

## Department of Computer Science and Engineering

[Minimum Credits to be earned: 174 (for regular students)/132(for Lateral entry students)]

<b>First Semester</b>							
No	Course Code	Course	POs	Periods			
				L	T	P	C
1	16HSX01	English Communication Skills I	10	3	1	-	3
2	16MAX01	Engineering Mathematics I	1,2	3	1	-	3
3	16PYX01	Engineering Physics	1	3	1	-	3
4	16MEX01	Engineering Mechanics	1	3	1	-	3
5	16CSX01	Problem Solving using C	1, 2,3	3	1	-	3
6	16PYX02	Engineering Physics Lab	4	-	-	3	2
7	16CSX02	Problem Solving using C Lab	2, 3, 4	-	-	3	2
8	16MEX02	Engineering Drawing	1, 4, 9, 10	-	-	3	2
<b>Total</b>				15	5	9	21
<b>Second Semester</b>							
1	16HSX03	English Communication Skills II	10	3	1	-	3
2	16MAX02	Engineering Mathematics II	1,2	3	1	-	3
3	16CYX01	Engineering Chemistry	1,2	3	1	-	3
4	16EEX01	Basic Electrical Engineering	1, 3	3	1	-	3
5	16CHX01	Environmental Studies	1, 3, 6, 7	3	1	-	3
6	16HSX02	English Communication Skills Lab	10	-	-	3	2
7	16CYX02	Engineering Chemistry Lab	4	-	-	3	2
8	16MEX03	Engineering Workshop	2, 10, 12	-	-	3	2
<b>Total</b>				15	5	9	21
<b>Third Semester</b>							
No	Course Code	Course	POs	Periods			
				L	T	P	C
1	16IT305	Data Structures	1, 2, 3, PSO2	3	1	-	3
2	16IT306	Object Oriented Programming through Java	2, 3	3	1	-	3
3	16CS303	Computer Organization and Architecture	1, 2, 3	3	1	-	3
4	16CS304	Database Management Systems	1, 2, 3	3	1	-	3
5	16CS305	Digital Logic Design	1, 2, 3, 4, 5, 9	3	-	2	4
6	16CS306	Discrete Structures & Graph Theory	1, 2, 3	3	1	-	3
7	16IT308	Data Structures Lab	3, 4, 5	-	-	3	2
8	16IT309	Java Lab	2, 3, 4, 5	-	-	3	2
9	16CS309	Database Management Systems Lab	2, 3, 4, 5	-	-	3	2
10		CCEC Activity - I		-	-	3	-
11	16ESX01	Employability Skills - I		-	2	-	-
<b>Total</b>				18	7	14	25
<b>Fourth Semester</b>							
1	16MA405	Probability and Statistics	2	3	1	-	3
2	16EC410	Microprocessors and Interfacing	2, 3	3	1	-	3
3	16IT406	Operating Systems	1, 2, 3	3	1	-	3
4	16CS404	Software Engineering	2, 3, 4, 5	3	-	2	4
5	16CS405	Theory of Computation	1, 2, 3	3	1	-	3
6	16CS406	Web Technologies	3, 5, 6	3	1	-	3
7	16EC411	Microprocessors and Interfacing Lab	2, 4, 9	-	-	3	2
8	16CS408	Linux Programming Lab.	4, PSO2	-	-	3	2
9	16CS409	Web Technologies Lab	3, 4, 5, 8	-	-	3	2
10		CCEC Activity - I		-	-	3	1
11	16ESX02	Employability Skills – II		-	2	-	1
<b>Total</b>				18	7	14	27

<b>Fifth Semester</b>							
No	Course Code	Course	POs	Periods			
				L	T	P	C
1	16IT404	Computer Networks	2, 3	3	1	-	3
2	16IT505	Object Oriented Analysis and Design	2, 3, 4, 5	3	-	2	4
3	16IT602	Artificial Intelligence	2, 3	3	1	-	3
4	16CS504	Compiler Design	2, 3, 5	3	1	-	3
5	16CS505	Design and Analysis of Algorithms	2, 3	3	1	-	3
6		Elective I / CC		3	1	-	3
7	16IT409	Computer Networks Lab	2, 4, 5	-	-	3	2
8	16CS509 / 16CS510	Term Paper / Mini Project	2, 4, 8, 10, 12; 2, 3, 4, 5, 8, 9, 10, 11, PSO1, PSO2	-	-	3	2
9		CC & EC Activity II		-	-	3	-
10	16ESX03	Employability Skills - III		-	2	-	-
11		Summer Internship		-	-	-	-
<b>Total</b>				18	5	11	23
<b>Sixth Semester</b>							
1	16HSX04	Engineering Economics & Project Management	11, 14	3	1	-	3
2	16CS602	Data Mining	2, 3, 4, 5	3	-	2	4
3	16CS603	Internet of Things	3, 4, 7, PSO2	3	1	-	3
4	16CS604	Mobile Computing	2, 3, 5				
5		Elective II/CC		3	1	-	3
6		Elective III (Open Elective)		3	1	-	3
7	16CS607	IoT Lab	2, 3, 4, 5, 9	-	-	3	2
8	16CS510 / 16CS509	Mini Project / Term Paper	2, 4, 8, 10, 12 ; 2, 3, 4, 5, 8, 9, 10, 11, PSO1, PSO2	-	-	3	2
9		Audit Course		-	-	-	-
10		CC & EC Activity II		-	-	3	1
11	16ESX04	Employability Skills - IV		-	2	-	1
<b>Total</b>				18	5	11	25
<b>Seventh Semester</b>							
No	Course Code	Course	POs	Periods			
				L	T	P	C
1	16IT701	Big Data Analytics	2, 5, 6	3	1	-	3
2		Elective IV/CC		3	1	-	3
3		Elective V/CC		3	1	-	3
4	16IT705	Big Data Analytics Lab	3, 4, 5	-	-	3	2
5	16CS705	Mobile Application Development Lab	2, 3, 8	-	-	3	2
6	16CS706	Full Semester Internship <sup>1</sup>	2,5,8,9,10,11,12	-	-	-	16
<b>Total</b>				9	3	6	13/16
<b>Eighth Semester</b>							
1	16IT802	Professional Ethics	6, 8	3	1	-	3
2	16CS802	Machine Learning	2, 5	3	1	-	3
3		Elective VI/CC		3	1	-	3
4	16CS804	Project work	1, 3,4,9,10,11,12, PSO2	-	-	-	10
5	16CS706	Full Semester Internship <sup>2</sup>	2,5,8,9,10,11,12, PSO1	-	-	-	16
<b>Total</b>				9	3	-	19/16

<sup>1</sup> Student who opt for FSI-16CS706 during 7<sup>th</sup> semester, have to register one more additional elective and 16CS704 & 16CS705 as additional lab courses during 8<sup>th</sup> semester

<sup>2</sup> Student the who opt for FSI-16CS706 during 8<sup>th</sup> semester, have to register an additional course in consultation with HoD during 7<sup>th</sup> semester

**List of Electives, Contemporary Courses, Courses, Audit Courses, Employability Skills and One Credit Courses**

<b>Elective I</b>							
No	Course Code	Course	POs	Periods			
				L	T	P	C
1	16IT001	Information System Design	2, 3, 4, 12	3	1	-	3
2	16CS001	Computer Graphics & Multimedia	2, 3, 4	3	1	-	3
3	16CS002	Software Design Patterns	2, 3, 5	3	1	-	3
4		MOOCs		-	-	-	3
<b>Elective II</b>							
1	16CS003	Qualitative Data Analysis	3, 5	3	1	-	3
2	16CS004	Real Time Operating Systems	2, 3, 5, PSO1	3	1	-	3
3	16CS005	Service Oriented Architecture	3, 5, 8	3	1	-	3
4		MOOCs		-	-	-	3
<b>Elective III (Open Electives – Mathematics, Chemistry, Entrepreneurship Skills, Industrial Safety and Engineering &amp; Technology )</b>							
1	16CE007	Disaster Management	2, 6, 7, 10	3	1	-	3
2	16EE004	Renewable Energy Sources	7, 11, 12	4	-	-	3
3	16ME007	Principles of Entrepreneurship	11	3	1	-	3
4	16EC004	Fundamentals of GPS	2,4,5,6	3	1	-	3
5	16CS006	Computational Intelligence	2, 3, 5	3	1	-	3
6	16CS007	IoT for Engineering Applications	5	3	1	-	3
7	16CH007	Industrial Safety and Hazard Management	2,3,6,8	3	1	-	3
8	16IT005	Fundamentals of Cloud Computing	2,5,6	3	1	-	3
9	16PE006	Smart Grid Technologies	4,7	3	1	-	3
10	16MA001	Computational Mathematics	2,9	3	1	-	3
11	16CY001	Nano Science & Technology	2,3,6,7,12	3	1	-	3
<b>Elective IV</b>							
1	16EC602	Digital Signal Processing	2, 3, 4	3	1	-	3
2	16IT006	Human Computer Interaction	2, 3, 5	3	1	-	3
3	16IT003	Information Retrieval Systems	3, 5, 6	3	1	-	3
4	16CS008	Software Project Management	3, 5, 6, PSO2	3	1	-	3
5		MOOCs		-	-	-	3
<b>Elective V</b>							
1	16IT002	Distributed Systems	3, 7	3	1	-	3
2	16IT007	Middleware Technologies	3, 5	3	1	-	3
3	16IT009	Cryptography and Network Security	3, 5, 6	3	1	-	3
4	16CS009	Social Network Analysis	2, 4, 5, 12	3	1	-	3
5		MOOCs		-	-	-	3
<b>Elective VI</b>							
1	16EC005	Digital Image Processing	2, 3, 5, 6	3	1	-	3
2	16IT010	Computer Forensics	2, 3, 5	3	1	-	3
3	16IT011	E & M Commerce	5, 6				
4	16IT504	Cloud Computing	3, 5, 6	3	1	-	3
5	16CS010	Multimedia Databases	3, 5, 6				
6	16CS011	Wireless Ad hoc Networks	3, 5, 6	3	1	-	3
		MOOCs		-	-	-	3

<b>Contemporary Courses (CC)<sup>5</sup></b>							
1	16IT012	Data Analytics I	2, 3, 5	4	-	-	3
2	16IT013	Data Analytics II	2, 3, 5	4	-	-	3
3	16IT014	Data Analytics III	2, 3, 5	4	-	-	3
4	16CS012	Security Analytics I	3, 5, 6, PSO1	4	-	-	3
5	16CS013	Security Analytics II	3, 5, 6	4	-	-	3
6	16CS014	Security Analytics III	3, 5, 6	4	-	-	3
7	16IT016	Enterprise Application Development using IBM RAD & Bluemix	3, 5, 6, PSO1	4	-		
8	16IT017	Big Data Analytics with Hadoop Platform	3, 5, 6, PSO1	4	-		
9	16IT018	Foundation Course in Security Identity and Access Management	3, 5, 6, PSO1	4	-		
10	16CSX16	Digital Marketing (Self Study )	2, 5, 12	-	-	-	1
<b>One Credit Course (s)<sup>5</sup></b>							
1	16CSI01	Tibero DB		1	0	0	1
2	16CSI02	Cyber Crime and IT Law		1	0	0	1
3	16CSI03	Introduction to Data science in Python		1	0	0	1
<b>Audit Courses</b>							
1	16AT001	Contemporary India: Economy, Polity and Society (ME)		-	-	-	-
2	16AT002	Indian Heritage and Culture (EEE)		-	-	-	-
3	16AT003	Intellectual Property Rights and Patents (ECE)		-	-	-	-
4	16AT004	Introduction to Journalism (CSE)		-	-	-	-
5	16AT005	Professional Ethics and Morals (CE)		-	-	-	-
6	16AT006	Science, Technology and Development (Chem)		-	-	-	-
7	16AT007	Industrial sociology (PE)		-	-	-	-
8	16AT008	Organizational Behavior (IT)		-	-	-	-
9	16AT009	Communication Etiquette in workplaces (BS & H)		-	-	-	-

**Department of Computer Science and Engineering**  
**M. Tech Specialization: Computer Science in Cyber Security**

[Minimum Credits to be earned: 64]

First Semester							
No	Course Code	Course	POs	Periods			
				L	T	P	C
1	17MCS101	Fundamentals of Computer Science and Engineering		3	1	-	3
2	17MCS102	Cryptography and Network Security		3	1	-	3
3	17MCS103	TCP/IP		3	1	-	3
4	17MCS104	Managing and Securing Networks*		3	-	2	4
5		Elective I		3	1	-	3
6	17MCS106	Cryptography and Network Security Laboratory		-	-	4	2
7	17MCS107	Term Paper		-	-	-	2
Total				20			
Second Semester							
1	17MCS201	Penetration Testing and Vulnerability Assessment		3	1	-	3
2	17MCS202	Cloud Architecture and Security		3	1	-	3
3	17MCS203	Principles of Secure Coding		3	1	-	3
4	17MCS204	Network Intrusion and Incidence Response*		3	-	2	4
5		Elective II		3	1	-	3
6	17MCS206	Secure Coding Laboratory		-	-	4	2
7	17MCS207	Comprehensive Viva-voce		-	-	-	2
Total				20			
Third Semester & Fourth Semester							
No	Course Code	Course	POs	Periods			
				L	T	P	C
1	17MCS301	Internship and Project Work	4, 6,7,8,9,10,11	-	-	-	4
2	17MCS302	Project Work (Inline to Cyber Security )	6,7,8,9,10,11	-	-	-	20
Total				24			

### List of Elective Courses

Elective I							
No	Course Code	Course	POs	Periods			
				L	T	P	C
1	17MCS001	Ethical Hacking and Counter Measures - 1		3	1	-	3
2	17MCS002	Computer Hacking and Forensic Investigator - 1		3	1	-	3
3	17MCS003	Incident Handler - 1		3	1	-	3
Elective II							
1	17MCS004	Ethical Hacking and Counter Measures - 2		3	1	-	3
2	17MCS005	Computer Hacking and Forensic Investigator - 2		3	1	-	3
3	17MCS006	Incident Handler - 2		3	1	-	3

\* --- Integrated course

## Departments of Computer Science & Engineering and Information Technology

### Minutes of 6<sup>th</sup> Board of Studies Meeting

**Date :** 20-11-2015

**Time:** 10.00 A.M. to 1.00 P.M.  
& 2.00 P.M. to 5.00 P.M.

#### **AGENDA:**

1. SWOT & GAP Analysis of the course structure and curriculum under AR13 regulations
2. Review & Finalization of course structure of UG Programmes under AR16 regulations.
3. Review & Finalization of course titles & content of UG Programmes under AR16 regulations.
4. Review & Finalization of course structure of PG Programmes under AR16 regulations.
5. Review & Finalization of course titles & content of PG Programmes under AR16 regulations.
6. Review & Revision of continuous assessment & semester end evaluation components under AR16 Regulations.
7. Review & Revision of continuous assessment system for AR16 Regulations.
8. Any other with the permission of the Chairman

#### **Members Present :**

S.No	NAME	DESIGNATION
1.	Dr. Srinivas Prasad	Chairman, BOS of CSE & IT, HOD - CSE
2.	Dr. P. Kanchanamala	Co-Chairman, BOS of CSE & IT, HOD - IT
3.	Dr. D. Rajyalakshmi	Member <i>D. Rajyalakshmi</i>
4.	Mr. Srikanth Gunturu	Member <i>G.S. Gunturu</i>
5.	Dr. Bansidahara Majhi	Member <i>Bansidahara Majhi</i>
6.	Dr. Anjaneyulu Pasala	Member <i>Anjaneyulu Pasala</i>
7.	Dr. Sasanko Sekhar Gantayat	Member
8.	Dr. V. Sreerama Murthy	Member
9.	Mr. A. Venkata Ramana	Member
10.	Mrs. R. Sivaranjani	Member
11.	Mrs. G. Anuradha	Member



12.	Sri D.K.Bebarta	Member
13.	Sri Ch. Sreenu Babu	Member
14.	Mr.Ajitkumar Rout	Member
15.	Sri Srinivasan Nagaraj	Member
16.	Sri K. Koteswara Rao	Member
17.	Mrs.S.Vani Kumari	Member
18.	Sri V.Srinadh	Member
19.	Sri M. Balajee	Member
20.	Mrs. I. Srilakshmi	Member
21.	Mrs.M.Vijaya Bharathi	Member
22.	Mrs. K.Srividya	Member
23.	Sri G. Narasinga Rao	Member
24.	Mr. G. Veerraju	Member
25.	Sri. K. Lakshmana Rao	Member
26.	Sri M. Rama Chandra	Member
27.	Ms. G. Neelima	Member
28.	Mr. P. Naga Raju	Member
29.	Sri Ch.Chakradhara Rao	Member
30.	Mrs. K. Jayasri	Member
31.	Mr. P. Muralidhara Rao	Member
32.	Mrs. V. Mahalakshmi	Member
33.	Mrs.N.Lakshmi Devi	Member
34.	Mr. A.V.Ramana	Member
35.	Mrs. M.Jyothi	Member
36.	Mr.M. Satish	Member
37.	Mr.P.Srihari	Member
38.	Mr.CH.R.Vinod Kumar	Member
39.	Mr.G.Satya Keerthi	Member
40.	Mrs.V.Vasudha Rani	Member
41.	Mrs.M.Suneetha	Member
42.	Mrs.A.Anupama	Member
43.	Mr.U.Chandra Sekhar	Member

## **Agenda 1: SWOT & GAP Analysis of the course structure and curriculum under AR13 regulations.**

- Analyzed the comparison between AR-13 and AR-16 regulations and informed that AR-13 regulations are for 192 credits and AR-16 is for 174 credits.
- Informed that SWOT analysis is done and reviewed the course structure and proposed for AR-16 in line with industry, GATE, TOFEL and research perspective.
- Also informed that for theory subject 3 credits were allotted and for lab 2 credits in AR-16.
- Displayed all the new courses in AR-16 structures, informed that four theory courses and 2 lab courses were introduced in AR-16 curriculum.
  - Four theory courses includes Probability & statistics, PPL, MPA
  - Two labs were unix lab(External BOS suggested to have Linux Lab) and Internet concepts & Web design Lab.
  - Language processors lab is replaced with soft computing Lab

## **Agenda 2: Review & Finalization of course structure of UG Programmes under AR16 regulations.**

## **Agenda 3: Review & Finalization of course titles & content of UG Programmes under AR16 regulations.**

- 1<sup>st</sup> Semester: C& Data structures subject:
  - BoS suggested changing the title to "*problem solving using C*". ✓
  - BoS members suggested to include data structures part upto stacks and queues. Suggestion was given to remove the searching and sorting part from data structures.
  - Also given suggestion that, emphasis should be on problem solving.
  - Asked to remove Bala guruswamy text book from the text books list. Suggested to include Kernigen Ritchie and problem solving by Dormy.
- C & DS Lab:
  - Suggested to change title to problem solving using C Lab.
  - Asked to revise practical problem statements.
- 3<sup>rd</sup> Semester & 4<sup>th</sup> Semester: After so many deliberations, the finalized course structure for 3<sup>rd</sup> and 4<sup>th</sup> semesters are

S. Rajya Laxmi

Bosad

G.S. Srinivas

Amritha



3 <sup>rd</sup> Semester	4 <sup>th</sup> Semester
Data Structures and Algorithms	Microprocessor through Interfacing
Digital Logic Design	Principles of Programming Language
Probability & Statistics	Computer organization & Architecture
Discrete Mathematics	Theory of Computation
Database Management Systems	Software Engineering
Object oriented programming through java	Advanced Java
Database Management Systems Lab	Microprocessor through Interfacing Lab
Object oriented programming through java Lab	Linux Lab
Data Structures Lab	Advanced Java Lab

- 5<sup>th</sup> Semester & 6<sup>th</sup> Semester: After so many deliberations, the finalized course structure for 5<sup>th</sup> and 6<sup>th</sup> semesters are

5 <sup>th</sup> Semester	6 <sup>th</sup> Semester
Compiler Design	Engineering Economics and Project Management
Computer Networks	Data Mining
Operating System	Object oriented Analysis and Design
Web Technologies(LAMP Stack)	Cryptography and Network Security
Design Analysis and Algorithms	E-2(RTOS/CG&M)
Software Verification and Validation	E-3(Computational Intelligence)
CN lab	OOAD lab
WT lab	Data Mining lab
Term Paper/ Mini Project	Research practice/Mini Project
Audit Course	CCEC

- 7<sup>th</sup> Semester(FSI) & 8<sup>th</sup> Semester: After so many deliberations, the finalized course structure for 5<sup>th</sup> and 6<sup>th</sup> semesters are

7 <sup>th</sup> Semester(FSI)	7 <sup>th</sup> Semester(NoN-FSI)
Internship	Software Reliability
	E-4(DSP/MT/MC/IoT)
	E-5(DS/HCI/QDA/SPM)
	Design & Analysis of Algorithms Lab
	Soft computing Lab

8 <sup>th</sup> Semester(Non - FSI)	8 <sup>th</sup> Semester (FSI)
Big Data Analytics	Internship
E-6 (DIP/IRS/CF/WAhN)	
E-7 (CC/BI/E-com/PR)	
Project Work	

- Suggested to include R Language to explore Big-Data Analytics.
- Suggestion was given to include mobile application development and Content based Image retrieval.

**Agenda 5&6: Review & Finalization of course structure of PG Programmes under AR16 regulations.**

- Suggestion was given to change the titles in the M.Tech course.
- Also suggested to change the theory subject credits from 4credits to 3 credits.
- Proposed to add more labs and informed that, M.Tech should have more learning hours than less contact hours.

**Agenda 7: Review & Revision of continuous assessment system for AR16 Regulations.**

- It has been decided to have 30% weightage for internal tests and 70% weightage for end semester Examinations.

**Agenda 8: Summary of reviews and suggestions received from various stakeholders.**

- Majority of Stakeholders had given that PEOs formulated are good enough catering to the achievement of the mission of the department.
- Reviews on POs were also found to be satisfactory as POs formulated covers all the graduate attributes prescribed by NBA
- Suggestions on courses to be included, project domains to be concentrated will be taken care in the design of curriculum

*Pradeep*

*G. S. Srinivas*

*H. M. Srinivas*

*D. Rajya Laxmi*