SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF ENGINEERING & TECHNOLOGY

COMPUTER SCIENCE AND ENGINEERING

Syllabus Structure and detailed syllabus of

M.E. (Computer Science & Engineering) Part II

w.e.f. Academic Year 2014-15

Structure of M. E. (Computer Science & Engineering) Part-II
w.e.f. Academic Year 2014 - 15

Semester – III

Sr. No.	Course	Teaching Scheme					Evaluation Scheme			
		L	T	P	Credits		Scheme	Theory (Marks)	Practical (Marks)	Total
1	Self learning	--	--	--	3		ISE	30	--	30
							ESE	70	--	70
2	Lab Practice	--	--	2	1		ISE	--	25	25
3	**Dissertation Phase –I** : Synopsis Submission Seminar	--	--	6	3		ISE	--	75	75
	Dissertation Phase-II : Termwork	--	--	--	3		ISE	--	100	100
	Dissertation Phase II Progress Seminar Presentation	--	--	--	6		ESE	--	200	200
	Total	**--**	**--**	**08**	**16**			**100**	**400**	**500**

Note:

1. Student shall select one Self Learning course from the following list.
   i) Big Data
   ii) Open Source Technology
   iii) Computer Network Administration

Semester – IV

Sr. No.	Course	Teaching Scheme			Evaluation Scheme		
		P	Credits		Scheme	Practical (Marks)	Total
1	**Dissertation Phase III** : Progress Seminar Presentation and report	4	4		ISE	100	100
2	**Dissertation Phase IV**: Term work	2	6		ISE	200	200
3	Final presentation and viva-voce	-	6		ESE	200	200
	Total	**6**	**16**			**500**	**500**

ISE – IN SEMESTER EVALUATION
ESE – END SEMESTER EVALUATION

SOLAPUR UNIVERSITY, SOLAPUR

M.E. (Computer Science and Engineering) Part - II
Semester - III
1. Self Learning – i. Big Data

Examination Scheme
Credits: 3
ISE: 30 marks
ESE: 70 marks

SECTION I

Unit 1: Introduction to Big Data Analytics: Introduction and importance of Big Data, Fundamentals, Examining Big Data types, Characteristics.

Unit 2 Technology Foundation of Big Data: Big Data Technology, Digging into Big Data Technology components , Virtualization and Big Data ,Examining Cloud and Big Data, Information Management in Big Data.

Unit 3: Big Data Management: Operational Databases, MapReduce Fundamentals, Exploring world of Hadoop , Hadoop Foundation and ecosystem , Appliances and Big Data Warehouses.

SECTION II

Unit 4: The MapReduce and Software Stack: Algorithms using MapReduce, Extensions to MapReduce,The communication Cost Model, The Complexity Theory for MapReduce.

Unit 5: Big Data Solutions in Real World: The importance of Bigdata to Business, Analyzing Data in Motion: A Real-World View, Improving Business Processes with Big Data Analytics:A Real-World View, Data Privacy and Ethics in Big Data.

Unit 6: Ethics of Big Data: Big Data Big Impact, Values and Actions, Current practices, Aligning Values and Actions.

Textbooks:

1) Big Data For Dummies By Judith Hurwitz, Alan Nugent , Fern Halper , Marcia Kaufman : John Wiley & Sons
2) Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses (Wiley CIO) By Michael Minelli, Michele Chambers, Ambiga Dhiraj : John Wiley & Sons
3) Ethics of Big Data: Balancing Risk and Innovation By Kord Davis, O'reilly Media
4) Mining of Massive Datasets by Anand Rajaraman, Jure Leskovec, Jeff rey D. Ullman, Cambridge University Press.

Reference Books:

1) Hadoop: The Definitive Guide, 3rd Edition , By Tom White , O'reilly Media
2) Big Data Now: 2012 Edition Publisher: O'Reilly Media.
3) Too Big to Ignore: The Business Case for Big Data (Wiley and SAS Business Series) By Phil Simon, Wiley 1e.

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Semester - III
1. Self Learning – ii. Open Source Technologies

Examination Scheme
Credits: 3
ISE: 30 marks
ESE: 70 marks

SECTION I

Unit 1 OST (Open Source Technologies) Overview: Evolution & development of OST and contemporary technologies, Factors leading to its growth. Open Source Initiative (OSI), Free Software Foundation and the GNU Project, principle and methodologies, Indian Contexts of OST, Applications, Pros and cons of OST.

Unit 2 Open Source Licenses: The MIT License, The BSD License, The Apache License, v1.1 and v2.0, The Academic Free License , Application and Philosophy of MIT and BSD Licenses, GNU General Public License, GNU Lesser General Public License, The Mozilla Public License, Application and Philosophy of GNU GPL and GNU LGPL, Artistic and Creative Commons Licenses

Unit 3 Legal Impacts of Open Source Technologies: Entering Contracts, Statutory Developments Related to Software Contracts, The Self-Enforcing Nature of Open Source and Free Software Licenses, The Global Scope of Open Source and Free Software Licensing, Community Enforcement of Open Source and Free Software Licenses, Compatible and Incompatible Licensing: Multiple and Cross Licensing.

SECTION II

Unit 4 Introduction of Linux: Overview of Linux Operating System, Linux Distribution , Graphical Environment and Terminal Windows, Linux Graphical Desktop , File System Concepts, Managing File with Graphical Utilities. Linux OS variants, Case study of Ubuntu 12.04.x and BOSS (Bharat Operating System Solutions) Linux.

Unit 5 Open Source Web servers and RDBMS:
Open Source Web servers: Installation, configuration and administration under Windows and Linux environment: of Apache, Nginx, Apache Tomcat.
Open Source RDBMS: Installation, configuration and administration under Windows and Linux environment: MySQL, PostgreSQL.

Unit 6 Popular Open Source Softwares: Installation, customization and maintenance of Open Source Content management Systems: Drupal, Wordpress , Joomla , Umbraco , Liferay Portal, Alfresco. Installation, Customization and Maintenance of Open Source Learning management Systems: Moodle, ATutor.

Textbooks:

1) Understanding Open Source and Free Software Licensing - By Andrew M. St. Laurent, Oreily Media. (e-Resource available at: http://oreilly.com/openbook/osfreesoft/book/index.html)
2) Apache HTTP Server Documentation Version 2.2 by by Apache Software Foundation
3) MySQL 5.5 Reference Manual (Chapter 2 and 3 of manual) (e-Resource)
4) The Complete Guide to Linux System Administration by Nicholas Wells, Cengage Learning.
5) Official Documentation of ATutor, Moodle, Drupal, Joomla, Wordpress, Liferay Portal, Alfresco, Umbraco. (e-Resources)

Reference Books:

1) BOSS Linux: http://bosslinux.in
2) (NRCFOSS) initiative of the Department of Information Technology, Ministry of Communications & Information Technology, Government of India, http://www.nrcfoss.org.in/
3) Open Source: Technology and Policy By Fadi P. Deek and James A. M. McHugh , Cambridge University Press.

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Semester - III
1. Self Learning – iii. Computer Network Administration

Examination Scheme
Credits: 3
ISE: 30 marks
ESE: 70 marks

Section I

1. **Data Communication and network management overview:**
   Analogy of telephone network management, Data and telecommunication network, distributed computing environment, TCP/IP based networks – Internet and intranet, communication protocols and standards, challenges of information technology manager Network management – goals, organization and functions, network and system management, network management system platform, current status and future of network management.
2. **Basic foundation:**
   Standards, models and languages: Network management standards, network management model, organization model, information model, communication model, ASN.1, Encoding structure, macros, and functional model.
3. **SNMP 1 network management:**
   Organization and information models: Managed network, International organization and standard SNMP model, organization model, system overview, information models

Section II

4. **SNMP v1 network management:**
   Communication and functional models, SNMP model, functional model, Major changes in SNMP v2 and v3
5. **SNMP Management:**
   RMON – Remote monitoring, RMON, SMI & MIB, RMON1, RMOPN2, ATM Remote monitoring, case study of internet traffic using RMON.
6. **Network management tools and systems:**
   network management tools, network statistics measurement systems, network management systems, commercial network management systems, System management, Enterprise management solutions.

Text Books:

1. Network Management principles and practice – Mani Subramanian (Pearson Edition)
2. SNMP – SNMPv2 , SNMPv3 & RMON 1 – William Stalling (Pearson Edition)
3. Network Administration – Steve Wisniewski.

Reference Books:

1. Network Management – Concepts & Practice: A Hands-on Approach by J. Richard Burke (Pearson Education)
2. Network Management, MIBs & MPLS, Principles, Design & Implementation/Stephen B. Morris (Pearson Education).
3. TCP/IP Protocol Suite – B.A. Forouzan (TMH Edition)

Mode of Assessment

(i) Assessment of Theory Courses: (Self Learning)

(a) A student shall be evaluated with 30% weightage for his/her academic performance in a theory course for In-Semester Evaluation (ISE) and with 70% weightage for End-Semester Examination (ESE) which is University Examination.

(b) ISE shall be based on student's performance in Mid-term tests, Class-tests, assignments, viva-voce, quizzes, subject seminars, field visit, case studies, subject mini project etc. The mode of In-Semester Evaluation (ISE) shall be decided from various assessment components mentioned in **Table-A** given hereunder and the same shall be announced by the Course Instructor at the beginning of the course.

In-Semester Evaluation is a process of continuous assessment. The formative and summative assessment components are combined to generate 30% weightage marks for In-Semester Evaluation (ISE).

Table – A: Assessment components

Sr. No.	**Assessment Component**	**Max. Marks**
1	Mid-Term Written Test conducted & evaluated at Institute Level (Mandatory)	**15**
2	Written Test conducted & evaluated at Institute Level **or** One or more Appropriate Activities related to course curriculum and conducted & evaluated at institute level, which includes–, assignments, viva-voce, quizzes, subject seminars with report writing, field visit, subject mini project, application software training, case study with report writing.	**15** **15**

(c) ESE shall be University Examination of three hours duration for each theory course carrying 70% weightage and shall be held as per the schedule declared by the university for that semester.

(d) All examinations and evaluations shall be compulsory. Credits for a course shall be awarded only if the student satisfies evaluation criteria and acquire the necessary minimum grade.

(e) Minimum performance of 40% in ISE and ESE **separately** shall be required to get the passing grade.

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Semester - III
2. Lab Practice

Teaching Scheme
Practical: 2Hrs/Week

Examination Scheme
Credit:1
ISE: 25 marks

Student should study tools and related modern technologies, in lab practice in any one of the following areas.
1. Big Data and Hadoop.
2. Tools or technologies related to his/her dissertation work.
3. Computer Networking Administration Tools

Student should perform assignments on it and submit journal
OR
Develop a mini project and submit report.

The assessment of laboratory course shall be carried out as-

- Term work assessment shall be carried out at institute level based on turn-by-turn supervision of the student's work, and the quality of his/her work as prescribed through laboratory journals and his/her performance uniformly distributed throughout the semester.

Minimum performance of 40% in Termwork shall be required to get the passing grade.

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Semester - III
3. Dissertation Phase - I

Teaching Scheme	**Examination Scheme**
Practical: 6Hrs/Week	**Credits:3**
	ISE: 75 marks

Phase I Synopsis Submission Seminar (ISE): A student shall be expected to carry out intensive literature survey for a period of about two months in the field of interest and to select a topic for his/her dissertation in consultation with the faculty advisor assigned. The student shall then submit a report and deliver a seminar on the problem chosen by him/her to the panel of three departmental PG recognized faculty members. It shall be expected that a student justifies the gravity and also the relevance of the problem through his/her seminar. This shall be for the approval of synopsis.

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Semester - III

3. Dissertation Phase - II

Examination Scheme

ISE Credits:3
ISE: 100 marks

ESE Credits: 6
ESE: 200 marks

Phase II Term Work (ISE)

Phase II evaluation consists of term-work evaluation (ISE) based on the efforts put in by the student to carry out his/her work & the results obtained thereof.

Phase II Progress Seminar Presentation (ESE):

The End Semester Evaluation (ESE) consisting of submission of progress report and presentation of progress seminar followed by demonstration before a panel three departmental PG recognized faculty members.

Guidelines for Assessment of Dissertation Phase I & II

1. Quality of Literature survey and Novelty in the problem
2. Clarity of Problem definition and Feasibility of problem solution
3. Clarity of objective and scope

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Semester - IV

1. Dissertation Phase - III

Teaching Scheme
Practical: 4Hrs/Week

Examination Scheme
Credits: 4
ISE: 100 marks

Phase III Term Work and Progress Seminar Presentation and report (ISE):

The student who has cleared his/her Phase II evaluation shall submit a report and present the status of work carried out on the dissertation, after 8-10 weeks of Phase II ESE, to three departmental PG recognized faculty members.

Guidelines for Assessment of Dissertation Phase III

1. Quality of work attempted
2. Presentation skills
3. Relevance to the specialization

SOLAPUR UNIVERSITY, SOLAPUR

M.E. (Computer Science and Engineering) Part - II
Semester - IV
2. Dissertation Phase – IV Termwork

Teaching Scheme
Practical: 2Hrs/Week

Examination Scheme
Credits: 6
ISE: 200 marks

After completing the dissertation work to the satisfaction, the student shall submit the dissertation report in the prescribed format to the university.

Guidelines for Assessment of Dissertation Phase IV Termwork

1. Fulfilment of objectives
2. Validation of results
3. Quality of Written Presentation

- **Students should publish at least one paper based on his/her work in reputed International Journal (desirably in Referred Journal)**

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Semester - IV
3. Final Presentation and Viva-voce

Examination Scheme
Credits: 6
ESE: 200 marks

Final Presentation and Viva-voce (ESE):

Open defense of the student on his/her dissertation shall be arranged by the university. This defense shall be in front of the panel of examiners as appointed by university authority.