IT 306: Software Project Management

(Elective)

Credits: 3
Lecture Hours: 48

Course Objectives

The module aims to provide an overview of the roles, responsibilities and management methods of the software project manager. The course intended to teach students how to develop approaches and styles of management for software projects.

Course Description

Software Project Basics, Tools and Techniques, Estimation, Project Schedules, Reviews, Software requirements, Design and Programming, Software Testing, Using Project management effectively, Management and leadership, Managing an outsourced Project, Process Improvement

Course Details

Unit 1: Software Project Basics **LH 5**

Introduction
Types of Software Projects
Classification of software projects: Based on software development life cycle, approach driven, maintenance, web application, agile development
Approaches to software project management
Alignment of software engineering methodology with project: management methodology
The Ad Hoc Methods-based Approach
The process-Driven Approach
Comparison between Ad Hoc Approach with the process-driven approach
Software Project Acquisition
Writing proposal, negotiating, contract acceptance

Unit 2:Tools and Techniques **LH 4**

Software project planning
Understanding the why is project needed and needs of project
Project management plan: resources, skill sets, computer systems
Risk assessment and management plan
Create the project plan

Unit 3: Estimation **LH 4**

Elements of successful estimate
Wideband Delphi Estimation
Other Estimation Techniques
Evaluation Estimation Problems

Unit 4: Project Schedules **LH 5**

Building the project schedule
The Work breakdown structure
Graphic representation of a schedule
Managing multiple projects
Schedule to manage commitments
Evaluation scheduling problems

Unit 5: Reviews **LH 4**

- Inspections
- Deskchecks
- Walkthroughs
- Code reviews
- Pair Programming
- Inspect to manage commitments

Unit 6: Software requirements **LH 5**

- Requirement elicitations
- Use Cases
- Software requirement specification
- Change control

Unit 7: Design and Programming **LH 4**

- Review the design
- Version control with subversion
- Refactoring
- Unit Testing
- Use automation

Unit 8: Software Testing **LH 4**

- Test plans and cases
- Test execution

Unit 9: Using Project management effectively **LH 4**

- Understanding change, making change successful

Unit 10 Management and leadership **LH 3**

- Take responsibility
- Doing everything out in open
- Manage the organization
- Manage the team

Unit 11: Managing an outsourced Project **LH 3**

- Prevent major sources of project failure
- Management issues in outsourced projects
- Collaborate with the Vendor

Unit 12: Process Improvement **LH 3**

- Software process improvement
- Moving forward

References

AdnerwStellman, Jennifer Greene, “Applied Software Project management”, First edition, O’Reilly Meida

Murali K. Chemuturi, Thomas M. CagelyJr, “Mastering software project management” ,J. Ross Publishing

Highes, B. and Cotterell, M., “Software Project Management”. McGraw Hill, 1999.

Conway, K., “Software Project Management”, -From Concept to Deployment”, DreamTech Press, 2001

Garmus, D. and Herron, D., “Function Point Analysis, Measurement Practices for Successful Software Projects”, Addison-Wesley, 2001.

IT 308: Data Mining and Data Warehousing

(Elective)

Credits: 3
Lecture Hours: 48

Course Objective

The objective of the course is to make learner understand foundation principles and techniques of data mining and data warehousing. Students will be able to select and use various data mining language and tools very useful for adding business value of an organization.

Course Description

Introduction, Data Preprocessing- Data Integration and Transformation, Classification, Association Analysis, Cluster Analysis, Information Privacy and Data Mining, Advanced Applications, Search engines, Data Warehouses, Capacity Planning.

Course Details

Unit 1: Introduction **LH 2**

1.1. Data Mining Origin
1.2. Data Mining & Data Warehousing basics

Unit 2: Data Preprocessing **LH 6**

2.1. Data Types and Attributes
2.2. Data Pre-processing
2.3. OLAP
2.4 Characteristics of OLAP Systems
2.5 Multidimensional View and Data cube
2.6 Data Cube Implementation
2.7 Data Cube Operations
2.8 Guidelines for OLAP Implementation

Unit 3: Classification **LH 7**

3.1. Basics and Algorithms
3.2. Decision Tree Classifier
3.3. Rule Based Classifier
3.4. Nearest Neighbor Classifier
3.5. Bayesian Classifier
3.6. Artificial Neural Network Classifier
3.7. Issues : Overfitting, Validation, Model Comparison

Unit 4: Association Analysis **LH 7**

4.1. Basics and Algorithms
4.2. Frequent Itemset Pattern & *Apriori* Principle
4.3. FP-Growth, FP-Tree
4.4. Handling Categorical Attributes

Unit 5: Cluster Analysis **LH 7**

5.1. Basics and Algorithms
5.2. K-means Clustering
5.3. Hierarchical Clustering
5.4. DBSCAN Clustering

Unit 6: Information Privacy and Data Mining **LH 3**

6.1 Basic principles to Protect Information Privacy
6.2 Uses and Misuses of Data Mining
6.3 Primary Aims of data Mining
6.4 Pitfalls of Data Mining

Unit 7: Advanced Applications **LH 3**

7.1. Web-mining: Web content mining, web usage mining
7.2. Time-series data mining

Unit 8: Search Engines **LH 3**

8.1 Characteristics of search engine
8.2 Search Engine functionality
8.3 Ranking of Web pages

Unit 9: Data Warehousing **LH 7**

9.1 Operational Data sources
9.2 ETL (Extract, Transform, Load)
9.3 Data Warehouse Processes, Managers and their functions
9.4 Data Warehouses and Data Warehouses Design
9.5 Guidelines for Data Warehouse Implementation

Unit 10 Capacity Planning **LH 3**

10.1 Calculating storage requirement, CPU requirements

Practical:

Students should practice enough on real-world data intensive problems

References:

· Pang-NingTan, Michael Steinbach and Vipin Kumar, Introductionto Data Mining, 2005, Addison-Wesley.
· Jiawei Han and Micheline Kamber, *Data Mining: Concepts and Techniques*, 2nd Edition, 2006, Morgan Kaufmann.
- G.K. Gupta, Introduction to Data Mining with Case Studies, Prentice Hall of India
- IBM, An Introduction to Building the Data Warehouse, Prentice Hall of India
- IBM, Introduction to Business Intelligence and Data Warehousing, Prentice Hall of India
- Adriaans Pieter, D. Zantige, "Data Mining", Pearson Education Asia Pub. Ltd, 2002