linear Programming** 2.1 Two-Variable LP Model 2.2 Graphical LP Solution 2.2.1 Solution of a Maximization Model 2.2.2 Solution of a Minimization Model 2.3 Computer Solution with Solver and AMPL 2.3.1 LP solution with Excel Solver 2.3.2 LP Solution with AMPL 2.4 Linear Programming Applications 2.4.1 Investment 2.4.2 Product Planning and Inventory Control 2.4.3 Manpower Planning 2.4.4 Urban Development Planning 2.4.5 Blending and Refining 2.4.6 Additional LP Applications	07

03	**The Simplex Method and Sensitivity Analysis** 3.1 LP Model in Equation Form 3.2 Transition from Graphical to Algebraic Solution 3.3 The Simplex Method 3.3.1 Iterative Nature of the Simplex Method 3.3.2 Computational details of the Simplex algorithm 3.3.3Summary of the Simplex Method 3.4Artificial Starting Solution 3.4.1 M-Method 3.4.2 Two-Phase Method 3.5 Special Cases in the Simplex Method 3.5.1 Degeneracy 3.5.2 Alternative Optima 3.5.3 Unbounded Solution 3.5.4 Infeasible Solution 3.6 Sensitivity Analysis 3.6.1 Graphical Sensitivity Analysis 3.6.2 Algebraic Sensitivity Analysis – Changes in the Right-hand side 3.6.3 Algebraic Sensitivity Analysis – Objective function 3.6.4 Sensitivity Analysis with Tora, Solver, and Ampl 3.7 Computational issues in Linear Programming	06
04	**Duality and Post-Optimal Analysis** 4.1 Definition of the Dual Problem 4.2 Primal-Dual Relationships 4.2.1 Review of Simplex Matrix Operations 4.2.2 Simplex Tableau Layout 4.2.3 Optimal Dual Solution 4.2.4 Simplex Tableau Computations 4.3 Economic Interpretation of Duality 4.3.1 Economic Interpretation of Dual Variables 4.3.2 Economic Interpretation of Dual Constraints 4.4 Additional Simplex Algorithms 4.4.1 Dual Simplex Algorithm 4.4.2 Generalized Simplex Algorithm	05
05	**Transportation Model and Its Variants** 5.1 Definition of the Transportation Model 5.2 Nontraditional Transportation Models 5.3 The Transportation Algorithm 5.3.1 Determination of the Starting Solution 5.3.2 Iterative Computations of the Transportation Algorithm 5.3.3 Simplex Method Explanation of the Method of Multipliers 5.4 The Assignment Model	05

	5.4.1 The Hungarian Method 5.4.2 Simplex Explanation of the Hungarian Method	
06	**Decision Analysis** 6.1 Decision Making under Certainty – Analytic Hierarchy Process (AHP) 6.2 Decision Making under Risk 6.2.1 Decision Tree-Based Expected Value Criterion 6.2.2 Variants of the Expected Value Criterion 6.3 Decision under Uncertainty	03
07	**Stimulation Modeling** 7.1 Monte Carlo Simulation 7.2 Types of Simulation 7.3 Elements of Discrete Event Simulation 7.3.1 Generic Definition of Events 7.3.2 Sampling from Probability Distributions	02
08	**Nonlinear Programming Algorithms** 8.1 Unconstrained Algorithms 8.1.1 Direct Search Method 8.1.2 Gradient Method 8.2 Constrained Algorithms 8.2.1 Separable Programming 8.2.2 Quadratic Programming	03
09	**Introduction to spreadsheet model**	02

List of Assignment:

Atleast **15** assignments based on the above syllabus; Assignments to also include progams wherever applicable.

Term Work:

The distribution of marks for term work shall be as follows:

- Laboratory work (assignments): ……..…….. (25) Marks.
- Case Study Presentations (to be done during semester):… (15) Marks.
- Attendance ……. (10) Marks

TOTAL: ……. (50) Marks.

The final certification and acceptance of term work ensures the satisfactory performance of work assigned and minimum passing in the term work.

References:

1. Taha, Hamdy A. “Operations Research” Pearson, 2011.
2. N.D. Vhora “ Quantitative Techniques in Management” TMH , 3rd edition

Course Code	Course/Subject Name	Credits
CPE6012	**Software Project Management**	**02**

Outcomes: Learner will be able to…

1. Learner will be able to define characteristics of a project,
2. Learner will be able to appreciate project management principles, risk in environment and the management challenges for effective project management.
3. Learner will be able to apply the project management principles across all phases of a project.
4. Learner will be able to demonstrate use of tools and techniques for the management of a project plan, monitor and controlling a project schedule and budget, tracking project progress.

Module	Detailed Contents	Hrs.
01	**An overview of IT Project Management** 1.1 Introduction, the state of IT project management, context of project management, need of project management, project goals, project life cycle and IT development, extreme project management, PMBOK.	02
02	**Conceptualizing and Initializing the IT Project** 2.1 An information technology project methodology (ITPM), project feasibility, request for proposal (RFP), the business case, project selection and approval, project contracting, IT governance and the project office.	04
03	**The Human Side of Project Management** 3.1 Introduction, organization and project planning, the project team, the project environment.	02
04	**Developing the Project Charter and Project Plan** 4.1 Introduction, project management process, project integration management, the project charter, project planning framework, the contents of a project plan, the planning process. 4.2 The Work Breakdown Structure (WBS), the linear responsibility chart, multidisciplinary teams.	04
05	**The Scope Management Plan** 5.1 Introduction, scope planning, project scope definition, project scope verification, scope change control.	04
06	**The Project ís Schedule, Budget and Risk Management** 6.1 Introduction, developing the project schedule, project management	08

	software tools, methods of budgeting, developing the project budget, improving cost estimates, finalizing the project schedule and budget. 6.2 IT project risk management planning process, identifying IT project risks, risk analysis and assessment, risk strategies, risk monitoring, and control, risk responses and evaluation.	
07	**Allocating Resources to the Project** 7.1 Resource loading, resource leveling, allocating scarce resources to projects and several projects, Goldrattís critical chain.	03
08	**The Project Communication Plan** 8.1 Introduction, monitoring and controlling the project, the project communications plan, project metric, project control, designing the control system, the plan-monitor-control cycle, data collection and reporting, reporting performance and progress, information distribution.	02
09	**Managing Change, Resistance and Conflicts**	02
10	**Managing Project Procurement and Outsourcing** 10.1 Introduction, project procurement management, outsourcing.	02
11	**Project Leadership and Ethics** 11.1 Introduction, project leadership, ethics in projects, multicultural projects.	01
12	**The Implementation Plan and Project Closure** 12.1 Introduction, project implementation, administrative closure, project evaluation, project audit.	02

Term Work:

Term work shall consist of at least **10** assignments covering all topics and course project by using appropriate tool. The distribution of marks for term work shall be as follows:

1. Assignments: ……..... (25) Marks.
2. Case study presentations **(to be done during semester)**:..... (15)
3. Attendance:..... (10)

TOTAL: ……. (50) Marks.

The final certification and acceptance of TW ensures the satisfactory Performance of laboratory Work and Minimum Passing in the term work.

Suggested Assignment List

In practical, a group of maximum three students should be formed. Each group is supposed to complete all lab experiments on the case study given by the subject teacher. In lab experiments students can used the tools like MsWord to prepare document whereas MsProject to preparing WBS, N/w diagram, PERT, CPM, Variance analysis etc.

1. Project and System's Management
2. Feasibility study document
3. Project Proposal
4. Project Planning
5. Activity Planning
6. Analyzing the project network diagram
7. Cost estimation and budgeting
8. Risk management
9. Performance analysis of project
10. Project evaluation and closure

Text Book:

1. "Information Technology Project Management", Jack T. Marchewka, 3rd edition, Wiley India, 2009.

Reference Books:

1. S. J. Mantel, J. R. Meredith and etl.. "Project Management" 1st edition, Wiley India, 2009.
2. John M. Nicholas, "Project Management for Business and Technology", 2nd edition, Pearson Education.
3. Joel Henry, "Software Project Management, A real-world guide to success", Pearson Education, 2008.
4. Gido and Clements, "Successful Project Management", 2nd edition, Thomson Learning.
5. Hughes and Cornell, "Software Project Management", 3rd edition, Tata McGraw Hill
6. Joseph Phillips, "IT Project Management", 2nd edition, Tata McGraw Hill
7. Robert K. Wyzocki and Rudd McGary, "Effective Project Management", 3rd edition, Wiley
8. Brown, K.A. Project Management, McGraw Hill, 2002.
9. E-Book – Project Management Body of Knowledge.
10. Dinsmore, P. C. (Ed.). (1993) The AMA Handbook of Project Management. AMACOM

Course Code	Course/Subject Name	Credits
CPE6013	**Elective – Foreign Language – German**	02

Course Code	Course/Subject Name	Credits
CPE6014	**Elective – Foreign Language – French**	02

Objectives:

1. To introduce German language in a holistic manner. The texts and exercises are aimed at developing the students' skills of reading, writing, listening and speaking. The course is divided into units with a thematic and grammatical progression. Scenarios from everyday life and formulated in a manner suitable and especially interesting for beginners. However since most of the students would want to do this course for professional advancement this course scenarios from the professional life are introduced in simple but engaging manner.

Outcomes: Learner will be able to…

1. read and understand simple German / French text
2. Describe basic family structure , culture and work culture
3. Draft e-mails and create simple presentations

Module	Detailed Contents	Hrs.
01	Basic Grammar, pronunciation and basic expression	08
02	**Communication** 2.1 Greetings , begining of conversation, Introduction of oneself , numbers , counting and dates	08
03	Reading , Comprehension and writing - (Type of Text) Dialogs, Monologs , Biodata,	05
04	Family Structures Culture Computer and Multimedia Work culture	10
05	**Corporate communication** 5.1 Emails , Technical Reports , Making presentations	05

Term Work:

Term work shall consist of minimum **10** assignments of different difficulty level based on above syllabus. The distribution of marks for term work shall be as follows:

- Laboratory work (assignments): ……..….. (25) Marks.
- Presentation:……(15) Marks.
- Attendance ……. (10) Marks

TOTAL: ……. (50) Marks.

References:

For German

1. German Conversation Demystified with Two Audio CDs / Edition by Ed Swick
1. German Conversational: Learn to Speak and Understand French with Pimsleur Language Programs Audio CD – Audiobook by Pimsleur

For French

2. French Conversational: Learn to Speak and Understand French with Pimsleur Language Programs Audio CD – Audiobook by Pimsleur

Subject Code	Subject Name	Credits
CPL605	**Network Programming Laboratory**	02

Laboratory Course Outcomes:

Learner will be able to :

1. Configure Linux Network
2. View and edit routing tables
3. Configure Linux Router
4. Configure Linux FTP server
5. Install and Configure DNS server
6. Install and configure web server

Module	Detailed content	Hours
1	Study of Networking Commands (Ping, Tracert, TELNET, nslookup, netstat, ARP, RARP) and Network Configuration Files.	2
2	Linux Network Configuration. i. Configuring NIC's IP Address. ii. Determining IP Address and MAC Address using if-config command. iii. Changing IP Addess using ifconfig. iv. Static IP Address and Configuration by Editing. v. Determining IP Address using DHCP. vi. Configuring Hostname in /etc/hosts file.	4
3	Setting up multiple IP Addresses on a single LAN.	2
4	Using netstat and route commands to do the following. i. View current routing table. ii. Add and delete routes. iii. Change default gateway.	2
5	Using GUI configuration Tools to add /configure Ethernet Card.	2
6	Configuring Linux as a router by enabling IP Forwarding.	2
7	Configuring remote login Services, telnet & ssh.	2

	i. To install and configure TELNET server. ii. To set up SSH and connect to remote machine.	
8	To configure Linux FTP server using VSFTPD. i. Set up anonymous access of FTP server. ii. Enable individual logins and add FTP users with Read- only access. iii. Transfer Files.	2
9	To install and configure DNS server.	2
10	To install and configure Web server.	2
11	Design TCP iterative Client and Server application to reverse the given input sentence.	2
12	Design TCP concurrent Client and Server application to reverse the given input sentence.	2
13	Design TCP Client and Server application to transfer file.	2
14	Design a TCP concurrent Server to convert a given text into upper case using multiplexing system call “select”.	2
15	Design a TCP concurrent Server to echo given set of sentences using Poll functions.	2
16	Design UDP Client and Server application to reverse the given input sentence.	2
17	Design UDP Client Server to transfer a file.	2
18	Design using Poll Client Server application to multiplex TCP and UDP requests for 60converting a given text into upper case.	2
19	Design a RPC application to add and subtract a given pair of integers.	2
20	Program to determine the host ByteOrder	2
21	Program to set and get socket options	2

Format of Laboratory Course:

The format for the Laboratory Course is

1. Atlease 8 small experiments based on above syllabus
2. One group Miniproject

A group of 3 students ; 4 Batches per class.

The scope of the miniproject should be such that it completes in 15 hours of actual working.

Termwork Assessment:

Laboratory Experiment: 10

Mini Project presentation : 10

Attendance : 05

End Semester Examination:

Oral examination is to be conducted by pair of internal and external examiners