Third Year – Second Semester
Compiler Design (PCCS-321)
Professional Core (PC); 4 Credits (4-0-0)

Objectives:

1. To design and implementation of programming language translators. Theoretical aspects of language design and translation are discussed and practically demonstrated by developing a working compiler

Unit	Contents	No. of Lectures
Unit 1	**Introduction:** Introduction to Compiler, Phases and passes, Bootstrapping, Finite state machines and regular expressions and their applications to lexical analysis, Optimization of DFA-Based Pattern Matchers implementation of lexical analyzers, lexical-analyzer generator, LEX-compiler,Formal grammars and their application to syntax analysis, BNF notation, ambiguity, YACC. The syntactic specification of programming languages: Context free grammars, derivation andparse trees, capabilities of CFG	**06**
Unit 2	**Basic Parsing Techniques:** Parsers, Shift reduce parsing, operator precedence parsing, top down parsing, predictive parsers Automatic Construction of efficient Parsers: LR parsers, the canonical Collection of LR(0) items, constructing SLR parsing tables, constructing Canonical LR parsing tables, Constructing LALR parsing tables, using ambiguous grammars, an automatic parser generator, implementation of LR parsing tables.	**08**

Unit 3	**Syntax-directed Translation:** Syntax-directed Translation schemes, Implementation of SyntaxdirectedTranslators, Intermediate code, postfix notation, Parse trees & syntax trees, three address code, quadruple & triples, translation of assignment statements, Boolean expressions,statements that alter the flow of control, postfix translation, translation with a top down parser.More about translation: Array references in arithmetic expressions, procedures call, declarationsand case statements.	**12**
Unit 4	**Symbol Tables:** Data structure for symbols tables, representing scope information. Run-Time Administration: Implementation of simple stack allocation scheme, storage allocation in blockstructured language. Error Detection & Recovery: Lexical Phase errors, syntactic phase errors semantic errors.	**10**
Unit 5	**Code Generation:** Design Issues, the Target Language. Addresses in the Target Code, Basic Blocks and Flow Graphs, Optimization of Basic Blocks, Code Generator. Code optimization: Machine-Independent Optimizations, Loop optimization, DAG representation of basic blocks, value numbers and algebraic laws, Global Data-Flow analysis	**08**
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Reference/Text Books

1. Aho, Sethi& Ullman, "Compilers: Principles, Techniques and Tools", Pearson Education
2. V Raghvan, " Principles of Compiler Design", TMH
3. Kenneth Louden," Compiler Construction", Cengage Learning.
4. Charles Fischer and Ricard LeBlanc," Crafting a Compiler with C", Pearson Education

Organizational Behavior (OEC-xxx)
Open Electives (OE); 4 Credits (3-1-0)

Objectives:

1. Organizational behaviour is the study of how people act, think, and feel in organizational settings.
2. The behavioural challenges managers face today are exacerbated by the increasing complexity of the work environment and the fast pace of demographic and technological changes.

Unit	Contents	No. of Lectures
Unit 1	**Focus and Purpose:** Definition, need and importance of organizational behavior, Nature and scope, Frame work Organizational behavior models.	**06**
Unit 2	**Individual Behaviour:** Personality- types, Factors influencing personality, Theories, Learning, Types of learners, The learning process, Learning theories, Organizational behavior modification. Misbehavior- Types, Management Intervention. Emotions- Emotional Labor, Emotional Intelligence, Theories. Attitudes- Characteristics, Components, Formation, Measurement, Values. Perceptions, Importance, Factors influencing perception, Interpersonal perception- Impression Management. Motivation, importance, Types, Effects on work behavior.	**10**
Unit 3	**Group Behavior:** Organization structure, Formation, Groups in organizations, Influence, Group dynamics, Emergence of informal leaders and working norms, Group decision making techniques, Team building, Interpersonal relations,Communication, Control.	**08**
Unit 4	**Leadership And Power:** Meaning, Importance, Leadership styles, Theories, Leaders vs Managers, Sources of power, Power centers, Power and Politics.	**10**
Unit 5	**Dynamics of Organizational Behavior:** Organizational culture and climate, Factors affecting organizational climate, Importance.	**10**

	Job satisfaction, Determinants, Measurements, Influence on behavior. Organizational change, Importance, Stability vs Change, Proactive vs Reaction change, the change process, Resistance to change, Managing change. Stress, Work Stressors, Prevention and Management of stress, Balancing work and Life. Organizational development, Characteristics, objectives. Organizational effectiveness	
		44

References/Text Books:

1. Stephen P. Robins, Organisational Behavior, PHI Learning / Pearson Education,11th edition, 2008.
2. Fred Luthans, Organisational Behavior, McGraw Hill, 11th Edition, 2001.

Schermerhorn, Hunt and Osborn, Organisational behavior, John Wiley, 9th Edition, 2008.

Optimization Technique (PECS-31x)
Professional Electives (PECS); 4 Credits (3-0-2)

Objectives:

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

1. understand importance of optimization of industrial process management
2. apply basic concepts of mathematics to formulate an optimization problem
3. analyse and appreciate variety of performance measures for various optimization problems

Unit	Contents	No. of Lectures
Unit 1	**Introduction to Operation Research:** Operation Research approach, scientific methods, introduction to models and modeling techniques, general methods for Operation Research models, methodology and advantages of Operation Research, history of Operation Research.	**08**
Unit 2	**Linear Programming (LP):** Introduction to LP and formulation of Linear Programming problems, Graphical solution method, alternative or multiple optimal solutions, Unbounded solutions, Infeasible solutions, Maximization – Simplex Algorithm, Minimization – Simplex Algorithm using Big-M method, Two phase method, Duality in linear programming, Integer linear programming.	**10**
Unit 3	**Transportation & Assignment Problems:** Introduction to Transportation problems, various methods of Transportation problem, Variations in Transportation problem, introduction to Assignment problems, variations in Assignment problems. **Network Analysis:** Network definition and Network diagram, probability in PERT analysis, project time cost trade off, introduction to resource smoothing and allocation. **Sequencing:** Introduction, processing N jobs through two machines, processing N jobs through three machines, processing N jobs through m machines.	**12**
Unit 4	**Inventory Model:** Introduction to inventory control, deterministic inventory model, EOQ model with quantity discount. **Queuing Models:** Concepts relating to queuing systems, basic elements of queuing model, role of Poison & exponential distribution, concepts of birth and death process.	**06**

Unit 5	**Replacement & Maintenance Models:** Replacement of items, subject to deterioration of items subject to random failure group vs. individual replacement policies. **Simulation:** Introduction & steps of simulation method, distribution functions and random number generation.	**06**
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References/Text Books:

1. Optimization Techniques, SS Rao, Wiley Eastern India
2. Optimization Techniques by C.B. Gupta, Optimization Techniques, IK International Publications
3. Optimization Techniques by Mohan & Deep, Optimization Techniques, Newage Publications