SYLLABUS

MANONMANIAM SUNDARANAR UNIVERISTY, TIRUNELVELI-12

UG - COURSES – AFFILIATED COLLEGES

Course Structure for **B.Sc. Computer Science**

(Choice Based Credit System)

(with effect from the academic year 2017- 2018 onwards)

Semester-V				
Part	Subject Status	Subject Title	Subject Code	Credit
III	Core	Software Engineering and Testing	SMCS51	4
	Core	Data communication and Computer Network	SMCS52	4
	Core	Dot NET Technologies	SMCS53	4
	Major Practical -V	Dot NET	SMCSP5	2
	Major Practical- VI	Data Structures	SMCSP6	2
	Major Elective - I	Mobile Computing	SECS5A	4
	Skill Based	Personality Development	SCSB5A	2
		Mini Project	SMCS5P	3

Total Marks: 100 Internal Exam: 25 marks + External Exam: 75 marks

A. **Scheme for internal Assessment**:
Maximum marks for written test: **20 marks**
3 internal tests, each of **I hour** duration shall be conducted every semester.
To the average of the **best two** written examinations must be added the marks scored in. The **assignment** for 5 marks.

The break up for internal assessment shall be:
Written test- 20 marks; Assignment -5 marks Total - 25 marks

B. Scheme of External Examination
3 hrs. examination at the end of the semester
A – Part : 1 mark question two - from each unit
B – Part : 5 marks question one - from each unit
C – Part : 8 marks question one - from each unit

- **Conversion of Marks into Grade Points and Letter Grades**

S.No	Marks	Letter Grade	Grade point (GP)	Performance
1	90-100	O	10	Outstanding
2	80-89	A+	9	Excellent
3	70-79	A	8	Very Good
4	60-69	B+	7	Good
5	50-59	B	6	Above Average
6	40-49	C	5	Pass
7	0-39	RA	-	Reappear
8	0	AA	-	Absent

- **Cumulative Grade Point Average (CGPA)**

$$\mathbf{CGPA} = \frac{\mathbf{\Sigma\,(GP \times C)}}{\mathbf{\Sigma C}}$$

- **GP** = Grade point, **C** = Credit
- CGPA is calculated only for Part-III courses
- CGPA for a semester is awarded on cumulative basis

- **Classification**
  a) First Class with Distinction : CGPA $\geq$ 7.5*****
  b) First Class : CGPA $\geq$ 6.0
  c) Second Class : CGPA $\geq$ 5.0 and $<$ 6.0
  d) Third Class : CGPA $<$ 5.0

SOFTWARE ENGINEERING AND TESTING

OBJECTIVES:

- To understand the concepts of analysis, design and implementation of a software product.
- To have general understanding about object-oriented software engineering.
- To make students to get experience and be ready for the large scale projects in IT Industry.

Unit I

Introduction:

Evolution – From an Art form on Engineering Discipline: Evolution of an Art into an Engineering Discipline. – Software Development of Projects: Program versus Product – Emergence of Software Engineering: Early Computer Programming – High Level Language Programming – Control Flow-based Design – Data Structure Oriented Design – Object Oriented Design.

Software Life Cycle Models:- A few Basic Concepts – Waterfall Model and its Extension: Classical Waterfall Model – Iterative Waterfall Model – Prototyping Model – Evolutionary Model. – Rapid Application Development (RAD): Working of RAD. –Spiral Model.

Unit II

Software Project Management:-

Responsibilities of a Software Project Manager – Project Planning- Project Estimation Techniques-Risk Management.

Requirements Analysis and Specification:- Requirements Gathering and Analysis – Software Requirements Specifications (SRS):Users of SRS Document – Characteristics of a Good SRS Document – Important Categories of Customer Requirements – Functional Requirements – How to Identify the Functional Requirements? – Organisation of the SRS Document.

Unit III

Software Design:-

Overview of the Design Process: Outcome of the Design Process – Classification of Design Activities. – How to Characterize a good Software Design?

Function-Oriented Software Design:- Overview of SA/SD Methodology – Structured Analysis – Developing the DFD Model of a System: Context Diagram – Structured Design – Detailed Design.

Unit IV

User Interface Design:-

Characteristics of a good User Interface - Basic Concepts – Types of User Interfaces – Fundamentals of Components based GUI Development: Window System. **Coding and Testing:-** Coding – Software Documentation – Testing: Basic Concepts and Terminologies – Testing Activities. – Unit Testing – Black-box Testing:

Equivalence Class Partitioning – Boundary Value Analysis. – White-box Testing.

Unit V

Software Reliability and Quality Management:-

Software Reliability: Hardware versus Software Reliability. – Software Quality – Software Quality Management System – ISO 9000: What is ISO 9000 Certification? – ISO 9000 for Software Industry – Shortcomings of ISO 9000 Certification. – SEI Capability Maturity Model: Level 1 to Level 5. **Software Maintenance:-** Characteristics of Software Maintenance: Characteristics of Software Evolution – Software Reverse Engineering.

Text Book:

Fundamentals of Software Engineering Fourth Edition by Rajib Mall – PHI Learning Private Limited 2015.

Reference Books:

1. Software Engineering 2nd Edition by K L James PHI.
2. Software Engineering 9th Edition by Ian Sommerville - Pearson Education Asia.

DATA COMMUNICATION AND COMPUTER NETWORK

OBJECTIVES:

- To understand the concepts of data communication.
- To get through understanding of different topologies.
- To study the function of different layers.
- To get familiarized with different protocols and network components.

Unit I

Introduction

Data communication – Networks-the Internet –Protocols and Standards – **Network Models** –Layered tasks –OSI model- layers in OSI model-TCP/IP protocol Suit-Addressing.

Unit II

Physical layer

Analog and digital – Transmission Impairment –Data rate limits- Performance-Transmission mode -**BandWidth Utilization**- Multiplexing - **Transmission media** – Guided and Unguided media.

Unit III

Switching

Circuit Switched Network-Datagram Network – Virtual Circuit Network. **Using telephone and cable networks –** Telephone Network- Dial-Up Modem– Digital Subscriber lIne – Cable TV Network and Cable TV for Data transfer.

Unit IV

Data Link Layer

Error Detection and Correction- Introduction- Checksum. **Data link control**-Framing-Flow and Error Control-Protocols-Noiseless Channels-Noisy Channels. **Wired LANs**-IEEE standards-Standard Ethernet- Changes in the Standard – Fast Ethernet-Gigabit Ethernet.

Unit V

Wireless LANs: IEEE 802.11-Blue tooth. **Connecting LANs :** Connecting devices, Backbone networks. **Wireless WANs**: Cellular Telephony, Satellite Networks. **Network Layer**- IPv4 Address-IPv6 Address-Internetworking. **Transport Layer**-Process to Process delivery –UDP-TCP. **Application Layer-** Name space-

Text Book

1. Data Communication and Networking –"BEHROUZ A FOROUZAN ",The McGraw- Hill- 4 thed.

References

1. Data Communication and Computer Networks – " Prakash C.Gupta
2. Computer Networks Protocols,Standards and Interfaces- " Uyless Black
3. Data Communications and Computer Networks – Brijendra Singh

DOT NET TECHNOLOGIES

OBJECTIVES:

- To highlight the features of ASP.NET and apply it to develop various applications.
- To understand the concepts of .Net framework as a whole and the technologies that constitutes the frame work.
- To make the students to get experience and be ready for the large scale projects in IT industry.

Unit I

The .NET Platform and the Web:

The Web Client/Server Model – Components of ASP.NET and the .NET Framework – Overview of Internet Information Server – Overview of ASP.NET – The .NET Common Language Runtime and Class Library – Managed Components in .NET – Web Services – Language Independence in the .NET Framework – COM+ Component Services and .NET – Direction and plans for .NET. **The VB.NET:** What is VB.NET? – First VB application – Variables, Constants and Operators – Modularizing Code – Functions and Subroutines – Controlling Program Flow – Handling Errors and Exceptions – Object Oriented Programming – Multithread Programming.

Unit II

Working with ASP.NET:

The features of ASP.NET – The Anatomy of ASP.NET Pages –Introducing Web Forms – VS.NET Web Applications and other IDE Basics – Separating Content and Code – the Code- Behind Feature – Application Configuration – Using HTML Forms – Using Web Controls – Web Controls for displaying and formatting data – Web Controls for creating buttons – Web control for inputting text – Web controls for selecting choices – Web controls for creating lists – Miscellaneous Basic Controls – Creating a simple ASP.NET Application – ASP.NET Page Directives – ASP.NET Rich Controls – Validation Controls – Data List Controls – User Controls - Saving state with the StateBag Object – ASP.NET Intrinsic Objects.

Unit III

Using the .NET Framework Class Library:

Common Features of the .NET Framework Class Library – Using Data Collections – Handling File Input/output and Directories – Watching the File System for Changes – Using the Windows Event Log – Working with Active Directory Services – Using Message Queues – Communicating with Servers on the Internet – Manipulating XML Data – Sending Internet E- mail.

Unit IV

Building .NET Managed Components for COM+: The concept of Managed Code Execution – The Common Language Runtime – COM+ Component Services – Using VB.NET to develop Managed Components – Serviced Components – Building VB.NET Serviced Components. **Building Web Services:** The need for Web Services – Overview of Web Services – Web Service Description Language - Web Service Wire Formats – Web Services Discovery – Creating a simple Web Service – Calling Web Services with Proxy Classes – Creating a Client for a Web Service – Managing State in Web Services – Using Transactions in Web Services.

Unit V

Accessing Data with ADO.NET: Overview of Data Access on the Web – ADO.NET: The next generation of Data-Access Technology – ADO.NET Programming Objects and Architecture – Displaying Database Data – Programming with the DataList and DataGrid Controls – Working with the DataSet and DataTable Objects – Maintaining Data Integrity with the DataRelation Class – Using Manual Database Transactions – Working with Typed DataSet Objects. **Securing .NET Applications:** Windows Security – IIS Authentication and Authorization Security – A crash course in Cryptography – Implementing Data Encryption – ASD.NET Authentication Security.

Text Book

1. ASP.NET and VB.NET Web Programming –by Matt J. Crouch, Pearson.

Reference Books

1) Upgrading Microsoft Visual Basic 6.0 to .NET - by d Robinson, Michael Bond, Robert Ian Oliver, WP Publishers.
2) Visual Basic.NET - by Shirish Chavan, Pearson

DOT NET PRACTICAL LISTING

Objective:

Learn to program in Dot Net and to develop web pages using ASP.NET

Each exercise should be completed within two hours.

It is compulsory to complete all the exercises given in the list in the stipulated time.

1. Build a homepage for XYZ Corporation using Web Controls.
2. Create a login page using user control in a web form.
3. Create a simple multiple choice questionnaire. Submit the answers and display the score.
4. Develop a project to input data through a web form to a database and retrieve the data. Use the calendar control to input date.
5. Develop a project to input data through a web form to a database and validate the data. Use the Required Field Validator and RangeValidator Controls.
6. Check whether a given word or phrase is a palindrome using Web Service.
7. Create an online photo gallery using DataList and DataGrid Controls.
8. Develop code to send email from ASP.NET

DATA STRUCTURE PRACTICAL LIST

Objective: To develop skills in implementing data structure algorithms

Each exercise should be completed within two hours.

It is compulsory to complete all the exercises given in the list in the stipulated time.

1. Search an element in a list using Binary Search.
2. Implementation of Stack- Push and Pop.
3. Implementation of Queue – Enqueue and Dequeue
4. Implementation of Binary Tree Traversals using recursion.
   a) Pre-order b) In-order c) Post-Order
5. Implementation of Breadth First Search algorithm.
6. Implementation of Depth First Search algorithm.
7. Implementation of Merge Sort
8. Implementation of Quick Sort

Mobile Computing

OBJECTIVES:

- To highlight the features of Mobile Communication.
- To understand the concepts of Mobile Protocols
- To learn about package and deploying Applications.

Unit I

Basics of Communication Technologies: Components of a Wireless Communication System – Architecture of a Mobile Telecommunication System – Wireless Local Area Networks – Bluetooth Technology. **Introduction to Mobile Computing and Wireless Networking:** What is Mobile Computing ? Mobile Computing vs. Wireless Networking – Characteristics of Mobile Computing – Structure of Mobile Computing Application-Cellular Mobile Communication –Global System for Mobile Communications (GSM) – General Packet Radio Service (GPRS) – Universal Mobile Telecommunications System (UMTS). (12L)

Unit II

MAC Protocols: Properties required of MAC Protocols – Wireless MAC Protocols : Some Issues- A taxonomy of MAC Protocols –Fixed Assignment schemes – Random Assignment Schemes –Reservation based Schemes. **Mobile Internet Protocol:** Mobile IP – Packet Delivery – Overview of Mobile IP – Desirable features of Mobile IP- Key mechanism used in Mobile IP – Route Optimization – Dynamic Host Configuration Protocol. (12L)

Unit III

Mobile Transport Layer: Overview of TCP/IP – Terminologies of TCP/IP – Architecture of TCP/IP – An overview of the operation of TCP – Application Layer Protocols of TCP – TCP in Mobile Networks. **Mobile Databases** : Issues in Transaction Processing – Transaction Processing Environment –Data dissemination – Transaction Processing in Mobile Environment – Data Replication – Mobile Transaction Models – Rollback Process – Two-Phase Commit Protocol – Query Processing – Recovery.

Unit IV

Wireless Sensor Networks: WSN vs. MANET – Applications – Architecture of the Sensor Node – Challenges in the design of an effective WSN – Characteristics of Sensor Networks –WSN Routing Protocols –Target Coverage –Clustered Wireless Sensor Networks. **Operating Systems for Mobile Computing:** Special Constraints and requirements of Mobile O/S- A survey of Commercial Mobile Operating Systems – A Comparative study of Mobile OSs. (12L)

Unit V

Mobile Application Development and Protocols: Mobile Devices as Web Clients – WAP – J2ME – Android Application Development. **Mobile Commerce:** Applications of M-Commerce – Business-to-Business(B2B) Applications –Structure of Mobile Commerce –Pros and Cons of M-Commerce – Mobile Payment Systems.

Text Book

Fundamentals of Mobile Computing –by Prasant Kumar Pattnaik, Rajib Mall,, PHI.

Reference Books

1. Wireless and Mobile Communication, T.G. Palanivelu & R. Nakkeeran,PHI Learning Private Limited,2009
2. Wireless and Cellular Telecommunications, Third Edition William C.Y. Lee, McGraw Hill
3. Mobile Computing Technology, Applications and Service Creation, Asoke K. Talukder & Roopa R. Yavagal,TMH Publication
4. Wireless Communications and Networking made simple, Prof. Satish Jain, Vineeta Pillai, BPB Publications

PERSONALITY DEVELOPMENT

Course objective :

- To develop the skills of the professional undergraduate students for proper self expression, social communication, spoken English, correct pronunciation, voice modulation and business etiquettes.
- The students should improve their personality, communication skills and enhance their self-confidence.
- To develop the presentation skills of the undergraduate students.
- The students should be able to act with confidence, should be clear about their own personality, character and future goals.

UNIT-I:

PERSONALITY- Definition – Determinants - Personality Traits – Theories Of Personality – Importance Of Personality Development - SELF AWARENESS – Meaning – Benefits Of Self – Awareness – Developing Self- Awareness. SWOT – Meaning – Importance – Application – Components. GOAL SETTING: Meaning – Importance – Effective Goal Setting – Principles Of Goal Setting – Goal Setting At The Right Level .

UNIT-II:

SELF MONITORING- Meaning-High Self – Monitor Vs. Low-Self Monitor- Advantages & Disadvantages of Self- Monitor- Self Monitoring And Job Performance. PERCEPTION – Definition – Factors Influencing Perception – Perception Process – Errors In Perception – Avoiding Perceptual Errors. ATTITUDE- Meaning – Formation Of Attitude – Types Of Attitude – Measurement Of Attitude – Barriers To Attitude Change- Methods To Attitude Change. ASSERTIVENESS - Meaning –Assertiveness In Communication - Assertiveness Techniques – Benefits Of Being Assertive – Improving Assertiveness.

UNIT-III

TEAM BUILDING – Meaning – Types Of Teams – Importance of Team Building - Creating Effective Team. LEADERSHIP – Definition – Leadership Style – Theories Of Leadership – Qualities Of An Effect Leader. NEGOTIATION SKILLS – Meaning – Principles Of Negotiation - Types Of Negotiation – The Negotiation Process – Common Mistakes In Negotiation Process.CONFLICT MANAGEMENT – Definition – Types Of Conflict – Levels Of Conflict – Conflict Resolution – Conflict Management.

UNIT-IV

COMMUNICATION – Definition – Importance Of Communication – Process Of Communication – Communication Symbols – Communication Network – Barriers In Communication - Overcoming Communication Barriers. TRANSACTIONAL ANALYSIS –Meaning – EGO states – Types Of Transactions – Johari Window – Life Positions. EMOTIONAL INTELLIGENCE – Meaning – Components Of

Emotional Intelligence – Significance Of Managing Emotional Intelligence – How Develop Emotional Quotient. STRESS MANAGEMENT – Meaning – Sources Of Stress – Symptoms Of Stress – Consequences Of Stress – Managing Stress. Page **26** of **37**

UNIT – V:

SOCIAL GRACES – Meaning – Social Grace At Work – Acquiring Social Graces. TABLE MANNERS – Meaning – Table Etiquettes In Multicultural Environment – Do‟s And Don‟ts Of Table Etiquettes. DRESS CODE – Meaning – Dress code for selected Occasions – Dress Code for an Interview – GROUP DISCUSSION: Meaning - Personality Traits Required For Group Discussion – Process Of Group Discussion – Group Discussion Topics. INTERVIEW – Definition – Types Of Skills – Employer Expectations – Planning For The Interview – Interview Questions – Critical Interview Questions.

REFERENCE BOOKS:

1. Personality Development – Dr. S. Narayanarajan, Dr. B. Rajasekaran, G. Venkadasalapathi, V. VijueshNayaham and Herald M.Dass
2. Organisational Behaviour – Stephan P. Robbins
3. Organisational Behaviour – Jit S. Chandran
4. From campus to Corporate – Dr.K.K. Ramachandran and Dr. K.K. Karthick

Mini Project

WEB PROGRAMMING WITH PHP AND MYSQL
Practical Listing

Objective:

To develop applications in PHP using various concepts like arrays, udf's, Sessions and make the students to understand and to establish the connectivity between PHP and MySQL and develop programs to add records, retrieve records and delete records from a table.

Each exercise should be completed within two hours.

It is compulsory to complete all the exercises given in the list in the stipulated time.

1. Create a simple webpage using PHP.

2. Design a form to create an email. Store the data in a database. Validate all the input fields. Database connectivity in PHP with MySQL.

3. Create a mysql database table tbllogin with fields user name and Password. Perform all database operations like select, insert, delete, update on the table tbllogin

4. Develop a **CRUD** application, which stands for **C**reate, **R**ead, **U**pdate, **D**elete.

5. A quick example of a CRUD application would be a database of employees for a company. From the control panel, an admin would be about to add a new employee (create), view a list of employees (read), change an employee's salary (update) or remove a fired employee from the system (delete).
6. Create a table with two columns namely the name of the player and number of wickets. Create a Chart to display the data.