1.2 - Academic Flexibility
1.2.1-Number of Programmes in which Choice Based Credit System (CBCS)/ elective course system has been implemented

List of Supporting Documents

Sr.No	Documents
1	Graduation Courses Syllabus Structure
2	Post Graduate Courses Syllabus Structure

Principal,

Dr. F.B. Sayyad

Graduation Course Structure

Curriculum
for

Third Year of Computer Engineering
(2019 Course)

(With effect from 2021-22)

http://unipune.ac.in

Faculty of Science and Technology

Savitribai Phule Pune University
Maharashtra, India

Savitribai Phule Pune University
Third Year of Computer Engineering (2019 Course)
(With effect from Academic Year 2021-22)
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Savitribai Phule Pune University
Third Year of Computer Engineering (2019 Course)
(With effect from Academic Year 2021-22)

Home

Semester V

Course Code	Course Name	Teaching Scheme (Hours/week)			Examination Scheme and Marks						Credit Scheme			
		Lecture	Practical	Tutorial	Mid-Sem	End-Sem	Term work	Practical	Oral	Total	Lecture	Practical	Tutorial	Total
310241	Database Management Systems	03	-	-	30	70	-	-	-	100	03	-	-	03
310242	Theory of Computation	03	-	-	30	70	-	-	-	100	03	-	-	03
310243	Systems Programming and Operating System	03	-	-	30	70	-	-	-	100	03	-	-	03
310244	Computer Networks and Security	03	-	-	30	70	-	-	-	100	03	-	-	03
310245	Elective I	03	-	-	30	70	-	-	-	100	03	-	-	03
310246	Database Management Systems Laboratory	-	04	-	-	-	25	25	-	50	-	02	-	02
310247	Computer Networks and Security Laboratory	-	02	-	-	-	25	-	25	50	-	01	-	01
310248	Laboratory Practice I	-	04	-	-	-	25	25	-	50	-	02	-	02
310249	Seminar and Technical Communication	-	-	01	-	-	50	-	-	50	-	-	01	01
	Total	15	10	01	150	350	125	50	25	700	15	05	01	21
310250	Audit Course 5												Grade	
	Total Credit										15	05	01	21

310245 Elective I Options:
310245(A) Internet of Things and Embedded Systems
310245(B) Human Computer Interface
310245(C) Distributed Systems
310245(D) Software Project Management

310250 Audit Course 5 Options:
310250 (A) Cyber Security
310250 (B) Professional Ethics and Etiquettes
310250 (C) Learn New Skills
310250 (D) Engineering Economics
310250 (E) Foreign Language

Laboratory Practice I
Assignments from **Systems Programming and Operating System** and **Elective I**

Savitribai Phule Pune University
Third Year of Computer Engineering (2019 Course)
(With effect from Academic Year 2021-22)

Semester VI

Course Code	Course Name	Teaching Scheme (Hours/week) $$			Examination Scheme and Marks						Credit Scheme			
		Lecture	Practical	Tutorial	Mid-Sem	End-Sem	Term work	Practical	Oral	Total	Lecture	Practical	Tutorial	Total
310251	Data Science and Big Data Analytics	04	-	-	30	70	-	-	-	100	03	-	-	03
310252	Web Technology	04	-	-	30	70	-	-	-	100	03	-	-	03
310253	Artificial Intelligence	04	-	-	30	70	-	-	-	100	03	-	-	03
310254	Elective II	04	-	-	30	70	-	-	-	100	03	-	-	03
310255	Internship**	-	-	-	-	-	100 **	-	-	100	-	-	-	04 **
310256	Data Science and Big Data Analytics Laboratory	-	04	-	-	-	50	25	-	75	-	02	-	02
310257	Web Technology Laboratory	-	02	-	-	-	25	-	25	50	-	01	-	01
310258	Laboratory Practice II	-	04	-	-	-	50	25	-	75	-	02	-	02
	Total	12	10	-	120	280	225	50	25	700	12	09	-	21
310259	Audit Course 6												Grade	
	Total										12	09	-	21

310254 Elective II Options:
310254(A) Information Security
310254(B) Augmented and Virtual Reality
310254(C) Cloud Computing
310254(D) Software Modeling and Architectures

310259 Audit Course 6 Options:
310259(A) Digital and Social Media Marketing
310259(B) Sustainable Energy Systems
310259(C) Leadership and Personality Development
310259(D) Foreign Language
310259(E) Learn New Skills

Laboratory Practice II:
Assignments from **Artificial Intelligence** and **Elective II**.

**** Internship:**
Internship guidelines are provided in course curriculum sheet.

$$ Hours/Week for Theory Course in Third Year of Engineering, Semester VI:

As per the apex bodies' recommendations and guidelines, it is need of the day to train the pre-final year students for the industrial readiness through internship. As per the guidelines of AICTE, the duration of internship is 4-6 weeks after completion of semester V and before commencement of semester VI, so it is apparent that the contact hours of the TE students need to be managed meticulously. It becomes mandatory as per the structure that 4 credits for internship must earned by the students. **Per semester, 15 weeks duration that is suggested ideally by the affiliated university will eventually reduce to fruitful 12 weeks after the implementation of the revised curriculum (2019 Course). With the evaluatory introduction of internship in the structure, we are left with the choice of 4 theory courses in the sixth semester with 12 weeks instead of traditional 15 weeks.** To balance the credits and to achieve the minimum required contact hours, it is the reasonable choice to allot 4 hours / week for each theory course of the sixth semester of Third year of Engineering. The additional one lecture/ week will definitely be instrumental in achieving the largest of minimum contact hours. As such there is no correspondence of weekly load and credits earned, the credit allotted per course remain intact despite of the change. **So it is almost imperative that the commencement of VI Semester need to be approx. 3 weeks beyond the schedule.**

Faculty of Engineering
Savitribai Phule Pune University, Pune

Maharashtra, India

Syllabus

for

Fourth Year of Computer Engineering
(2015 Course)

(with effect from 2018-19)

Prologue

It is with great pleasure and honor that I share the syllabi for Fourth Year of Computer Engineering (2015 Course) on behalf of Board of Studies (BoS), Computer Engineering. We, members of BoS are giving our best to streamline the processes and curricula design at both UG and PG programs.

It is always the strenuous task to balance the syllabus with the blend of core subjects, current developments and exotic subjects. By considering all the aspects with adequate prudence the contents are designed to make the graduate competent enough as far as employability is concerned. It is absolutely necessary and justified to add sufficient flexibility in the given constraints leading the curriculum design near to perfection.

It may be highly subjective to include or exclude the courses, but benefit of the learner is always the nucleus the process. Many thoughts, suggestions, recommendations and directions help us to come up with the final contents. For the final year finishing touch is absolutely necessary which is provided with project based learning at the most.

I sincerely thank all the minds and hands who work adroitly to materialize these tasks. I really appreciate everyone's contribution and suggestions in finalizing the contents.

Dr. Varsha H. Patil

Coordinator, Board of Studies (Computer Engineering), SPPU, Pune

[This document contents Program Educational Objectives - Program Outcomes - Program Specific Outcomes(page 3),Courses (teaching scheme, examination, marks and credit)(page 4-5), Courses syllabi(page 7-85) and FE to BE courses at a glance(Page 86-87)].

Other related Syllabus Links:
Syllabus for First Year Engineering (2015 Course)
Syllabus for Second Year Computer Engineering (2015 Course)
Syllabus for Third Year Computer Engineering (2015 Course)

Savitribai Phule Pune University
Fourth Year of Computer Engineering (2015 Course)
(with effect from 2018-19)

Semester I

Course Code	Course	Teaching Scheme Hours / Week		Examination Scheme and Marks						Credit	
		Theory	Practical	In-Sem	End-Sem	TW	PR	OR/ *PRE	Total	TH/ TUT	PR
410241	High Performance Computing	04	--	30	70	--	--	--	100	04	--
410242	Artificial Intelligence and Robotics	03	--	30	70	--	--	--	100	03	--
410243	Data Analytics	03	--	30	70	--	--	--	100	03	--
410244	Elective I	03	--	30	70	--	--	--	100	03	--
410245	Elective II	03	--	30	70	--	--	--	100	03	--
410246	Laboratory Practice I	--	04	--	--	50	50	--	100	--	02
410247	Laboratory Practice II	--	04	--	--	50	--	*50	100	--	02
410248	Project Work Stage I	--	02	--	--	--	--	*50	50	--	02
								Total Credit		16	06
	Total	16	10	150	350	100	50	100	750	22	
410249	Audit Course 5									Grade	

Elective I	Elective II
410244 (A) Digital Signal Processing	410245 (A) Distributed Systems
410244 (B) Software Architecture and Design	410245 (B) Software Testing and Quality Assurance
410244 (C) Pervasive and Ubiquitous Computing	410245 (C) Operations Research
410244 (D) Data Mining and Warehousing	410245 (D) Mobile Communication

410249-Audit Course 5 (AC5) Options:

AC5-I   Entrepreneurship Development   AC5-IV: Industrial Safety and Environment Consciousness

AC5-II: Botnet of Things   AC5-V: Emotional Intelligence

AC5-III: 3D Printing   AC5-VI: MOOC- Learn New Skills

Abbreviations:

TW: Term Work   TH: Theory   OR: Oral   PR: Practical

Sem: Semester   *PRE: Project/ Mini-Project Presentation

Savitribai Phule Pune University
Fourth Year of Computer Engineering (2015 Course)
(with effect from 2018-19)

Semester II

Course Code	Course	Teaching Scheme Hours / Week		Examination Scheme and Marks						Credit	
		Theory	Practical	In-Sem	End-Sem	TW	PR	OR/ *PRE	Total	TH/ TUT	PR
410250	Machine Learning	03	--	30	70	--	--	--	100	03	--
410251	Information and Cyber Security	03	--	30	70	--	--	--	100	03	--
410252	Elective III	03	--	30	70	--	--	--	100	03	--
410253	Elective IV	03	--	30	70	--	--	--	100	03	--
410254	Laboratory Practice III	--	04	--	--	50	50	--	100	--	02
410255	Laboratory Practice IV	--	04	--	--	50	--	*50	100	--	02
410256	Project Work Stage II	--	06	--	--	100	--	*50	150	02	04
								Total Credit		12	10
	Total	12	14	120	280	200	50	100	750	22	
4102 57	Audit Course 6									Grade	

Elective III	Elective IV
410252 (A) Advanced Digital Signal Processing	410253 (A) Software Defined Networks
410252 (B) Compilers	410253 (B) Human Computer Interface
410252 (C) Embedded and Real Time Operating Systems	410253 (C) Cloud Computing
410252 (D) Soft Computing and Optimization Algorithms	410253 (D) Open Elective

410259-Audit Course 6 (AC6) Options:

AC6-I: Business Intelligence
AC6-II: Gamification
AC6-III: Quantum Computing

AC6-IV: Usability Engineering
AC6-V: Conversational Interfaces
AC6-VI: MOOC- Learn New Skills

Abbreviations:

TW: Term Work   TH: Theory   OR: Oral   PR: Practical

Sem: Semester   *PRE: Project/ Mini-Project Presentation

Savitribai Phule Pune University, Pune

Syllabus for TE Civil Engineering (2019 Pattern)

Implemented from Academic year 2021-22

Board of Studies in Civil Engineering

Faculty of Science and Technology

Course Code	Course Name	Teaching Scheme (Hours/Week)			Examination Scheme and Marks							Credit					
		Theory	Practical	Tutorial	IN-Sem	End-Sem	TW	PR	OR	Total	TH	TW	PR	OR	TUT	Total
301001	Hydrology and Water Resources Engineering	03	--	--	30	70	--	--	--	100	03	--	--	--	--	03
301002	Water Supply Engineering	03	--	--	30	70	--	--	--	100	03	--	--	--	--	03
301003	Design of Steel Structures	03	--	--	30	70	--	--	--	100	03	--	--	--	--	03
301004	Engineering Economics and Financial Management	03	--	--	30	70	--	--	--	100	03	--	--	--	--	03
301005	Elective I	03	--	--	30	70	--	--	--	100	03	--	--	--	--	03
301006	Seminar	--	--	01	--	-	50	--	--	50	--	--	--	--	01	01
301007	Hydrology and Water Resources Engineering Lab	--	02	--	--	--	25	--	--	25	--	01	--	--	--	01
301008	Water Supply Engineering Lab	--	02	--	--	--	--	50	--	50	--	--	01	--	--	01
301009	Design of Steel Structures Lab	--	04	--	--	--	--	--	50	50	--	--	--	02	--	02
301010	Elective I Lab	--	02	--	--	--	25	--	--	25	--	01	--	--	--	01
301011	Audit Course I: Professional Ethics and Etiquettes/ Sustainable Energy Systems	--	--	01	--	GR	--	--	--	GR	--	--	--	--	--	--
	Total	15	10	02	150	350	100	50	50	700	15	02	01	02	01	21

Abbreviations: TH : Theory, TW: Term Work, PR : Practical, OR: Oral, TUT : Tutorial, GR: Grade

Elective I: 301005

S N	Course Code	Course Name
01	301005 a	Advanced Fluid Mechanics and Hydraulic Machines
02	301005 b	Research Methodology and IPR
03	301005 c	Construction Management
04	301005 d	Advanced Concrete Technology
05	301005 e	Matrix Methods of Structural Analysis
06	301005 f	Advanced Mechanics of Structures

SEMESTER-VI

Course Code	Course Name	Teaching Scheme (Hours/Week)			Examination Scheme and Marks						Credit					
		Theory	Practical	Tutorial	IN-Sem	End-Sem	TW	PR	OR	Total	TH	TW	PR	OR	TUT	Total
301012	Waste Water Engineering	03	--	--	30	70	--	--	--	100	03	--	--		--	03
301013	Design of RC Structures	03	--	--	30	70	--	--	--	100	03	--	--		--	03
301014	Remote Sensing and GIS	03	--	--	30	70	--	--	--	100	03	--	--		--	03
301015	Elective II	03	--	--	30	70	--	--	--	100	03	--	--		--	03
301016	Internship	--	--	--	--	--	100	--	--	100	--	04	--	--		04
301017	Waste Water Engineering Lab	--	02	--	--	--	--	--	50	50	--		--	01	--	01
301018	Design of RC Structures Lab	--	04	--	--	--	--	--	50	50	--		--	02	--	02
301019	Remote Sensing and GIS Lab	--	02	--	--	--	50	--	--	50	--	01	--	--	--	01
301020	Elective II Lab	--	02	--	--	--	50	--	--	50	--	01	--	--	--	01
301021	Audit Course II: Leadership and Personality Development/ Industrial Safety	--	--	01	--	GR	--	--	--	GR		--	--	--	--	--
	Total	12	10	01	120	280	200	--	100	700	12	06	--	03	--	21

Abbreviations: TH : Theory, TW: Term Work, PR : Practical, OR: Oral and TUT : Tutorial, GR: Grade

Elective II: 301015

S N	Course Code	Course Name
01	301015 a	Advanced Engineering Geology with Rock Mechanics
02	301015 b	Soft Computing Techniques
03	301015 c	Advanced Surveying
04	301015 d	Advanced Geotechnical Engineering
05	301015 e	Architecture and Town Planning
06	301015 f	Solid Waste Management
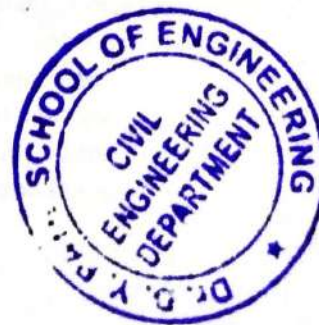
SAVITRIBAI PHULE PUNE UNIVERSITY

Board of Studies in Civil Engineering

Structure and Syllabus for B.E. Civil 2015 Course (w. e. f. June, 2018)

SAVITRIBAI PHULE PUNE UNIVERSITY

Board of Studies in Civil Engineering

Structure for B.E. Civil 2015 Course (w. e. f. June 2018)

Subject code	Subject	Teaching Scheme Hrs/Week			In-Semester Assessment	TW	Pract /Or	End-Semester Exam	Total	Credit	
		Lect	Tu	Pr						Th	Lab
401 001	Environmental Engineering II	3	--	2	30	--	50	70	150	3	1
401002	Transportation Engineering	3	--	2	30	50	--	70	150	3	1
401 003	Structural Design and Drawing III	4	--	2	30	--	50	70	150	4	1
401 004	Elective I	3	--	2	30	50	--	70	150	3	1
401 005	Elective II	3	--	--	30	--	--	70	100	3	--
401 006	Project (Phase-I)	--	2	--	--	--	50	--	50	--	2
	Total :	16	2	8	150	100	150	350	750	16	6
										22 Credits	

Semester-I

Subject code	Subject	Teaching Scheme Hrs/Week			In-Semester Assessment	TW	Or	End-Semester Exam	Total	Credit	
		Lect	Tu	Pr						Th	Pr
401 007	Dams and Hydraulic Structures	3	--	2	30	--	50	70	150	3	1
401008	Quantity Surveying, Contracts and tenders	3	--	2	30	--	50	70	150	3	1
401 009	Elective III	3	--	2	30	50	--	70	150	3	1
401 010	Elective IV	3	--	2	30	50	--	70	150	3	1
401 006	Project	--	6	--	--	50	100	--	150	--	6
	Total :	12	6	8	120	150	200	280	750	12	10
										22 Credits	

Semester-II

Savitribai Phule Pune University
Faculty of Science & Technology

Curriculum

For

First Year
Bachelor of Engineering
(Choice Based Credit System)

(2019 Course)

(With Effect from Academic Year 2019-20)

Savitribai Phule Pune University

Faculty of Science and Technology

Syllabus for Final Year of Mechanical Engineering

(Course 2015)

Savitribai Phule Pune University

B. E. (Mechanical) (2015 Course) Semester – I

Code	Subject	Teaching Scheme Hrs / week			Examination Scheme					Total Marks	Credits	
		Lecture	Tut	Pract	In Sem	End Sem	TW	PR	OR		Theory	TW/ Pr/OR
402041	Hydraulics and Pneumatics	3	-	2	30	70	25	-	25	150	3	1
402042	CAD CAM Automation	3	-	2	30	70	25	50	-	175	3	1
402043	Dynamics of Machinery	4	-	2	30	70	25	-	25	150	4	1
402044	Elective-I	3	-	2	30	70	25	-	-	125	3	1
402045	Elective-II	3	-	-	30	70	-	-	-	100	3	-
402046	Project-I	-	-	4	-	-	25	-	25	50	-	2
	Total	16	-	12	150	350	125	50	75	750	16	6
											22	

B. E. (Mechanical) (2015 Course) Semester – II

Code	Subject	Teaching Scheme Hrs / week			Examination Scheme					Total Marks	Credits	
		Lecture	Tut	Pract	In Sem	End Sem	TW	PR	OR		Theory	TW/ Pr/OR
402047	Energy Engineering	3	-	2	30	70	25	-	25	150	3	1
402048	Mechanical System Design	4	-	2	30 (1.5 Hrs)	70 (3 Hrs)	25	-	50	175	4	1
402049	Elective-III	3	-	2	30	70	25	-	-	125	3	1
402050	Elective-IV	3	-	-	30	70	-	-	-	100	3	-
402051	Project-II	-	-	12	-	-	100	-	100	200	-	6
	Total	13	-	18	120	280	175	-	175	750	13	9
											22	

Elective – I			Elective – II	
Code	Subject		Code	Subject
402044 A	Finite Element Analysis		402045 A	Automobile Engineering
402044 B	Computational Fluid Dynamics		402045 B	Operation Research
402044 C	Heating Ventilation and Air Conditioning		402045 C	Energy Audit and Management
			402045 D	Open Elective**

Elective – III			Elective – IV	
402049 A	Tribology		402050 A	Advanced Manufacturing Processes
402049 B	Industrial Engineering		402050 B	Solar & Wind Energy
402049 C	Robotics		402050 C	Product Design and Development
			402050 D	Open Elective**

Faculty of Science and Technology   Mechanical Engineering

Savitribai Phule Pune University
Board of Studies - Automobile and Mechanical Engineering
Undergraduate Program - Mechanical Engineering (2019 pattern)

Course Code	Course Name	Teaching Scheme (Hrs/week)			Examination Scheme and Marks						Credit			
		TH	PR	TUT	ISE	ESE	TW	PR	OR	Total	TH	PR	TUT	Total
Semester-V														
302011	Numerical & Statistical Methods	3	-	1	30	70	25	-	-	125	3	-	1	4
302012	Heat & Mass Transfer	3	2	-	30	70	-	50	-	150	3	1	-	4
302013	Design of Machine Elements	3	2	-	30	70	-	-	25	125	3	1	-	4
302014	Mechatronics	3	2	-	30	70	-	-	25	125	3	1	-	4
302015	Elective I	3	-	-	30	70	-	-	-	100	3	-	-	3
302016	Digital Manufacturing Laboratory	-	2	-	-	-	50	-	-	50	-	1	-	1
302017	Skill Development	-	2	-	-	-	25	-	-	25	-	1	-	1
302018	Audit course - V$	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	15	10	1	150	350	100	50	50	700	15	5	1	21
Semester-VI														
302049	Artificial Intelligence & Machine Learning	3	2	-	30	70	-	-	25	125	3	1	-	4
302050	Computer Aided Engineering	3	2	-	30	70	-	50	-	150	3	1	-	4
302051	Design of Transmission Systems	3	2	-	30	70	-	-	25	125	3	1	-	4
302052	Elective II	3	-	-	30	70	-	-	-	100	3	-	-	3
302053	Measurement Laboratory	-	2	-	-	-	50	-	-	50	-	1	-	1
302054	Fluid Power & Control Laboratory	-	2	-	-	-	50	-	-	50	-	1	-	1
302055	Internship/Mini project *	-	4	-	-	-	100	-	-	100	-	4	-	4
302056	Audit course - VI$	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	12	14	-	120	280	200	50	50	700	12	9	-	21

Elective-I		Elective-II	
302045-A	Advanced Forming & Joining Processes	302052-A	Composite Materials
302045-B	Machining Science & Technology	302052-B	Surface Engineering

Abbreviations: TH: Theory, **PR**: Practical, **TUT**: Tutorial, **ISE**: In-Semester Exam, **ESE**: End-Semester Exam, **TW**: Term Work, **OR**: Oral

Note: Interested students of TE (Automobile Engineering and Mechanical Engineering) can opt for any one of the audit course from the list of audit courses prescribed by BOS (Automobile and Mechanical Engineering)

Instructions:
- Practical/Tutorial must be conducted in FOUR batches per division only.
- Minimum number of Experiments/Assignments in PR/Tutorial shall be carried out **as mentioned in the syllabi** of respective courses.
- Assessment of tutorial work has to be carried out similar to term-work. The Grade cum marks for Tutorial and Term-work shall be awarded on the basis of **continuous evaluation.**
- $Audit course is mandatory but non-credit course. Examination has to be conducted at the end of Semesters for award of grade at institute level. Grade awarded for audit course shall not be calculated for grade point & CGPA.

"Empowerment through quality technical education"
Dr D Y Patil Educational Enterprises Charitable Trust's
Ajeenkya D Y Patil Group of Institution's Technical Campus
Dr D Y PATIL SCHOOL OF ENGINEERING
(Approved by AICTE, New Delhi Recognized by Govt. of Maharashtra, Affiliated to Savitribai Phule Pune University)
AISHE Code: C-46648   DTE Code: EN6732   SPPU PUN Code: CEGP015720
(Accredited by NAAC)

Post-Graduation Course Structure

Savitribai Phule Pune University, Pune
Master of Computer Engineering (2017 Course)

Semester I

Course Code	Course	Teaching Scheme Hours / Week		Examination Scheme and Marks					Credit	
		Theory	Practical	In-Sem	End-Sem	TW	OR/PRE	Total	TH	PR
510101	Research Methodology	04	--	50	50	--	--	100	04	--
510102	Bio-Inspired Optimization Algorithms	04	--	50	50	--	--	100	04	--
510103	Software Development and Version Control	04	--	50	50	--	--	100	04	--
510104	Embedded and Real Time Operating Systems	04	--	50	50	--	--	100	04	--
510105	Elective I	05	--	50	50	--	--	100	05	-
510106	Laboratory Proficiency I	--	08	--	--	50	50	100	--	04
							Total Credit		21	04
	Total	21	08	250	250	50	50	600	25	
510107	Non-Credit Course I								Grade	

| Elective I			
510105A	Advanced Digital Signal Processing	510105B	Data Mining
510105C	Network Design and Analysis	510105D	Data Algorithms
510105E	Open Elective		

Semester II

Course Code	Course	Teaching Scheme Hours / Week		Examination Scheme and Marks					Credit	
		Theory	Practical	In-Sem	End-Sem	TW	OR/PRE	Total	TH	PR
510108	Operation Research	04	--	50	50	--	--	100	04	--
510109	System Simulation and Modeling	04	--	50	50	--	--	100	04	--
510110	Machine Learning	04	--	50	50	--	--	100	04	--
510111	Elective II	05	--	50	50	--	--	100	05	--
510112	Seminar I		04	--	--	50	50	100	--	04
510113	Laboratory Proficiency II	--	08	--	--	50	50	100	--	04
							Total Credit		17	08
	Total	17	12	200	200	100	100	600	25	
510114	Non-Credit Course II								Grade	

Elective II			
510111A	Image Processing	510111B	Web Mining
510111C	Pervasive and Ubiquitous Computing	510111D	Network Security
510111E	Open Elective		

Abbreviations: TW: Term Work , **TH:** Theory, **OR:** Oral, **PRE:** Presentation, **Sem:** Semester
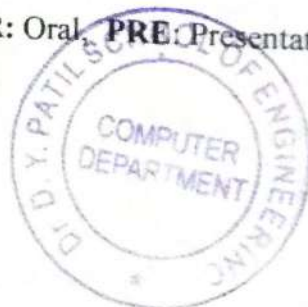
Savitribai Phule Pune University, Pune
Master of Computer Engineering (2017 Course)

Semester III

Course Code	Course	Teaching Scheme Hours / Week		Examination Scheme and Marks					Credit	
		Theory	Practical	In-Sem	End-Sem	TW	OR/PRE	Total	TH	PR
610101	Fault Tolerant Systems	04	--	50	50	--	--	100	04	--
610102	Information Retrieval	04	--	50	50	--	--	100	04	--
610103	Elective III	05	--	50	50	--	--	100	05	--
610104	Seminar II	--	04	--	--	50	50	100	--	04
610105	Dissertation Stage I	--	08	--	--	50	50	100	--	08
							Total Credit		13	12
	Total	13	12	150	150	100	100	500	25	
610106	Non-Credit Course III								Grade	

Elective III

610103A	Cloud Security	610103B	Speech Signal Processing		
610103C	Mobile Ad-hoc Network	610103D	Pattern Recognition	610103E	Open Elective

Semester IV

Course Code	Course	Teaching Scheme Hours / Week	Examination Scheme and Marks			Credit
		Practical	TW	OR/PRE	Total	PR
610107	Seminar III	05	50	50	100	05
610108	Dissertation Stage II	20	150	50	200	20
	Total	25	200	100	300	25

Non-Credit Courses

Typically curriculum is constituted by credit, non-credit and audit courses. These courses are offered as compulsory or elective. Non Credit Courses are compulsory. No grade points are associated with non-credit courses and are not accounted in the calculation of the performance indices SGPA & CGPA. However, the award of the degree is subject to obtain a PP grade for non credit courses. Conduction and assessment of performance in said course is to be done at institute level. The mode of the conduction and assessment can be decided by respective course instructor. Recommended but not limited to- (one or combination of) seminar, workshop, MOOC Course certification, mini project, lab assignments, lab/oral/written examination, field visit, field training. Examinee should submit report/journal of the same. Reports and documents of conduction and assessment in appropriate format are to be maintained at institute. Result of assessment will be PP or NP. Set of non-credit courses offered is provided. The Examinee has to select the relevant course from pool of courses offered. Course Instructor may offer beyond this list by seeking recommendation from authority. The selection of 3 distinct non-credit courses, one per semester (Semester I, II & III). The Contents of Non Credit Courses are Provided at page 63 onwards.

Recommended Set of Non-Credit Courses(510107, 510114, 610106):

NCC1: Game Engineering   NCC2: Advanced Cognitive Computing
NCC3: Reconfigurable Systems   NCC4: Convergence Technology
NCC5: Machine Learning   NCC6: Storage Area Networks
NCC7: Search Engine Optimization NCC8: Virtual Reality
NCC9: Machine Translation   NCC10: Infrastructure Management

University of Pune

UNIVERSITY OF PUNE, PUNE

Structure and Syllabus

FOR

M. E. (Mechanical) (Design Engineering)
2017- Course

UNDER FACULTY OF ENGINEERING

EFFECTIVE FROM JULY 2017

University of Pune

M.E. Mechanical Engineering (Design Engineering) - 2017 Course

SEMESTER I

CODE	SUBJECT	TEACHING SCHEME Lect./ Pr	EXAMINATION SCHEME		TW	Oral/ Present ation	Total	CREDITS
			Paper					
			In Semester Assessment	End Semester Assessment				
507201	Advanced Mathematics@	4	50	50	-	-	100	4
502202	Material Science and Mechanical Behavior of Materials	4	50	50	-	-	100	4
502203	Advanced Stress Analysis	4	50	50	-	-	100	4
502104	Research Methodology	4	50	50	-	-	100	4
502205	Elective I**	5	50	50	-	-	100	5
502206	Lab Practice I	4			50	50	100	4
	Total	25	250	250	50	50	600	25

SEMESTER II

CODE	SUBJECT	TEACHING SCHEME Lect./ Pr	EXAMINATION SCHEME		TW	Oral/ Present ation	Total	CREDITS
			Paper					
			In Semester Assessment	End Semester Assessment				
502207	Analysis and Synthesis of Mechanisms	4	50	50	-	-	100	4
502208	Advanced Mechanical Vibrations	4	50	50	-	-	100	4
502209	Finite Element Method	4	50	50	-	-	100	4
502210	Elective II	5	50	50	-	-	100	5
502211	Lab Practice II	4	-	-	50	50	100	4
502212	Seminar I	4	-	-	50	50	100	4
	Total	25	200	200	100	100	600	25

Note:

Elective I**: Common to All M.E. Mechanical Specializations

@ Syllabus is common with Automotive Engineering. Hence End Semester examination paper will be same.

University of Pune

SEMESTER III

CODE	SUBJECT	TEACHING SCHEME	EXAMINATION SCHEME					CREDITS
		Lect./ Pr	Paper		TW	Oral/ Present ation	Total	
			In Semester Assessment	End Semester Assessment				
602213	Optimization Techniques	4	50	50	-	-	100	4
602214	Mechanical Measurements and Controls	4	50	50	-	-	100	4
602215	Elective III	5	50	50	-	-	100	5
602216	Seminar II	4	-	-	50	50	100	4
602217	Project Stage I	08	-	-	50	50	100	8
Total		25	150	150	100	100	500	25

SEMESTER IV

CODE	SUBJECT	TEACHING SCHEME	EXAMINATION SCHEME				CREDITS
		Lect./ Pr	Paper	TW	Oral/ present ation	Total	
602218	Seminar III	5	-	50	50	100	5
602219	Project Work Stage II	20	-	150	50	200	20
Total		25	-	200	100	300	25

Lab Practice I & II:

The laboratory work will be based on completion of assignments confined to the courses of that semester.

SEMINAR:

The student shall deliver the seminar on a topic approved by authorities.

Seminar I : shall be on state of the art topic of student's own choice approved by authority. The student shall submit the seminar report in standard format, duly certified for satisfactory completion of the work by the concerned Guide and head of the department/institute.

Seminar II : shall be on the topic relevant to latest trends in the field of concerned branch, preferably on the topic of specialization based on the electives selected by him/her approved by authority. The student shall submit the seminar report in standard format, duly certified for satisfactory completion of the work by the concerned Guide and head of the department/institute.

Seminar III: shall be extension of **seminar II.** The student shall submit the seminar report in standard format, duly certified for satisfactory completion of the work by the concerned Guide and head of the department/institute.

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PROJECT WORK:

The project work shall be based on the knowledge acquired by the student during the coursework and preferably it should meet and contribute towards the needs of the society. The project aims to provide an opportunity of designing and building complete system or subsystems based on area where the student likes to acquire specialized skills.

Project Work Stage – I

Project work Stage – I is the integral part of the project Work. In this, the student shall complete the partial work of the Project that will consist of problem statement, literature review, project overview, scheme of implementation (UML/ERD/block diagram/ PERT chart, etc.) and Layout & Design of the Set-up. The candidate shall deliver a presentation as a part of the progress report of Project work Stage-I, on the advancement in Technology pertaining to the selected dissertation topic.
The student shall submit the progress report of Project Work Stage-I in standard format duly certified for satisfactory completion of the work by the concerned guide and head of the department/Institute.

Project Work Stage - II

In Project Work Stage – II, the student shall complete the balance part of the Project that will consist of fabrication of set up required for the project, conducting experiments and taking results, analysis & validation of results and conclusions.

The student shall prepare the final report of Project work in standard format duly certified for satisfactory completion of the work by the concerned guide and head of the department/Institute.

Note: Institute must submit the list of candidates, guide and project details (title, area, problem definition, and abstract - clearly indicating objectives and scope, sponsorship details, if any) to the university within month of commencement of third semester. The guide must be approved/qualified teacher of the institute. A guide can guide at the most 8 students per year.

2017 Pattern
Syllabus Structure

ME   **First Year – Semester I**

Sr.No.	Subject Code	Subject	Examination Scheme					Total	Credits
			Paper						
			L/P	ISA	ESA	TW	OR		
1	504201	Digital CMOS Design	4	50	50	-	-	100	4
2	504202	Reconfigurable Computing	4	50	50	-	-	100	4
3	504203	Embedded System Design	4	50	50	-	-	100	4
4	504204	Research Methodology	4	50	50	-	-	100	4
5	504205	Elective I	5	50	50	-	-	100	5
6	504206	Lab. Practice I	4	-	-	50	50	100	4
		Total	25	250	250	50	50	600	25

Elective I:

1. Micro Electromechanical Systems
2. Nano Technology
3. Processor Design

Sr.No.	Subject Code	Subject	Examination Scheme					Total	Credits
			Paper						
			L/P	ISA	ESA	TW	OR		
1	604201	Testing and Verification of VLSI Circuits	4	50	50	-	-	100	4
2	604202	ASIC Design	4	50	50	-	-	100	4
3	604203	Elective III	5	50	50	-	-	100	5
4	604204	Seminar II	4	--	----	50	50	100	4
5	604205	Project Stage I	8	--	---	50	50	100	8
		Total	25	150	150	100	100	500	25

Elective III:

Elective III Topics for 3 Credits

1. Value Education, Human Rights and Legislative Procedures
2. Environmental Studies
3. Renewable Energy Studies
4. Disaster Management
5. Foreign language
6. Knowledge Management
7. Economics for Engineers
8. Engineering Risk – Benefit Analysis

Elective III Topics for 2 Credits

Sr.No.	Subject Code	Subject	Examination Scheme					Total	Credits
				Paper					
			L/P	ISA	ESA	TW	OR		
1	504207	Analog CMOS Design	4	50	50	-	-	100	4
2	504208	System on Chip	4	50	50	-	-	100	4
3	504209	Embedded Automotive Systems	4	50	50	-	-	100	4
4	504210	Elective II	5	50	50	-	-	100	5
5	504211	Lab. Practice II	4	--	---	50	50	100	4
6	504212	Seminar I	4	-	-	50	50	100	4
		Total	25	200	200	100	100	600	25

Elective II :

1. Embedded Product Design
2. High Speed ICs
3. Mixed Signal IC Design
4. Embedded Signal Processor Architectures
5. Real Time Operating Systems