# M.L. Dahanukar College of Commerce

## Teaching Plan: 2024 - 25

**Department: I.T.** **Class: B.Sc.(I.T.)** **Semester: V**

**Subject: Software Project Development**

**Name of the Faculty: Farhan M. Shaikh**

| Month | Topics to be Covered | Internal Assessment | Number of Lectures |
|---|---|---|---|
| June | **Introduction to Software Project Management**: Introduction, Why is Software Project Management Important? What is a Project? Software Projects versus Other Types of Project, Contract Management and Technical Project Management, Activities Covered by Software Project Management, Plans, Methods and Methodologies, Some Ways of Categorizing Software Projects, Project Charter, Stakeholders, Setting Objectives, The Business Case, Project Success and Failure, What is Management? Management Control, Project Management Life Cycle, Traditional versus Modern Project Management Practices.<br>**Project Evaluation and Programme Management**: Introduction, Business Case, Project Portfolio Management, Evaluation of Individual Projects, Cost–benefit Evaluation Techniques, Risk Evaluation, Programme Management, Managing the Allocation of Resources within Programmes, Strategic Programme Management, Creating a Programme, Aids to Programme Management, Some Reservations about Programme Management, Benefits Management.<br>**An Overview of Project Planning** : Introduction to Step Wise Project Planning, Step 0: Select Project, Step 1: Identify Project Scope and Objectives, Step 2: Identify Project Infrastructure, Step 3: Analyze Project Characteristics, Step 4: Identify Project Products and Activities, Step 5: Estimate Effort for Each Activity, Step 6: Identify Activity Risks, Step 7: Allocate Resources, Step 8: Review/Publicize Plan, Steps 9 and 10: Execute Plan/Lower Levels of Planning | | 10 |

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| July | **Selection of an Appropriate Project Approach:** Introduction, 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, Other Ways of Categorizing Prototypes, Incremental Delivery, Atern/Dynamic Systems Development Method, Rapid Application Development, Agile Methods, Extreme Programming (XP), Scrum, Lean Software Development, Managing Iterative Processes, Selecting the Most Appropriate Process Model.<br>**Software Effort Estimation:** Introduction, Where are the Estimates Done? Problems with Over- and Under-Estimates, The Basis for Software Estimating, Software Effort Estimation Techniques, Bottom-up Estimating, The Top-down Approach and Parametric Models, Expert Judgement, Estimating by Analogy, Albrecht Function Point<br>Analysis, Function Points Mark II, COSMIC Full Function Points, COCOMO II: A Parametric Productivity Model, Cost Estimation, Staffing Pattern, Effect of Schedule Compression, Capers Jones Estimating Rules of Thumb.<br>**Activity Planning:** Introduction, Objectives of Activity Planning, When to Plan, Project Schedules, Projects and Activities, Sequencing and Scheduling Activities, Network Planning Models, Formulating a Network Model, Adding the Time Dimension, The Forward Pass, Backward Pass, Identifying the Critical Path, Activity Float, Shortening the Project Duration, Identifying Critical Activities, Activity-on-Arrow Networks. | Solving Numericals related to the concept of FPA, COCOMO II, Estimation by analogy, Function Points Mark II. Calculation of float in the project, drawing Activity-on-node networks, activity-on-arrow networks.<br>Solving Numericals related to Forwards Pass, Backward Pass | 12 |
| August | **Risk Management**: Introduction, Risk, Categories of Risk, Risk Management Approaches, A Framework for Dealing with Risk, Risk Identification, Risk Assessment, Risk Planning, Risk Management, Evaluating Risks to the Schedule, Boehm's Top 10 Risks and Counter Measures, Applying the PERT Technique, Monte Carlo Simulation, Critical Chain Concepts.<br>**Resource Allocation**: Introduction, Nature of Resources, Identifying Resource Requirements, Scheduling Resources, Creating Critical Paths, Counting the Cost, Being Specific, Publishing the Resource Schedule, Cost Schedules, Scheduling Sequence. | Solving Numericals related to Risk Matrix and Risk management. Calculation of Resource Schedule and Cost Schedule using histogram and bar charts, Drawing Gantt charts, PERT charts, Calculation of EVA, Using PERT in risk management. | 12 |

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| | **Monitoring and Control**: Introduction, Creating the Framework, Collecting the Data, Review, Visualizing Progress, Cost Monitoring, Earned Value Analysis, Prioritizing Monitoring, Getting the Project Back to Target, Change Control, Software Configuration Management (SCM).<br>**Managing Contracts**: Introduction, Types of Contract, Stages in Contract Placement, Typical Terms of a Contract, Contract Management, Acceptance. | | |
| September | **Managing People in Software Environments**: Introduction, Understanding Behaviour, Organizational Behaviour: A Background, Selecting the Right Person for the Job, Instruction in the Best Methods, Motivation, The Oldham–Hackman Job Characteristics Model, Stress, Stress Management, Health and Safety, Some Ethical and Professional Concerns.<br>**Working in Teams:** Introduction, Becoming a Team, Decision Making, Organization and Team Structures, Coordination Dependencies, Dispersed and Virtual Teams, Communication Genres, Communication Plans, Leadership.<br>**Software Quality :** Introduction, The Place of Software Quality in Project Planning, Importance of Software Quality, Defining Software Quality, Software Quality Models, ISO 9126, Product and Process Metrics, Product versus Process Quality Management, Quality Management Systems, Process Capability Models, Techniques to Help Enhance Software Quality, Testing, Software Reliability, Quality Plans.<br>**Project Closeout:** Introduction, Reasons for Project Closure, Project Closure Process, Performing a Financial Closure, Project Closeout Report. | | 12 |
| October | Revision and Doubt solving | | 2 |
| | **Total Lectures** | | **48** |

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# M.L. Dahanukar College of Commerce

## Teaching Plan: 2024 - 25

**Department: I.T.** **Class: T.Y.B.Sc.(I.T.)** **Semester:V**

**Subject: Internet of Things**

**Name of the Faculty: Ms. Shruti Save**

| Month | Topics to be Covered | Internal Assessment | Number of Lectures |
|---|---|---|---|
| **June** | **Unit I**<br>**The Internet of Things**: An Overview: The Flavour of the Internet of Things, The "Internet" of "Things", The Technology of the Internet of Things, Enchanted Objects, Who is Making the Internet of Things?<br>**Design Principles for Connected Devices**: Calm and Ambient Technology, Magic as Metaphor, Privacy, Keeping Secrets, Whose Data Is It Anyway? Web Thinking for Connected Devices, Small Pieces, Loosely Joined, First-Class Citizens on The Internet, Graceful Degradation, Affordances<br>**Internet Principles**: Internet Communications: An Overview, IP, TCP, The IP Protocol Suite (TCP/IP), UDP, Static IP Address Assignment, Dynamic IP Address Assignment, IPv6, MAC Addresses, TCP and UDP Ports, HTTP Ports, Other Common Ports, Application Layer Protocols, HTTP, HTTPS: Encrypted HTTP, Other Application Layer Protocols. | | 15 |
| **July** | **Unit II**<br>**Thinking About Prototyping**: Sketching, Familiarity, Costs versus Ease of Prototyping, Prototypes and Production, Changing Embedded Platform, Physical Prototypes and Mass Personalisation, climbing into the Cloud, Open Source versus Closed Source, Why Closed? Why Open? Mixing Open and Closed Source, Closed Source for Mass Market Projects, Tapping into the Community. | | 24 |

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| | **Prototyping Embedded Devices**: Electronics, Sensors, Actuators, Scaling Up the Electronics, Embedded Computing Basics, Microcontrollers, System-on-Chips, Choosing Your Platform, Arduino, developing on the Arduino, Some Notes on the Hardware, Openness, Raspberry Pi, Cases and Extension Boards, Developing on the Raspberry Pi, Some Notes on the Hardware, Openness.<br>**UNIT III**<br>**Prototyping the Physical Design**: Preparation, Sketch, Iterate, and Explore, Nondigital Methods, Laser Cutting, Choosing a Laser, 3D Printing, Types of 3D Printing, Software, CNC Milling, Repurposing/Recycling.<br>**Prototyping Online Components**: Security, implementing the API, Using Curl to Test, Going Further, Real-Time Reactions, Polling, Comet, Other Protocols.<br>**UNIT IV :**<br>**Techniques for Writing Embedded Code**: Memory Management, Types of Memory, Making the Most of Your RAM, Performance and Battery Life, Libraries, Debugging | | |
| **August** | **UNIT IV :**<br>Business Models: A Short History of Business Models, Space and Time, From Craft to Mass Production, The Long Tail of the Internet, Learning from History, The Business Model Canvas, Who Is the Business Model For? Models, Make Thing, Sell Thing, Subscriptions, Customisation, be a Key Resource, Provide Infrastructure: Sensor Networks, take a Percentage, Funding an Internet of Things Startup, Hobby Projects and Open Source, Venture Capital, Government Funding, Crowdfunding. | | 10 |

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| | **UNIT V :**<br>Moving to Manufacture: What Are You Producing? Designing Kits, Designing Printed, Software Choices, The Design Process, Manufacturing Printed Circuit Boards, Etching Boards, Milling Boards. Assembly, Testing, Mass-Producing the Case and Other Fixtures, Certification, Costs, Scaling Up Software, Correctness and Maintainability, Performance, User Community.<br>**Ethics:** Characterizing the Internet of Things, Privacy, Control, Disrupting Control, Crowdsourcing, Environment, Physical Thing, Electronics, Internet Service, Solutions, The Internet of Things as Part of the Solution, Cautious Optimism, The Open Internet of Things Definition. | | |

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# M.L. Dahanukar College of Commerce

## Teaching Plan: 2024 - 25

**Department: I.T.** **Class: B.Sc.(I.T.)** **Semester: V**

**Subject: Advance Web Development**

**Name of the Faculty: Snehal S. Borlikar**

| Month | Topics to be Covered | Internal Assessment | Number of Lectures |
|---|---|---|---|
| JUNE | Unit 1: Introduction to .net<br>C# language, Type objects and Namespace<br>Unit 2: Web Form Fundamentals | | 13 |
| JULY | Unit 3: Error handling, logging, State Management, Master pages<br>Unit 4: ADO.net Fundamentals | | 15 |
| AUGUST | Unit 4: ADO.net Fundamentals, Data Controls<br>Unit 5: Understanding Security Requirements, Introduction to Authentication and Authorization | | 10 |
| SEPTEMBER | Unit 5: nuggets, bootstrap, security fundamentals, Ajax. | | 10 |

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# M.L.Dhanukar College of Commerce

## Teaching Plan: 2024 - 25

**Department: B.Sc.I.T.** **Semester: V**

**Class: T.Y.B.Sc.I.T.** **Div: A/B**

**Subject: Artificial Intelligence and Applications**

**Name of the Faculty: Mrs. Snehal Borade**

| Month | Topics to be Covered | Internal Assessment | Number of Lectures |
|---|---|---|---|
| June | **Unit I :-Introduction:** What is Artificial Intelligence? Foundations of AI, history, the state of art AI today. **Intelligent Agents:** agents and environment, good behaviour, nature of environment, the structure of agents.<br><br>**Unit II:- Solving Problems by Searching:** Problem solving agents, searching for solutions, uninformed search, informed search strategies, heuristic functions. | | 12 |
| July | **Beyond Classical Search:** local search algorithms, searching with non-deterministic action, searching with partial observations, online search agents and unknown environments.<br>**Unit III:- Adversarial Search:** Games, optimal decisions in games, alpha-beta pruning, stochastic games, partially observable games.<br><br>**Logical Agents:** Knowledge base agents, The Wumpus world, propositional logic, propositional theorem proving.<br><br>**Probabilistic reasoning**: Uncertainty, Conditional Probability, **Bayes** Theorem. | | 12 |
| August | **Unit IV:-** | | 10 |

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| | **First Order Logic:** Need for First Order Logic, Difference between Propositional and First Order Logic. Knowledge engineering in First Order Logic.<br><br>**Inference in First Order Logic:** Unification and lifting, forward and backward chaining, resolution.<br><br>**Artificial Neural Netwok:** Architecture of ANN, merits and demerits of ANN, types of ANN. | | |
| September | **Planning:** Definition of Classical Planning, Algorithms for planning as state space search, planning graphs, other classical planning approaches, analysis of planning approaches, Time, Schedules and resources, hierarchical planning, Planning and Acting in Nondeterministic Domains, multiagent planning.<br><br>**Generative AI:** Generative AI History, AI vs Generative AI, benefits of generative AI. | | 11 |

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M.L. Dahanukar College of Commerce

# Teaching Plan: 2024 - 25

**Department: I.T.** **Class: T.Y.B.Sc.(I.T.)** **Semester:V**

**Subject: Emerging Technologies**

**Name of the Faculty: Supritha Bhandary**

| Month | Topics to be Covered | Internal Assessment | Number of Lectures |
|---|---|---|---|
| June | Big Data: Introduction to Big Data, Three Vs of Big data, usage of Big data, Big data Challenges<br>NoSQL: Definition, ACID Vs BASE, CAP Theorem, Advantages and Disadvantages, MongoDB data Model: JSON and BSON, Capped collection, Schema Evolution<br>Introducing MongoDB: Non-Relational approach, SQL comparision | | 16 |
| July | Using MongoDB shell, creating collection, MapReduce, aggregate(), Conditional operators, MongoDB document Data Model Approach. MongoDB Architecture, Standalone Deployment, Cluster Architecture, MongoDB Storage engine: Data storage Engine, data file, GridFS, Indexing, types of indexes. sharding, managing the data. | | 18 |
| August | MongoDB Limitations, MongoDB Best Practices, the End of Disk? SSD AND In-Memory Databases: Solid State Disk, the Economics of Disk, SAP HANA,<br>jQuery: Introduction, Ajax with JQuery Image Slider, JSON: Introduction, JSON Grammar, JSON Vs XML, Data Interchanging, JSON HTML, JSONP | | 14 |

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