SCHEME OF STUDIES & EXAMINATIONS B Tech (CSE)

Department: Computer Science & Engineering – 7th Semester

Sr. No	Course No.	Course Title	Teaching Schedule			Marks of class work	Examination Marks		Total	Credit	Duration of Exam
			L	T	P		Theory	practical			
1	CSE 401B	MOBILE APPLICATIONS DEVELOPMENT (Common with IT)	3	1	-	25	75	-	100	4	3
2	CSE 403 B	CLOUD COMPUTNIG	3	1	-	25	75	-	100	4	3
3		OPEN ELECTIVE	4		-	25	75	-	100	4	**3**
4		ELECTIVE – I	4		-	25	75	-	100	4	3
5		ELECTIVE –II	4		-	25	75	-	100	4	3
6	CSE 421 B	MOBILE APPLICATIONS DEVELOPMENT LAB (common with IT)			2	20		30	50	1	3
7	CSE 423B	CLOUD COMPUTING LAB			2	20		30	50	1	3
8	CSE 425B	PROJECT			4	100			100	4	
9	CSE 427B	PROFESSIONAL TRAINING -II			2	50			50	2	
Total			18	2	10	315	375	60	750	28	

*** List of Open Electives**

1	MEI 623B	ENTREPRENEURSHIP	**6**	BT401B	BIO-INFORMATICS
2	BME451B	MEDICAL INSTRUMENTATION	**7**	AE417B	MODERN VEHICLE TECHNOLOGY
3	ECE305B	CONSUMER ELECTRONICS	**8**	CE451B	POLLUTION & CONTROL
4	EE451B	ENERGY AUDIT	**9**	CSE-411B	MANAGEMENT INFORMATION SYSTEM
5	EEE457B	ENERGY RESOURCES &TECHNOLOGY	**10**	IT-413B	CYBER SECURITY

ELECTIVES – I		**ELECTIVES - II**	
IT 304 B	SOFTWARE TESTING	CSE 457 B	NETWORK SECURITY & CRYPTOGRAPHY
IT 405 B	ADVANCED COMPUTER NETWORKS	CSE 459 B	MULTIMEDIA TECHNOLOGY
CSE 451 B	DATA WAREHOUSING & DATA MINING	CSE 461 B	DISTRIBUTED OPERATING SYSTEMS
CSE 453 B	DISTRIBUTED COMPUTING	CSE 463 B	SOFTWARE AGENTS
CSE 455 B	ADVANCED COMPUTER ARCHITECTURE	CSE 465 B	INFORMATION SECURITY & DATA HIDING

Note:

1. **Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weight-age of Moral Values & Ethics and Sports are given in General Proficiency Syllabus.**
2. **Students will be permitted to opt for any one elective run by the other department (i.e. open electives) and for any two electives, one from Elective–I and one from Elective-II run by the department. However, the department shall offer those elective for which they have expertise. The choice of the students for any elective shall not be binding for the department to offer, if the department does not have expertise. The minimum strength of the students should be 20 to run an elective course.**
3. **Assessment of Professional Training-II, undergone at the end of VI semester, will be based on seminar, viva-voce,report and certificate of Professional Training obtained by the student from the industry, institute, research lab, training center etc**
4. **The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.**

SYLLABUS: B Tech (CSE)

Department: Computer Science & Engineering – 7th Semester

Subject: MOBILE APPLICATIONS DEVELOPMENT (Theory) **Subject Code: CSE 401B**

Detailed Content

Unit No.1 Introduction to Mobile Application Development

Topic No.1 : Definition of mobile computing
Topic No.2 : various types of mobile computing devices, mobile computers, smart phones, dedicated devices
Topic No.3 : Web based applications, Native applications, Compare
Topic No.4 : contrast web-based mobile applications against native applications
Topic No.5 : history of mobile platforms (PDA's, Notebooks, smart phones. Internet protocols for mobile Applications .i.e. WAP),
Topic No.6 : evolution of browsers, Internet languages such as HTML
Topic No.7 : JavaScript.

Unit No.2 Infrastructure

Topic No.8 : Describe mobile and cell phone technologies CDMA, GSM, 3G, 4G, Compare and contrast 3G and 4G
Topic No.9 : IP address, subnet mask, static vs Dynamic IP, gateway, DNS,transport including HTTP
Topic No.10: routing
Topic No.11: secure connections
Topic No.12: proxies and reverse proxies
Topic No.13: Need for storage, local Storage, local Storage

Unit No.3 HTML/CSS/DOM and Scripting

Topic No.14: Basic HTML, validation, rendering
Topic No.15: Cascading Style Sheets (CSS)
Topic No.16: document object model (DOM): document, objects, model, DOM tree
Topic No.17: DOM's utilization in web design
Topic No.18: basic JavaScript code, constructs of the JavaScript language

Unit No.4 Designing mobile user interfaces and Mobile Platforms

Topic No.20: Design mobile interfaces, usability, ways to test user interfaces, types of user interfaces for mobile apps
Topic No.21: Interactive voice response (IVR), SMS/MMS
Topic No.22: Mobile web, Tracking Progress, Native applications, Hybrids
Topic No.23: mobile application development design considerations,Text entry, screen size, user interface and user context
Topic No.24: Mobile Platforms, URIs for mobile apps
Topic No.25: Compare and contrast native mobile platforms such as tightly controlled (IPhone), open (Android), and licensed (Windows Mobile),
Topic No.26: web as a mobile application platform.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1		4	25	75	3 hours	100

TEXT BOOKS:

1. Lauren Darcey and Shane Conder, "Android Wireless Application Development", Pearson Education, 2nd ed. (2011)

REFERENCE BOOKS:

1. Reto Meier, "Professional Android 2 Application Development", Wiley India Pvt Ltd (2011)
2. Mark L Murphy, "Beginning Android", Wiley India Pvt Ltd(2009)
3. Sayed Y Hashimi and Satya Komatineni, "Pro Android", Wiley India Pvt Ltd(2009)
4. Brian Fling, "Mobile Design and Development: Practical concepts and techniques for creating mobile sites and web

SYLLABUS: B Tech (CSE)

Department: Computer Science & Engineering – 7th Semester

Subject: Cloud Computing (Theory) **Subject Code: CSE 403B**

Detailed Content

Unit No.1 Introduction to Cloud computing

Topic No.1 : Cloud computing history, Architecture and essential characteristics
Topic No.2 : Cloud service models
Topic No.3 : Cloud Deployment models
Topic No.4 : Advantages of cloud computing, Cloud v/s Grid computing.

Unit No.2 Virtualization

Topic No.5 : Virtualization techniques, Benefits and drawbacks of virtualization
Topic No.6 : VM migration with its types
Topic No.7 : Hypervisors and its types of hypervisors
Topic No.8 : Distributed management of virtual infrastructures
Topic No.9 : Scheduling techniques for advance reservation of Capacity
Topic No.10: Service-oriented architectures, SOA implementation
Topic No.11: SOAP, REST, SOAP v/s REST, Web 2.0.

Unit No.3 PaaS

Topic No.12: Introduction: advantages and disadvantages of PaaS
Topic No.13: Introduction to Google app engine, GAE cost structure
Topic No.14: Apache hadoop, : Map Reduce, HDFS, Hive
Topic No.15: Map reduce programming model, Hadoop as a service

Unit No.4 Migrating into the cloud

Topic No.16: Introduction: challenges in the cloud, legal issues in cloud computing
Topic No.17: Cloud Economics
Topic No.18: Capacity Management, Restricted Choices, Capacity Planning
Topic No.19: Queuing and Response Time
Topic No.20: Evidence Based Decision Making
Topic No.21: Instrumentation, Measuring Resource Consumption, Key Volume Indicator

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1		4	25	75	3 hours	100

TEXT BOOKS:

1. Cloud Computing Principles and Paradigms, Rajkumar Buyya, Wiley & Sons pub.

REFERENCE BOOKS:

2. Cloud Computing Web-Based dynamic IT services: Christian Baun, Springer.
3. Implementing and Developing Cloud Computing Applications: David E.Y Sarna, CRC Press.

Note:

In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.

SYLLABUS: B Tech (CSE)

Department: Computer Science & Engineering – 7th Semester

Subject: MANAGEMENT INFORMATION SYSTEM (Theory) **Subject Code: CSE 411B**

Detailed Content

Unit No.1 INFORMATION SYSTEM FOUNDATIONS and I.T.INFRASTRUCTURE

Topic No.1 : Introduction to Information System and MIS
Topic No.2 : Decision support, Decision making systems
Topic No.3 : Systems approach, the systems view of business
Topic No.4 : Managing the digital firm
Topic No.5 : Electronic Commerce, Electronic business
Topic No.6 : DBMS, RDBMS
Topic No.7 : Introduction to Telecommunication and Networks
Topic No.8 : Managing Hardware Assets, Managing Software Assets, Managing Data Resources
Topic No.9 : Internet and New IT Infrastructure

Unit No.2 CONCEPTUAL SYSTEM DESIGN

Topic No.10: Define the problems, set systems objective and establish system constraints, Determine information needs
Topic No.11: Develop alternative conceptual design and elect one document the system concept
Topic No.12: Prepare the conceptual design report
Topic No.13: Information Systems Security and Control, Ethical and Social Impact of Information Systems.

Unit No.3 DETAILED SYSTEM DESIGN

Topic No.14: Inform and involve the organization, aim of detailed design, project management of MIS detailed design
Topic No.15: identify dominant, trade of criteria
Topic No.16: Define the sub systems, sketch the detailed operating sub systems, sketch the detailed information flow
Topic No.17: Determine the degree of automation of each operation, inform and involve the organization again
Topic No.18: inputs outputs and processing, early system testing software
Topic No.19: hardware and tools proposed to organization to operate the system, documentation of detailed design

Unit No.4 IMPLEMENTATION, EVALUATION AND MAINTENANCE OF THE MIS

Topic No.20: Plan the implementation, acquire floor space and plan space layouts, organize for implementation
Topic No.21: Develop procedures for implementation, train the operating personnel
Topic No.22: computer related acquisitions, develop forms for data collection and information dissemination
Topic No.23: Develop the files test the system, cut-over, document the system
Topic No.24: Evaluate the MIS control and maintain the system, Pitfalls in MIS development
Topic No.25: Redesigning the organization with Information systems, Managing Knowledge Work

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
4			4	25	75	3 hours	100

TEXT BOOKS:

1. Management Information System by W. S. Jawadekar, 2002, Tata McGraw Hill.
2. Information System for Modern Management (3rd edition)- Robert G. Murdick, Loel E. Ross & James R.Claggett. PHI

REFERENCE BOOKS:

1. Management Information System; O Brian; TMH
2. Management Information System by Davis Olson Mac Graw Hill

SYLLABUS: B Tech (CSE)

Department: Computer Science & Engineering – 7th Semester

Subject: SOFTWARE TESTING (Theory) **Subject Code: IT 304B**

Detailed Content

Unit No.1 Introduction

Topic No.1: What is software testing and why it is so hard ?
Topic No.2: Error, Fault, Failure, Incident
Topic No.3: Test Cases
Topic No.4: Testing Process
Topic No.5: Limitations of Testing
Topic No.6: No absolute proof of correctness
Topic No.7: Overview of Graph Theory
Topic No.8: Functional Testing
Topic No.9: Boundary Value Analysis
Topic No.10: Equivalence Class Testing
Topic No.11: Decision Table Based Testing
Topic No.12: Cause Effect Graphing Technique

Unit No.2 Structural Testing and Testing activities

Topic No.13: Path testing
Topic No.14: DD-Paths
Topic No.15: Cyclomatic Complexity
Topic No.16: Graph Metrics
Topic No.17: Data Flow Testing
Topic No.18: Mutation testing
Topic No.19: Unit Testing
Topic No.20: Levels of Testing
Topic No.21: Integration Testing
Topic No.22: System Testing
Topic No.23: Debugging
Topic No.24: Domain Testing

Unit No.3 Reducing the number of test cases and Object Oriented Testing

Topic No.25: Prioritization guidelines
Topic No.26: Priority category
Topic No.27: Scheme
Topic No.28: Risk Analysis
Topic No.29: Regression Testing
Topic No.30: Slice based testing
Topic No.31: Issues in Object Oriented Testing
Topic No.32: Class Testing
Topic No.33: GUI Testing
Topic No.34: Object Oriented Integration
Topic No.35: System Testing

Unit No.4 Testing Tools

Topic No.36: Static Testing Tools
Topic No.37: Dynamic Testing Tools

Topic No.38: Characteristics of Modern Tools
Topic No.39: Implementation with example
Topic No.40: Advanced topics in software testing
Topic No.41: web based testing
Topic No.42: Client server testing
Topic No.43: Automated test cases generation
Topic No.44: Regular expression
Topic No.45: FSM based testing.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1		4	25	75	3 hours	100

TEXT BOOKS:

2. William Perry, Effective Methods for Software Testing , John Wiley & Sons, New York, 1995.
3. Cem Kaner, Jack Falk, Nguyen Quoc, Testing Computer Software , Second Edition, Van Nostrand
4. Reinhold, New York, 1993.
5. 3. Boris Beizer, Software Testing Techniques , Second Volume, Second Edition, Van Nostrand
6. Reinhold, New York, 1990.
7. 4. Louise Tamres, Software Testing , Pearson Education Asia, 2002

REFERENCE BOOKS:

1. Roger S. Pressman, Software Engineering – A Practitioner's Approach , Fifth Edition, McGraw-Hill International Edition, New Delhi, 2001.
2. Boris Beizer, Black-Box Testing – Techniques for Functional Testing of Software and Systems , John Wiley & Sons Inc., New York, 1995.
3. K.K. Aggarwal & Yogesh Singh, Software Engineering , New Age International Publishers, New Delhi, 2003.
4. Marc Roper, Software Testing , McGraw-Hill Book Co., London, 1994.
5. Gordon Schulmeyer, Zero Defect Software , McGraw-Hill, New York, 1990.
6. Watts Humphrey, Managing the Software Process , Addison Wesley Pub. Co. Inc., Massachusetts,

Note:

In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.

SYLLABUS: B Tech (CSE)

Department: Computer Science & Engineering – 7th Semester

Subject: Distributed Operating System **Subject Code: CSE 461B**

Detailed Content

Unit No.1 Introduction to Distributed System

Topic No.1: Introduction to Distributed System
Topic No.2: Characteristics of Distributed system
Topic No.3: Network vs. centralized systems
Topic No.4: Design issues
Topic No.5: Resource sharing
Topic No.6: the Web – Challenges
Topic No.7: System models
Topic No.8: Architectural model
Topic No.9: fundamental model
Topic No.10: Networking and internetworking Communication in Distributed System
Topic No.11: Layered protocols
Topic No.12: ATM networks
Topic No.13: Client –Server model
Topic No.14: Remote Procedure Calls
Topic No.15: Group Communication

Unit No.2

Topic No.16: Clock synchronization
Topic No.17: Mutual Exclusion
Topic No.18: Election algorithm
Topic No.19: the Bully algorithm
Topic No.20: a Ring algorithm
Topic No.21: Transactions
Topic No.22: Nested transactions
Topic No.23: Locks
Topic No.24: Optimistic concurrency control
Topic No.25: Timestamp ordering
Topic No.26: Comparison
Topic No.27: Flat and nested distributed transactions
Topic No.28: Atomic commit protocols
Topic No.29: Concurrency control in distributed transactions
Topic No.30: Deadlock in Distributed Systems
Topic No.31: Distributed Deadlock Prevention
Topic No.32: Distributed Deadlock Detection
Topic No.33: Threads
Topic No.34: System models
Topic No.35: Processors Allocation
Topic No.36: Scheduling in Distributed System
Topic No.37: Real Time Distributed Systems

Unit No.3-A Distributed file systems

Topic No.38: Distributed file system Design
Topic No.39: Distributed file system Implementation
Topic No.40: Trends in Distributed file systems

Unit No.3-B Distributed Shared Memory

Topic No.41: What is shared memory?
Topic No.42: Consistency models
Topic No.43: Page based distributed shared memory
Topic No.44: shared variables distributed shared memory

Unit No.4: Features of PIC Microcontroller

Topic No.45: Overview of security techniques
Topic No.46: Cryptographic algorithms
Topic No.47: Digital signatures
Topic No.48: Cryptography pragmatics
Topic No.49: Replication
Topic No.50: System model
Topic No.51: group communications
Topic No.52: Fault tolerant services
Topic No.53 Highly available services
Topic No.54: Transactions with replicated data

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
4			4	25	75	3 hours	100

TEXT BOOKS:

1. Andrew S. Tanenbaum, Maartenvan Steen, Distibuted Systems, —Principles and Pardigms||, Pearson Education,2002.
2. George Coulouris, Jean Dollimore and Tim Kindberg, —Distributed Systems Concepts and Design||, 3rd Edition, Pearson Education, 2002.

REFERENCE BOOKS:

1. Tanenbaum and Steen, —Distributed Systems||, PHI, 2002.
2. Sape Mullender, —Distributed Systems||, 2nd Edition, Addison Wesley, 1993.
3. Albert Fleishman, —Distributed Systems: Software Design and Implementation||, Springer Verlag, 1994.
4. M. L. Liu, —Distributed Computing Principles and Applications||, Pearson Education, 2004.

Note:

In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.

SYLLABUS: B Tech (CSE)

Department: Computer Science & Engineering – 7th Semester

Subject: MOBILE APPLICATIONS DEVELOPMENT (lab) **Subject Code: CSE 421B**

List of Practicals

Exp 1: Getting Started with Android Development
Exp 2: Activities and Views: Android Manifest.xml, Activity Class ,Basic View Components: Layouts and Buttons
Exp 3: Navigation with Data: Working with Intent, Sharing Data Between Activities, Application Class
Exp 4: Android Resources: String Resources, Loading Strings in XML, Loading Strings in Code, The Resource Values Folder
Exp 5: Drawables - Image Basics, Drawable Folders and Qualifiers, Dimensions, Image Padding, The ImageButton Widget
Exp 6: Lists: Implementing an Android List, ListView, ListActivity, Empty Lists , ListAdapter, Sorting the Adapter, Overriding ArrayAdapter, List Interaction
Exp 7: Dialogs, New and Old: AlertDialog, Custom Dialog, Support Library, Fragments, DialogFragment
Exp 8: Menus: Options Menu, Modifying an Options Menu, Context Menu
Exp 9: Saving Data with Shared Preferences: Shared Preferences, Getting Started with SharedPreferences, PreferenceActivity
Exp 10: Saving Data with a Database: Setting Up SQLite, Creating a Helper , using the Helper, Cursor and CursorAdapater
Exp 11: Threading with AsyncTasks: Threading in Android, AsyncTask, Tracking Progress
Exp 12: Styles and Themes: Introduction to Styling: Defining Styles, Defining Themes, Style Inheritance, Direct Theme References

Develop an Android based Project

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
		2	1	20	30		50

SYLLABUS: B Tech (CSE)

Department: Computer Science & Engineering – 7th Semester

Subject: Cloud Computing (Lab) **Subject Code: CSE 423B**

List of Practicals

1. Write a small application in JAVA or any other language.
2. Connect it to storage using Cloud SQL, a schemaless NoSQL datastore, or object storage using Cloud Storage.
3. Test the application using various tools like eclipse.
4. Development of applications on Google app engine.
5. Case study of private Cloud setup through OpenStack
6. Study DevStack - an OpenStack Community Production
7. Case study of private Cloud setup through CloudStack
8. Case study of XEN/VMware/KVM hypervisor
9. Case study of Amazon ec2.
10. Use EC2 with Other Amazon Web Services

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
		2	1	20	30	3 hours	50

SYLLABUS: B Tech (CSE)

Department: Computer Science & Engineering – 7th Semester

Subject: PROJECT **Subject Code: CSE 425B**

Detailed Content

The primary objective of this course is to develop in students the professional quality of synthesis employing technical knowledge obtained in the field of Engineering & Technology through a project work involving design, analysis augmented with creativity, innovation and ingenuity.

Project involving design/ fabrication/ testing/ computer simulation/ case studies etc. which commences in the VII Semester will be completed in VIII Semester and will be evaluated through a panel of examiners consisting of the following:

Chairman of Department : Chairperson
Project coordinator : Member Secretary
Respective project supervisor : Member

The student will be required to submit two copies of his/her project report to the department for record (one copy each for the department and participating teacher).

Project coordinator will be assigned the project load of maximum of 2 hrs. per week including his own guiding load of one hr. However, the guiding teacher will be assigned maximum of one period of teaching load irrespective of number of students/groups under him/her.

The format of the cover page and the organization of the body of the report for all the B.Tech will be finalized and circulated by the Dean, Faculty of Engineering and Technology.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
		4	4	50	50	-	100

SYLLABUS: B Tech (CSE)

Department: Computer Science & Engineering – 7th Semester

Subject: PROFESSIONAL TRAINING II **Subject Code: CSE 427B**

Detailed Content

- At the end of 6th semester each student would undergo four weeks Professional Training in an Industry/Institute/ Professional / Organization/ Research Laboratory etc. with the prior approval of the Training andPlacement Officer of the University and submit in the department a typed report along with a certificate fromthe organization.
- The typed report should be in a prescribed format.
- The report will be evaluated in the VII Semester by a Committee consisting of three teachers from different specialization to be constituted by the Chairperson of the department. The basis of evaluation will primarily be the knowledge and exposure of the student towards different processes and the functioning of theorganization.
- The student will interact with the committee through presentation to demonstrate his/her learning.
- Teachers associated with evaluation work will be assigned 2 periods per week load.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
		2	2		50	-	50