Integral University Lucknow
Study & Evaluation Scheme
M. Tech. (Evening) Computer Science & Engg.

Semester -I

S. No.	Subject Code	Category	Subject	Periods				Evaluation Scheme				Subject Total
								C A			Exam.	
				L	T	P	C	CT	TA	Total	ESE	
1	CSE 507	DC	Advanced Computer Networks	3	1	0	4	40	20	60	40	100
2	CSE 508	DC	Advanced Software Engineering	3	1	0	4	40	20	60	40	100
3	CSE 509	DC	Advanced Computer Networks Lab	0	0	3	2	30	30	60	40	100
			Total	**6**	**2**	**3**	**10**	**80**	**60**	**140**	**160**	**300**

L-Lecture **T-T**utorial **P-**Practical **C**-Credits **CT-**Class Test

TA-Teacher Assessment

CA - Continuous Assessment

Continuous Assessment = Class Test + Teacher Assessment

Subject Total = Continuous Assessment (CA) + End Semester Examination (ESE)

DC- Departmental Core
DE- Departmental Elective

Integral University, Lucknow
Department of Computer Science & Engineering
M.Tech. (Evening) CSE 1st Year / 1st Semester
Subject Name: Advanced Computer Networks, Subject Code: CSE- 507
SYLLABUS REVISED-2015
w.e.f. July - 2016

L T P C
3 1 0 4

UNIT-1
Need & Comparison of network models (ISO-OSI and TCP/IP), IEEE Standards-DQDB, Wireless LAN. Introduction to flow control, Error Control, Error detection and correction, IP Addressing, multiplexing. HDLC-Configurations and transfer modes, frames, Control Field, Segment format, Features & comparison of IP V4, IPV6. [8]

UNIT-2
Network layer - connection devices, routing algorithms and protocols, direct versus indirect delivery, forwarding techniques, Unicast routing protocols -optimization, intra and inter – domain routing, distance vector routing, link state routing, path vector routing.
Multicast routing protocols - Applications, Multicast Routing, IP routing, dynamic routing protocols. [8]

UNIT-3
Transport layer-User datagram protocol (UDP)-segment format, Well-known port for UDP, checksum, UDP Operation, Use of UDP.
TCP - TCP Segment format, TCP Services, TCP features, TCP connection Establishment & release, TCP half close, TCP simultaneous close, TCP timers, TCP data flow, TCP timeout and retransmission.
SCTP- SCTP services, SCTP Feature, Packet format, and SCTP Association. [8]

UNIT-4
Congestion control - data traffic descriptor, traffic profile, congestion - network performance, open-loop& close loop congestion control.
Quality of services - flow characteristics, flow classes, techniques to improve QoS-Scheduling, Traffic Shaping, Resource reservation Admission control, RSVP, ARP, RARP, ICMP, and IGMP.
Security-services - message confidentiality, message authentication, message Non-repudiation, message confidentiality-confidentiality with symmetric – key cryptography.
Confidentiality with asymmetric-key cryptography, message and message digest, hash function criteria. [8]

UNIT 5
Application layer- Segment format and working of DNS, BOOTP, DHCP, FTP, TELNET, TFTP, streaming live audio/video, real – time interactive audio/video – characteristics, RTP – RTP Packets Format, RTCP – Sender Report, Receiver, Source Description Message, Bye Message. Application-Specification Message, Case study of voice over IP – SIP. [8]

References:

1. Forouzen,"Data Communication and Networking",TMH
2. A.S.Tanenbaum,"Computer Networks",3rd Edition,Prentice Hall India,1997.
3. W.Stallings,"Data and Computer Communication",Macmillan Press,1989.
4. W. Richard stevens, " TCP/IP Illustrated Vol 1 ", Addition Wesley.
5. J Martin, "TCP/IP Networking Architecture, Administration and programming", Prentice Hall 1994.
6. D.E. Comer, "Internetworking with TCP/IP, Vol 1, Principles, Protocols, and architecture.
7. R. Stevens, "Unix Networking Programming", PHI 1998.

Integral University, Lucknow
Department of Computer Science & Engineering
M.Tech. (Evening) CSE 1st Year / 1st Semester
Subject Name: Advanced Software Engineering, Subject Code: CSE- 508
SYLLABUS REVISED-2015
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L T P C
3 1 0 4

UNIT-I

Software Engineering: Review of Software Engineering ,Key Concepts, Classical SDLC model of software engineering , COTS, RUP ,Rapid Application Development, Agile methods, Extreme programming. **Advanced concepts of software engineering:** Clean Room Software Engineering, Component Based Software Engineering, Aspect oriented software engineering, Service oriented software engineering, Object Oriented Software Engineering. **[8]**

UNIT -II

Software Project Management: Introduction to Software project management, Project Managers Roles and Responsibilities, Project Planning, Project Evaluation, Project Monitoring and Control, Effort Estimation, Human Resource Management, Risk Management, Software Project Management Tools. **[8]**

UNIT-III

Requirement Engineering: Introduction, Importance, Challenges, Success factors of Requirement Engineering, Requirement Engineering Framework, Characteristics of Requirements, Issues and problems in Requirement Elicitation, Trends and challenges of Requirement Elicitation ,Techniques and approaches of Requirement Elicitation ,Role of Soft Skills in Requirement analysis ,Requirement Reuse, Requirement Verification & Validation.

Specification of Requirement models: Characteristics of SRS, Components of SRS, Specification Language, Structure of Requirement Document, Guidelines for writing SRS. **[8]**

UNIT –IV

Requirement Prioritization: Aspects of Prioritization, Prioritization Techniques, Requirement Negotiation, Ambiguity in Requirement engineering, **Requirement Management:** Change Management, Activities, Traceability, Measurement & Metrics, Software Requirements and Risk Management, Requirement Engineering for Agile Methods, Introduction to Object Oriented Requirement, Requirement Engineering for Web Based Information System ,Distributed Requirement Engineering ,Future directions in Requirement Engineering Research. **[8]**

UNIT-V

Software Design: Design Principles**,** Software Design Process, Design Qualities, Design Patterns.

Design Practices: Incremental Design, Structured Analysis and Structured Design, Jacksons Structured Programming, Introduction to Object Oriented Design. **[8]**

REFERENCES

1. Sommerville “Software Engineering” , Pearson
2. Bob Hughes, ”Software project Management” ,TMH
3. Aybüke Aurum, Claes Wohlin “Engineering and Managing Software Requirements” Springer.
4. Karl E. Weigers “Software Requirements” WP Publishers & Distributors
5. Brian Berenbach “Software & Systems Requirements Engineering ” TMH
6. David Budgen, “Software Design” Pearson, 2003

Integral University, Lucknow

Department of Computer Science & Engineering

M.Tech. (Evening) CSE 1st Year / 1st Semester

Subject Name: Advanced Computer Networks Lab, Subject Code: CSE- 509

SYLLABUS REVISED-2015

w.e.f. July - 2016

L	T	P	C
0	0	3	2

1. Interpreting Ping and Trace route Output / Router Configuration.
2. Troubleshooting and Resolving Network Issues.
3. Simulation of OSPF routing protocol.
4. Simulation of RIP routing protocol.
5. Simulation of EIGRP routing protocol.
6. Simulation of DHCP.
7. Simulation of Open A Hyper Terminal Session.
8. Simulation of Exploring Different LAN Switch Options.
9. Simulation of Configuring Static and Default Routes.
10. Simulation of Configuring a PPP Connection between a Customer and an ISP.