

# **Sri Kaliswari College (Autonomous), Sivakasi**

(Affiliated to Madurai Kamaraj University)

Re-Accredited with 'A' grade (CGPA 3.30) by NAAC)



## **Programme Scheme, Scheme of Examination and Syllabi**

(For those who join from June 2018 and afterwards)

## **Curriculum Design and Development Cell**

**PG Programme – M.Sc., Computer Science**

**Sri Kaliswari College (Autonomous), Sivakasi**  
**Department of Computer Science (UG & PG)**  
**M.Sc (Computer Science) (Semester) – (2018-2020)**  
**Objectives, Outcomes, Regulation**

**Programme Objectives:**

- To enhance the knowledge in the field of computer science.
- To improve the skill set needed for global demands.
- To improve the software development programming skill.
- To update knowledge in current trends in IT.
- To produce employable graduates.
- To impart moral and value based education for character modeling.

**Programme Outcomes:**

**Knowledge**

1. Acquisition of advanced knowledge for higher studies and research.
2. Synthesis of knowledge and critical thinking

**Skills**

1. Acquisition of cognitive skills
2. Acquisition of Life Skills for Employment.

**Attitude**

1. Holistic Personality Development through Self-directed and lifelong learning.
2. Eco Sensitivity, inclusive culture, moral uprightless and social commitment.

**Programme Specific Outcome**

1. Ability to apply knowledge of computing, mathematics, science, and computer science fundamentals.
2. Ability to identify, formulate, and solve complex computer science problems.
3. Ability to use the techniques, skills, and modern computational tools necessary for computer science practices.
4. Ability to function effectively as an individual, as a member or leader in diverse & multidisciplinary teams.
5. An understanding of computer science & management principles to manage projects.

**Sri Kaliswari College (Autonomous), Sivakasi**  
**Department of Computer Science (UG & PG)**  
**Choice Based Credit System – Curriculum Pattern**  
**PG Programme – M.Sc. [Computer Science]**  
**2018-2020**

Sem	Course Code	Title	Hours	Credits
I	18PCSC11	<b>Core Course– I:</b> Discrete Mathematics	4	4
	18PCSC12	<b>Core Course – II:</b> Advanced C and Data Structure	5	4
	18PCSC13	<b>Core Course – III:</b> Modern Operating System	5	4
		<b>Major Elective Course – I:</b>	6	4
	18PCSO11	1. Compiler Design		
	18PCSO12	2. Object Oriented Analysis and Design		
	18PCSO13	3. Embedded Systems		
	18PCSO14	4. Computer Security		
	18PCSC1P	<b>Core Course – IV:</b> Advanced C and Data Structure Lab	5	3
	18PCSC1Q	<b>Core Course – V:</b> Python Programming Lab	5	3
		<b>TOTAL</b>	<b>30</b>	<b>22</b>
II	18PCSC21	<b>Core Course – VI:</b> Advanced Java Programming	5	4
	18PCSC22	<b>Core Course – VII:</b> Data Communications and Networks	5	4
	18PCSC23	<b>Core Course – VIII:</b> Database Systems	4	4
	18PCSN21	<b>Non-Major Elective Course – I:</b> Web Designing	6	4
	18PCSC2P	<b>Core Course – IX:</b> Advanced Java Programming Lab	5	3
	18PCSC2Q	<b>Core Course – X:</b> RDBMS Lab	5	3
		<b>TOTAL</b>	<b>30</b>	<b>22</b>

III	18PCSC31	<b>Core Course – XI:</b> Web Technology	5	4
	18PCSC32	<b>Core Course – XII:</b> Software Project Management	4	4
	18PCSC33	<b>Core Course – XIII:</b> Data Mining	5	4
		<b>Major Elective Course – II</b>	6	4
	18PCSO31	1. Digital Image Processing		
	18PCSO32	2. Mobile Computing		
	18PCSO33	3. Network Security and Cryptography		
	18PCSO34	4. Neural Networks		
	18PCSC3P	<b>Core Course – XIV:</b> Open Source Tools Lab	5	4
	18PCSC3Q	<b>Core Course – XV:</b> Mobile and Web App Development Lab	5	4
	<b>TOTAL</b>	<b>30</b>	<b>24</b>	
IV	18PCSC41	<b>Core Course – XVI:</b> Advanced Computing	6	6
	18PCSC4P	<b>Core Course – XVII:</b> Employability Skills	6	6
	18PCSJ41	<b>Core Course – XVIII:</b> Project and Viva-Voce	18	10
		<b>TOTAL</b>	<b>30</b>	<b>22</b>

Semester	I	II	III	IV	Total
Credits	22	22	24	22	90

**Sri Kaliswari College (Autonomous), Sivakasi**  
**Department of Computer Science (UG & PG)**  
**PG Programme – M.Sc.,**  
**Semester I**  
**(2018 – 2020)**

**Core Course – I: Discrete Mathematics (18PCSC11)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 4</b>	<b>Int. Marks</b>	<b>: 25</b>
<b>Hours / Week</b>	<b>: 4 Hrs</b>	<b>Ext. Marks</b>	<b>: 75</b>
<b>Duration</b>	<b>: 60 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- To gain deep knowledge in logic.
- To express a logic sentence in terms of predicates, quantifiers, and logical connectives.
- To work with Boolean function.
- To solve counting problems by applying elementary counting techniques using the product and sum rules.
- To apply mathematics in graph theory.

**Course Outcomes:**

1. Able to understand the logic.
2. Able to express logic sentences.
3. Able to deal with sets and functions.
4. Able to work with Boolean function.
5. Gain knowledge about counting problems.
6. Able to apply mathematics in graph theory.

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**UNIT I**

**(12 Hrs)**

**Mathematical Logic:** Statements and Notation. **Connectives:** Negation – Conjunction – Disjunction – Statement Formulas and Truth Tables – Logical Capabilities of Programming Languages – Conditional and Biconditional – Well-Formed Formulas – Tautologies – Equivalence of Formulas – Duality Law – Tautological Implications – Formulas with Distinct Truth Tables – Functionally Complete Sets of Connectives. **Normal Forms:** Disjunctive Normal Forms – Conjunctive Normal Forms – Principal Disjunctive Normal Forms – Principal Conjunctive Normal Forms – Ordering and Uniqueness of Normal Forms.

**UNIT II**

**(12 Hrs)**

**The Theory of Inference for the statement calculus:** Validity using Truth Tables – Rules of Inference – Consistency of Premises and Indirect Method of Proof – Automatic Theorem Proving. **The Predicate Calculus:** Predicates – The Statement Function, Variables and Quantifiers – Predicate Formulas – Free and Bound Variables – The Universe of

Discourse. **Grammers and Languages:** Formal Definition of a Language – Notations of Syntax Analysis. **Polish Expressions and their compilation:** Polish Notation – Conversion of Infix expressions to Polish Notation.

**UNIT III (12 Hrs)**

**Sets:** Introduction – The Power Set – Cartesian Products – Using Set notation with quantifiers. **Set Operations:** Introduction – Set Identities – Generalized unions and intersections – Computer Representations of Sets. **Functions:** Introduction – One-to-One and Onto Functions – Inverse Functions and Compositions of Functions – The Graphs of Functions.

**UNIT IV (12 Hrs)**

**Boolean Functions:** Introduction – Boolean Expressions and Boolean Functions – Identities of Boolean Algebra – Duality – The Abstract Definition of a Boolean Algebra. **Representing Boolean Functions:** Sum-of-Products Expansions – Functional Completeness. **Logic Gates:** Introduction – Combinations of Gates – Examples of Circuits – Adders. **Minimization of Circuits:** Introduction – Karnaugh Maps – The Quine-McCluskey Method.

**UNIT V (12 Hrs)**

**Counting:** Basic Counting Principles. **The Pigeonhole Principle:** Introduction – The Generalized Pigeonhole Principle. **Inclusion-Exclusion:** The Principle of Inclusion-Exclusion. **Graphs:** Types of Graphs - Graph Models. **Graph Terminology:** Basic Terminology – Bipartite Graphs. **Representing Graphs and Graph Isomorphism:** Introduction – Representing Graphs – Adjacency Matrices – Incidence Matrices – Isomorphism of Graphs.

**Textbooks**

1. J.P.Tremblay and R.Manohar, “Discrete Mathematical Structures with applications to computer science”, McGraw Hill, 2004.
2. Kenneth H. Rosen, “Discrete Mathematics and Its Applications”, Tata McGraw-Hill Edition, 2005, Fifth Edition.

Unit	Textbook No.	Chapters	Section	Page No.
I	1	1	1.1, 1.2, 1.3, 1.4, 1.5	2-6, 7-38, 50-60, 65-78, 79-89
II		3	3.3, 3.4	299-308, 309-318
III	2	1	1.6, 1.7, 1.8	77-85, 86-94, 97-108
IV	2	10	10.1, 10.2, 10.3, 10.4	701-707, 709-711, 712-717, 719-732
V	2	4	4.1, 4.2	302-306, 313-316
		6	6.5	451-455
		8	8.1, 8.2, 8.3	537-543, 545-561, 557-563

### **Reference Books**

1. M.K.Venkatraman, N.Sridharan, Chandrasekaran ,“Discrete Mathematics”, The National Publishing Company, 2000.
2. T.Veerarajan, “Discrete Mathematics”, TMH, 2007.

### **Webliography**

1. [http://www.math.northwestern.edu/%7Emlerma/papers/discrete\\_mathematics-2005.pdf](http://www.math.northwestern.edu/%7Emlerma/papers/discrete_mathematics-2005.pdf)
2. [https://www.tutorialspoint.com/discrete\\_mathematics/rules\\_of\\_inference.htm](https://www.tutorialspoint.com/discrete_mathematics/rules_of_inference.htm)
3. <https://www.lynda.com/Programming-Foundations-tutorials/Foundations-Programming-Discrete-Mathematics/411376-2.html>

**Sri Kaliswari College (Autonomous), Sivakasi**  
**Department of Computer Science (UG & PG)**  
**PG Programme – M.Sc.,**  
**Semester I**  
**(2018-2020)**

**Core Course – II: Advanced C and Data Structure (18PCSC12)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 4</b>	<b>Int. Marks</b>	<b>: 25</b>
<b>Hours / Week</b>	<b>: 5 Hrs</b>	<b>Ext. Marks</b>	<b>: 75</b>
<b>Duration</b>	<b>: 75 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- To enhance the knowledge in Pointers.
- To Perform TSR using C.
- To master the design and applications of linear, tree, and graph structures.
- To understand various algorithm design and analysis techniques.

**Course Outcomes:**

1. Design algorithmic solution for given problem.
2. Acquire master in handling TSR Routine.
3. Learn to choose appropriate data structure as applied to specified problem definition.
4. Acquire skills to use operations like searching, insertion, deletion.
5. Students will be able to apply concepts learned in various do mains like DBMS, compiler construction etc.
6. Use linear and non -linear data structures like stacks, queues, linked list etc.
7. Describe stack, Queue and linked list operations.

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**UNIT I**

**(15 Hrs)**

**Pointers:** Introduction to pointers – Pointer Expressions – char, int, float Pointers.  
**Pointers and Arrays :** Pointers and Array – Passing an entire Array to Function – Passing 2D, 3D array to a Function – Returning Array from a Function – Array of Pointer. **Pointers and Strings:** Standard Library String Functions 2D Array of Characters – Array of Pointer to String. **Pointers and Structure:** An Array of Structure – Structure Pointer – Offset and Structure Element.

**UNIT II**

**(15 Hrs)**

**TSR :** Introduction - ROM – BIOS Function of Approaches – ROM BIOS philosophy – The CPU Registers – Interrupt Vector Table – Invoking ROM BIOS Functions – int86() Function – Finding Memory Size using the declaration dos.h – Elementary TSR:How TSR



works-Pointers to functions-The first TSR-The interrupt function modifier-variable in TSRs-Time bound TSRs-Tinkering with the keyboard-functioning of the keyboard.

**UNIT III (15 Hrs)**

**Hashing:** Hash Table Representation-Application of Hashing. **Search Trees Structures:** Binary Search Tree-Red Black Trees-B-Trees-AVL Trees-Applications.

**UNIT IV (15 Hrs)**

**Graphs: Definitions**-Representation of graph-Graph ADT-Graph Search Method-Greedy Method: Optimization Problem-Greedy Method-Applications.

**UNIT V (15 Hrs)**

**Algorithm Design:** Divide and conquer – Dynamic programming – backtracking – branch and bound.

**Textbooks**

1. Yashavant Kanetkar, “Pointers in C”, BPB Publication, 2006, 4<sup>th</sup> Edition.
2. Yashavant Kanetkar, “Writing TSR throw C”, 2002.
3. Sahni, “Data Structure, Algorithm and Application in C++”, Tata McGraw Hill, 2000.

Unit	Textbook No	Chapters	Page No.
I	1	1,2,3,4	1-225
II	2	1,2	17-31,45-47-71
III	3	7,11	343-365,488-546
IV	3	12,13	557-573,600-611
V	3	14, 15,16,17	661-810

**Reference Books**

1. Herbert Schildt, “The C Complete Reference”, 2008, 4<sup>th</sup> Edition.
2. M. A. Weiss, “Data Structures and Algorithm Analysis in C”, Pearson Education, 2002, Asia.

**Webliography**

1. [http://www.tutorialspoint.com/cplusplus/cpp\\_tutorial.pdf](http://www.tutorialspoint.com/cplusplus/cpp_tutorial.pdf)(functions and pointers)
2. [http://www.e-reading.club/bookreader.php/138793/Advanced\\_C.pdf](http://www.e-reading.club/bookreader.php/138793/Advanced_C.pdf)(files in c)
3. <http://www.cs.princeton.edu/courses/archive/spr11/cos217/lectures/08DsAlg.pdf>(Linked List)
4. <http://lib.mdp.ac.id/ebook/Karya%20Umum/Dsa.pdf>(Binary Search Tree,AVL Tree)
5. [http://www.e-reading.club/bookreader.php/138822/Mehta\\_-\\_Handbook\\_of\\_Data\\_Structures\\_and\\_Applications.pdf](http://www.e-reading.club/bookreader.php/138822/Mehta_-_Handbook_of_Data_Structures_and_Applications.pdf)(Applications of Data Structure)

**Sri Kaliswari College (Autonomous), Sivakasi**  
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**PG Programme – M.Sc.,**  
**Semester I**  
**(2018 – 2020)**

**Core Course – III : Modern Operating Systems (18PCSC13)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 4</b>	<b>Int. Marks</b>	<b>: 25</b>
<b>Hours / Week</b>	<b>: 5 Hrs</b>	<b>Ext. Marks</b>	<b>: 75</b>
<b>Duration</b>	<b>: 75 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- To study the basic concepts and functions of Operating system.
- To understand the structure and function of operating system.
- To understand the principles of Concurrency and Deadlocks.
- To learn various memory management schemes.

**Course Outcomes:**

1. Understand the difference between different types of modern operating systems, virtual machines and their structure of implementation and applications.
2. Understand the difference between process & thread, issues of scheduling of user level processes / threads and their issues & use of locks, semaphores, monitors for synchronizing multiprogramming with multithreaded systems and implement them in multithreaded programs.
3. Gain knowledge about the concepts of deadlock in operating systems and how they can be managed / avoided and implement them in multiprogramming system.
4. Demonstrate the design and management concepts along with issues and challenges of main memory, virtual memory and file system.
5. Understand the types of I/O management, disk scheduling, protection and security problems faced by operating systems and how to minimize these problems.
6. Understanding in Linux Operating System.

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**UNIT I**

**(15 Hrs)**

**Introduction:** What Operating Systems do – Computer System Organization – Computer System Architecture – Operating System Structure – Operating System Operations – Process Management – Memory Management. **Operating System Structures:** Operating System Services – User and Operating System Interface – System Calls – Types of System Calls – System Programs – Operating System Design and Implementation – Operating System Structure.

**UNIT II**

**(15 Hrs)**

**Processes:** Process Concept – Process Scheduling – Operations on Processes – InterProcess Communication – Communication in Client-Server Systems. **Threads:** Overview – Multithreading Models – Threading Issues. **Process Synchronization:**

Background – The Critical Section Problem – Mutex Locks – Semaphores – Classic Problems of Synchronization – Monitors.

**UNIT III (15 Hrs)**

**CPU Scheduling:** Basic Concepts – Scheduling Criteria – Scheduling Algorithms.  
**Deadlocks:** System Model – Deadlock Characterization – Methods for Handling Deadlocks – Deadlock Prevention – Deadlock Avoidance – Deadlock Detection – Recovery from Deadlock.

**UNIT IV (15 Hrs)**

**Main Memory:** Background – Swapping – Contiguous Memory Allocation – Segmentation – Paging – Structure of the Page Table. **Virtual Memory:** Background – Demand Paging – Page Replacement – Thrashing – Memory Mapped Files. **Mass-Storage Structure:** Overview of Mass Storage Structure – Disk Structure – Disk Attachment – Disk Scheduling – Disk Management.

**UNIT V (15 Hrs)**

**Distributed Systems:** Advantages of Distributed Systems – Types of Network based Operating System – Communication Structure – Distributed File Systems. **Case Studies The Linux System:** Linux History – Design Principles – Kernel Modules – Process Management – Scheduling – Memory Management – Input and Output – Interprocess Communication – Network Structure.

**Textbook**

1. Abraham Silberschatz, Peter Baer Galvin, Greg Gagne “Operating System Concepts” Wiley, 2013, 9<sup>th</sup> Edition.

Unit	Chapters	Section	Page No.
I	1, 2	1.1 – 1.7, 2.1 – 2.7	4 – 26, 55 – 86.
II	3, 4, 5	3.1 – 3.4, 3.6, 4.1, 4.3, 4.6, 5.1 – 5.2, 5.5 – 5.8	105 – 130, 136 – 147, 163 – 166, 169 – 171, 183 – 188, 203 – 207, 212 – 232.
III	6, 7	6.1 – 6.3, 7.1 – 7.7.	261 – 277, 315 – 338.
IV	8, 9, 10	8.1 – 8.6, 9.1 – 9.2, 9.4, 9.6 – 9.7, 10.1 – 10.5.	351 – 383, 397 – 407, 409 – 421, 425 – 436, 467 – 482.
V	17, 18	17.1 – 17.2, 17.4, 17.9, 18.1 – 18.6, 18.8 – 18.10	741 – 747, 751 – 756, 765 – 773, 781 – 809, 815 – 821.

**Reference Books**

1. William Stallings “Operating Systems – Internals and Design Principles”, Prentice Hall, 2011, 7<sup>th</sup> Edition.
2. Silberschatz, Galvin, and Gagne, “Operating System Concepts”, Wiley India Pvt Ltd, 2003, 6<sup>th</sup> Edition,
3. Gary Nutt, “Operating Systems”, Pearson Education, 2004, 3<sup>rd</sup> Edition,
4. Harvey M. Deitel, “Operating Systems”, Pearson Education, 2004, 3<sup>rd</sup> Edition,

## **Webliography**

1. [https://www.tutorialspoint.com/operating\\_system/os\\_multi\\_threading.htm](https://www.tutorialspoint.com/operating_system/os_multi_threading.htm).
2. [https://www.tutorialspoint.com/operating\\_system/os\\_memory\\_management.htm](https://www.tutorialspoint.com/operating_system/os_memory_management.htm).
3. [https://www.tutorialspoint.com/operating\\_system/os\\_file\\_system.htm](https://www.tutorialspoint.com/operating_system/os_file_system.htm).
4. <https://javajee.com/deadlock-prevention-avoidance-detection-and-recovery-in-operating-systems>.

**Sri Kaliswari College (Autonomous), Sivakasi**  
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**PG Programme – M.Sc.,**  
**Semester I**  
**(2018 – 2020)**

**Major Elective Course – I : Compiler Design (18PCSO11)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 4</b>	<b>Int. Marks</b>	<b>: 25</b>
<b>Hours / Week</b>	<b>: 6 Hrs</b>	<b>Ext. Marks</b>	<b>: 75</b>
<b>Duration</b>	<b>: 90 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- To enable the students to know the basics of compilation process.
- Be familiar with tokenizing problems.
- Be clear about the Parsers and parsing process.
- Have strong knowledge about the code generation.

**Course Outcomes:**

1. Gain knowledge of lex tool & yacc tool to develop a scanner & parser.
2. Understand building symbol tables and generating intermediate code.
3. Identify the code optimization techniques to improve the performance of a program in terms of speed & space.
4. Acquire knowledge in modern compiler & its features.
5. Understand the new tools and technologies used for designing a compiler.
6. Understand the patterns, tokens & regular expressions.

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**UNIT I**

**(18 Hrs)**

**Compilers:** The structure of a compiler – The evolution of programming languages – Application of Compiler Technology – Programming Language basics - **Lexical Analysis:** The role of the lexical analyzer - Input buffering - Specification of tokens - Recognition of tokens –The lexical analyzer generators lex - Finite automata - From a regular expression to an NFA - Design of a lexical analyzer generator - Optimization of DFA-based pattern matchers.

**UNIT II**

**(18 Hrs)**

**Syntax Analysis :**The role of the parser- Context-free grammars - Writing a grammar - Top-down parsing - Bottom-up parsing - Operator-precedence parsing - Introduction to LR parsing: Simple LR – More powerful LR parsers - Using ambiguous grammars - Parser generators.

**UNIT III****(18 Hrs)**

**Syntax-Directed Translation:** Syntax- directed definitions – Evaluation Order for SDD’s – Application of Syntax-Directed Translation - Syntax-Directed Translation Schemes – Implementing L-Attributed SDD’s.

**UNIT IV****(18 Hrs)**

**Intermediate Code Generation:** Variants of syntax trees- Three Address code – Types and Declarations – Translation of expressions – Type checking – Control flow – Back patching – Switch Statements – Intermediate code Procedures.

**UNIT V****(18 Hrs)**

**Code Generation:** Issues in the design of a code generator- The target Language - Addresses in the target code - Basic blocks and flow graphs - Optimization of Basic Blocks - A simple code generator - Peephole optimization - Register allocation and assignment – Instruction Selection by Tree Rewriting – Optimal Code Generation for Expressions – Dynamic Programming Code Generation.

**Textbook**

1. Aho, V.A., Monica, S. Sethi, R. and Ullman, J.D., “Compilers: Principles, Techniques and Tools”, Pearson Education, New Delhi, 2007, Second Edition.

Unit	Chapters	Section	Page No.
I	1,3	1.2,1.3,1.5,1.6, 3.1-3.9	4-14,17-36,109-187
II	4	4.1-4.9	191-192,197-297
III	5	5.1-5.5	303-352
IV	6	6.1-6.9	357-424
V	8	8.1-8.11	505-577

**Reference Books**

1. Muchnick, S., “Advanced Compiler Design Implementation”, Morgan Koffman, New Delhi, 1997, First Edition.
2. Holub, A., “Compiler Design in C”, Prentice Hall of India, New Delhi, 1990, Second Edition.
3. Fischer, N.C. and Leblanc, R.J., “Crafting a compiler with C”, Benjamin Cummings, New Delhi, 1991, First Edition.

**Webliography**

1. [https://www.tutorialspoint.com/compiler\\_design/compiler\\_design\\_syntax\\_analysis.ht](https://www.tutorialspoint.com/compiler_design/compiler_design_syntax_analysis.ht)
2. <https://www.geeksforgeeks.org/compiler-design-introduction-to-syntax-analysis/>
3. [https://www.tutorialspoint.com/compiler\\_design/index.htm](https://www.tutorialspoint.com/compiler_design/index.htm)
4. <https://www.geeksforgeeks.org/compiler-design-tutorials/>

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**PG Programme – M.Sc.,**  
**Semester I**  
**(2018 – 2020)**

**Major Elective Course – I : Object Oriented Analysis and Design (18PCSO12)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 4</b>	<b>Int. Marks</b>	<b>: 25</b>
<b>Hours / Week</b>	<b>: 6 Hrs</b>	<b>Ext. Marks</b>	<b>: 75</b>
<b>Duration</b>	<b>: 90 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- To provide a brief, hands-on overview of object-oriented analysis in software process.
- To discuss Case studies based project specifications to develop object-oriented models and identify implementation strategies.
- To demonstrate and apply basic object oriented techniques to create and modify object oriented analysis and design models.

**Course Outcomes:**

1. Prepare Object Oriented Analysis and Design documents for a given problem using Unified Modeling Language.
2. Master the fundamental principles of OO programming.
3. Familiar with the application of the Unified Modeling Language (UML) towards Analysis and design.
4. Master common patterns in OO design and implement them.
5. Familiar with group/team projects and presentations.
6. Be exposed to technical Writing and Oral presentations.
7. Able to understand the object oriented concepts and to apply object oriented life cycle.

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**UNIT I** **(18 Hrs)**

**Complexity:** The Inherent Complexity of Software – The Structure of Complex Systems –Bringing order to Chaos-On Designing Complex Systems. **The Object Model:** The Evolution of the object Model – Elements of the Object Model – Applying the Object Model.

**UNIT II** **(18 Hrs)**

**Classes and Objects:** The Nature of an Object – Relationships Among Objects – The Nature of a class – Relationships Among Classes – The Interplay of Classes and Objects – On Building Quality Classes and Objects. **Classification:** The Importance of Proper Classification – Identifying Classes and Objects – Key Abstractions and Mechanisms.

**UNIT III****(18 Hrs)**

**The Notation:** Elements of the Notation – Class Diagrams – State Transition Diagrams – Object Diagrams – Interaction Diagrams – Module Diagrams – Process Diagrams – Applying the Notation.

**UNIT IV****(18 Hrs)**

**The Process:** First Principles – The Micro Development Process – The Macro Development Process.

**UNIT V****(18 Hrs)**

**Pragmatics:** Management and Planning – Staffing – Release Management – Reuse – Quality Assurance and Metrics – Documentation-Tools – Special Topics – The Benefits and Risks of Object – Oriented Development. **Applications:** Data Acquisition Weather Monitoring Station: Analysis – Design – Evolution – Maintenance.

**Textbook**

1. Grady Booch, “Object Oriented Analysis and Design with Applications”, Pearson Education, Singapore, 2003, 2<sup>nd</sup> Edition.

Unit	Chapters	Section	Page No.
I	1, 2	1.1 – 1.4, 2.1 – 2.3	3 – 24, 28 – 79
II	3, 4	3.1 – 3.6, 4.1–4.3	81 – 143 ,146 – 157
III	5	5.1 – 5.8	172 – 227
IV	6	6.1 – 6.3	230 – 264
V	7, 8	7.1 – 7.8, 8.1 – 8.4	268 – 289, 294 – 326

**Reference Books**

1. Michael.R Blaha and James R Rumbaugh, “Object-oriented modeling and design with UML”, Pearson, 2004, 2<sup>nd</sup> Edition.
2. Craig Larman. “Applying UML and Patterns – An introduction to Object-Oriented Analysis and Design and Iterative Development”, Pearson Education, 2005, 3<sup>rd</sup> Edition.
3. Ali Bahrami, “Object Oriented Systems Development”, McGraw-Hill, 1999.
4. O’Docherty, Mike, “Object-Oriented Analysis & Design”, Wiley, 2005.
5. Martin Fowler, “UML Distilled A Brief Guide to Standard Object Modeling Language”, Addison Wesley, 2003, 3<sup>rd</sup> Edition.

**Webliography**

1. [www.dcs.shef.ac.uk/people/A.Simons/discovery/ooadfls.html](http://www.dcs.shef.ac.uk/people/A.Simons/discovery/ooadfls.html)
2. [www.matincor.com/documents/intro\\_ooad.pdf](http://www.matincor.com/documents/intro_ooad.pdf)
3. [www.tutorialpoints.com/Object\\_Oriented\\_analysis\\_design/ooad\\_object\\_oriented\\_analysis.htm](http://www.tutorialpoints.com/Object_Oriented_analysis_design/ooad_object_oriented_analysis.htm)



**Sri Kaliswari College (Autonomous), Sivakasi**  
**Department of Computer Science (UG & PG)**  
**PG Programme – M.Sc.,**  
**Semester I**  
**(2018 – 2020)**

**Major Elective Course – I : Embedded Systems (18PCSO13)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 4</b>	<b>Int. Marks</b>	<b>: 25</b>
<b>Hours / Week</b>	<b>: 6 Hrs</b>	<b>Ext. Marks</b>	<b>: 75</b>
<b>Duration</b>	<b>: 90 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- To make students familiar with the basic concepts and terminology of the target area, the embedded systems design flow.
- To give students an understanding of the embedded system architecture.
- To acquaint students with methods of executive device control and to give them opportunity to apply and test those methods in practice.
- To teach students to make measurements with the specified accuracy.

**Course Outcomes:**

1. Understand basic concepts in the embedded computing systems area.
2. Determine the optimal composition and characteristics of an embedded system.
3. Design and program an embedded system at the basic level.
4. Recognize the key features of embedded systems in terms of computer hardware and be able to discuss their functions.
5. Examine and evaluate the hardware functionality required by an embedded system to achieve real-time operation.
6. Describe and illustrate real-time operation of a system.
7. Discuss, appraise and implement efficient software design for embedded systems.

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**UNIT I** **(18 Hrs)**

**Introduction:** Introduction to Embedded systems – Processor and memory organization

**UNIT II** **(18 Hrs)**

**Devices and Networks:** Devices and buses for Device Networks – Device drivers and Interrupt servicing mechanism.

**UNIT III** **(18 Hrs)**

**Embedding and Modeling Concepts:** Programming Concepts and Embedded Programming in C, C++ and java - Program Modeling Concepts.

**UNIT IV****(18 Hrs)**

**RTOS: Real-Time Operating Systems –Real time Operating System Programming-I: Micro/OS-II and VxWorks.**

**UNIT V****(18 Hrs)**

**Embedded Software Development Process and Tools:** Introduction to Embedded software development process and Tools –Host and Target Machines-Linking and Locating Software-Getting Embedded Software into the Target System-Issues in Hardware-software Design and Co-design.

**Textbook**

1. Raj Kamal, “Embedded Systems Architecture, Programming and Design”, Tata Mc-Graw- Hill Education Private Limited, 2008, Second Edition.

<b>Unit</b>	<b>Chapters</b>	<b>Section</b>	<b>Page No.</b>
I	1	1.1 – 1.12	3 – 58
	2	2.4	96 – 104
II	3	3.1 - 3.13	128 – 185
	4	4.1 - 4.9	187 – 232
III	5	5.1 - 5.7	234 – 272
	6	6.1 - 6.5	273 – 301
IV	9	9.1 - 9.3	406 – 476
V	13	13.1 - 13.5	618 – 646

**Reference Books**

1. R.J.A.Buhr, D.L.Bailey, "An Introduction to Real Time Systems: Design to networking with C/C++", Prentice- Hall, International, 1999.
2. Grehan Moore and Cyliax, "Real Time Programming: A guide to 32 Bit Embedded Development Reading: Addison- Wisley-Longman", 1998.
3. Dr. K.V.K.K. Prasad, “Embedded/Real-Time Systems: Concepts, Design & Programming Black Book”, Dream Tech Press, 2005.

**Webliography**

1. [https://www.tutorialspoint.com/embedded\\_systems/index.htm](https://www.tutorialspoint.com/embedded_systems/index.htm).
2. <https://www.javatpoint.com/embedded-system-tutorial>.
3. <https://www.embeddedrelated.com/tutorials.php>.

**Sri Kaliswari College (Autonomous), Sivakasi**  
**Department of Computer Science (UG & PG)**  
**PG Programme – M.Sc.,**  
**Semester I**  
**(2018 – 2020)**

**Major Elective Course – I : Computer Security (18PCSO14)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 4</b>	<b>Int. Marks</b>	<b>: 25</b>
<b>Hours / Week</b>	<b>: 6 Hrs</b>	<b>Ext. Marks</b>	<b>: 75</b>
<b>Duration</b>	<b>: 90 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- To know about what is security.
- To understand the concept of cryptography and its techniques.
- To understand different kinds of program security.

**Course Outcomes:**

1. Understand the fundamentals Computer Security.
2. Gain Knowledge in the concept of Cryptography and its applications.
3. Familiarity in encryption algorithms.
4. Gain Familiarity with Program Security.
5. Learn the concepts of protecting Operating Systems.
6. Analyze Database Security.

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**UNIT I** **(18 Hrs)**

**Security Problem in Computing:** Secure Mean – Attacks – Meaning of Computer Security – Computer Criminals – Methods of Defense –Encryption Overview – Hardware and Software Security – Human Controls in Security.

**UNIT II** **(18 Hrs)**

**Cryptography:** Terminology and Background – Representing Characters – Substitution Ciphers – Transposition – Good Encryption Algorithm – Data Encryption Standard – The AES Encryption Algorithm – Public key Encryption – Possible Attacks on RSA – The Uses of Encryption.

**UNIT III** **(18 Hrs)**

**Program Security:** Secure Programs – Non-malicious Program Errors – Viruses and Other Malicious Code – Targeted Malicious Code – Convert Channels – Controls Against Program Threats.

**UNIT IV****(18 Hrs)**

**Protection in General Purpose OS:** Protected Objects and Methods of Protection – Memory and Address Protection – Control of Access to General Objects – File Protection Mechanism – User Authentication – Biometrics.

**UNIT V****(18 Hrs)**

**Database Security:** Introduction to Databases – Security Requirements - Reliability and Integrity – Sensitive Data – Inference – Multilevel Databases – Proposals of Multilevel Security.

**Textbook**

1. Charles P.Pfleeger, Shari Lawrence Pfleeger, Deven N.Shah, “Security in Computing”, Pearson Education Inc, New Delhi, 2009, 4<sup>th</sup> Edition.

<b>Unit</b>	<b>Chapters</b>	<b>Section</b>	<b>Page No.</b>
I	1	1.1 – 1.6	1 - 45
II	2	2.1 - 2.9	55 - 107
III	3	3.1 - 3.5	117 - 190
IV	4	4.1- 4.5	203 - 247
V	6	6.1 - 6.7	336 - 383

**Reference Books**

1. Shuangbao (Paul) Wang, Robert S. Ledley, “Computer Architecture and Security Fundamentals of Designing Secure Computer Systems”, John Wiley & Sons Singapore Pte. Ltd., Singapore, 2013.
2. Matt Bishop, “Computer Security Art and Science”, Pearson/PHI, 2008.

**Webliography**

1. <http://www.inst.eecs.berkeley.edu/~cs161/fa05>
2. <https://blog.storagecraft.com/5-common-encryption-algorithms/>
3. <https://www.scribd.com/document/345716320/Protection-in-General-Purpose-Operating-Systems>

**Sri Kaliswari College (Autonomous), Sivakasi**  
**Choice Based Credit System**  
**PG Programme – M.Sc (Computer Science)**  
**Semester I**  
**(2018-2020)**

**Core Course – IV: Advanced C and Data Structure Lab (18PCSC1P)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 3</b>	<b>Int. Marks</b>	<b>: 25</b>
<b>Hours / Week</b>	<b>: 5 Hrs</b>	<b>Ext. Marks</b>	<b>: 75</b>
<b>Duration</b>	<b>: 75 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- To enhance the knowledge in Pointers and TSR in C.
- To master the design and applications of linear, tree, and graph structures.
- To understand various algorithm design and analysis techniques.

**Course Outcomes:**

1. Familiarization of language environment.
2. Apply C features including arrays, structures and pointers.
3. Acquire practical knowledge on the application of data structures.
4. Develop skills to design and analyze simple and non linear data structures.
5. Identify the appropriate data structures for given problem.

**Program using C**

1. Program for passing array as pointers to function
2. String handling using pointers
3. Demonstrate Structures and Pointers
4. One to Two Simple TSR Programs

**Data Structures**

5. Binary tree:
  - a. Binary Search Tree – Searching, Insertion & Deletion.
  - b. Binary Tree Traversal.
6. Minimum spanning tree:
  - a. Prim’s Algorithm.
  - b. Kruskal’s Algorithm.
7. Sort:
  - a. Bubble Sorting.
  - b. Quick sorting
  - c. Merge Sorting.
  - d. Selection Sorting
8. Binary search trees
9. Single source shortest path algorithm
10. Hashing and collision resolution techniques
11. AVL Trees
12. Back tracking
13. 4 – Queen Problem

**Sri Kaliswari College (Autonomous), Sivakasi**  
**Department of Computer Science (UG & PG)**  
**PG Programme – M.Sc.,**  
**Semester I**  
**(2018 – 2020)**

**Core Course – V : Python Programming Lab (18PCSC1Q)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 3</b>	<b>Int. Marks</b>	<b>: 40</b>
<b>Hours / Week</b>	<b>: 5 Hrs</b>	<b>Ext. Marks</b>	<b>: 60</b>
<b>Duration</b>	<b>: 75 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- To work with basic constructs of Python.
- To make the students to develop their own Python program using the concepts of Strings, Lists, Tuples.
- To work with the Python program involving the concepts of Dictionary, Sets and File Handling.
- To implement Data analytics and Machine learning concepts in Python.

**Course Outcomes:**

1. Ability to write simple programs.
2. Ability to develop Python programs using Strings, Lists and Tuples.
3. Knowledge to develop programs using the concepts of Dictionary and Sets.
4. Ability to handle file using Python constructs.
5. Ability to write programs using classes and objects in Python.
6. Knowledge in Handling datasets for Data Analysis and Machine Learning using Python.

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**Basic Exercise**

1. Simple Python Programs.
2. Programs on Mathematical Functions.
3. Programs on Lists.
4. Programs on Strings.
5. Programs on Tuples.
6. Programs on Dictionary.
7. Programs on Sets.
8. Programs on Function Recursion.
9. Programs on File handling.

**Using Dataset**

10. Program for Data Analysis using NumPy for two or more dataset.
11. Program for Data Analysis using Pandas Data Frames for two or more dataset.

**Sri Kaliswari College (Autonomous), Sivakasi**  
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**PG Programme – M.Sc.,**  
**Semester II**  
**(2018 – 2020)**

**Core Course – VI : Advanced Java Programming (18PCSC21)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 4</b>	<b>Int. Marks</b>	<b>: 25</b>
<b>Hours / Week</b>	<b>: 5 Hrs</b>	<b>Ext. Marks</b>	<b>: 75</b>
<b>Duration</b>	<b>: 75 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- To enrich the knowledge of students in Advanced Java.
- To Introduce the concepts of Swings and Networking.
- To Introduce Web Services.
- To give a knowledge on Web Apps using Struts.

**Course Outcomes:**

1. Acquire Basic Knowledge in Advanced Java.
2. Gain knowledge in Swing and Networking, and Struts.
3. Acquire Knowledge in handling swing components and containers.
4. Apply network sockets.
5. Understanding in Web Services.
6. Work with database connection and Struts framework.

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**UNIT I**

**(15 Hrs)**

**Generic Collections:** Introduction – Collections overview – Type Wrapper Classes for Primitive types – Auto-boxing and Auto-unboxing – Lists – Collections Methods – Stack Class – Priority Queue and Interface Queue. **Generic Classes and Methods:** Introduction – Implementation and Compile time Translation Issues – Overloading Generic Methods – Generic Classes. **Custom Generic Data Structures:** Introduction – Linked Lists – Stacks. **Multithreading:** Introduction – Threaded States – Creating Using Executor Framework – Thread Synchronization – Producer / Customer without Synchronization – Producer / Customer: Array Blocking Queue – Producer / Customer with Synchronization – Bounded Buffers.

**UNIT II**

**(15 Hrs)**

**GUI Components: Part I:** Overview of Swing Components – Displaying Text and Images – Text Fields – JButton – JCheckBox – JRadioButton – JComboBox – JList – Multiple Selection Lists – JPanel – Introduction to Layout Managers – Using Panels to Manage Layouts – JTextArea. **GUI Components: Part II:** JSlider – Using Menus with frames – JPopupMenu – JDesktopPane and JInternalFrame – JTabbedPane – BorderLayout and GridBag Layout.

**UNIT III****(15 Hrs)**

**Networking:** Introduction – Manipulating URLs – Reading a file on a web server – Establishing Simple Server – Establishing Simple Client – Client / Server Interaction – Datagrams. **Accessing DB Using JDBC:** Introduction – Manipulating DB with JDBC – Rowset Interface – Prepared Statements – Stored Procedures – Transaction Processing.

**UNIT IV****(15 Hrs)**

**Web Services:** Introduction – Web Service Basics – SOAP – REST – SSON – Publishing and Consuming SOAP based Web Services – publishing and Consuming REST based XML services – Publishing and Consuming REST based JSON Web Services – Session Tracking in a SOAP Web Service – Consuming DB drives SOAP Web Service.

**UNIT V****(15 Hrs)**

**Struts 2:** Frameworks for web applications – Struts2 Framework – Saying Hello to Struts2. **Working with Strct2 actions:** Introducing – Packaging – Implementing. **Adding Workflow with Interceptors:** Why Intercept requests – Interceptors in action – Built-in Interceptors – Declaring Interceptors. **UI Component Tags:** Why we Need UI Component Tags – Tags, Templates and Themes – UI Component Tag Reference.

**Textbooks**

1. Paul Deital, Harvey Deital, “Java How to Programs”, Ninth Edition.
2. Donald Brown, Chad Michael Davis, Scott Stanlick, “Struts2 in Action”, Manning Publications Co., Greenwich, 2008.

Unit	Textbook No.	Chapters	Section	Page No.
I	1	20	20.1 – 20.4, 20.6 – 20.9	830 – 832, 833 – 856
	1	21	21.1, 21.3 – 21.6	874, 877 – 891
	1	22	22.1, 22.4 – 22.5	905, 907 – 921
	1	26	26.1 – 26.8	1046 – 1086
II	1	14	14.4 – 14.6, 14.9 – 14.13, 14.16, 14.18 – 14.20	555 – 567, 571 – 588, 597 – 601, 604 – 618
	1	25	25.2, 25.4 – 25.5, 25.7, 25.8	1001 – 1005, 1006 – 1017, 1022 – 1040
III	1	27	27.1 – 27.8	1119 – 1150
	1	28	28.1, 28.8 – 28.9, 28.11 – 28.13	1172, 1189 – 1209, 1211 – 1227
IV	1	31	31.1 – 31.10	1299 – 1345
V	2	1	1.2 – 1.3	9 – 15
	2	2	2.1 – 2.3	20 – 36
	2	3	3.1 – 3.3	44 – 54
	2	4	4.1 – 4.4	74 – 94
	2	7	7.1 – 7.3	167 – 198



### **Reference Books**

1. Cay S. Horstmann, Gary Cornell, “Core Java Volume I & II – Fundamentals”, Prentice Hall, Ninth Edition.
2. Herbert Schildt, “Java - The Complete Reference”, Oracle Press, Ninth Edition.
3. Dave Newton, “Apache Struts2 Web Application Development”, Packt Publishing, 2009.

### **Webliography**

1. <https://www.javatpoint.com>
2. [https://www.ntu.edu.sg/home/ehchua/programming/java/JDBC\\_Basic.html](https://www.ntu.edu.sg/home/ehchua/programming/java/JDBC_Basic.html)
3. <https://docs.oracle.com/javaee/6/tutorial/doc/gijti.html>
4. [https://www.tutorialspoint.com/struts\\_2/index.htm](https://www.tutorialspoint.com/struts_2/index.htm)

**Sri Kaliswari College (Autonomous), Sivakasi**  
**Department of Computer Science(UG & PG)**  
**PG Programme – M.Sc.,**  
**Semester II**  
**(2018-2020)**

**Core Course – VII: Data Communications and Networks (18PCSC22)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 4</b>	<b>Int. Marks</b>	<b>: 25</b>
<b>Hours / Week</b>	<b>: 5 Hrs</b>	<b>Ext. Marks</b>	<b>: 75</b>
<b>Duration</b>	<b>: 75 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- To Introduce Basic Concepts of Computer networks and its applications.
- To have better understanding of the network architecture and different layers of network.
- To gain insight about transitions of different languages.

**Course Outcomes:**

1. Learn the fundamentals of computer Networks.
2. Gain knowledge in the functionalities of each and every layer in network.
3. Ability to realize and compare different LAN topologies.
4. Implement and Compare the performance of Data Link Layer protocols.
5. Analyze the services and features of the various layers in the protocol stack.
6. Differentiate different routing algorithms and their usage.

**UNIT I**

**(15 Hrs)**

**Introduction** – Data Communication, Networks, Protocol Layering, TCP/IP suite and OSI Model. Physical Layer: Data and Signals,-Periodic analog signals- Digital signals - Transmission impairment-Performance-Digital to Digital Conversion: Line Coding- Line coding scheme-Block coding-Scrambling-Analog to Digital Conversion: PCM,DM.- Transmission Modes .Bandwidth Utilization - Multiplexing: FDM,TDM - Spread Spectrum: FHSS, DSSS- Transmission media :Guided and Un Guided Media-Switching: Circuit Switching, PacketSwitching.

**UNIT II**

**(15 Hrs)**

**Data Link Layer:** Introduction: Link layer Addressing- Error Detection and Correction- Introduction-Block Coding-Checksum - **Data Link Control:**DLC services-datalink layer protocols-HDLC-point-to-point protocol.**MAC:**Random Access-Controlled Access-Channelization. Other wired Networks: Telephone Networks-Cable Networks-

SONET-ATM.Wireless LAN's:IEEE802.11 Project-Blue Tooth. **Connecting Devices and virtual LANs:** Connecting devices-Virtual LANs.

**UNIT III (15 Hrs)**

**Network Layer:** Network Layer Services- IPV4 addresses-forwarding of IP Packets.**Network Layer prtocols:** Internet Protocol-ICMPv4-Mobile IP.**Unicast Routing:** Routing algorithms-Unicast routing protocols. **Multicast Routing:** Multicasting basics-Intradomain multicast protocols-Interdomain multicast procols-IGMP.**Next Generation IP:** IPv6 Addressing- The IPV6 protocol –The ICMPv6 protocol-Transition from IPv4 to IPv6.

**UNIT IV (15 Hrs)**

**Transport Layer:** Introduction to Transport layer: Introduction-Transport layer protocols. **Transport Layer Protocols:** User Datagram Protocol-ransmission control protocol-SCTP.

**UNIT V (15 Hrs)**

**Application Layer:** Introduction- Client-Server Programming - Iterative Programming Using c-Interactive programming in Java. **Standard Client-Server Protocols:** WWW and Http-FTP-Electronic mail-TelNet - Secure Shell-Domain name system.

**Textbook**

1. Behrouz A. Forouzan, “Data Communication and Networking”, McGraw Hill Education(India) Pvt Ltd, 5<sup>th</sup> Edition .

Unit	Chapters	Section	Page No.
I	1-4,6-8	1.1,1.2,2.12.3,3.1-3.4,3.6, 4.1-4.3,6.1,6.2,7.1-7.3,8.1-8.3	1-8,32-45,53-79,84-88,95-126,156-178,186-201,207-216
II	9-12,14,15,17	9.1,9.2,10.1-10.4,11.1-11.4,12.1-12.3,14.1-14.4,15.1-15.3,17.1,17.2	284-248,258-281,294-312,326-347,388-425,436-452,494-506
III	18-22	18.1,18.4,18.5,19.1,19.2,19.3,20.1-20.3,21.2-21.5,22.1-22.4	512-541,528-555,562-589,596-623,643-660,666-684
IV	23,24	23.1,23.2,24.1-24.4	692-728,736-801
V	25,26	25.1-25.4,26.1-26.6	818-857,872-921

**Reference Books**

1. AchyutS.GodBole, “Data Communications and Networks”, Tata McGraw Hill, 2005.
2. William Stallings, “Data and Computer Communications”, PHI, 2007.

**Webliography**

1. [http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-263j-data-communication-networks-fall-2002/lecture-notes\(Flow Control\)](http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-263j-data-communication-networks-fall-2002/lecture-notes(Flow Control))
2. [http://www.slideshare.net/yayavaram/data-communications-class-notes\(Topology\)](http://www.slideshare.net/yayavaram/data-communications-class-notes(Topology))
3. [http://www.docsity.com/en/study-notes/computer-science/data-communication-and-computer-networks/\(Multipexing\)](http://www.docsity.com/en/study-notes/computer-science/data-communication-and-computer-networks/(Multipexing))

**Sri Kaliswari College (Autonomous), Sivakasi**  
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**PG Programme – M.Sc.,**  
**Semester II**  
**(2018 – 2020)**

**Core Course – VIII: Database Systems (18PCSC23)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 4</b>	<b>Int. Marks</b>	<b>: 25</b>
<b>Hours / Week</b>	<b>: 4 Hrs</b>	<b>Ext. Marks</b>	<b>: 75</b>
<b>Duration</b>	<b>: 60 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- To understand the fundamentals of data models and conceptualize and depict a database system using E-R diagram.
- To make a study of SQL and relational database design.
- To know about data storage techniques and query processing.
- To impart knowledge in transaction processing, concurrency control techniques and recovery procedures.

**Course Outcomes:**

1. Understand the basic concepts of the database and data models.
2. Design a database using ER diagrams and map ER into Relations and normalize the relations.
3. Acquire the knowledge of query evaluation to monitor the performance of the DBMS.
4. Develop a simple database applications using normalization.
5. Acquire the knowledge about different special purpose databases and to critique how they differ from traditional database systems.

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**UNIT I**

**(12 Hrs)**

**Introduction** : Database-System Applications - Purpose of Database Systems - View of Data - Database Languages - Relational Databases - Database Design - Data Storage and Querying - Transaction Management - Database Architecture - Data Mining and Information Retrieval - Specialty Databases - Database Users and Administrators  
**Relational Databases** : Introduction to the Relational Model - Structure of Relational Databases - Database Schema – Keys- Schema Diagrams - Relational Query Languages - Relational Operations.

**UNIT II**

**(12Hrs)**

**Database Design and the E-R Model** : Overview of the Design Process -The Entity-Relationship Model -Constraints -Removing Redundant Attributes in Entity Sets -Entity-Relationship Diagrams -Reduction to Relational Schemas - Entity-Relationship Design Issues -Extended E-R Features -Alternative Notations for Modeling Data -Other Aspects of Database Design . **Relational Database Design**: Features of Good Relational Designs -

Atomic Domains and First Normal Form -Decomposition Using Functional Dependencies – Algorithms for decomposition – Decomposition Using Multivalued dependencies – More Normal forms.

**UNIT III (12 Hrs)**

**Introduction to SQL :**Overview of the SQL Query Language - SQL Data Definition -Basic Structure of SQL Queries -Additional Basic Operations -Set Operations -Null Values -Aggregate Functions -Nested Sub queries -Modification of the Database. **Intermediate SQL:** Join Expressions -Views -Transactions - Integrity Constraints -SQL Data Types and Schemas –Authorization. **Advanced SQL:** Accessing SQL from a Programming Language -Functions and Procedures –Triggers.

**UNIT IV (12 Hrs)**

**Introduction to Database-System Architectures:** Centralized and Client-server Architectures-Server System architectures – Parallel Systems –Distributed system. **Parallel Databases:** Design of Parallel systems. **Distributed Databases:** Homogeneous and Heterogeneous Databases – Distributed Data Storage – Distributed Transactions – Heterogeneous Distributed Databases – Cloud Based Databases.

**UNIT V (12 Hrs)**

**Transactions:** Transaction Concept -A Simple Transaction Model - Storage Structure **Concurrency Control:** Lock-Based Protocols - Deadlock Handling. **Recovery System:** Failure Classification – Storage- ARIES- Remote Backup Systems. **Speciality Databases: Object-Based databases:** Implementing O-R Features, Persistent Programming Languages, Object-Relational Mapping, Object-Oriented Vs Object-Relational. **XML:** Storage of XML data,XML Applications. **Spatial and Temporal Data & Mobility:** Motivation-Time in Database-Spatial and Geographic Data-Multimedia Databases – Mobility and Personal Databases.

**Textbook**

1. Abraham Silberschatz, Henry F.Korth, S.Sudarshan, “Database System Concepts”, Tata McGraw Hill Education(India) Pvt limited, 6<sup>th</sup> Edition.

Unit	Chapters	Section	Page No.
I	1	1.1,1.2,1.3,1.4,1.5,1.6,1.7,1.8,1.9,1.10,1.11,1.12	01 - 29
	2	2.1,2.2,2.3,2.4,2.5,2.6	39- 51
II	7	7.1,7.2,7.3,7.4,7.5,7.6,7.7,7.8,7.9,7.10	259 - 313
	8	8.1,8.2,8.3,8.5,8.6,8.7	323-338,348-361
III	3	3.1,3.2,3.3,3.4,3.5,3.6,3.7,3.8,3.9	57-104
	4	4.1,4.2,4.3,4.4,4.5,4.6	113-149
	5	5.1,5.2,5.3	157-187
IV	17	17.1, 17.2, 17.3, 17.4,	769-788
	18	18.8	815-817
	19	19.1,19.2,19.3,19.8,19.9	825-832,857-870

V	14	14.1,14.2,14.3	627-633
	15	15.1,15.2	661-679
	16	16.1,16.2,16.8,16.9	721-726,750-759
	22	22.7,22.8,22.9,22.10	963-975
	23	23.6,23.7	1009-1019
	25	25.1,25.2,25.3,25.4,25.5	1061-1085

### **Reference Books**

1. Alexis leon, Mathews Leon, Vijay Nichole, “Essentials of Database Management Systems”, Vikas Publishers, New Delhi, 2006.
2. Rajesh Narang, “Database Management Systems”, PHI, 2004.
3. Elmasri, Navathe, “Fundamentals of Database Systems”, Pearson Education Asia, Third Edition.
4. Raghu Ramakrishnan& Johannes Gehrke, “Database Management System”, MGH Publications, Second Edition.

### **Webliography**

1. <https://www.studytonight.com/dbms/>
2. <https://beginnersbook.com/2015/04/dbms-tutorial>
3. <https://www.tutorialcup.com/dbms>

**Sri Kaliswari College (Autonomous), Sivakasi**  
**Department of Computer Science (UG & PG)**  
**PG Programme – M.Sc.,**  
**Semester II**  
**(2018 – 2020)**

**Non–Major Elective Course – I: Web Designing (18PCSN21)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 4</b>	<b>Int. Marks</b>	<b>: 25</b>
<b>Hours / Week</b>	<b>: 6 Hrs</b>	<b>Ext. Marks</b>	<b>: 75</b>
<b>Duration</b>	<b>: 90 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- To create a static website using HTML.
- To know about usage of lists, links, text, images and tables in HTML.
- To create a dynamic website using Javascript.

**Course Outcomes:**

1. Acquire knowledge in the concepts of HTML and JavaScript.
2. Acquire knowledge in Basic HTML tags.
3. Design a HTML page using lists, links, text, images and tables.
4. Understand fundamentals of JavaScript.
5. Learn basic problem solving techniques and principles of structured programming.

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**UNIT I** **(18 Hrs)**

**Learning the Basics of HTML:** Structuring Your HTML – The Title – Headings – Paragraphs – Comments. **Organizing Information with Lists:** An Overview – Numbered Lists – Unordered Lists – Definition Lists – Nesting Lists – Other Uses for Lists.

**UNIT II** **(18 Hrs)**

**Working with Links:** Creating Links – Linking Local Pages Using Relative and Absolute Pathnames. **Formatting Text with HTML and CSS :** Character–Level Elements – Character Formatting Using CSS – Preformatted Text – Horizontal Rules – Line Break – Addresses.

**UNIT III** **(18 Hrs)**

**Using Images on Your Web Pages:** Inline Images in HTML – Adding Alternative Text to Images – Images and Text – Text and Image Alignment – Wrapping Text Next to Images. **Building Tables:** Creating Tables – Table Parts – The <table> Element – Summarizing the Table – Rows and Cells – Empty Cells – Captions.

**UNIT IV** **(18 Hrs)**

**Javascript: Introduction to Scripting:** Introduction – Your First Script: Displaying a Line of Text with JavaScript in a Web Page – Modifying Your First Script – Obtaining

User Input with prompt Dialogs – Memory Concepts – Arithmetic – Decision Making: Equality and Relational Operators.

## UNIT V

(18 Hrs)

**Javascript: Control Statements I:** Introduction – Algorithms – Pseudocode – Control Statements – if Selection Statement – if...else Selection Statement – while Repetition Statement – Formulating Algorithms: Counter–Controlled Repetition – Formulating Algorithms: Sentinel–Controlled Repetition – Formulating Algorithms: Nested – Control Statements – Assignment Operators – Increment and Decrement Operators.

### Textbooks

1. Laura Lemay, Rafe Coburn, Jennifer Kyrnin, “HTML, CSS & JavaScript Web Publishing”, Pearson Education, New Delhi, 2016, 7<sup>th</sup> Edition.
2. Paul Deitel, Harvey Deitel, Abbey Deitel, “Internet and world wide web : how to program”, Pearson Education, New Delhi, 2012, 5<sup>th</sup> Edition.

Unit	Textbook No.	Chapters	Section	Page No.
I	1	4	–	57 – 67
	1	5	–	71 – 85
II	1	6	–	89 – 98
	1	7	–	121 – 135
III	1	9	–	200 – 213
	1	10	–	241 – 251
IV	2	6	6.1 – 6.7	185 – 207
V	2	7	7.1 – 7.12	214 – 242

### Reference Books

1. Julie C. Meloni, “HTML, CSS & JavaScript”, Pearson Education, 2012.
2. Jon Duckett, “HTML and CSS: Design and Build Websites”, John Wiley & Sons, 2011.
3. Jon Duckett, “Web design with HTML, CSS, Javascript and jQuery Set”, John Wiley & Sons, 2014.

### Webliography

1. <http://ptgmedia.pearsoncmg.com/images/9780672336232/samplepages/9780672336232.pdf>
2. <http://www.itp.uzh.ch/~suzanne/ebooks/The%20Web%20Book-A4-HM.pdf>
3. <http://www.wufai.edu.tw/%E7%B6%B2%E9%A0%81%E6%8A%80%E8%A1%93%E4%B8%AD%E5%BF%83/datasheet/HTML%20and%20CSS%20design%20and%20build%20websites.pdf>
4. <http://www.timlin.net/csm/cis111/HTML5e6.pdf>
5. <http://gvpcse.helplena.co/pdf/dietel.pdf>



**Sri Kaliswari College (Autonomous), Sivakasi**  
**Department of Computer Science (UG & PG)**  
**PG Programme – M.Sc.,**  
**Semester II**  
**(2018 – 2020)**

**Core Course – IX : Advanced Java Programming Lab (18PCSC2P)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 3</b>	<b>Int. Marks</b>	<b>: 40</b>
<b>Hours / Week</b>	<b>: 5 Hrs</b>	<b>Ext. Marks</b>	<b>: 60</b>
<b>Duration</b>	<b>: 75 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- To make the student to work with the advanced concepts of Java.
- To work with Swing, Networking and JDBC Concepts.
- To work with the Web Services and Struts 2 framework.

**Course Outcomes:**

1. Ability to work with List and Collection class.
2. Ability to work with Swing Controls and Layouts.
3. Knowledge in Client & Server implementation.
4. Understanding in JDBC concepts.
5. Ability to work with Web Services.
6. Ability to work with Java Struts Framework.

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**Basic Programs**

1. Programs implementing the concepts of Lists and Collection Classes
2. Program to implement the concept of Simple Multithreading.
3. Program to implement the concept of Multithreading with Synchronization

**Advanced Programs using NetBeans / Eclipse**

4. Programs to demonstrate the concept of Basic Swing Controls
5. Programs to demonstrate the concept of Advanced Swing Controls and Layouts
6. Basic Networking Program for Simple Client and Server
7. Two or more programs for JDBC understanding
8. Programs based on JSON / SOAP Web services
9. Programs based on simple Java Struts concepts
10. Programs based on Java Struts Interceptors and UI Component Tags.

**Sri Kaliswari College (Autonomous), Sivakasi**  
**Department of Computer Science (UG & PG)**  
**PG Programme – M.Sc.,**  
**Semester II**  
**(2018 – 2020)**

**Core Course – X: RDBMS Lab (18PCSC2Q)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 3</b>	<b>Int. Marks</b>	<b>: 40</b>
<b>Hours / Week</b>	<b>: 5 Hrs</b>	<b>Ext. Marks</b>	<b>: 60</b>
<b>Duration</b>	<b>: 75 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- To gain knowledge about database.
- To acquire knowledge over various database models, schemas and SQL statements.
- To insight on transactions and recovery system into database.
- To empower as Database administrator.

**Course Outcomes:**

1. Populate and query a database using SQL DML/DDDL commands.
2. Apply PL/SQL including stored procedures, stored functions, cursors, packages in application development and Design different views of tables for different users.
3. Design and build a GUI application using database.
4. Design and implement a database with data consistency.
5. Apply current technical concepts and practices in the core information technologies.

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1. Design a Logical schema for given domain.
  2. Apply 1NF,2 NF and 3 NF for given domain.
  3. Populate table by single insertion and bulk insertion.
  4. Do DDL and DML operations in the given relations.
  5. Execute queries based on time stamp and regular expression.
  6. Create Clone or Temporary table for existing table.
  7. Creation of log file for recovery purpose.
  8. Execute different Join queries for given relational tables.
  9. Do Transaction management for any specific transaction.
  10. Write a procedure for different manipulation.
  11. Write a Function for any DML.
  12. Create a View for making report on given integrity.
  13. Create a Trigger for various events.
  14. Write Cursor for various events.
  15. Implement ODBC for programming language application.

**Pre-Document:**

1. SRS (System Requirement Specification)/URS(User Requirement Specification)
2. E-R Design or UML Design Document.

**Sri Kaliswari College (Autonomous), Sivakasi**  
**Department of Computer Science (UG & PG)**  
**PG Programme – M.Sc.,**  
**Semester III**  
**(2018 – 2020)**

**Core Course – XI: Web Technology (18PCSC31)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 4</b>	<b>Int. Marks</b>	<b>: 25</b>
<b>Hours / Week</b>	<b>: 5 Hrs</b>	<b>Ext. Marks</b>	<b>: 75</b>
<b>Duration</b>	<b>: 75 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- Teach a valid standards-conformant HTML document involving a variety of element types, including hyperlinks, images, lists, tables, and forms.
- Explain the use of CSS to implement a variety of presentation effects in HTML.
- Demonstrate techniques for improving the accessibility of an HTML document.
- Describe and use the features and syntax of programming language PHP.
- Retrieve, insert, update, and delete data from the relational database MySQL.
- Discuss the concept and implementation of cookies.
- Utilize Bootstrap to style forms, tables, and navigational elements.

**Course Outcomes:**

1. Select and apply markup languages for processing, identifying, and presenting of information in web pages.
2. Create PHP programs that use various PHP library functions, and that manipulate files and directories.
3. Analyze and solve various database tasks using the PHP language.
4. Able to write regular expressions including modifiers, operators and Meta characters.
5. Design and implement websites with good aesthetic sense of designing and latest technical know-how's.
6. Incorporate best practices in navigation, usability and written content to design websites that give users easy access to the information they seek.
7. Design to make a website much more responsive.

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**UNIT I**

**(15 Hrs)**

**HTML:** Introduction – Headings – Linking – Images – Special Characters and Horizontal Rules – Lists – Tables – Forms – Internal Linking – HTML5 Form Input Types – Input and Data List Elements and Auto Complete Attribute – Page Structure Elements. **CSS:** Inline Styles – Embedded Style Sheets – Conflicting Styles – Linking External Style Sheets – Positioning Elements – Backgrounds – Element Dimensions – Box Model and Text Flow – Media Types and Media Queries – Drop Down Menus – User Style Sheets.

## UNIT II

(15 Hrs)

**Introduction to PHP:** Basic Syntax – Sending Data to the Browser – Writing Comments – What are Variables – Strings – Numbers – Constants – Single vs Double Quotation Marks – Debugging Steps. **Programming with PHP:** Creating HTML Forms – Handling an HTML Form – Conditionals and Operators – Validating Form Data – Arrays – For and While Loops.

## UNIT III

(15 Hrs)

**Creating Dynamic Web Site:** Including Multiple Files – Handling HTML Forms Revisited – Making Sticky Forms – Creating Your Own Functions. **Error Handling and Debugging:** Error Types and Basic Debugging – Displaying PHP Errors. **Using PHP and MySQL:** Modifying the Template – Connecting to MySQL – Executing simple Queries – Retrieving Query Results – Ensuring Secure SQL – Counting Returned Records – Updating Records with PHP.

## UNIT IV

(15 Hrs)

**Common Programming Techniques:** Sending Values to a Script – Using Hidden Form Inputs – Editing Existing Records – Paginating Query Results – Making Sortable Displays. **Web Application Development:** Sending Email – Handling File Uploads – PHP and JavaScript – Understanding HTTP Headers – Date and Time Functions. **Cookies and Sessions:** Making a Login Page – Making the Login Functions – Using Cookies – Using Sessions – Improving Sessions Security.

## UNIT V

(15 Hrs)

**Bootstrap:** The Evolution of CSS and Bootstrap – Responsive Design Basics – What Bootstrap Includes – Bootstrap File Structure – How to use Bootstrap – Basic HTML Structure for Bootstrap – Basic HTML Elements – Responsive Classes – Rendering Images – Grid System – Constructing Data Entry Forms – Other Utility Classes – Encapsulating Everything – Packaged Components in Bootstrap – Compiling and Building Bootstrap.

### Textbooks

1. Paul Dietel, Harvey Deitel, Abbey Deitel, “Internet & World Wide Web How to Program”, Pearson Education Limited, England, 2012, 5<sup>th</sup> Edition.
2. Larry Ullman, “PHP and MySQL for Dynamic Web Sites: Visual QuickPro Guide”, PEARSON Education, Noida, India, 2014, 4<sup>th</sup> Edition.
3. Snig Bhaumik, “Bootstrap Essentials”, Packt Publishing Ltd, Birmingham, London, 2015.

Unit	Textbook No.	Chapters	Section	Page No.
I	1	2	2.1, 2.5 – 2.12	70, 73 – 99
I	1	3, 4	3.2 - 3.4, 4.1 – 4.13	109 – 136, 137 – 168
II	2	1	-	1 – 34
	2	2	-	35 – 72
III	2	3, 8	-	75 – 109, 241 – 249
	2	9	-	265 – 297
IV	2	10, 11, 12	-	299 – 327, 329 – 365, 367 – 398
V	3	1, 2, 3	-	1 – 11, 13 – 26, 27 – 48
	3	4, 6	-	49 – 64, 95 – 107

### **Reference Books**

1. Elizabeth Castro, Bruce Hyslop, “HTML and CSS”, Peachpit PressUSA, 2014, 8<sup>th</sup> Edition.
2. Matt Doyle, “Beginning PHP 5.3”, Wiley Publishing Inc Indianapolis Indiana, 2010.
3. Jennifer Kyrnin, Sams, “Teach Yourself Bootstrap in 24 Hours”, Pearson Education Inc, Indiana, 2016.

### **Webliography**

1. <https://www.tutorialspoint.com/html/index.htm>
2. <https://www.tutorialspoint.com/php/index.htm>
3. <https://www.tutorialrepublic.com/php-tutorial/>
4. <https://www.tutorialrepublic.com/twitter-bootstrap-tutorial/>

**Sri Kaliswari College (Autonomous), Sivakasi**  
**Department of Computer Science (UG & PG)**  
**PG Programme – M.Sc.,**  
**Semester III**  
**(2018 – 2020)**

**Core Course – XII : Software Project Management (18PCSC32)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 4</b>	<b>Int. Marks</b>	<b>: 25</b>
<b>Hours / Week</b>	<b>: 4 Hrs</b>	<b>Ext. Marks</b>	<b>: 75</b>
<b>Duration</b>	<b>: 60 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- To enrich the students knowledge in the following topic.
- To give the knowledge regarding Need for software project management.
- To get to know about various process model.

**Course Outcomes:**

1. Ability to manage the selection and initiation of individual projects and of portfolios of projects in the enterprise.
2. Conduct project planning activities that accurately forecast project costs, timelines, and quality. Implement processes for successful resource, communication, and risk and change management.
3. Learn practical application of project management to formulate strategies allowing Organizations to achieve strategic goals.
4. Develop critical-thinking and analytical decision-making capabilities to investigate Complex business problems to propose project-based solutions.
5. Acquire skills to manage creative teams and project processes effectively and efficiently.
6. Develop team-building skills to managing projects, project teams, and stakeholders.

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**UNIT I**

**(12 Hrs)**

**Introduction to Software Project Management:** What is Software Project Management – What is a project – Software projects versus other types of project – Contract Management and Technical Project Management – Plans, Methods and Methodologies – Some ways of categorizing software projects – Stakeholders – Setting Objectives – The Business Case – Project Success and Failure – What is Management – Management Control – Traditional versus Modern Project Management Practices. **Project Evaluation and Programme Management:** A Business Case - Project portfolio Management – Evaluation of Individual Projects – Programme Management – Managing the allocation of resources within the programmes – Strategic programme Management.

**UNIT II****(12 Hrs)**

**An overview of Project Planning:** Stepwise Project Planning – All Steps (Step 0-Step 10).**Selection of an Appropriate Project Approach:** Build or Buy – Choosing Methodologies and Technologies – Software Processes and Process Models – Choice of Process models – Structure versus speed of Delivery – The Waterfall Model – The Spiral Model – Software Prototyping.

**UNIT III****(12 Hrs)**

**Activity Planning:** Objectives of Activity planning – When to Plan – Project schedules – Sequencing and Scheduling Activities – Network Planning models – Formulating a Network Model – The Forward Pass – The Backward Pass – Identifying the Critical path – Activity Float – Shortening the Project Duration – Identifying Critical Activities. **Risk Management:** Risk – Categories of Risk – Risk identification – Risk Planning – Evaluating Risks to the Schedule – Applying the PERT technique – Monte Carlo simulation – Critical Chain Concepts.

**UNIT IV****(12 Hrs)**

**Monitoring and Control:** Creating the Framework – Collecting the Data – Review – Project Termination Review - Cost monitoring – Earned Value Analysis – Prioritizing Monitoring – Change control – Software Configuration Management. **Managing Contracts:** Types of Contract – Stages in Contract Placement – Typical Terms of a Contract – Contract Management – Acceptance.

**UNIT V****(12 Hrs)**

**Managing People in Software Environments:** Selecting the Right person for the Job – Instruction in the Best Methods – Motivation – The Oldham-Hackman job characteristics model – Stress – Health and Safety – Some Ethical and Professional concerns. **Working in Teams:** Becoming a Team – Decision making – Organization and Team structures – Coordination Dependencies – Dispersed and Virtual teams – Communications genres – Communication plans – Leadership.

**Textbook**

1. Bob Hughes, Mike Cotterell and Rajib Mall, “Software Project Management”, TataMcGraw Hill, New Delhi, 2012, 5<sup>th</sup> Edition.

Unit	Chapters	Section	Page No.
I	1, 2	1.1 – 1.5, 1.7 – 1.15, 2.1 – 2.4, 2.7 – 2.9	1-4,7-17,21-26,36-39
II	3,4	301-3.10,4.1 – 4.9	47-65,68-80
III	6,7	6.1 – 6.4, 6.6 – 6.8, 6.10 – 6.15, 7.1 – 7.3, 7.5, 7.7, 7.9 – 7.12	126-128,134-138,139-145,155- 158,159,164,167-180
IV	9,10	9.1 – 9.5, 9.7 – 9.9, 9.11, 9.12, 10.1-10.6	202-211,215-221,224-231,233-247
V	11,12	11.1, 11.4 – 11.10,12.1-12.9	249-250,253-262,264-286

### **Reference Books**

1. Robert K.Wysocki, “Effective Software Project Management”, Wiley Publication, 2011.
2. Walker Royce, “Software Project Management”, Addison-Wesley, 1998.
3. Gopaldaswamy Ramesh, “Managing Global Software Projects”, McGraw Hill Education (India), 2013, Fourteenth Reprint.

### **Webliography**

1. E-book: <http://engineersevanigam.blogspot.in/2013/07/software-project-management-5th-edition.html>



**Sri Kaliswari College (Autonomous), Sivakasi**  
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**PG Programme – M.Sc.,**  
**Semester III**  
**(2018 – 2020)**

**Core Course – XIII: Data Mining (18PCSC33)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 4</b>	<b>Int. Mark</b>	<b>: 25</b>
<b>Hours / Week</b>	<b>: 5 Hrs</b>	<b>Ext. Mark</b>	<b>: 75</b>
<b>Duration</b>	<b>: 75 Hrs</b>	<b>Max. Mark</b>	<b>: 100</b>

**Course Objectives:**

- To focus on the design and implementation of data marts and provide necessary knowledge of data.
- To provide an overview of the methodologies and approaches to data mining.
- To provide an understanding of the Data Mining and Web Mining concepts and their algorithms.

**Course Outcomes:**

1. Gain knowledge in data mart designing and implementation.
2. Understand principles and applications of warehouse.
3. Design physical, logical and conceptual model.
4. Understand various classification algorithms.
5. Acquire skills measure the classified data.
6. Apply mining concepts in real world issues.

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**UNIT I**

**(15 Hrs)**

**Introduction:** What is Data Mining – What Kinds of Data can be Mined – What Kinds of Patterns Can Be Mined – Major Issues of Data Mining – **Data Warehousing and OLAP:** Data Warehouse: Basic Concepts – Data Warehouse Modeling: Data Cube & OLAP – Data Warehouse Design and Usage – Data Warehouse Implementation.

**UNIT II**

**(15 Hrs)**

**Data Preprocessing: An Overview:** Data Quality: Why Process the Data – Major Tasks in Data Processing – **Data Cleaning:** Missing Values – Noisy Data – Data Cleaning as a Process - – **Data Integration:** - Entity Identification Problem – Redundancy and Correlation Analysis – Tuple Duplication – Data Value Conflict Detection and Resolution - **Data Reduction:** Overview of Data Reduction Strategies – Wavelet Transforms – Principal Components Analysis – Attribute Subset Selection – Regression and Log-Linear Models: Parametric Data Reduction – Histograms – Clustering – Sampling – Data Cube Aggregation - **Data Transformation and Data Discretization:** Data Transformation Strategies Overview– Data Transformation by Normalization – Discretization by Binning –

Discretization by Binning – Discretization by Histogram Analysis – Discretization by Cluster, Decision Tree and Correlation Analyses – Concept Hierarchy Generation for Nominal Data.

**UNIT III (15 Hrs)**

**Mining Frequent Patterns, Associations and Correlations: Basic Concepts** - Market Basket Analysis – Frequent Itemsets, Closed Itemsets and Association Rules – **Frequent Itemset Mining Methods:** Apriori Algorithm: Finding Frequent Itemsets by confined Candidate Generation – Generating Association Rules from Frequent Itemsets – Improving the efficiency of Apriori – A Pattern-Growth Approach for Mining Frequent Itemsets – Mining Frequent itemsets Using Vertical Data Format – Mining Closed and Max Patterns – **Advanced Pattern Mining:** Pattern Mining in Multilevel, Multidimensional Space – Pattern Exploration and Application: Applications of Pattern Mining.

**UNIT IV (15 Hrs)**

**Classification: Basic Concepts** – Basic Concepts – Decision Tree Induction – Bayes Classification Methods - **Classification: Advanced Methods** – Classification by Back propagation – Lazy Learners (or Learning from your Neighbours) – **Other Classification Methods:** Genetic Algorithms – Rough Set Approach – Fuzzy Set Approaches.

**UNIT V (15 Hrs)**

**Cluster Analysis: Basic Concepts and Methods:** Cluster Analysis – Partitioning Methods: k-Means, k-Medoids – Hierarchical Methods: Agglomerative Vs Divisive Hierarchical Clustering, Distance Measures in Algorithmic Methods – Evaluation of Clustering – **Outlier Detection:** Outliers and Outlier Analysis.

**Textbook**

1. Jaiwei Han, Micheline Kamber, Jian Pei, “Data Mining Concepts and Techniques”, Edition – III.

Unit	Chapters	Section	Page No.
I	1	1.2, 1.3.1-1.3.4, 1.4.1-1.4.6, 1.7.2-1.7.5	5-8, 8-15, 5-20, 29-33
	4	4.2.1-4.2.6, 4.4.1-4.4.4	150-156, 156-165
II	3	3.1.1-3.1.2, 3.2.1-3.2.3, 3.3.1-3.3.4, 3.4.1-3.4.9, 3.5.1-3.5.6	84-87, 88-93, 93-99, 99-111, 111-119
III	6	6.1.1-6.1.2, 6.2.1-6.2.6	243-248, 248-264
	7	7.6.2	317-319
IV	8	8.1.1-8.1.2, 8.3.1-8.3.2	327-330, 350-355
	9	9.2.1-9.2.4, 9.5.1-9.5.2, 9.6.1-9.6.3	398-408, 422-426, 426-429
V	10	10.1.1-10.1.3, 10.2.1-10.2.2, 10.3.1-10.3.5, 10.6.1-10.6.3	444-451, 451-457, 457-477, 483-490
	12	12.1.1, 12.1.2	549-551, 551-553

### **Reference Books**

1. Joseph Schmuller, “Teach Yourself UML in 24 hours”
2. Jaiwei Han, Micheline Kamber, “Data Mining Concepts and Techniques”, Edition II.

### **Webliography**

1. <http://www.slideshare.net/PasqualePuzio/internet-of-things-and-its-applications>
2. [https://www.isoc.org/inet2000/cdproceedings/3a/3a\\_1.htm](https://www.isoc.org/inet2000/cdproceedings/3a/3a_1.htm)

**Sri Kaliswari College (Autonomous), Sivakasi**  
**Department of Computer Science (UG & PG)**  
**PG Programme – M.Sc.,**  
**Semester III**  
**(2018 – 2020)**

**Major Elective Course – II : Digital Image Processing (18PCSO31)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 4</b>	<b>Int. Marks</b>	<b>: 25</b>
<b>Hours / Week</b>	<b>: 6 Hrs</b>	<b>Ext. Marks</b>	<b>: 75</b>
<b>Duration</b>	<b>: 90 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- To understand the theoretical knowledge of image processing techniques and applications.
- To appreciate the use of image processing in current technologies.
- To expose the students to real-world applications of the image processing.

**Course Outcomes:**

1. Acquire the fundamental concepts of a digital image processing system.
2. Apply image enhancement techniques.
3. Understand the concept of restoration techniques.
4. Analyze and compress given images using segmentation techniques.
5. Learn different image transforms techniques.
6. Learn various filtering techniques to sharpen the image.

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**UNIT I** **(18 Hrs)**

**Digital Image Fundamentals:** Elements of visual perception - Light and the Electromagnetic System - Image Sensing and Acquisition – Image Sampling and Quantization – Some Basic Relationship between pixels - Linear and Nonlinear Operations.

**UNIT II** **(18 Hrs)**

**Image Enhancement:** Some Basic Gray Level Transformation - Histogram Processing - Enhancement using Arithmetic/Logic Operations - Basic Spatial Filtering - Smoothing Spatial Filtering - Sharpening Spatial Filters.

**UNIT III** **(18 Hrs)**

**Image Restoration:** A Model of the Image Degradation/Restoration Process - Noise Models - Restoration in the Presence of Noise Only-Spatial Filtering - Periodic Noise Reduction by Frequency Domain Filtering - Minimum Mean Square Error (Wiener) Filtering.

**UNIT IV****(18 Hrs)**

**Image Compression:** Fundamentals – Image Compression Models - Elements of Information Theory - Error-Free Compression - Lossy Compression - Image Compression Standards.

**UNIT V****(18 Hrs)**

**Image Segmentation:** Detection of Discontinuation - Edge Linking and Boundary Detection - Thresholding - Region Based Segmentation - Segmentation by Morphological Watersheds - The Use of Motion in Segmentation.

**Textbook**

1. Rafael C. Gonzalez, Richard E. Woods, “Digital Image Processing”, Pearson, 2004, Second Edition.

<b>Unit</b>	<b>Chapters</b>	<b>Section</b>	<b>Page No.</b>
I	2	2.1 - 2.6	34 – 70
II	3	3.2 - 3.7	78 – 134
III	5	5.1 - 5.4, 5.8	221 - 254, 262 – 266
IV	8	8.1 - 8.6	411 – 513
V	10	10.1 - 10.6	568 – 634

**Reference Books**

1. Anil K. Jain, “Fundamentals of Digital Image Processing”, Pearson 2002.
2. Madhuri A.Joshi, “Digital Image Processing - An Algorithmic Approach”, PHI Learning, 2009.
3. HandaB, Dutta MajumderD, “Digital Image Processing and Analysis”, PHI Learning, 2009.

**Webliography**

1. <https://www.tutorialspoint.com/dip/index.htm>
2. <http://www.owl.net.rice.edu/~elec539/Projects99/BACH/proj2/intro.html>
3. <https://www.cs.auckland.ac.nz/courses/compsci773s1c/lectures/ImageProcessing.html/topic3.htm>

**Sri Kaliswari College (Autonomous), Sivakasi**  
**Department of Computer Science (UG & PG)**  
**PG Programme – M.Sc.,**  
**Semester III**  
**(2018 – 2020)**

**Major Elective Course – II: Mobile Computing (18PCSO32)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 4</b>	<b>Int. Marks</b>	<b>: 25</b>
<b>Hours / Week</b>	<b>: 6 Hrs</b>	<b>Ext. Marks</b>	<b>: 75</b>
<b>Duration</b>	<b>: 90 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- To Learn the Voice and data communication Technologies.
- To enhance the knowledge about 3G technology.
- To enrich the knowledge about Security techniques.

**Course Outcomes:**

1. Gain the knowledge about various types of Wireless Data Networks and Voice Networks.
2. Understand the architectures, the challenges and the Solutions of Wireless Communication
3. Realize the role of Wireless Protocols in shaping the future Internet.
4. Able to develop simple Mobile Application Using Android
5. Apply the fundamental design paradigms and technologies to mobile computing applications.
6. Develop consumer and enterprise mobile applications using representative mobile devices and platforms using modern development methodologies.
7. Design effective mobile interfaces using human computer interaction principles.
8. Evaluate the role of mobile applications in software intensive systems.

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**UNIT I** **(18 Hrs)**

**Mobile Computing Architecture :** History of Computers – History of Internet – Internet the Ubiquitous Network – Architecture for Mobile Computing – Three-Tier Architecture – Design Considerations for Mobile computing – Mobile Computing through Internet – Making Existing Applications Mobile – Enabled.

**UNIT II** **(18 Hrs)**

**Emerging Technologies:** Introduction – Blue tooth – Radio Frequency Identification (RFID) – Wireless Broadband (WIMAX) – Mobile IP. **Global System For Mobile Communications (GSM):** Global System for Mobile Communications – GSM Architecture – GSM Entities – Call Routing in GSM – PLMN Interfaces – GSM Addresses and Identifiers – Network Aspects in GSM – GSM Frequency Allocation – Authentication and Security.

**UNIT III****(18 Hrs)**

**Short Message Service (SMS):** Mobile Computing over SMS – Short Message Services (SMS) – Value Added Services through SMS. **General Packet Radio Service (GPRS):** GPRS and Packet Data Network – GPRS Network Architecture – GPRS Network Operations – Data Services in GPRS – Applications for GPRS – Limitations of GPRS – Billing and Charging in GPRS.

**UNIT IV****(18 Hrs)**

**CDMA & 3G:** Introduction – Wireless Data – Third Generation Networks **Wireless LAN:** Introduction – Wireless LAN Advantages – IEEE 802.11 Standards – Wireless LAN Architecture – Mobility in Wireless LAN – Deploying Wireless LAN – Mobile Ad Hoc Networks and Sensor Networks – Wireless LAN Security – WIFI Versus 3G.

**UNIT V****(18 Hrs)**

**Security Issues In Mobile Computing:** Introduction – Information Security – Security Techniques and Algorithms – Security Protocols – Public key Infrastructure – Trust – Security Models – Security Frameworks for Mobile Environment.

**Textbook**

1. Asoke K Talukder, Hasan Ahmed, Roopa R Yavagal “Mobile Computing”, TMH publishing company New Delhi, 2007, 2<sup>nd</sup> Edition.

Unit	Chapters	Section	Page No.
I	2	2.1 – 2.8	28 – 55
II	4, 5	4.1 – 4.5, 5.1 – 5.7, 5.9, 5.11	84 – 103, 116 – 131, 138 – 139, 140 – 143.
III	6, 7	6.1 – 6.3, 7.2 – 7.8	145 – 154, 174 – 190
IV	9, 10	9.1, 9.5 – 9.6, 10.1 – 10.8, 10.12	218 – 219, 236 – 243, 251 – 279, 283 – 284
V	20	20.1 – 20.8	565 – 596

**Reference Books**

1. Jochen Schiller, “Mobile Communication”, Pearson Education, 2003, 2<sup>nd</sup> Edition.
2. Frank Adelstein, “Fundamentals of Mobile and Pervasive Computing”, TMH, 2005.
3. Uwe Hansmaan et al, “Principles of Mobile Computing”, Springer, 2003.

**Webliography**

1. <https://www.slideshare.net/jainikpatel12/architecture-of-mobile-computing>
2. <https://www.slideshare.net/balu008/gsmpppt-18795096>
3. <https://www.slideshare.net/shamstabrez98499/gprs-ppt>
4. <https://www.slideshare.net/parveshtaneja9/wlan-wireless-local-area-network>

**Sri Kaliswari College (Autonomous), Sivakasi**  
**Department of Computer Science (UG & PG)**  
**PG Programme – M.Sc.,**  
**Semester III**  
**(2018 – 2020)**

**Major Elective Course – II: Network Security and Cryptography (18PCSO33)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 4</b>	<b>Int. Marks</b>	<b>: 25</b>
<b>Hours / Week</b>	<b>: 6 Hrs</b>	<b>Ext. Marks</b>	<b>: 75</b>
<b>Duration</b>	<b>: 90 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- Identify computer and network security threats.
- Classify the threats and develop a security model.
- Encrypt and decrypt messages.
- Verify messages using well known signature generation and verification algorithms.
- Protect information resources by making unauthorized acquisition.

**Course Outcomes:**

1. Be able to perform encrypt and decrypt messages.
2. Understand what is meant by number theory and finite fields.
3. Be able to construct public- key.
4. Understand hash functions.
5. Be able to web security consideration.
6. Able to Analyze existing authentication and key agreement protocols.

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**UNIT I** **(18 Hrs)**

**Classical Encryption Techniques:** Symmetric Cipher Model- Substitution Technique – Transposition technique – Rotor Machines – Steganography. **Block Ciphers and the Data Encryption Standard:** Traditional Block Cipher Structure – The Data encryption Standard- A DES Example- The Strength of DES- Block Cipher Design Principles.

**UNIT II** **(18 Hrs)**

**Basic Concepts in Number Theory and Finite Fields:** Divisibility and Division Algorithm – The Euclidian Algorithm – Groups, Rings, and Fields – Polynomial Arithmetic. **Public- Key Cryptography and RSA:** Principles of Public Key Cryptosystems – The RSA Algorithm.

**UNIT III** **(18 Hrs)**

**Cryptographic Hash Functions:** Application of Cryptographic Hash Function – The two simple Hash function – Requirement and Security – Hash functions Based on Cipher Block Chaining- Secure Hash Algorithm(SHA) – SHA -3.



**UNIT IV****(18 Hrs)**

**Message Authentication Codes:** Message Authentication Requirements – Message Authentication Function – Security of MACs – Key Wrapping. **Digital Signature:** Digital Signature – Elgamal Digital Signature Scheme – Schnorr Digital Signature Scheme – NIST Digital Signature Algorithm – RSA- PSS Digital Signature Algorithm.

**UNIT V****(18 Hrs)**

**User Authentication:** Remote User –Authentication Principles –Kerberos – Federated Identity Management – Personal Identity Verification. **Transport level Security:** Web Security Consideration- Secure Sockets Layer – Transport Layer Security - HTTPS - Secure Shell(SSH).

**Textbook**

1. William Stallings, “Cryptography and Network Security”, Pearson Education, March 2013, 6<sup>th</sup> Edition.

<b>Unit</b>	<b>Chapters</b>	<b>Page No.</b>
I	1,2	7-40,41-64
II	3,8	65-110, 241- 274
III	10	303-346
IV	11,12	347-386, 387- 410
V	14,15	445- 490, 491- 528

**Reference Books**

1. Charles Pfleeger, “Security in Computing”, Prentice Hall of India, 2006, 4th Edition.
2. Bruce Schneier and Neils Ferguson, “Practical Cryptography”, Wiley Dreamtech India Pvt Ltd, 2003, 4<sup>st</sup> Edition.
3. Behrouz A. Ferouzan, “Cryptography & Network Security”, Tata McGraw Hill, 2007.

**Webliography**

1. <https://www.cs.waikato.ac.nz/~tcs/103review.pdf>
2. [http://www.inf.ufsc.br/~bosco.sobral/ensino/ine5680/material-cripto-seg/2014-1/Stallings/Stallings\\_Cryptography\\_and\\_Network\\_Security.pdf](http://www.inf.ufsc.br/~bosco.sobral/ensino/ine5680/material-cripto-seg/2014-1/Stallings/Stallings_Cryptography_and_Network_Security.pdf)
3. <https://www.scribd.com/doc/81735044/Cryptography-and-Network-Security-Forouzan>

**Sri Kaliswari College (Autonomous), Sivakasi**  
**Department of Computer Science (UG & PG)**  
**PG Programme – M.Sc.,**  
**Semester III**  
**(2018 – 2020)**

**Major Elective Course –II : Neural Networks (18PCSO34)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 4</b>	<b>Int. Marks</b>	<b>: 25</b>
<b>Hours / Week</b>	<b>: 6 Hrs</b>	<b>Ext. Marks</b>	<b>: 75</b>
<b>Duration</b>	<b>: 90 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- Understand Neural Network Terminology.
- Build Neuron Model.
- Analysis and classify similar Pattern.
- Understand Pattern Recognition Problem.
- Knowing Applications of ANN.

**Course Outcomes:**

1. Be able to build neuron model.
2. Familiarize in activation function.
3. Be able to recognize pattern.
4. Be able to classify pattern.
5. Familiarize in linear and nonlinear Feed Forward networks.
6. Able to work with Artificial Neural Networks.

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**UNIT I** **(18 Hrs)**

**Basics of Artificial Neural Networks:** Characteristics of Neural Networks – Historical Development of Neural Network Principles – Artificial Neural Network Terminology – Models of Neuron – Topology – Basic Learning Laws.

**UNIT II** **(18 Hrs)**

**Activation & Synaptic Dynamics:** Introduction - Activation Dynamics models - Synaptic Dynamics models – Learning Methods - Stability and Convergence. **Functional units of ANN for Pattern Recognition Tasks:** Pattern Recognition Problem – Basic Functional Units – Pattern Recognition Tasks by the Functional units.

**UNIT III** **(18 Hrs)**

**Feed Forward Neural Networks:** Introduction – Analysis of Pattern Association Networks – Analysis of Pattern Classification Networks – Analysis of Pattern Mapping Networks.

**UNIT IV****(18 Hrs)**

**FeedBack Neural Networks:** Introduction- Analysis of Linear Auto associative FF Networks – Analysis of Pattern and Storage Networks – Stochastic Networks and Simulated Annealing – Boltzmann Machine.

**UNIT V****(18 Hrs)**

**Applications of ANN:** Introduction –Direct Application – Application Areas.

**Textbook**

1. Yegnanarayana, “Artificial Neural Networks”, Prentice Hall of India Private Limited.

<b>Unit</b>	<b>Chapters</b>	<b>Section</b>	<b>Page No.</b>
I	1	1.1- 1.6	15-39
II	2,3	2.1 - 2.5, 3.1 - 3.3	40 – 68, 76 - 86
III	4	4.1 - 4.4	88 – 134
IV	5	5.1 – 5.5	142 – 195
V	8	8.1 – 8.3	278 – 333

**Reference Books**

1. Li Min Fu, “Neural networks in Computer intelligence”, Tata McGraw-Hill, 2003.
2. James A Freeman David, M S Kapura ,“Neural Networks”, Pearson Education, 2004.

**Webliography**

1. <http://www.tamilspider.com/resources/5290-Syllabus-Anna-University-Coimbatore-B-Tech-IT.aspx>.
2. <http://cdn.iiit.ac.in/cdn/speech.iiit.ac.in/svlpubs/book/Yegna1999.pdf>.
3. [https://www.goodreads.com/author/show/1691479.Limin\\_Fu](https://www.goodreads.com/author/show/1691479.Limin_Fu).

**Sri Kaliswari College (Autonomous), Sivakasi**  
**Department of Computer Science (UG & PG)**  
**PG Programme – M.Sc.,**  
**Semester III**  
**(2018 – 2020)**

**Core Course – XIV : Open Source Tools Lab (18PCSC3P)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 4</b>	<b>Int. Marks</b>	<b>: 40</b>
<b>Hours / Week</b>	<b>: 5 Hrs</b>	<b>Ext. Marks</b>	<b>: 60</b>
<b>Duration</b>	<b>: 75 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- To learn various diagram techniques using UML.
- Implement the session, cookies and validation control in PHP.
- To be familiar with vectors, metrics and arrays in R.

**Course Outcomes:**

1. Familiarization of open source language environment.
2. Apply to R features including arrays, vectors and metrics.
3. Apply to PHP features including session, cookies and files.
4. Gain the knowledge in environmental function and mathematical function in R.
5. Gain the knowledge in reading data from working data set in R.
6. Gain skills to handle files and directories in PHP.

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**UML**

1. Prepare use case diagrams for an applications using UML.
2. Prepare class diagrams for an applications using UML.
3. Prepare Sequence diagrams for an applications using UML.
4. Prepare state chart diagrams for an applications using UML.
5. Prepare Deployment diagrams for an applications using UML.
6. Prepare component diagrams for an applications using UML.
7. Prepare collaboration diagrams for an applications using UML.
8. Prepare Activity diagrams for an applications using UML.

**PHP**

9. Handling Html Form With PHP.
10. Program for User Defined Function.
11. Handling Images with PHP.
12. Working with file and Directories.
13. One Program for Creation of sessions Handling.
14. One Program for Creation, modification and deletion program using cookies.
15. One or More programs using Validation Controls in PHP.
16. One or More Programs for creating simple applications using PHP.

**R Tool**

17. Program using mathematical functions and String functions.
18. Program using Vectors, Matrices and Arrays.
19. Program using Lists and Data Frames.
20. Program using Environments and Functions.
21. Program using Flow Control and Loops.
22. Program using Reading data from files and working with datasets.

**Sri Kaliswari College (Autonomous), Sivakasi**  
**Department of Computer Science (UG & PG)**  
**PG Programme – M.Sc.,**  
**Semester III**  
**(2018 – 2020)**

**Core Course – XV: Mobile and Web App Development Lab (18PCSC3Q)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 4</b>	<b>Int. Mark</b>	<b>: 40</b>
<b>Hours / Week</b>	<b>: 5 Hrs</b>	<b>Ext. Mark</b>	<b>: 60</b>
<b>Duration</b>	<b>: 75 Hrs</b>	<b>Max. Mark</b>	<b>: 100</b>

**Course Objectives:**

- To enhance the knowledge about server side web applications.
- To learn basic validation controls and Database Connectivity in .Net.
- To develop the idea for effective own dynamic websites.
- To enrich the knowledge about Android programming.
- To develop the idea for effective .apk files.

**Course Outcomes:**

1. Gain an understanding of the Microsoft .NET architecture.
  2. Acquire a working knowledge of creating rich internet Web application using the
  3. .NET Framework including ASP.NET, ADO.NET, C# and Web Services.
  4. Acquire Professional ethics in design and deploying an application.
  5. Procure employability in IT sector IT industry.
  6. Get understanding work on Android Development Environment.
  7. Develop effective .apk files.
  8. Enhance practical skills and knowledge to construct software for a mobile application.
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**Web Application Development**

1. Program using Abstract class and Abstract method.
2. Program for Error Handling using Try, Catch and Finally.
3. Program using Windows Presentation Foundation (WPF).
4. Program using AJAX.
5. Application for Form Designing using basic controls
6. Application for Form Designing using data and web controls
7. Creation of Simple Website with Validation controls
8. Table Creation and Manipulation Using Grid View, Detail View, Form View Controls
9. Create an Application for Inserting, Updating, and Deleting Records.
10. Application to produce reports

### **Mobile Application Development**

11. Develop an application that uses GUI components, Font and Colors.
12. Develop an application that uses Layout Managers and event listeners.
13. Develop an application that makes use of database.
14. Develop an application that makes use of RSS Feed.
15. Implement an application that implements Multi threading.
16. Implement an application that writes data to the SD card.

**Sri Kaliswari College (Autonomous), Sivakasi**  
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**PG Programme – M.Sc.,**  
**Semester IV**  
**(2018 – 2020)**

**Core Course – XVI : Advanced Computing (18PCSC41)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 6</b>	<b>Int. Marks</b>	<b>: 25</b>
<b>Hours / Week</b>	<b>: 6 Hrs</b>	<b>Ext. Marks</b>	<b>: 75</b>
<b>Duration</b>	<b>: 90 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- To improve the knowledge fundamentals of Computing Technologies.
- To enrich the knowledge about IoT, Pervasive computing and Cloud Computing.
- To improve the deployment of cloud computing applications.

**Course Outcomes:**

1. Describe the operation of modern and high performance computers.
2. Undertake performance comparisons of modern and high performance computers.
3. Improve the performance of applications on modern and high performance computers.
4. Understand the application areas of IOT.
5. Realize the revolution of Internet of mobile devices
6. Know concepts of cloud and server networks.
7. Understand building blocks of IOT and characteristics.
8. Familiar to connect IoT devices via pervasive networks.

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**UNIT I**

**(18 Hrs)**

**IoT:** The Third ICT Wave - Rise of the Machines-The IoT Kaleidoscope-Defining Internet of Things- IoT: A Web 3.0 View - **Ubiquitous IoT Applications:** A Panoramic View of IoT Applications - Important Vertical Applications - Telematics and Intelligent Transport - Systems - Smart Grid and Electric Vehicles - Smarter Planet and Smart Buildings.

**UNIT II**

**(18 Hrs)**

**Four Pillars of IoT:** The Horizontal, Verticals, and Four Pillars - M2M: The Internet of Devices - RFID: The Internet of Objects - WSN: The Internet of Transducers - SCADA: The Internet of Controllers. **The DNA of IoT:** DCM: Device, Connect, and Manage - Device: Things that Talk - Connect: Via Pervasive Networks - Wired Networks -Wireless Networks - Satellite IoT - Manage: To Create New Business Value - More Ingredients: LBS, GNSS, RTLS and Others.



### UNIT III

(18 Hrs)

**Pervasive Computing:** Ubiquitous or Pervasive Computing-What is a Context Various Definition and Types of Contexts: Enumeration-based-Role-based. Context-Aware Computing and Applications: Core capabilities for context awareness-Types of context-aware applications-Developing context-aware applications. Middleware Support: Contextual services-Actuator service-An Example: context toolkit-Providing location context. **Introduction to Mobile Middleware:** What is Mobile Middleware-Adaption-Agents-Service Discovery Middleware for Application Development: Adaption and Agents: The spectrum of adaption-Resource monitoring-Characterizing adaptation strategies-An application-aware adaptation architecture: Odyssey-A Sample Odyssey application-More adaption middleware. **Mobile Agents:**Why mobile agents And why not-Agent architectures-Migration strategies-Communication strategies.

### UNIT IV

(18 Hrs)

**Introducing Cloud Computing:** Grasping the Fundamentals: Considering perspectives-Computing on the Cloud-Defining the Cloud: Elasticity and scalability-self-service provisioning-application programming interfaces (APIs)-Billing and metering of services-performing monitoring and measuring-security. Comparing cloud providers with traditional IT services providers-addressing problems-discovering the business drivers for consuming cloud services: supporting business agility-reducing capital expenditures. **Discovering the value of the cloud for business:** Modeling services-understanding infrastructure as a service-Exploring platform as a service- seeing software as a service: software as a service modes-massively scaled software as a service-economies of scale. Management and administration. Getting inside the cloud: Feeling sensational about organization: deciding on a strategy-coping with governance issues-monitoring business process-managing IT costs. Administering cloud services: service level agreements and monitoring-support-billing and accounting. Looking at the technical interface management APIs and data transformations-data and application architecture-security in the cloud. Managing cloud resources: IT security-performance management -provisioning-service management-untangling software dependencies. **Developing your cloud strategy:** seeing the many aspects of your cloud strategy-questioning your company's strategy-assessing where you are today: how tangled is my computing environment-what's my data center environment-what data supports my strategy. Assessing your expense structure-checking up on rules and Governances-developing a road map.

### UNIT V

(18 Hrs)

**Understanding the Nature of the Cloud:** Seeing The Advantages Of The Highly Scaled Data Center: Comparing Financial Damage: Traditional Versus Cloud-Traditional Data Center-Cloud Data Center. Scaling the Cloud-Comparing Traditional and Cloud Data Center Costs: Examining Labor Costs and Productivity-Wondering Where You Are. **Exploring the Technical Foundation for Scaling Computer Systems:** Server-ing Up Some Hardware: Tradition! Versus Clouds-Considering Cloud Hardware-Open-Source Dynamic. Economies of Scale: Benefitting Otherwise. Keeping the Bottom Line in Mind. **Checking the Cloud's Workload Strategy:** Managing Workloads in the Cloud-Thinking of Workloads As

Well-Planned Services- Creating Interfaces Between Containers-Discovering How XML Fits in-Using Container Workloads: Case Study. Balancing Risk and Practical Models-Testing Workloads in the Real World.

### **Textbooks**

1. Honbo Zhou, “The Internet of Things in the Cloud: A Middleware Perspective”, CRC Press, New Delhi, 2012.
2. Frank Adelstein, “Fundamentals of Mobile and Pervasive Computing”, TMH, New Delhi, 2005.
3. Judith Hurtwitz, Robin Bloor, MaricaKufman and Dr.FernHalper, “Cloud Computing for Dummies”, Wiley India Pvt Ltd, New Delhi, reprint 2011.

<b>Unit</b>	<b>Textbook No.</b>	<b>Chapters</b>	<b>Section</b>	<b>Page No.</b>
I	1	1,2	1.1-1.4,2.1,2.2	1-30
II	1	3,4	3.1-3.5,4.1-4.4	31-66
III	2	4,5,6	4.1-4.5,5.1-5.4, 6.1-6.3	91-135
IV	3	1,2,3,4	-	7-46
V	3	5,6,7	-	49-74

### **Reference Books**

1. Imielinski, Tomasz, Korth, Henry F. (Eds.), “Mobile Computing”, Springer, 1996.
2. Raj Kamal, “Mobile Computing”, oxford university press, 2011, Second Edition.
3. John Rhoton, “Cloud Computing Explained: Implementation Handbook for Enterprises”, 2013.

### **Webliography**

1. <http://www.slideshare.net/PasqualePuzio/internet-of-things-and-its-applications>
2. <http://www.slideshare.net/PasqualePuzio/internet-of-things-and-its-applications>
3. <https://www.google.co.in/urlsa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwj4yvie767MAhUOv44KHSSdDHYQFggbMAA&url=http%2F%2F203.250.33.57%2FIoT%2BCloud%2FCh%25203.%2520Four%2520Pillars%2520of%2520IoT.pptx&usg=AFQjCNGkP05iOU1QA2zpAyYv8iPwJCNFzw&v m=bv.120551593,d.c2E>
4. <http://www.crcnetbase.com/doi/abs/10.1201/b13090-6>
5. <http://internetofthingsagenda.techtarget.com/definition/pervasivecomputing-ubiquitous-computing>
6. [https://www.isoc.org/inet2000/cdproceedings/3a/3a\\_1.htm](https://www.isoc.org/inet2000/cdproceedings/3a/3a_1.htm)
7. [http://www.wikinvest.com/concept/Cloud\\_Computing](http://www.wikinvest.com/concept/Cloud_Computing)
8. <http://www.rightscale.com/blog/enterprise-cloud-strategies/identifying-workloads- cloud>

**Sri Kaliswari College (Autonomous), Sivakasi**  
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**PG Programme – M.Sc.,**  
**Semester IV**  
**(2018 – 2020)**

**Core Course – XVII: Employability Skills (18PCSC4P)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 6</b>	<b>Int. Marks</b>	<b>: 40</b>
<b>Hours / Week</b>	<b>: 6 Hrs</b>	<b>Ext. Marks</b>	<b>: 60</b>
<b>Duration</b>	<b>: 90 Hrs</b>	<b>Max. Marks</b>	<b>: 100</b>

**Course Objectives:**

- To develop effective Communication skills.
- To develop effective Presentation skills.
- To make them ready for the Interviews and Jobs.
- To deal with different situations diligently and responsibly.
- To ready to adopt any kind of employability.

**Course Outcomes:**

1. Understand the significance of soft skills in working environment.
2. Learn to connect and work with others to achieve a set of task.
3. Handle emotions and respect for the opinions, personal space.
4. Develop self-motivation, raised aspirations and beliefs in one's own abilities.
5. Excel with focused approach in working environment.
6. Communicate effectively with creativity.
7. Acquiring of leadership quality.
8. Handling of difficult situations in different perspective.

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1. Resume Preparation
  2. Email Etiquettes by sending and replying emails
  3. Peer Session on Self Introduction
  4. New paper reading to improve voice modulation
  5. Storytelling to enhance creativity and presentation skills
  6. Enact on Body Languages by peers
  7. Prepare a Time Management Matrix for daily scheduling
  8. Do Time Management exercises and activities in the classroom
  9. Do Destress related exercises in the class room
  10. Conduct activities related to enhance leadership qualities
  11. Do activities related to team spirit
  12. Peer Group Discussion on various topics
  13. Peer Telephonic Interview
  14. Peer Mock Stress Interview
  15. Peer Mock HR Interview

**Internal (40 Marks)**

Resume Preparation : 10 Marks

Mock GD : 15 Marks

Mock Interview : 15 Marks

**External (60 Marks)**

Resume Preparation : 10 Marks

Mock GD : 25 Marks

Mock Interview : 25 Marks

**Sri Kaliswari College (Autonomous), Sivakasi**  
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**PG Programme – M.Sc.,**  
**Semester IV**  
**(2018 – 2020)**

**Core Course –XVIII: Project and Viva-Voce (18PCSJ41)**  
**(For those who join from June 2018 and afterwards)**

<b>Credits</b>	<b>: 10</b>	<b>Int. Marks</b>	<b>: 40</b>
<b>Hours / Week</b>	<b>: 18 Hrs</b>	<b>Ext. Marks</b>	<b>: 60</b>
<b>Duration</b>	<b>: 6 Months</b>	<b>Max. Marks</b>	<b>: 100</b>

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**Rules and Regulations**

The project shall be undertaken individually in duration of 6 months. The following list of parameters is taken into account for the evaluation of project work and viva voce. The student has to produce 3 copies (Individual – 1, Department Library – 1, General Library – 1) of the document.

**Internal (40 Marks)**

Consolidated Two Review Meetings	: 20 Marks
Project Documentation	: 10 Marks
Overall Performance	: 10 Marks

**External (60 Marks)**

Project Documentation	: 10 Marks
Project Demo & Presentation	: 30 Marks
Viva Voce	: 20 Marks