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**INSTITUTE**

**VISION MISSION**

# INSTITUTE VISION AND MISSION

## VISION

To be a premier technological institute striving for excellence with global perspective and commitment to the nation.

## MISSION

- To produce engineering graduates of professional quality and global perspective through Learner Centric Education.
- To establish linkages with government, industry and research laboratories to promote R&D activities and to disseminate innovations.
- To create an eco-system in the institute that leads to holistic development and ability for life-long learning..



**DEPARTMENT**



**VISION MISSION**

# DEPARTMENT VISION AND MISSION

## **Vision:**

- To evolve as a centre of academic and research excellence in the area of Computer Science and Engineering.

## **Mission :**

- To utilize innovative learning methods for academic improvement.
- To encourage higher studies and research to meet the futuristic requirements of Computer Science and Engineering.
- To inculcate Ethics and Human values for developing students with good character

**PROGRAM  
EDUCATIONAL  
OBJECTIVES,  
PROGRAM OUTCOMES  
& PROGRAM  
SPECIFIC  
OUTCOMES**

## **Program Educational Objectives (PEOs)**

Graduates of this programme will :

**PEO 1:** Adapt to evolving technology.

**PEO 2:** Provide optimal solutions to real time problems.

**PEO 3:** Demonstrate his/her abilities to support service activities with due consideration for Professional and Ethical Values.

## **Programme Specific Outcomes (PSO s):**

A graduate of the Computer Science and Engineering Program will be able to:

**PSO 1:** Use Mathematical Abstractions and Algorithmic Design along with Open Source Programming tools to solve complexities involved in Programming. [K3]

**PSO2:** Use Professional engineering practices and strategies for development and maintenance of software. [K3]

## Program Outcomes (POs):

### Computer Science Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of Mathematics, Science, Engineering Fundamentals and Concepts of Computer Science Engineering to the solution of complex Engineering problems. [K3]
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of Mathematics, Natural Sciences and Computer Science. [K4]
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specific needs with appropriate consideration for the public health and safety, and the cultural, societal and environmental considerations. [K5]
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions. [K5]
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex Engineering activities with an understanding of the limitations. [K3]
6. **The Engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional Engineering practice. [K3]
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. [K3]
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the Engineering practice. [K3]
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. [K6]
10. **Communication:** Communicate effectively on complex Engineering activities with the Engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. [K2]
11. **Project management and finance:** Demonstrate knowledge and understanding of the Engineering and Management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. [K6]
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. [K1]



# **COURSE STRUCTURE**

## **IV Year - I Semester**

<b>S. No.</b>	<b>Subjects</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credit</b>
1	Cryptography and Network Security	4	--	--	3
2	Software Architecture & Design Patterns	4	--	--	3
3	Web Technologies	4	--	--	3
4- HS	Managerial Economics and Financial	4	--	--	3
5	<b>Elective-I</b> i. Big Data Analytics ii. Information Retrieval Systems iii. Mobile Computing	4	--	--	3
6	<b>Elective-II</b> i. Cloud Computing ii. Software Project Management iii. Scripting Languages	4	--	--	3
7	Software Architecture & Design Patterns	--	--	3	2
8	Web Technologies Lab	--	--	3	2
<b>Total</b>					<b>22</b>



**LESSON  
PLANS**

# Cryptography and Network Security

Academic Year : 2020-21

Programme: B.Tech-R16

Year/ Semester: IV/I

Sections :A,B,C&D

Name of the Course: Cryptography and Network Security Course Code: C401/R1641051

## COURSE OUTCOMES (Along with Knowledge Level):

After completion of this course, the students will be able to:

CO	Course Outcome	Knowledge Level
CO1	Discuss the fundamentals of information security, attacks, services and mechanisms.	K2
CO2	Illustrate the various Symmetric key Cryptography algorithms.	K2
CO3	Demonstrate the various Asymmetric key Cryptography algorithms.	K3
CO4	Explain key distribution and management, message integrity and authentication schemes.	K2
CO5	Discuss the security at transport layer and application layer.	K2
CO6	Describe the functionalities of IP Security and System security.	K2

### **TEXT BOOKS:**

1. Cryptography and Network Security, Behrouz A Forouzan, DebdeepMukhopadhyay, (3e) Mc Graw Hill.
2. Cryptography and Network Security, William Stallings, (6e) Pearson.
3. Everyday Cryptography, Fundamental Principles & Applications, Keith Martin, Oxford

### **REFERENCE BOOKS:**

1. Network Security & Cryptography, Bernard Menezes, Cengage,2010

### **Targeted Proficiency Level and Targeted level of Attainment (for each Course Outcome):**

Course Outcome	Targeted Proficiency Level (% of Marks)	Targeted level of Attainment (% Students)
1	60	60
2	60	60
3	60	60
4	60	60
5	60	60
6	60	60

**Unit 1**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	<b>CO 1</b>	<b>Dissemination of Department Vision, Mission, PEOs, POs, PSOs, COs</b> ,Introduction,describe Security Goals	K1	1	Lecture	PPT
2		Explain about Security attacks	K2	1	Lecture	PPT
3		Distinguish security services and mechanisms	K2	1	Lecture	PPT
4		Discuss mathematics of cryptography	K2	1	Lecture	PPT
5		Discuss Integer Arithmetic	K2	1	Discussion	PPT
6		Discuss Modular Arithmetic	K2	1	Lecture	PPT
7		Discuss Matrices and linear congruence	K2	1	Discussion	PPT
		<b>TOTAL</b>			<b>07</b>	

**Unit 2**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	<b>CO 2</b>	Introduction to mathematics of symmetric key cryptography	K1	3	Lecture	PPT
2		Explain Algebraic structures	K2	1	Lecture	PPT
3		Explain GF Fields	K2	1	Discussion	PPT
4		Discuss polynomials and generators	K2	1	Discussion	PPT
5		Explain modern block ciphers	K2	1	Lecture	PPT
6		Describe substitution and transposition, block ciphers as permutations	K1	2	Lecture	PPT
7		Discuss S-boxes, modern stream ciphers	K2	1	Lecture	PPT
8		Demonstrate DES	K2	2	Lecture	PPT
9		Demonstrate AES	K2	2	Lecture	PPT
	<b>TOTAL</b>			<b>14</b>		

**Unit 3**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	<b>CO 3</b>	Discuss Prime, Primality Testing, Numbers, Modular Arithmetic	K2	1	Lecture	PPT
2		Demonstrate Factorization, Fermat's and Euler's Theorems	K2	1	Lecture	PPT
3		Explain The Chinese Remainder theorem	K2	1	Lecture with discussion	PPT
4		Discuss quadratic congruence	K2	1	Lecture	PPT
5		Describe Exponentiation and logarithm	K2	1	Lecture	PPT
6		Illustrate RSA Algorithm	K3	1	Lecture	PPT
7		Illustrate Diffie Hellman Key Exchange	K3	1	Lecture	PPT
8		Illustrate Rabin encryption & decryption	K3	1	Lecture	PPT
9		Illustrate Elgamal encryption & decryption	K3	1	Lecture	PPT
10		Illustrate Elliptic Curve Cryptography	K3	1	Lecture	PPT
		<b>TOTAL</b>		<b>10</b>		

**Unit 4**

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	<b>CO 4</b>	Discuss about Message Integrity, Message Authentication	K2	1	Lecture	PPT
2		Explain Secure Hash Algorithm	K2	2	Lecture With discussion	PPT
3		Distinguish HMAC & CMAC	K2	1	Discussion	PPT
4		Explain about Digital Signatures schemes	K2	2	Lecture with discussion	PPT
5		Explain attacks on digital signature	K2	1	Lecture	PPT
6		Discuss variations and applications of digital signatures	K2	1	Lecture	PPT
7		Explain symmetric key distribution	K2	1	Lecture	PPT
8		Demonstrate Kerberos	K2	1	Lecture	PPT

9		Discuss symmetric key agreement	K2	1	Lecture	PPT
10		Explain Public key distribution	K2	2	Lecture	PPT
		<b>TOTAL</b>		<b>13</b>		

### Unit 5

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 5	Explain Electronic Mail Security	K2	1	Lecture	PPT
2		Discuss pretty good privacy(PGP)	K2	1	Lecture	PPT
3		Discuss about S/MIME	K2	2	Lecture With Discussion	PPT
4		Explain about Secure Socket Layer (SSL)	K2	2	Lecture	PPT
5		Explain Transport Layer Security(TLS)	K2	1	Lecture	PPT
		<b>TOTAL</b>			<b>07</b>	

### Unit 6

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 6	Outline IP Security Overview	K1	1	Lecture	PPT
2		Explain Two security protocols (AH,ESP)	K2	2	Lecture	PPT
3		Discuss security association, security policy	K2	1	Lecture	PPT
4		Explain Internet key exchange mechanism	K2	1	Lecture	PPT
5		Discuss about system security	K2	1	Lecture	PPT
		<b>TOTAL</b>			<b>06</b>	

**Total No. of Classes: 57**

# **SOFTWARE ARCHITECTURE & DESIGN PATTERNS**

**Academic Year : 2020-21**

**Programme: B.Tech-R16**

**Year/ Semester: IV/I**

**Sections :A,B,C&D**

**Name of the Course: SOFTWARE ARCHITECTURE & DESIGN PATTERNS**

**Course Code: R1641052/C-402**

## **COURSE OUTCOMES (Along with Knowledge Level):**

**After completion of this course, the students will be able to:**

CO1. Define various Architecture reference models and Quality Attributes. (K1)

CO2. Explain the mechanism of Evaluating Architecture. (K2)

CO3. Apply various principles in selecting and using Patterns. (K3)

CO4. Construct Structural Patterns for a given Scenario. (K3)

CO5. Construct Behavioral Patterns for a given Scenario. (K3)

CO6. Examine various Case Studies in utilizing Software Architectures. (K3)

## **Text Books suggested:**

**T1. Software Architecture in Practice, Second Edition, Len Bass, Paul Clements & Rick Kazman, Pearson Education, 2003.**

**T2. Design Patterns, Erich Gamma, Pearson Education, 1995.**

## **Reference Books suggested:**

R1. Beyond Software Architecture, Luke Hohmann, Addison Wiley, 2003.

R2. Software Architecture, David M.Dikel, David Kane and James R.Wilson, Prentice Hall PTR, 2001.

R3. Software Design, David Budgen, Second Edition, Pearson Education, 2003.

R4. Head First Design Patterns, Eric Freeman & Elisabeth Freeman, O'REILLY, 2007.

R5. Design Patterns in Java, Steven John Metsker & William C. Wake, Pearson Education, 2006.

R6. J2EE Patterns, Deepak Alur, John Crupi & Dan Malks, Pearson Education, 2003.

R7. Design Patterns in C#, Steven John metsker, Pearson Education, 2004.

R8. Pattern Oriented Software Architecture, F. Buschmann & Others, John Wiley & Sons.

**Targeted Proficiency Level and Targeted level of Attainment (for each Course Outcome):**

<b>Course Outcome</b>	<b>Targeted Proficiency Level (% of Marks)</b>	<b>Targeted level of Attainment (% Students)</b>
402.1	60	60
402.2	60	60
402.3	65	65
402.4	65	65
402.5	65	65
402.6	60	60

**Unit-1**

<b>S.No</b>	<b>Course Outcome</b>	<b>Intended Learning Outcomes (ILO)</b>	<b>Knowledge Level of ILO</b>	<b>No. of Hours</b>	<b>Pedagogy</b>	<b>Teaching aids</b>
1	<b>CO1</b>	Introduction to OBE, Dissemination of Vision, Mission of the Dept.and PEOs,POs & PSOs of the Programme.		1	Lecture	BB
2		Describe the Architecture Business Cycle.	K1	1	Lecture	BB
3		Define Software Architecture.	K1	1	Lecture	BB
4		Outline various Architectural Patterns	K1	1	Lecture	BB+ICT
5		State Reference Models and Architectures	K1	1	Lecture	BB
6		Outline architectural Structures and Views.	K1	1	Lecture	BB+ICT
7		Define Quality Attributes, Describe the steps of Achieving them	K1	2	Lecture with discussion	BB+ICT
8		Describe Architectural Styles and Patterns.	K1	1	Lecture with discussion	BB+ICT



9		State the steps of Designing, Documenting and Reconstructing the Software Architecture.	K1	2	Lecture with discussion	BB
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### Unit- 2

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO2	Explain the importance of Software Evaluation.	K2	1	Lecture	BB
2		Infer the role of Architecture Design in Decision Making	K2	1	Lecture with Discussion	BB
3		Describe the Models – ATAM, CBAM	K1	2	Lecture with Discussion	BB+ICT
4		Define Software Product Lines	K1	1	Lecture	BB
5		Interpret the steps of Building Systems from off the shelf components.	K2	2	Lecture with Discussion	BB+ICT
6		Infer the future of Software Architecture	K2	1	Lecture with Discussion	BB+ICT

### Unit-3

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO3	Define Pattern Descriptions	K1	1	Lecture	BB
2		Describe the steps of Organizing Catalogues and their role in solving Design Problems	K2	2	Lecture with Discussion	BB + ICT
3		Apply various principles in Selecting and Using Patterns	K3	2	Lecture with Discussion	BB + ICT

4		Construct an Abstract factory Pattern for a given Scenario	K3	1	Lecture with Discussion	BB+ ICT
5		Describe the Builder Pattern using an example.	K2	1	Lecture with Discussion	BB+ ICT
6		Describe the Factory Method Pattern using an example.	K2	1	Lecture with Discussion	BB+ ICT
7		Describe the Prototype Pattern and its consequences.	K2	1	Lecture with Discussion	BB+ ICT
8		Explain the Singleton Pattern using an example.	K2	1	Lecture with Discussion	BB+ ICT

#### Unit- 4

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	<b>CO4</b>	Describe Adapter Structural Pattern.	K1	1	Lecture	BB
2		Explain Bridge Structural Pattern.	K2	1	Lecture with Discussion	BB+ ICT
3		Construct Composite Structural Pattern for a given scenario.	K3	1	Lecture with Discussion	BB+ ICT
4		Construct Decorator Pattern for a given scenario.	K3	1	Lecture with Discussion	BB+ ICT
5		Explain the Façade Structural Pattern.	K2	1	Lecture with Discussion	BB+ ICT
6		State and explain the Flyweight Structural Pattern.	K2	2	Lecture with Discussion	BB+ ICT
7		Describe PROXY Structural Pattern.	K1	1	Lecture	BB

**Unit-5**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO5	State and explain the Chain of Responsibility Behavioural Pattern.	K1	1	Lecture	BB
2		Describe the Command Behavioural Pattern.	K2	1	Lecture with Discussion	BB + ICT
3		Develop Interpreter Behavioural Pattern for a given example.	K3	1	Lecture with Discussion	BB + ICT
4		Construct Iterator Behavioural Pattern for a given example.	K3	1	Lecture with Discussion	BB + ICT
5		Construct Mediator Behavioural Pattern for a given example.	K3	1	Lecture with Discussion	BB + ICT
6		Explain the Memento Behavioural Pattern.	K2	1	Lecture with Discussion	BB + ICT
7		Describe Observer, State and Strategy Behavioural Patterns in detail.	K1	3	Lecture with Discussion	BB + ICT
8		State and explain Template Method and Visitor Behavioural Pattern.	K1	2	Lecture	BB

**Unit-6**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO6	Examine the A-7E Case Study in utilizing architectural structures.	K3	1	Lecture with practical	BB + ICT
2		Analyze the World Wide Web Case Study in understanding Interoperability.	K3	1	Lecture with practical	BB + ICT

3	Explain the design steps of Air Traffic Control in achieving high availability.	K2	1	Lecture with Discussion	BB + ICT
4	Describe the design steps of Celsius Tech in dealing product line development.	K1	1	Lecture	BB
5	Define the design problems of a Document Editor	K1	1	Lecture	BB
6	Explain the Document Structure of a Document Editor	K2	1	Lecture with Discussion	BB
7	Explain the Formatting steps of a Document Editor	K2	1	Lecture with Discussion	BB + ICT
8	State the steps of Embellishing the User Interface.	K1	1	Lecture	BB
9	Demonstrate the Supporting steps of Multiple Look-and-Feel Standards, Multiple Window Systems.	K3	2	lecture with Practical	BB + ICT
10	Describe the functionalities – User Operations, Spelling Checking, Hyphenation	K1	2	Lecture	BB

**Total No. of Classes: 60**

## **WEB TECHNOLOGIES**

**Academic Year : 2020-21**

**Year/ Semester: IV/I**

**Name of the Course: WEB TECHNOLOGIES**

**Programme: B.Tech-R16**

**Sections :A,B,C&D**

**Course Code: R1641053**

### **COURSE OUTCOMES (Along with Knowledge Level):**

**After completion of this course, the students will be able to:**

- CO 1. Demonstrate the Basics of HTML tags, Cascading style sheets (K3)
- CO 2. Demonstrate the basics of Java script,DHTML (K3)
- CO 3. Prepare XML, Document type Definition, XML schemas, Document object model, XSLT, DOM and SAX.Apply AJAX Approach (K3)
- CO 4. Apply PHP to Work with forms and Databases such as MySQL (K3)
- CO 5. Apply PERL to Retrieve documents from the web (K3)
- CO 6. Apply Ruby to Practical Web Applications. (K3)

### **TEXTBOOKS:**

1. Programming the World Wide Web, Robert W Sebesta, 7ed, Pearson.
2. Web Technologies, Uttam K Roy, Oxford
3. The Web Warrior Guide to Web Programming, Bai, Ekedahl, Farrelll, Gosselin, Zak, Karparhi, MacIntyre, Morrissey, Cengage.

### **REFERENCES:**

1. Ruby on Rails Up and Running, Lightning fast Web development, Bruce Tate, Curt Hibbs, Oreilly ( 2006).
2. Programming Perl, 4ed, Tom Christiansen, Jonathan Orwant, Oreilly (2012)
3. Web Technologies, HTML< JavaScript, PHP, Java, JSP, XML and AJAX, Black book, Dream Tech.
4. An Introduction to Web Design, Programming, Paul S Wang, Sanda S Katila, Cengage.

### **Targeted Proficiency Level :**

<b>Course Outcome</b>	<b>Targeted Proficiency Level (% of Marks)</b>
1	60
2	60
3	60

4	60
5	60
6	60

**Targeted Level of Attainment:**

<b>Course Outcome</b>	<b>Targeted level of Attainment (% Students)</b>
1	60
2	60
3	60
4	60
5	60
6	60

**LESSON PLAN:**

<b>SNo</b>	<b>Course Outcome</b>	<b>Intended Learning Outcomes (ILO)</b>	<b>Knowledge Level of ILO</b>	<b>No. of Hours</b>	<b>Pedagogy</b>	<b>Teaching aids</b>
1	<b>CO1</b>	Describe HTML tags	K1	3	Lecture	BB
		Explain Lists, Tables, Images	K2	3	Lecture	BB+ICT
		Explain Forms, Frames	K2	2	Lecture	BB+ICT
		Explain HTML5	K2	2	Lecture	BB+ICT
		Define Cascading style sheets	K1	3	Lecture	BB
2	<b>CO2</b>	Explain Objects, Primitives Operations and Expressions of JavaScript	K2	3	Lecture	BB
		Explain Output and Keyboard Input, Control Statements	K2	2	Lecture	BB
		Explain Object Creation and Modification, Arrays, Functions	K2	2	Lecture	BB
		Explain Constructors, Pattern Matching using Regular Expressions	K2	2	Lecture	BB
		Apply Positioning Moving and Changing Elements with DHTML	K3	2	Lecture	BB+ICT
3	<b>CO3</b>	Explain XML, Document type Definition, XML schemas	K2	3	Lecture	BB
		Demonstrate Document object model, XSLT, DOM and SAX.	K3	3	Lecture with Discussion	BB

		Explain AJAX	K2	1	Lecture	BB+ICT
		Apply Integrating PHP and AJAX	K3	2	Lecture with Discussion	BB+ICT
4	CO4	Explain Creating PHP script,	K2	2	Lecture	BB
		Demonstrate Running PHP script. Working with variables and constants: Using variables, Using constants, Data types, Operators	K3	3	Lecture with Discussion	BB+ICT
		Classify Conditional statements, Control statements	K2	2	Lecture	BB
		Describe Arrays, functions	K2	2	Lecture	BB
		Apply forms and Databases such as mySql, Oracle, SQL Sever.	K3	2	Lecture	BB+ICT
5	CO5	Explain PERL Operators and IF Statements	K2	3	Lecture	BB+ICT
		Describe Program Design and Control Structures	K2	2	Lecture	BB
		Explain Arrays,Hashes and File Handling	K2	2	Lecture	BB
		Describe Regular Expressions,Subroutines	K2	1	Lecture	BB+ICT
		Demonstrate Retrieving Documents from the web with PERL	K3	1	Lecture	BB+ICT
6	CO6	Explain Ruby, variables, types, simple I/O	K2	2	Lecture	BB
		Demonstrate Control, Arrays, Hashes, Methods, Classes	K3	2	Lecture	BB+ICT
		Iterators, Pattern Matching	K3	1	Lecture	BB
		Explain Overview of Rails	K2	2	Lecture	BB+ICT

**Total No. of Classes: 60**

## Mobile Computing

**Academic Year : 2020-21**

**Year/ Semester: IV/I**

**Name of the Course: Mobile Computing**

**Programme: B.Tech-R16**

**Sections :A,B,C&D**

**Course Code: C-405**

### **COURSE OUTCOMES (Along with Knowledge Level):**

**After completion of this course, the students will be able to:**

- CO.1 Describe mobile computing Paradigm and its applications,limitations. [K2]
- CO.2 Discuss wireless networks. [K2]
- CO.3 Demonstrate various layers of mobile networks. [K3]
- CO.4 Develop mobile transport layer and database issues. [K3]
- CO.5 Illustrate different data delivery methods and synchronization protocols . [K3]
- CO.6 Demonstrate mobile adhoc networks and related concepts. [K3]

### **TEXT BOOKS:**

1. Jochen Schiller, "Mobile Communications", Addison-Wesley, Second Edition, 2009.
2. Raj Kamal, "Mobile Computing", Oxford University Press, 2007, ISBN: 0195686772

### **REFERENCE BOOKS:**

1. ASOKE K TALUKDER, HASAN AHMED, ROOPA R YAVAGAL, "Mobile Computing, Technology Applications and Service Creation" Second Edition, Mc Graw Hill.
2. UWE Hansmann, LotharMerk, Martin S. Nocklous, Thomas Stober, "Principles of Mobile Computing," Second Edition, Springer.

**Targeted Proficiency Level and Targeted level of Attainment (for each Course Outcome):**

<b>Course Outcome</b>	<b>Targeted Proficiency Level (% of Marks)</b>	<b>Targeted level of Attainment (% Students)</b>
1	65	65
2	65	60
3	65	60
4	60	60
5	60	60
6	60	60



**CO 1**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 1	Describe Mobile Communications	K1	1	Lecture	BB
2		Describe Mobile Computing – Paradigm, Promises/Novel Applications	K1	1	Lecture	BB
3		Mobile computing Impediments and Architecture .	K1	1	Lecture	BB
4		Discuss Mobile and Handheld Devices	K2	1	Lecture With Discussion	BB
5		Limitations of Mobile and Handheld Devices.	K2	1	Lecture With Discussion	BB
6		Discuss GSM – Services, System Architecture	K2	1	Lecture	BB
7		Radio Interfaces, Protocols, Localization, Calling, Handover	K2	1	Lecture	BB
8		Security, New Data Services, GPRS.	K2	1	Lecture	BB

**CO 2**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 2	Describe (Wireless) Medium Access Control (MAC), Wireless.	K1	1	Lecture	BB
2		Explain Motivation for a specialized MAC.	K2	2	Lecture with Discussion	BB
3		Describe SDMA	K1	1	Lecture with Discussion	PPT
4		Describe FDMA.	K1	1	Lecture with Discussion	BB
5		Discuss TDMA.	K2	1	Lecture	BB+ICT
6		Explain CDMA.	K2	2	Lecture with Discussion	BB+ICT
7		Discuss Wireless LAN.	K2	1	Lecture with Discussion	BB+CRE

					and in class Assignment	
8		Discuss Wireless LAN.	K2	1	Lecture with Discussion and in class Assignment	BB+CRE

### CO 3

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 3	Describe Mobile Network Layer: IP and Mobile IP.	K1	1	Lecture	BB
2		Illustrate Network Layers, Packet Delivery and Handover Management.	K3	3	Lecture	BB
3		Explain Location Management, Registration.	K2	1	Lecture with Discussion	BB
4		Discuss Tunneling and Encapsulation.	K2	2	Lecture	BB+ICT
5		Demonstrate Route Optimization.	K3	2	Lecture with Discussion	BB+ICT
6		Demonstrate DHCP.	K3	2	Lecture with Discussion	BB+ICT

### CO 4

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Describe Mobile Transport Layer.	K1	1	Lecture	BB
2		Demonstrate Conventional TCP/IP Protocols.	K3	2	Lecture with Discussion	BB
3		Discuss Indirect TCP.	K2	3	Lecture with Discussion	BB
4		Demonstrate Snooping TCP.	K3	2	Lecture with Discussion	BB+ICT

5	CO 4	Demonstrate Mobile TCP, Other Transport Layer Protocols for Mobile Networks.	K3	3	Lecture with Discussion	BB+ICT
6		Explain Database Issues Database Hoarding & Caching Techniques.	K2	1	Lecture with Discussion	BB+ICT
7		Discuss Client-Server Computing & Adaptation.	K2	1	Lecture with Discussion	BB+ICT
8		Discuss Transactional Models, Query processing, Data Recovery Process & QoS Issues.	K2	1	Lecture with Discussion	BB+ICT

#### CO 5

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 5	Describe Data Dissemination and Synchronization.	K1	1	Lecture	BB
2		Discuss Classification of Data Delivery Mechanisms.	K2	2	Lecture with Discussion	BB
3		Explain Communications Asymmetry, Data Dissemination.	K2	2	Lecture	BB
4		Compute Broadcast Models, Selective Tuning and Indexing Methods.	K3	2	Lecture with Discussion	BB
5		Discuss Data Synchronization – Introduction, Software, and Protocols.	K2	1	Lecture with Discussion	BB

**CO 6**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 6	Describe Mobile Ad hoc Networks (MANETs) Introduction.	K1	1	Lecture	BB
2		Discuss Applications & Challenges of a MANET, Routing.	K2	2	Lecture with Discussion	BB
3		Explain Classification of Routing Algorithms, Algorithms such as DSR, AODV, DSDV, etc. , Mobile Agents, Service Discovery.	K2	2	Lecture with Discussion	BB
4		Show Protocols and Platforms for Mobile Computing :WAP.	K3	1	Lecture with Discussion	BB
5		Show Bluetooth, XML, J2ME, Java Card, PalmOS, Windows CE.	K3	2	Lecture with Discussion	BB
6		Explain SymbianOS, Linux for Mobile Devices, Android.	K2	1	Lecture with Discussion	BB

**Total No. of Classes: 60**

## Software Project Management

**Academic Year : 2020-21**

**Programme: B.Tech-R16**

**Year/ Semester: IV/I**

**Sections :A,B,C&D**

**Name of the Course: Software Project Management**

**Course Code: C406**

### **COURSE OUTCOMES (Along with Knowledge Level):**

**After completion of this course, the students will be able to:**

CO1. Define Software Project Management Terminology and Methodology. (K1)

CO2. Describe various Software Lifecycle Models, Process Artifacts and Workflows. (K2)

CO3. Explain various Effort Estimation Techniques for Project Planning. (K2)

CO4. Demonstrate Risk Management Concepts. (K3)

CO5. Develop Project Status Reports for tracking and controlling Software Deliverables. (K3)

CO6. Describe Software Quality Metrics. (K2)

### **Text Books suggested:**

T1. Software Project Management, Bob Hughes & Mike Cotterell, TMH

T2. Software Project Management, Walker Royce, Pearson Education, 2005.

T3. Software Project Management in Practice, Pankaj Jalote, Pearson

### **Reference Books suggested:**

R1. Software Project Management, Joel Henry, Pearson Education.

### **Targeted Proficiency Level and Targeted level of Attainment (for each Course Outcome):**

<b>Course Outcome</b>	<b>Targeted Proficiency Level (% of Marks)</b>	<b>Targeted level of Attainment (% Students)</b>
406.1	65	60
406.2	65	60
406.3	60	60
406.4	60	60
406.5	60	60
406.6	65	60
406	63	60

**Unit-1**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Dissemination of Vision, Mission of the Dept and PEOs, Pos,& PSOs of the Programme			Lecture	BB
2	CO1	Define Software Project Management Terminology.	K1	1	Lecture	BB
3		Describe software project management activities.	K1	1	Lecture	BB
4		Describe various challenges in software Projects	K1	1	Lecture	BB
5		Identify types of stake holders, objectives and goals in software project management.	K1	2	Lecture	BB
6		Describe Stepwise project planning and project scope.	K1	1	Lecture	BB
7		Identify Project products and Deliverables.	K1	1	Lecture	BB
8		Outline Effort Estimation and Infrastructure.	K1	1	Lecture	BB+ICT

**Unit- 2**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	<b>CO2</b>	Outline various Life Cycle Models.	K1	1	Lecture	BB
2		Classify technologies: Process Models	K2	2	Lecture	BB
3		Describe Software Prototyping.	K2	1	Lecture	BB
4		Explain Iterative and Incremental Process Framework.	K2	1	Lecture	BB
5		Classify Project Life Cycle Phases.	K2	1	Lecture	BB+ICT
6		Explain various Artifacts of Software Process.	K2	2	Lecture	BB
7		Explain Process Workflows.	K2	2	Lecture	BB

**Unit-3**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	<b>CO3</b>	Describe Software Effort Estimation Techniques.	K1	1	lecture	BB
2		Discuss Function Point Analysis.	K2	1	lecture with Discussion	BB
3		Explain SLOC: Software Metrics and Measurements.	K2	2	lecture	BB + ICT
4		Describe COCOMO: A Parametric Model	K2	2	lecture	BB + ICT
5		Discuss Use-Case based Estimation Techniques.	K2	1	lecture with Discussion	BB
6		Explain various Activity Identification Approaches: Sequencing and Scheduling Activities.	K2	2	lecture	BB
7		Discuss Network Planning Models in Project Scheduling: Critical Path Analysis.	K2	2	lecture with Discussion	BB



**Unit- 4**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO4	Describe various Risk Management Categories.	K1	2	Lecture	BB
2		Discuss concepts of Risk Identification, Assessment, Planning and Management.	K2	2	Lecture with discussion	BB+ICT
3		Demonstrate PERT Technique.	K3	1	Lecture	BB
4		Explain Monte Carlo Method for project estimation.	K2	2	Lecture	BB

**Unit-5**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO5	Describe the concept of Project Monitoring and Control.	K1	1	lecture	BB
2		Explain Progress Monitoring, and Cost Monitoring in Project Control.	K2	2	lecture	BB
3		Explain Earned Value Analysis in Cost Monitoring.	K2	2	lecture	BB + ICT
4		Discuss various Defects and Issues in Project Monitoring and Control.	K2	1	Lecture	BB + ICT
5		Develop Project Status Reports with Sample Case Study.	K3	1	lecture	BB
6		Discuss various types of resources and resource requirements in Software Project Management.	K2	2	lecture with discussion	BB
7		Explain the concept of Resource Allocation and Scheduling.	K2	1	Lecture with practical	BB

**Unit-6**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	<b>CO6</b>	Define Software Quality and Quality Factors.	K1	1	Lecture	BB + ICT
2		Explain Software Quality Planning.	K2	1	Lecture	BB + ICT
3		Outline various Quality Measures in Software Quality Management.	K1	2	Lecture	BB + ICT
4		Discuss Quantitative Approaches to Quality Management.	K2	2	Lecture with Discussion	BB + ICT
5		Describe Quantitative Quality Management Planning to achieve Quality Goals.	K2	1	Lecture	BB + ICT
6		Explain the concepts of product Quality and Process Quality.	K2	1	Lecture	BB + ICT
7		Describe Statistical Process Control Capability Maturity Model.	K2	2	Lecture with Discussion	BB + ICT
8		Discuss various Techniques to Enhance Software Quality.	K2	1	Lecture with Discussion	BB + ICT

**Total No. of Classes: 57**

## **Managerial Economics and Financial Analysis**

Academic Year : 2020-21

Year/ Semester: IV/I

Name of the Course: MEFA

Programme: B.Tech-R16

Sections :A,B,C&D

Course Code: C-404

### **COURSE OUTCOMES (Along with Knowledge Level):**

After completion of this course, the students will be able to:

CO	Course Outcome	Knowledge Level
404.1	Estimating the demand for a product and the relationship between price and demand.	(K2)
404.2	Interpret production concept, least cost combinations and various costs concepts in decision making.	(K3)
404.3	Describe the price –output determination under various market structures.	(K2)
404.4	Classify various forms of business organization.	(K2)
404.5	Prepare the financial statements to gains knowledge to analyze them.	(K3)
404.6	Assess various investment project proposals with the help of Capital Budgeting techniques for decision making.	(K3)

### **Text Books/ Reference Books suggested:**

1. Aryasri: Managerial Economics and Financial Analysis, 2/e, TMH, 2005. 2.
2. Varshney & Maheswari: Managerial Economics, Sultan Chand, 2003.
3. S A Siddhiqui & AS Siddhiqui , Managerial Economics and Financial Analysis, New Age international publishers 2013.

### **Targeted Proficiency Level and Targeted level of Attainment (for each Course Outcome):**

Course Outcome	Targeted Proficiency Level (% of Marks)	Targeted level of Attainment (% Students)
1	60	60
2	60	60
3	60	60
4	60	60
5	60	60
6	60	60

S.no	Course Outcome	Contents	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids	Remarks
	Estimate the demand for a product and the relationship between price and demand.	<b>UNIT–Introduction to managerial economics</b>		10			
1		Define managerial economics	K1	1	Lecture	LMS	
2		Describe ME with other disciplines	K1	1	Lecture	LMS	
3		Explain Nature and scope of managerial economics	K2	1	Lecture	LMS	
4		Define Demand	K1	1	Lecture Discuss	LMS	
5		Describe law of demand	K2	1	Lecture	LMS	
6		Explain Elasticity of demand	K2	1	Lecture	LMS	
7		Find the of elasticity of demand	K2	2	Lecture	LMS	
8		Explain Demand forecasting, methods.	K2	2	Lecture Discuss	LMS	
<b>UNIT–II: Production analysis and cost analysis</b>				08			
1	Interpret production concept, least cost combinations and various costs concepts in decision	State Production function	K1	1	Lecture	LMS	
2		State Isocost	K1	1	Lecture	LMS	
3		State Iso quants	K1	1	Lecture	LMS	
4		Explain Cob-Douglas production function	K2	1	Lecture Discuss	LMS	
5		Describe economies of scale	K2	1	Lecture	LMS	
		Enumerate various cost concepts	K1	1	Lecture	LMS	
		Solve break even analysis	K3	2	Lecture	LMS	

<b>UNIT–III: market structures</b>				10			
1	Describe the price	Describe Different types of market structures	K1	3	Lecture	LMS	
2		Explain Price-output determination	K2	3	Lecture	LMS	
3		Explain Pricing methods	K2	2	Lecture	LMS	
4		Describe Theory of firms	K2	2	Lecture	LMS	
<b>UNIT–IV: Business organization</b>				06			
1	Classify various forms of business	State Features, merits ,demerits of Different forms of Organizations	K2	4	Lecture	LMS	
2		Differentiate various forms of business organizations	K2	2	Lecture	LMS	
<b>Unit–V: financial accounting</b>				12			
1	Prepare the financial statements to gains	Prepare of financial statements	K3	4	Lecture	LMS	
2		Examine of financial statements by using funds flow, Ration ,	K3	8	Lecture	LMS	
<b>UNIT–VI: capital budgeting</b>				08			
1	Assess various investment project proposals with the help of Capital	Define Capital	K1	1	Lecture	LMS	
2		Enumerate types of capital	K1	1	Lecture	LMS	
3		Explain capital budgeting, Process	K2	2	Lecture	LMS	
5		Apply capital budgeting techniques	K3	4	Lecture	LMS	

**Total No. of Classes: 54**