AC 6/6/2012
Item No. 4.76

UNIVERSITY OF MUMBAI

Bachelor of Engineering

First Year Engineering (Semester I & II), Revised course (REV- 2012) from Academic Year 2012 -13, (Common for All Branches of Engineering)

(As per Credit Based Semester and Grading System with effect from the academic year 2012–2013)

First Year Engineering (Semester I & II), Revised course from Academic Year 2012 -13, (REV- 2012),

Sub Code	Subject Name	Teaching Scheme			Credits Assigned			
		Theory	Pract.	Tut.	Theory	TW/Pract	Tut.	Total
FEC101	Applied Mathematics-I	04	-	01	04		01	05
FEC102	Applied Physics-I	03	01	-	03	0.5	-	3.5
FEC103	Applied Chemistry -I	03	01	-	03	0.5	-	3.5
FEC104	Engineering Mechanics	05	02	-	05	01	-	06
FEC105	Basic Electrical & Electronics Engineering	04	02	-	04	01	-	05
FEC106	Environmental studies	02	-	-	02	-	-	02
FEL101	Basic Workshop Practice-I	-	04	-	-	02	-	02
		21	10	01	21	05	01	27

(Common for all branches of Engineering)

Scheme for FE - Semester - I

Sub. Code	Subject Name	Examination Scheme							
		Theory Marks				Term Work	Pract.	Oral	Total
		Internal Assessment			End sem. exam				
		Test 1	Test 2	Average of Test 1 and Test 2					
FEC101	Applied Mathematics-I	20	20	20	80	25	-	-	125
FEC102	Applied Physics-I	15	15	15	60	25	-	-	100
FEC103	Applied Chemistry -I	15	15	15	60	25	-	-	100
FEC104	Engineering Mechanics	20	20	20	80	25	-	25	150
FEC105	Basic Electrical & Electronics Engineering	20	20	20	80	25	-	25	150
FEC106	Environmental studies	15	15	15	60	-	-	-	75
FEL101	Basic Workshop Practice-I	-	-	-	-	50	-	-	50
				105	420	175		50	750

First Year Engineering (Semester I & II), Revised course from Academic Year 2012 -13, (REV- 2012), (Common for all branches)

Subject Code	Subject Name	Teaching Scheme			Credits Assigned			
		Theory	Pract.	Tut.	Theory	TW/Pract	Tut.	Total
FEC201	Applied Mathematics-II	04	-	01	04		01	05
FEC202	Applied Physics-II	03	01	-	03	0.5	-	3.5
FEC203	Applied Chemistry -II	03	01	-	03	0.5		3.5
FEC204	Engineering Drawing	03	04	-	03	02	-	05
FEC205	Structured Programming Approach	04	02	-	04	01	-	05
FEC206	Communication Skills	02	02	-	02	01	-	03
FEL201	Basic Workshop Practice -II	-	04	-	-	02	-	02
		19	14	01	19	07	01	27

Scheme for Semester - II

Sub. Code	Subject Name	Examination Scheme							
		Theory marks				Term Work	Pract.	Oral	Total
		Internal Assessment			End sem. exam				
		Test 1	Test 2	Av. of Test 1 & 2					
FEC201	Applied Mathematics-II	20	20	20	80	25	-	-	125
FEC202	Applied Physics-II	15	15	15	60	25	-	-	100
FEC203	Applied Chemistry -II	15	15	15	60	25	-	-	100
FEC204	Engineering Drawing	15	15	15	60	25	50	-	150
FEC205	Structured Programming Approach	20	20	20	80	25	25	-	150
FEC206	Communication Skills	10	10	10	40	25	-	-	75
FEL201	Basic Workshop Practice-II	-	-	-	-	50	-	-	50
				95	380	200	75		750

UNIVERSITY OF MUMBAI

Bachelor of Engineering

Information Technology (Second Year – Sem. III & IV)

Revised course (REV- 2012)

From Academic Year 2013 -14

Under

FACULTY OF TECHNOLOGY

(As per Semester Based Credit and Grading System)

From Dean's Desk:

To meet the challenge of ensuring excellence in engineering education, the issue of quality needs to be addressed, debated and taken forward in a systematic manner. Accreditation is the principal means of quality assurance in higher education.The major emphasis of accreditation process is to measure the outcomes of the program that is being accredited. In line with this Faculty of Technology of University of Mumbai has taken a lead in incorporating philosophy of outcome based education in the process of curriculum development.

Faculty of Technology, University of Mumbai, in one of its meeting unanimously resolved that, each Board of Studies shall prepare some Program Educational Objectives (PEO's) and give freedom to affiliated Institutes to add few (PEO's) and course objectives and course outcomes to be clearly defined for each course, so that all faculty members in affiliated institutes understand the depth and approach of course to be taught, which will enhance learner's learning process. It was also resolved that, maximum senior faculty from colleges and experts from industry to be involved while revising the curriculum. I am happy to state that, each Board of studies has adhered to the resolutions passed by Faculty of Technology, and developed curriculum accordingly. In addition to outcome based education, semester based credit and grading system is also introduced to ensure quality of engineering education.

Semester based Credit and Grading system enables a much-required shift in focus from teacher-centric to learner-centric education since the workload estimated is based on the investment of time in learning and not in teaching. It also focuses on continuous evaluation which will enhance the quality of education. University of Mumbai has taken a lead in implementing the system through its affiliated Institutes and Faculty of Technology has devised a transparent credit assignment policy and adopted ten points scale to grade learner's performance.Credit assignment for courses is based on 15 weeks teaching learning process, however content of courses is to be taught in 12-13 weeks and remaining 3-2 weeks to be utilized for revision, guest lectures, coverage of content beyond syllabus etc.

Credit and grading based system was implemented for First Year of Engineering from the academic year 2012-2013. Subsequently this system will be carried forward for Second Year Engineering in the academic year 2013-2014, for Third Year and Final Year Engineering in the academic years 2014-2015 and 2015-2016 respectively.

Dr. S. K. Ukarande
Dean,
Faculty of Technology,
Member - Management Council, Senate, Academic Council
University of Mumbai, Mumbai

Preamble

The engineering education in India in general is expanding in manifolds. Now, the challenge is to ensure its quality to the stakeholders along with the expansion. To meet this challenge, the issue of quality needs to be addressed, debated and taken forward in a systematic manner. Accreditation is the principal means of quality assurance in higher education and reflects the fact that in achieving recognition, the institution or program of study is committed and open to external review to meet certain minimum specified standards. The major emphasis of this accreditation process is to measure the outcomes of the program that is being accredited. Program outcomes are essentially a range of skills and knowledge that a student will have at the time of graduation from the program. In line with this Faculty of Technology of University of Mumbai has taken a lead in incorporating philosophy of outcome based education in the process of curriculum development.

I, as Chairman, Board of Studies in Information Technology of University of Mumbai, happy to state here that, Program Educational Objectives were finalized in a meeting where more than 30 members from different Institutes were attended, who were either Heads or their representatives of Information Technology Department. The Program Educational Objectives finalized for undergraduate program in Information Technology are listed below;

1. To prepare Learner's with a sound foundation in the basics of engineering fundamentals.
2. To prepare Learner's to use effectively modern programming tools to solve real life problems.
3. To prepare Learner's for successful career in Indian and Multinational Organisations and to excel in Postgraduate studies
4. To encourage and motivate Learner's for entrepreneurship.
5. To inculcate professional and ethical attitude, good leadership qualities and commitment to social responsibilities in Learners.
6. To encourage Learner to use best practices and implement technologies to enhance information security and enable compliance, ensuring confidentiality, information integrity, and availability.

In addition to Program Educational Objectives, for each course of undergraduate program, objectives and expected outcomes from learner's point of view are also included in the curriculum to support the philosophy of outcome based education. I believe strongly that small step taken in right direction will definitely help in providing quality education to the stake holders.

Dr. J. W. Bakal
Chairman, Board of Studies in Information Technology,
University of Mumbai, Mumbai

S. E. (Information Technology) Sem.-III

Course Code	Course Name	Teaching Scheme			Credits Assigned			
		Theory	Pract.	Tut	Theory	TW/Pract	Tut	Total
SEITC301	Applied Mathematics – III *	4		1	4		1	5
SEITC302	Data Structure and Algorithm Analysis	4			4			5
SEITC303	Object Oriented Programming Methodology*	4			4			5
SEITC304	Analog and Digital Circuits	4			4			5
SEITC305	Database Management Systems	3			3			4
SEITC306	Principles of Analog and Digital Communication.	3			3			4
SEITL302	Data Structure and Algorithm Analysis		2			1		
SEITL303	Object Oriented Programming Methodology*		2			1		
SEITL304	Analog and Digital Circuits		2			1		
SEITL305	Database Management Systems		2			1		
SEITL306	Principles of Analog and Digital Communication		2			1		
	TOTAL	22	10	1	22	5	1	28

Examination Scheme

Course Code	Course Name	Theory					Term work	Pract /Oral .	Total
		Internal Assessment			End sem exam	Exam duration (in Hrs)			
		TEST1	TEST 2	AVG.					
SEITC301	Applied Mathematics-III*	20	20	20	80	3	25	--	125
SEITC302	Data Structure & Algorithm Analysis	20	20	20	80	3	25	25	150
SEITC303	Object Oriented Programming Methodology*	20	20	20	80	3	25	25	150
SEITC304	Analog & Digital Circuits	20	20	20	80	3	25	25	150
SEITC305	Database Management Systems	20	20	20	80	3	25	25	150
SEITC306	Principles of Analog & Digital Communication.	20	20	20	80	3	25	25	150
	Total	120	120	120	480		150	125	875

* Common with Computer Engineering.
Tutorials will be evaluated as term work.

S. E. (Information Technology) Sem.-IV

Course Code	Course Name	Teaching Scheme			Credits Assigned			
		Th	Pract	Tut	Th.	Pract/	Tut	Total
SEITC401	Applied Mathematics-IV*	4		1	4		1	5
SEITC402	Computer Networks	4			4			5
SEITC403	Computer Organization and Architecture*	4			4			4
SEITC404	Automata Theory	3		1	3		1	4
SEITC405	Web Programming	4			4			5
SEITC406	Information Theory and Coding	4		1	4		1	5
SEITL402	Computer Networks		2			1		
SEITL405	Web Programming		2			1		
	Total	23	4	3	23	2	3	28

Examination Scheme

Course Code	Course Name	Theory					Term work	Pract/ Oral	Total
		Internal Assessment			END SEM EXAM	EXAM DURATION (in Hrs)			
		TEST1	TEST 2	AVG.					
SEITC401	Applied Mathematics-IV*	20	20	20	80	3	25	--	125
SEITC402	Computer Networks	20	20	20	80	3	25	25	150
SEITC403	Computer Organization and Architecture*	20	20	20	80	3	25	25	150
SEITC404	Automata Theory	20	20	20	80	3	25	--	125
SEITC405	Web Programming	20	20	20	80	3	25	25	150
SEITC406	Information Theory and Coding	20	20	20	80	3	25	--	125
	Total	120	120	120	480		150	75	825

* Common with Computer Engineering.

Tutorials will be evaluated as term work.

UNIVERSITY OF MUMBAI

Bachelor of Engineering

Information Technology (Third Year – Sem. V & VI)

Revised course

(REV- 2012) from Academic Year 2014 -15

Under

FACULTY OF TECHNOLOGY

(As per Semester Based Credit and Grading System)

Preamble

To meet the challenge of ensuring excellence in engineering education, the issue of quality needs to be addressed, debated and taken forward in a systematic manner. Accreditation is the principal means of quality assurance in higher education. The major emphasis of accreditation process is to measure the outcomes of the program that is being accredited. In line with this Faculty of Technology of University of Mumbai has taken a lead in incorporating philosophy of outcome based education in the process of curriculum development.

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Semester based Credit and Grading system enables a much-required shift in focus from teacher-centric to learner-centric education since the workload estimated is based on the investment of time in learning and not in teaching. It also focuses on continuous evaluation which will enhance the quality of education. University of Mumbai has taken a lead in implementing the system through its affiliated Institutes and Faculty of Technology has devised a transparent credit assignment policy and adopted ten points scale to grade learner's performance. Credit and grading based system was implemented for First Year of Engineering from the academic year 2012-2013. Subsequently this system will be carried forward for Second Year Engineering in the academic year 2013-2014, for Third Year and Final Year Engineering in the academic years 2014-2015 and 2015-2016 respectively.

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Dr. J. W. Bakal
Chairman, Board of Studies in Information Technology
University of Mumbai, Mumbai

Third Year Engineering (Semester V)
Revised course for Information Technology
Academic Year 2014-15 (REV- 2012)

Sub Code	Subject Name	Teaching Scheme (hrs/week)			Credits Assigned			
		Theory	Practical	Tut.	Theory	TW/ Practical	Tut.	Total
TEITC501	Computer Graphics and Virtual Reality	4			4			4
TEITC502	Operating Systems	4			4			4
TEITC503	Microcontroller and Embedded Systems	4			4			4
TEITC504	Advanced Database Management Systems	4			4			4
TEITC505	Open Source Technologies	3			3			3
TEITC506	Business Communication and Ethics*		2**+2			2		2
TEITL501	Computer Graphics and Virtual Reality		2			1		1
TEITL502	Operating Systems		2			1		1
TEITL503	Microcontroller and Embedded Systems		2			1		1
TEITL504	Advanced Database Management Systems		2			1		1
TEITL505	Open Source Technologies		2			1		1
	Total	19	12		19	07		26

***Common for all programs.**
****Theory class to be conducted for entire class.**

Note: During third year of engineering learners can be exposed to industrial environment by arranging an industrial visit.

Examination Scheme

Course Code	Course Name	Theory					Term work	Pract/ Oral	Total
		Internal Assessment			End sem exam	Exam duration (in Hrs)			
		TEST 1	TEST 2	AVG.					
TEITC501	Computer Graphics and Virtual Reality	20	20	20	80	3	25	25	150
TEITC502	Operating Systems	20	20	20	80	3	25	25	150
TEITC503	Microcontroller and Embedded Systems	20	20	20	80	3	25	25	150
TEITC504	Advanced Database Management Systems	20	20	20	80	3	25	25	150
TEITC505	Open Source Technologies	20	20	20	80	3	25	25	150
TEITC506	Business Communication and Ethics*	---	---	---	---	---	25	25	050
	Total	100	100	100	400	15	150	150	800

Third Year Engineering (Semester VI)
Revised course for Information Technology
Academic Year 2014 -15 (REV- 2012)

Subject Code	Subject Name	Teaching Scheme (hrs/week)			Credits Assigned			
		Theory	Practical	Tut.	Theory	TW/Pract.	Tut.	Total
TEITC601	Software Engineering	4			4			4
TEITC602	Distributed Systems	4			4			4
TEITC603	System and Web Security	4			4			4
TEITC604	Data Mining and Business Intelligence	4			4			4
TEITC605	Advance Internet Technology	4			4			4
TEITL601	Software Engineering		2			1		1
TEITL602	Distributed Systems		2			1		1
TEITL603	System and Web Security		2			1		1
TEITL604	Data Mining and Business Intelligence		2			1		1
TEITL605	Advance Internet Technology		2			1		1
	Total	20	10		20	05		25

Examination Scheme

Course Code	Course Name	Theory					Term work	Practical /Oral	Total
		Internal Assessment			End Sem exam	Exam duration (in Hrs)			
		TEST 1	TEST 2	AVG.					
TEITC601	Software Engineering	20	20	20	80	3	25	25	150
TEITC602	Distributed Systems	20	20	20	80	3	25	25	150
TEITC603	System & Web Security	20	20	20	80	3	25	25	150
TEITC604	Data Mining & Business Intelligence	20	20	20	80	3	25	25	150
TEITC605	Advance Internet Technology	20	20	20	80	3	25	25	150
	Total	100	100	100	400	15	125	125	750

AC7/6/2014

Item no. - 4.29

UNIVERSITY OF MUMBAI

Bachelor of Engineering

Information Technology (Final Year – Sem.VII & VIII)

Revised course (REV- 2012)

From Academic Year 2015 -16

Under

FACULTY OF TECHNOLOGY

(As per Semester Based Credit and Grading System)

From Dean's Desk:

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Dr. J. W. Bakal
Chairman, Board of Studies in Information Technology,

B.E. Engineering (Semester VII)
Revised course for Information Technology
Academic Year 2015 -16 (REV- 2012)

Course Code	Course Name	Teaching Scheme (hrs/week)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	TW/Prac	Tut.	Total
ITC701	Software Project Management	4			4			4
ITC702	Cloud Computing	3			3			3
ITC703	Intelligent System	4			4			4
ITC704	Wireless Technology	4			4			4
ITC705	Elective - I	4			4			4
ITL701	Software Project Management		2			1		1
ITL702	Cloud Computing		2			1		1
ITL703	Intelligent System		2			1		1
ITL704	Wireless Technology		2			1		1
ITT705	Elective - I		2			1		1
ITP706	Project-I		*			3		3
	Total	19	10		19	08		27

***Work load of the teacher in semester VII is equivalent to 6 hrs/week.**

Elective –I (Semester VII)	
ITC7051	Image Processing
ITC7052	Software Architecture
ITC7053	E-Commerce & E-Business
ITC7054	Multimedia Systems
ITC7055	Usability Engineering
ITC7056	Ubiquitous Computing

Examination Scheme

Course Code	Course Name	Theory					Term work	Pract/ Oral	Total
		Internal Assessment			End sem exam	Exam duration (in Hrs)			
		TEST 1	TEST 2	AVG.					
ITC701	Software Project Management	20	20	20	80	3	25	25	150
ITC702	Cloud Computing	20	20	20	80	3	25	25	150
ITC703	Intelligent System	20	20	20	80	3	25	25	150
ITC704	Wireless Technology	20	20	20	80	3	25	25	150
ITC705	Elective - I	20	20	20	80	3	25	25	150
ITP706	Project-I						25	25	050
	Total	100	100	100	400	15	150	150	800

B.E. Engineering (Semester VIII)
Revised course for Information Technology from
Academic Year 2015 -16, (REV- 2012)

Course Code	Course Name	Teaching Scheme			Credits Assigned			
		Theory	Pract.	Tut.	Theory	TW/Pract	Tut.	Total
ITC801	Storage Network Management and Retrieval	4			4			4
ITC802	Big Data Analytics	4			4			4
ITC803	Computer Simulation and Modeling	4			4			4
ITC804	Elective -II	4			4			4
ITL801	Storage Network Management and Retrieval		2			1		1
ITL802	Big Data Analytics		2			1		1
ITL803	Computer Simulation and Modeling		2			1		1
ITL804	Elective -II		2			1		1
ITP805	Project - II		**			6		6
	Total	16	08		16	10		26

****Workload of the teacher in semester VIII is equivalent to 12 hrs/week.**

Elective –I I (Semester VIII)	
ITC8041	Enterprise Resource Planning
ITC8042	Wireless Sensor Networks
ITC8043	Geographical Information Systems
ITC8044	Robotics
ITC8045	Soft Computing
ITC8046	Software Testing & Quality Assurance

Examination Scheme

Course Code	Course Name	Theory					Term work	Pract/ Oral	Total
		Internal Assessment			End sem exam	Exam duration (in Hrs)			
		TEST 1	TEST 2	AVG.					
ITC801	Storage Network Management and Retrieval	20	20	20	80	3	25	25	150
ITC802	Big Data Analytics	20	20	20	80	3	25	25	150
ITC803	Computer Simulation and Modeling	20	20	20	80	3	25	25	150
ITC804	Elective -II	20	20	20	80	3	25	25	150
ITP805	Project - II						50	50	100
	Total	80	80	80	320	12	150	150	700