



Rajgad Dnyanpeeth's

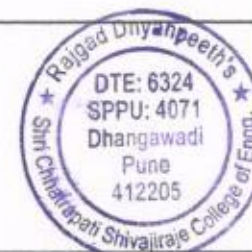
**SHRI CHHATRAPATI SHIVAJIRAJE COLLEGE OF ENGINEERING**  
Gat. No. 237, Pune Bangalore Highway, Dhangawadi, Tal-Bhor, Dist-Pune (Maharashtra)

### Criterion 1 – Curricular Aspects

#### Key Indicator- 1.2 Academic Flexibility

1.2.2 Percentage of programs in which Choice Based Credit System (CBCS)/elective course system has been implemented

Name of All Programs	whether adopting CBCS course system (Yes/No)	Whether adopting elective course system (Yes/No)	Program Code	Year of Implementation of CBCS / Elective Course System
Civil Engineering	YES	YES	632411	Year of Implementation of Elective Course System For BE (Civil Engineering) - 2012 Course is Academic Year 2015 - 2016 For BE (Civil Engineering) - 2008 Course is Academic Year 2014 -2015
Computer Engineering	YES	YES	632412	Year of Implementation of Elective Course System For BE (Computer Engineering) - 2012 Course is Academic Year 2015 - 2016 For BE (Computer Engineering) - 2008 Course is Academic Year 2014 -2015



Electronics and Telecommunication Engineering	YES	YES	632413	Year of Implementation of Elective Course System For BE (E&TC Engineering) - 2012 Course is Academic Year 2015 - 2016 For BE (E&TC Engineering) - 2008 Course is Academic Year 2014 - 2015
Mechanical Engineering	YES	YES	632414	Year of Implementation of Elective Course System For BE (Mechanical Engineering) - 2012 Course is Academic Year 2015 - 2016 For BE (Mechanical Engineering) - 2008 Course is Academic Year 2014 -2015





Rajgad Dnyanpeeth's

**SHRI CHHATRAPATI SHIVAJIRAJE COLLEGE OF ENGINEERING**  
Gat. No. 237, Pune Banglore Highway, Dhangawadi, Tal-Bhor, Dist-Pune (Maharashtra)

### Criterion 1 – Curricular Aspects

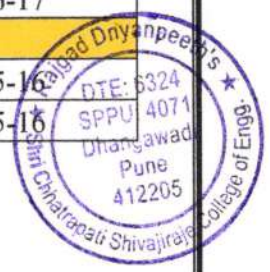
#### Key Indicator- 1.2 Academic Flexibility

1.2.2 Percentage of programs in which Choice Based Credit System (CBCS)/elective course system has been implemented

Name of the Elective Courses	Program Name	Program Code	Course Code	Year of Implementation of Elective Courses
<b>BE 2012 Pattern</b>				
EL-I: Architectural and Town Planning	Civil Engineering	632411	401004- D	2017-18
EL-II: TQM & MIS in Civil Engineering	Civil Engineering	632411	401005- C	2017-18
EL-III: Hydro Power Engineering	Civil Engineering	632411	401009- C	2017-18
EL-III: Air Pollution & Control	Civil Engineering	632411	401009- D	2017-18
EL-IV: Construction Management Planning	Civil Engineering	632411	401010- A	2017-18
EL-I: Data Mining Techniques & Applications	Computer Engineering	632412	410444-4	2017-18
EL-II: Pervasive Computing	Computer Engineering	632412	410445-2	2017-18
EL-III: Mobile Computing	Computer Engineering	632412	410451-1	2017-18
EL-IV: Mobile Applications	Computer Engineering	632412	410452-3	2017-18
EL-I: Embedded System & RTOS	E& TC Engineering	632413	404184- 2	2017-18
EL-II: Electronics Product Design	E& TC Engineering	632413	404185- 2	2017-18
EL-III: Audio Video Engg.	E& TC Engineering	632413	404191- 3	2017-18
EL-IV: Wireless Network	E& TC Engineering	632413	404192- 4	2017-18
EL-I: Energy Audit Management	Mechanical Engineering	632414	402044 A	2017-18
EL-I: Reliability Engineering	Mechanical Engineering	632414	402044 C	2017-18



EL-II: Advanced Manufacturing Processes	Mechanical Engineering	632414	402045 D	2017-18
EL-II: Operation Research	Mechanical Engineering	632414	402045C	2017-18
EL-III: Industrial Engineering	Mechanical Engineering	632414	402049 C	2017-18
EL-III: Automobile Engineering	Mechanical Engineering	632414	402049 D	2017-18
EL-IV: Finite Element Analysis	Mechanical Engineering	632414	402050 B	2017-18
<b>BE 2012 Pattern</b>				
EL-I: Advance Concrete Technology	Civil Engineering	632411	401004- C	2016-17
EL-I: Architectural and Town Planning	Civil Engineering	632411	401004- D	2016-17
EL-II: TQM & MIS in Civil Engineering	Civil Engineering	632411	401005- C	2016-17
EL-III: Hydro Power Engineering	Civil Engineering	632411	401009- C	2016-17
EL-III: Air Pollution & Control	Civil Engineering	632411	401009- D	2016-17
EL-IV: Construction Management Planning	Civil Engineering	632411	401010- A	2016-17
EL-I: Data Mining Techniques & Applications	Computer Engineering	632412	410444-4	2016-17
EL-II: Pervasive Computing	Computer Engineering	632412	410445-2	2016-17
EL-III: Mobile Computing	Computer Engineering	632412	410451-1	2016-17
EL-IV: Mobile Applications	Computer Engineering	632412	410452-3	2016-17
EL-I: Embedded System & RTOS	E& TC Engineering	632413	404184- 2	2016-17
EL-II: Electronics Product Design	E& TC Engineering	632413	404185- 2	2016-17
EL-III: Audio Video Engg.	E& TC Engineering	632413	404191- 3	2016-17
EL-IV: Wireless Network	E& TC Engineering	632413	404192- 4	2016-17
EL-I: Energy Audit Management	Mechanical Engineering	632414	402044 A	2016-17
EL-II: Operation Research	Mechanical Engineering	632414	402045C	2016-17
EL-II: Advanced Manufacturing Processes	Mechanical Engineering	632414	402045 D	2016-17
EL-III: Industrial Engineering	Mechanical Engineering	632414	402049 C	2016-17
EL-III: Automobile Engineering	Mechanical Engineering	632414	402049 D	2016-17
EL-IV: Finite Element Analysis	Mechanical Engineering	632414	402050 B	2016-17
EL-IV: Computer Fluid Dynamic	Mechanical Engineering	632414	402050 A	2016-17
<b>BE 2012 Pattern</b>				
EL-I: Advance Concrete Technology	Civil Engineering	632411	401004- C	2015-16
EL-I: Architectural and Town Planning	Civil Engineering	632411	401004- D	2015-16



EL-II: TQM & MIS in Civil Engineering	Civil Engineering	632411	401005- C	2015-16
EL-II: Integrated Water Resources and Planning	Civil Engineering	632411	401005- B	2015-16
EL-III: Hydro Power Engineering	Civil Engineering	632411	401009- C	2015-16
EL-III: Air Pollution & Control	Civil Engineering	632411	401009- D	2015-16
EL-IV: Construction Management Planning	Civil Engineering	632411	401010- A	2015-16
EL-I: Data Mining Techniques & Applications	Computer Engineering	632412	410444-4	2015-16
EL-II: Pervasive Computing	Computer Engineering	632412	410445-2	2015-16
EL-I: Web Technology	Computer Engineering	632412	410451-2	2015-16
EL-IV: Mobile Applications	Computer Engineering	632412	410452-3	2015-16
EL-I: Embedded System & RTOS	E& TC Engineering	632413	404184- 2	2015-16
EL-II: Electronics Product Design	E& TC Engineering	632413	404185- 2	2015-16
EL-III: Audio Video Engg.	E& TC Engineering	632413	404191- 3	2015-16
EL-IV: Wireless Network	E& TC Engineering	632413	404192- 4	2015-16
EL-I: Reliability Engineering	Mechanical Engineering	632414	402044 C	2015-16
EL-II: Operation Research	Mechanical Engineering	632414	402045C	2015-16
EL-II: Advanced Manufacturing Processes	Mechanical Engineering	632414	402045 D	2015-16
EL-III: Robotics	Mechanical Engineering	632414	402049 B	2015-16
EL-III: Industrial Engineering	Mechanical Engineering	632414	402049 C	2015-16
EL-IV: Computer Fluid Dynamic	Mechanical Engineering	632414	402050 A	2015-16
EL-IV: Finite Element Analysis	Mechanical Engineering	632414	402050 B	2015-16
<b>BE 2008 Pattern</b>				
EL-I: Air Pollution & Control	Civil Engineering	632411	401004- 3	2014-15
EL-II: Advance Concrete Technology	Civil Engineering	632411	401005- 5	2014-15
EL-III: Construction Management	Civil Engineering	632411	401007- 5	2014-15
EL-IV: Statistical Analysis & Computational Method Engineering	Civil Engineering	632411	401010- 3	2014-15
EL-IV: Hydro Power Engineering	Civil Engineering	632411	401010- 4	2014-15
EL-I: Software Architecture	Computer Engineering	632412	410444- 4	2014-15
EL-II: Software Testing and Quality Assurance	Computer Engineering	632412	410445- 4	2014-15
EL-III: Advanced Databases	Computer Engineering	632412	410451- 4	2014-15



EL-IV: Information Security	Computer Engineering	632412	410451- 4	2014-15
EL-I: Digital Image Processing	E& TC Engineering	632413	404184- 1	2014-15
EL-II: Mobile Communication	E& TC Engineering	632413	404185- 4	2014-15
EL-III: Television & video Engg	E& TC Engineering	632413	404189- 3	2014-15
EL-IV: Automotive Engineering	E& TC Engineering	632413	404190- 2	2014-15
EL-I: Energy Audit & Management	Mechanical Engineering	632414	402044- A	2014-15
EL-I: Tribology	Mechanical Engineering	632414	402044- D	2014-15
EL-II: Automobile Engineering	Mechanical Engineering	632414	402045- A	2014-15
EL-II: Quantitative & Decision Making Techniques	Mechanical Engineering	632414	405045- C	2014-15
EL-III: Robotics	Mechanical Engineering	632414	402049- C	2014-15
EL-IV: Reliability Engg.	Mechanical Engineering	632414	402050- C	2014-15
EL-IV: Management Info. Sys.	Mechanical Engineering	632414	402050- B	2014-15
<b>BE 2008 Pattern</b>				
EL-I: Air Pollution & Control	Civil Engineering	632411	401004- 3	2013-14
EL-II: Advance Concrete Technology	Civil Engineering	632411	401005- 5	2013-14
EL-III: Construction Management	Civil Engineering	632411	401007- 5	2013-14
EL-IV: Statistical Analysis & Computational Method Engineering	Civil Engineering	632411	401008- 3	2013-14
EL-I: Software Architecture	Computer Engineering	632412	410444- 4	2013-14
EL-II: Software Testing and Quality Assurance	Computer Engineering	632412	410445- 4	2013-14
EL-III: Advanced Databases	Computer Engineering	632412	410451- 4	2013-14
EL-IV: Information Security	Computer Engineering	632412	410451- 4	2013-14
EL-I: Digital Image Processing	E& TC Engineering	632413	404184- 1	2013-14
EL-II: Mobile Communication	E& TC Engineering	632413	404185- 4	2013-14
EL-III: Television & video Engg	E& TC Engineering	632413	404189- 3	2013-14
EL-IV: Automotive Engineering	E& TC Engineering	632413	404190- 2	2013-14
EL-I: Energy Audit & Management	Mechanical Engineering	632414	402044- A	2013-14
EL-II: Tribology	Mechanical Engineering	632414	402044- D	2013-14
EL-III: Automobile Engineering	Mechanical Engineering	632414	402045- A	2013-14
EL-IV: Quantitative & Decision Making Techniques	Mechanical Engineering	632414	402045- C	2013-14

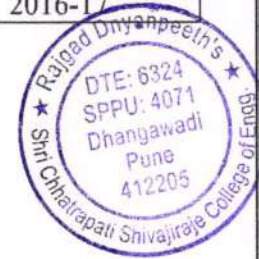


### 1.2.2 List of Audit courses implemented during the last five years

Name of the Audit Courses	Program Name	Program Code	Course Code	Year of Implementation of Audit Courses
<b>TE Computer 2015 Pattern</b>				
Professional Ethics and Etiquettes	Computer Engineering	632412	310549 AC3-II	2017-18
Emotional Intelligence	Computer Engineering	632412	310249 AC3-III	2017-18
Digital and Social Media Marketing	Computer Engineering	632412	310259 AC4-I	2017-18
Green Computing	Computer Engineering	632412	310259 AC4-II	2017-18
<b>SE Computer 2015 Pattern</b>				
Humanities and Social Sciences	Computer Engineering	632412	210250	2017-18
Environmental Studies	Computer Engineering	632412	210250	2017-18
Intellectual Property Rights and Patents	Computer Engineering	632412	210258	2017-18
Water Management	Computer Engineering	632412	210258	2017-18
<b>SE E&amp;TC 2015 Pattern</b>				
Road Safety Management	E& TC Engineering	632413	204192	2017-18
Cyber Crime and law	E& TC Engineering	632413	204193	2017-18
<b>TE E&amp;TC 2015 Pattern</b>				
Informational Security	E& TC Engineering	632413	-	2017-18
Embedded System	E& TC Engineering	632413	-	2017-18
<b>SE Mechanical 2015 Pattern</b>				
Value Education	Mechanical Engineering	632414	202055	2017-18
<b>TE Mechanical 2015 Pattern</b>				
Intellectual Property Rights and Patents	Mechanical Engineering	632414	302054	2017-18
<b>SE Computer 2015 Pattern</b>				
Humanities and Social Sciences	Computer Engineering	632412	210250	2016-17
Environmental Studies	Computer Engineering	632412	210250	2016-17
Intellectual Property Rights and Patents	Computer Engineering	632412	210258	2016-17



Water Management	Computer Engineering	632412	210258	2016-17
<b>SE E&amp;TC 2015 Pattern</b>				
Road Safety Management	E& TC Engineering	632413	204192	2016-17
Cyber Crime and law	E& TC Engineering	632413	204193	2016-17
<b>SE Mechanical 2015 Pattern</b>				
Value Education	Mechanical Engineering	632414	202055	2016-17







Rajgad Dnyanpeeth's

# Shri Chhatrapati Shivajiraje College of Engineering

Approved by AICTE, New Delhi, Recognized by Govt. of Maharashtra and Affiliated to Savitribai Phule  
Pune University, Pune (ID. PU/PN/Engg./376/2009), DTE CODE: EN3624



Anantrao Thopte  
Founder President, Ex. Edu. Minister

Sangram Thopte  
MLA, Executive President

Dr. Bhagyashri Patil  
Hon. Secretary

Dr. S. B. Patil  
Principal

To,  
The Coordinator,  
NAAC, Bangalore.

**Subject-** Implementation of CBCS/Elective to UG.

Reference- 1.2.2 Percentage of programs in which Choice Based Credit System (CBCS)/Elective course system has been implemented

Dear Sir/Madam,

As per the directives from Savitribai Phule Pune University (SPPU), Pune, the Electives has been implemented at institute as mentioned in table below. The circulars from SPPU are enclosed herewith.

Program Name	Year of implementation of CBCS/ Elective course System
BE Civil Engineering	BE 2012-Pattern Course is Academic Year 2015 - 2016
	BE 2008-Pattern Course is Academic Year 2014 -2015
BE Computer Engineering	BE 2012-Pattern Course is Academic Year 2015 - 2016
	BE 2008-Pattern Course is Academic Year 2014 -2015
BE E&TC Engineering	BE 2012-Pattern Course is Academic Year 2015 - 2016
	BE 2008-Pattern Course is Academic Year 2014 -2015
BE Mechanical Engineering	BE 2012-Pattern Course is Academic Year 2015 - 2016
	BE 2008-Pattern Course is Academic Year 2014 -2015



Dr. S. B. Patil

**Principal**

Principal  
Rajgad Dnyanpeeth's  
Shri Chhatrapati Shivajiraje College of Engg.,  
Dhangawadi, Pune-412206

सावित्रीबाई फुले पुणे विद्यापीठ  
(पूर्वीचे पुणे विद्यापीठ)

दूरध्वनी क्रमांक :  
०२०-२५६९१२३३  
२५६०१२५८  
२५६०१२५९



शैक्षणिक विभाग  
गणेशखिंड, पुणे-४११ ००७  
टेलिग्राफ : 'युनिपुणे'  
फॅक्स : ०२०-२५६९१२३३  
वेबसाइट : [www.unipune.ac.in](http://www.unipune.ac.in)  
ई-मेल : [boards@pun.unipune.ac.in](mailto:boards@pun.unipune.ac.in)

संदर्भ क्र. :सी.बी./ईज / ९६०

दिनांक : २४/०६/२०१५

परिपत्रक क्र. १११/२०१५

विषय:-

प्रथम वर्ष अभियांत्रिकी (२०१५ पॅटर्न) श्रेयांक पध्दतीप्रमाणे  
अभ्यासक्रमाबाबत...

विद्यापीठ अधिकार मंडळाने घेतलेल्या निर्णयानुसार सर्व संबंधितांस या परिपत्रकाद्वारे कळविण्यात येते की, शैक्षणिक वर्ष २०१५-१६ पासून प्रथम वर्ष अभियांत्रिकी (२०१५ पॅटर्न) श्रेयांक पध्दतीप्रमाणे अभ्यासक्रमास मान्यता देण्यात येत आहे.

सदर अभ्यासक्रम सा. फु. पुणे विद्यापीठाच्या [www.unipune.ac.in](http://www.unipune.ac.in) या वेबसाईटवर Syllabi-Engineering या शीर्षकाखाली उपलब्ध आहे.

सा. फु. पुणे विद्यापीठाच्या सर्व संलग्न अभियांत्रिकी महाविद्यालयांचे मा. प्राचार्य यांना विनंती की, सदर परिपत्रकाचा आशय सर्व संबंधित प्राध्यापक व विद्यार्थ्यांच्या निदर्शनास आणून द्यावा.

संचालकांकरिता  
(म.वि.वि.मं)

श्री माहितीसाठी व गुढील योग्य त्या कार्यवाहीसाठी:-

- १ मा. अधिष्ठाता, अभियांत्रिकी विद्याशाखा
- २ मा. संचालक, बी.सी.यु.डी.
- ३ मा. प्राचार्य, सर्व अभियांत्रिकी महाविद्यालये
- ४ मा. संचालक, सर्व मान्यताप्राप्त संस्था
- ५ मा. परीक्षा नियंत्रक, सा. फु. पुणे विद्यापीठ
- ६ मा. संचालक, स्पर्धा परीक्षा केंद्र
- ७ मा. उपकुलसचिव, परीक्षा (१,२)
- ८ मा. सिस्टीम ऑनॅलिस्ट डेटा प्रोग्रेसिंग युनिट
- ९ मा. उपकुलसचिव, प्रवेश
- १० मा. उपकुलसचिव, विकास
- ११ मा. उपकुलसचिव, पात्रता
१२. सहाय्यक कुलसचिव (परीक्षा समन्वय)
१३. सहाय्यक कुलसचिव (परीक्षा-एस.अॅण्ड टी. विभाग)
१४. सहाय्यक कुलसचिव (गोपनीय कक्ष)
१५. सहाय्यक कुलसचिव (परदेशी विद्यार्थी केंद्र)
१६. सहाय्यक कुलसचिव (सभा दफ्तर)
१७. कायदा अधिकारी
१८. जनसंपर्क अधिकारी
१९. कक्षाधिकारी (बहिःस्थ)
२०. कक्षाधिकारी (पात्रता विभाग)
२१. प्रमुख, विद्यापीठ उपकेंद्र : अहमदनगर, नाशिक.

वि.प. ठराव क्र. ब ५९पीए/५९/१५, दि. ०९ जून, २०१५

सावित्रीबाई फुले पुणे विद्यापीठ  
(पूर्वीचे पुणे विद्यापीठ)

दूरध्वनी क्रमांक :  
०२०-२५६९१२३३  
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शैक्षणिक विभाग  
गणेशखिंड, पुणे-४११ ००७  
टेलिग्राफ : 'युनिपुणे'  
फॅक्स : ०२०-२५६९१२३३  
वेबसाइट : [www.unipune.ac.in](http://www.unipune.ac.in)  
इ-मेल : [boards@pun.unipune.ac.in](mailto:boards@pun.unipune.ac.in)  
दिनांक : २४.०६.२०१६

संदर्भ क्र. :सी.बी./इंजि. /५४०

परिपत्रक क्रमांक. ९५ /२०१६

विषय:-

द्वितीय वर्ष अभियांत्रिकी श्रेयांक पध्दती (२०१५ पॅटर्न) अभ्यासक्रमांस  
(सर्व शाखांसाठी) शैक्षणिक वर्ष २०१६-१७ पासून मान्यता  
देण्याबाबत....

विद्यापीठ अधिकार मंडळाने घेतलेल्या निर्णयानुसार सर्व संबंधितांस या परिपत्रकाद्वारे कळविण्यात येते की, द्वितीय वर्ष अभियांत्रिकी श्रेयांक पध्दती (२०१५ पॅटर्न) अभ्यासक्रमांस (सर्व शाखांसाठी) शैक्षणिक वर्ष २०१६-१७ पासून मान्यता देण्यात येत आहे.

सदर अभ्यासक्रम सावित्रीबाई फुले पुणे विद्यापीठाच्या [www.unipune.ac.in](http://www.unipune.ac.in) या वेबसाईटवर Syllabi- Engineering या शीर्षकाखाली उपलब्ध आहे.

सावित्रीबाई फुले पुणे विद्यापीठाच्या सर्व संलग्न अभियांत्रिकी महाविद्यालयांचे मा. प्राचार्य यांना विनंती की, सदर परिपत्रकाचा आशय सर्व संबंधित प्राध्यापक व विद्यार्थ्यांच्या निदर्शनास आणून द्यावा.

संचालकांकरिता  
(म.वि.वि.मं)

कृ. मा. प.

प्रत माहितीसाठी व पुढील योग्य त्या कार्यवाहीसाठी:-

१. मा. समन्वयक, अभियांत्रिकी विद्याशाखा
२. मा. संचालक, म.वि.वि.मं
३. मा. प्राचार्य, सर्व अभियांत्रिकी महाविद्यालये
४. मा. संचालक, सर्व मान्यताप्राप्त संस्था
५. मा. परीक्षा नियंत्रक, सा. फु. पुणे विद्यापीठ
६. मा. संचालक, स्पर्धा परीक्षा केंद्र
७. मा. उपकुलसचिव, परीक्षा (१,२)
८. मा. सिस्टीम ऑनॅलिस्ट डेटा प्रोग्रेसिंग युनिट
९. मा. उपकुलसचिव, नियोजन व विकास
१०. मा. उपकुलसचिव, (पात्रता विभाग)
११. मा. उपकुलसचिव (सभा दफ्तर)
१२. मा. संचालक (परदेशी विद्यार्थी केंद्र)
१३. सहायक कुलसचिव, शैक्षणिक प्रवेश विभाग
१४. सहायक कुलसचिव (गोपनीय कक्ष)
१५. सहायक कुलसचिव (परीक्षा-एस.अॅण्ड टी. विभाग)
१६. सहायक कुलसचिव (परीक्षा समन्वय)
१७. वरिष्ठ कायदा अधिकारी
१८. जनसंपर्क अधिकारी
१९. कक्षाधिकारी (बहिःस्थ)
२०. प्रमुख, विद्यापीठ उपकेंद्र : अहमदनगर, नाशिक.

वि.प. ठराव क्र. ब १८ पीए/१८ /१६, दि. २७ मे, २०१६

सावित्रीबाई फुले पुणे विद्यापीठ  
(पूर्वीचे पुणे विद्यापीठ)

दूरध्वनी क्रमांक :  
०२०-२५६९१२३३  
२५६०१२५८  
२५६०१२५९



शैक्षणिक विभाग  
गणेशखिंड, पुणे-४११ ००७  
टेलिग्राफ : 'युनिपुणे'  
फॅक्स : ०२०-२५६९१२३३  
वेबसाइट : [www.unipune.ac.in](http://www.unipune.ac.in)  
इ-मेल : [boards@pun.unipune.ac.in](mailto:boards@pun.unipune.ac.in)  
दिनांक : ०३/०९/२०१७

संदर्भ क्र. :सी.बी./इंजि. /२२७


परिपत्रक क्रमांक. ६३ /२०१७

विषय :- अभियांत्रिकी विद्याशाखेंतर्गत तृतीय वर्ष इंजिनिअरींग २०१५ पॅटर्न पदवी अभ्यासक्रमाचा सुधारित आराखडा व अभ्यासक्रम शैक्षणिक वर्ष २०१७-१८ पासून लागू करण्याबाबत.....

विद्यापीठ अधिकार मंडळाने घेतलेल्या निर्णयानुसार सर्व संबंधितांस या परिपत्रकाद्वारे कळविण्यात येते की, अभियांत्रिकी विद्याशाखेंतर्गत तृतीय वर्ष इंजिनिअरींग २०१५ पॅटर्न पदवी अभ्यासक्रमाचा सुधारित आराखडा व अभ्यासक्रमास शैक्षणिक वर्ष २०१७-१८ पासून मान्यता देण्यात येत आहे.

सदर अभ्यासक्रम सावित्रीबाई फुले पुणे विद्यापीठाच्या [www.unipune.ac.in](http://www.unipune.ac.in) या वेबसाईटवर Syllabi-Engineering या शीर्षकाखाली उपलब्ध आहे.

सावित्रीबाई फुले पुणे विद्यापीठाच्या सर्व संलग्न अभियांत्रिकी महाविद्यालयांचे मा. प्राचार्य यांना विनंती की, सदर परिपत्रकाचा आशय सर्व संबंधित प्राध्यापक व विद्यार्थ्यांच्या निदर्शनास आणून द्यावा.

  
संचालकाकरिता  
(म.वि.वि.मं)

कृ. मा. प.

प्रत माहितीसाठी व पुढील योग्य त्या कार्यवाहीसाठी:-

१. मा. समन्वयक, अभियांत्रिकी विद्याशाखा
२. मा. संचालक, म.वि.वि.मं
३. मा. प्राचार्य, सर्व अभियांत्रिकी महाविद्यालये
४. मा. संचालक, सर्व मान्यताप्राप्त संस्था
५. मा. परीक्षा नियंत्रक, सा. फु. पुणे विद्यापीठ
६. मा. संचालक, स्पर्धा परीक्षा केंद्र
७. मा. उपकुलसचिव, परीक्षा (१,२)
८. मा. सिस्टीम ऑनॅलिस्ट डेटा प्रोग्रेसिंग युनिट
९. मा. उपकुलसचिव, नियोजन व विकास
१०. मा. उपकुलसचिव, (पात्रता विभाग)
११. मा. उपकुलसचिव (सभा दफ्तर)
१२. मा. संचालक (भारतीय विद्यार्थी केंद्र) जातिरक्षणीय केंद्र
१३. सहायक कुलसचिव, शैक्षणिक प्रवेश विभाग
१४. सहायक कुलसचिव (गोपनीय कक्ष)
१५. सहायक कुलसचिव (परीक्षा-एस.अॅण्ड टी. विभाग)
१६. सहायक कुलसचिव (परीक्षा समन्वय)
१७. वरिष्ठ कायदा अधिकारी
१८. जनसंपर्क अधिकारी
१९. कक्षाधिकारी (बहिःस्थ)
२०. प्रमुख, विद्यापीठ उपकेंद्र : अहमदनगर, नाशिक.

वि.प. ठराव क्र. ब ०५ पीए/०५/२०१६, दि. २९ नोव्हेंबर, २०१६

सावित्रीबाई फुले पुणे विद्यापीठ  
(पूर्वीचे पुणे विद्यापीठ)

दूरध्वनी क्रमांक :  
०२०-२५६९१२३३  
२५६०१२५८  
२५६०१२५९



शैक्षणिक विभाग  
गणेशखिंड, पुणे-४११ ००७  
टेलिग्राफ : 'युनिपुणे'  
फॅक्स : ०२०-२५६९१२३३  
वेबसाइट : [www.unipune.ac.in](http://www.unipune.ac.in)  
ई-मेल : [boards@pun.unipune.ac.in](mailto:boards@pun.unipune.ac.in)

संदर्भ क्र. :सी.बी./डीज / ९६०

दिनांक : २४/०६/२०१५

परिपत्रक क्र. १११/२०१५

विषय:-

प्रथम वर्ष अभियांत्रिकी (२०१५ पॅटर्न) श्रेयांक पध्दतीप्रमाणे  
अभ्यासक्रमाबाबत...

विद्यापीठ अधिकार मंडळाने घेतलेल्या निर्णयानुसार सर्व संबंधितांस या परिपत्रकाद्वारे कळविण्यात येते की, शैक्षणिक वर्ष २०१५-१६ पासून प्रथम वर्ष अभियांत्रिकी (२०१५ पॅटर्न) श्रेयांक पध्दतीप्रमाणे अभ्यासक्रमास मान्यता देण्यात येत आहे.

सदर अभ्यासक्रम सा. फु. पुणे विद्यापीठाच्या [www.unipune.ac.in](http://www.unipune.ac.in) या वेबसाईटवर Syllabi-Engineering या शीर्षकाखाली उपलब्ध आहे.

सा. फु. पुणे विद्यापीठाच्या सर्व संलग्न अभियांत्रिकी महाविद्यालयांचे मा. प्राचार्य यांना विनंती की, सदर परिपत्रकाचा आशय सर्व संबंधित प्राध्यापक व विद्यार्थ्यांच्या निदर्शनास आणून द्यावा.

संचालकांकरिता  
(म.बि.बि.मं)



श्री माहितीसाठी व गुढील योग्य त्या कार्यवाहीसाठी:—

- १ मा. अधिष्ठाता, अभियांत्रिकी विद्याशाखा
- २ मा. संचालक, बी.सी.यु.डी.
- ३ मा. प्राचार्य, सर्व अभियांत्रिकी महाविद्यालये
- ४ मा. संचालक, सर्व मान्यताप्राप्त संस्था
- ५ मा. परीक्षा नियंत्रक, सा. फु. पुणे विद्यापीठ
- ६ मा. संचालक, स्पर्धा परीक्षा केंद्र
- ७ मा. उपकुलसचिव, परीक्षा (१,२)
- ८ मा. सिस्टीम ऑनॅलिस्ट डेटा प्रोग्रेसिंग युनिट
- ९ मा. उपकुलसचिव, प्रवेश
- १० मा. उपकुलसचिव, विकास
- ११ मा. उपकुलसचिव, पात्रता
१२. सहाय्यक कुलसचिव (परीक्षा समन्वय)
१३. सहाय्यक कुलसचिव (परीक्षा—एस.अॅण्ड टी. विभाग)
१४. सहाय्यक कुलसचिव (गोपनीय कक्ष)
१५. सहाय्यक कुलसचिव (परदेशी विद्यार्थी केंद्र)
१६. सहाय्यक कुलसचिव (सभा दफ्तर)
१७. कायदा अधिकारी
१८. जनसंपर्क अधिकारी
१९. कक्षाधिकारी (बहिःस्थ)
२०. कक्षाधिकारी (पात्रता विभाग)
२१. प्रमुख, विद्यापीठ उपकेंद्र : अहमदनगर, नाशिक.

वि.प. ठराव क्र. ब ५९पीए/५९/१५, दि. ०९ जून, २०१५

सावित्रीबाई फुले पुणे विद्यापीठ  
(पूर्वीचे पुणे विद्यापीठ)

दूरध्वनी क्रमांक :  
०२०-२५६९१२३३  
२५६०१२५८  
२५६०१२५९



शैक्षणिक विभाग  
गणेशखिंड, पुणे-४११ ००७  
टेलिग्राफ : 'युनिपुणे'  
फॅक्स : ०२०-२५६९१२३३  
वेबसाइट : www.unipune.ac.in  
इ-मेल : boards@pun.unipune.ac.in  
दिनांक : २४.०६.२०१६

संदर्भ क्र. :सी.बी./इंजि. /५४०

परिपत्रक क्रमांक. ९५ /२०१६

विषय:-

द्वितीय वर्ष अभियांत्रिकी श्रेयांक पध्दती (२०१५ पॅटर्न) अभ्यासक्रमांस  
(सर्व शाखांसाठी) शैक्षणिक वर्ष २०१६-१७ पासून मान्यता  
देण्याबाबत....

विद्यापीठ अधिकार मंडळाने घेतलेल्या निर्णयानुसार सर्व संबंधितांस या परिपत्रकाद्वारे कळविण्यात येते की, द्वितीय वर्ष अभियांत्रिकी श्रेयांक पध्दती (२०१५ पॅटर्न) अभ्यासक्रमांस (सर्व शाखांसाठी) शैक्षणिक वर्ष २०१६-१७ पासून मान्यता देण्यात येत आहे.

सदर अभ्यासक्रम सावित्रीबाई फुले पुणे विद्यापीठाच्या www.unipune.ac.in या वेबसाईटवर Syllabi- Engineering या शीर्षकाखाली उपलब्ध आहे.

सावित्रीबाई फुले पुणे विद्यापीठाच्या सर्व संलग्न अभियांत्रिकी महाविद्यालयांचे मा. प्राचार्य यांना विनंती की, सदर परिपत्रकाचा आशय सर्व संबंधित प्राध्यापक व विद्यार्थ्यांच्या निदर्शनास आणून द्यावा.

संचालकांकरिता  
(म.वि.वि.मं)

कृ. मा. प.

प्रत माहितीसाठी व पुढील योग्य त्या कार्यवाहीसाठी:—

१. मा. समन्वयक, अभियांत्रिकी विद्याशाखा
२. मा. संचालक, म.वि.वि.मं
३. मा. प्राचार्य, सर्व अभियांत्रिकी महाविद्यालये
४. मा. संचालक, सर्व मान्यताप्राप्त संस्था
५. मा. परीक्षा नियंत्रक, सा. फु. पुणे विद्यापीठ
६. मा. संचालक, स्पर्धा परीक्षा केंद्र
७. मा. उपकुलसचिव, परीक्षा (१,२)
८. मा. सिस्टीम ऑनॅलिस्ट डेटा प्रोग्रेसिंग युनिट
९. मा. उपकुलसचिव, नियोजन व विकास
१०. मा. उपकुलसचिव, (पात्रता विभाग)
११. मा. उपकुलसचिव (सभा दफ्तर)
१२. मा. संचालक (परदेशी विद्यार्थी केंद्र)
१३. सहायक कुलसचिव, शैक्षणिक प्रवेश विभाग
१४. सहायक कुलसचिव (गोपनीय कक्ष)
१५. सहायक कुलसचिव (परीक्षा—एस.अॅण्ड टी. विभाग)
१६. सहायक कुलसचिव (परीक्षा समन्वय)
१७. वरिष्ठ कायदा अधिकारी
१८. जनसंपर्क अधिकारी
१९. कक्षाधिकारी (बहिःस्थ)
२०. प्रमुख, विद्यापीठ उपकेंद्र : अहमदनगर, नाशिक.

वि.प. ठराव क्र. ब १८ पीए/१८ /१६, दि. २७ मे, २०१६

सावित्रीबाई फुले पुणे विद्यापीठ  
(पूर्वीचे पुणे विद्यापीठ)

दूरध्वनी क्रमांक :  
०२०-२५६९१२३३  
२५६०१२५८  
२५६०१२५९



शैक्षणिक विभाग  
गणेशखिंड, पुणे-४११ ००७  
टेलिग्राफ : 'युनिपुणे'  
फॅक्स : ०२०-२५६९१२३३  
वेबसाइट : [www.unipune.ac.in](http://www.unipune.ac.in)  
इ-मेल : [boards@pun.unipune.ac.in](mailto:boards@pun.unipune.ac.in)

संदर्भ क्र. :सी.बी./इंजि. / 227

दिनांक : 03/04/2017

परिपत्रक क्रमांक. ६३ / २०१७

विषय :- अभियांत्रिकी विद्याशाखेंतर्गत तृतीय वर्ष इंजिनिअरींग २०१५  
पॅटर्न पदवी अभ्यासक्रमाचा सुधारित आराखडा व अभ्यासक्रम  
शैक्षणिक वर्ष २०१७-१८ पासून लागू करण्याबाबत.....

विद्यापीठ अधिकार मंडळाने घेतलेल्या निर्णयानुसार सर्व संबंधितांस या परिपत्रकाद्वारे कळविण्यात येते की, अभियांत्रिकी विद्याशाखेंतर्गत तृतीय वर्ष इंजिनिअरींग २०१५ पॅटर्न पदवी अभ्यासक्रमाचा सुधारित आराखडा व अभ्यासक्रमास शैक्षणिक वर्ष २०१७-१८ पासून मान्यता देण्यात येत आहे.

सदर अभ्यासक्रम सावित्रीबाई फुले पुणे विद्यापीठाच्या [www.unipune.ac.in](http://www.unipune.ac.in) या वेबसाईटवर Syllabi-Engineering या शीर्षकाखाली उपलब्ध आहे.

सावित्रीबाई फुले पुणे विद्यापीठाच्या सर्व संलग्न अभियांत्रिकी महाविद्यालयांचे मा. प्राचार्य यांना विनंती की, सदर परिपत्रकाचा आशय सर्व संबंधित प्राध्यापक व विद्यार्थ्यांच्या निदर्शनास आणून द्यावा.

संचालकाकरिता  
(म.वि.वि.मं)

कृ. मा. प.

प्रत माहितीसाठी व पुढील योग्य त्या कार्यवाहीसाठी:-

१. मा. समन्वयक, अभियांत्रिकी विद्याशाखा
२. मा. संचालक, म.वि.वि.मं
३. मा. प्राचार्य, सर्व अभियांत्रिकी महाविद्यालये
४. मा. संचालक, सर्व मान्यताप्राप्त संस्था
५. मा. परीक्षा नियंत्रक, सा. फु. पुणे विद्यापीठ
६. मा. संचालक, स्पर्धा परीक्षा केंद्र
७. मा. उपकुलसचिव, परीक्षा (१,२)
८. मा. सिस्टीम ऑनॅलिस्ट डेटा प्रोग्रेसिंग युनिट
९. मा. उपकुलसचिव, नियोजन व विकास
१०. मा. उपकुलसचिव, (पात्रता विभाग)
११. मा. उपकुलसचिव (सभा दफ्तर)
१२. मा. संचालक (भारतीय विद्यार्थी केंद्र) आंतरराष्ट्रीय केंद्र
१३. सहायक कुलसचिव, शैक्षणिक प्रवेश विभाग
१४. सहायक कुलसचिव (गोपनीय कक्ष)
१५. सहायक कुलसचिव (परीक्षा-एस.अॅण्ड टी. विभाग)
१६. सहायक कुलसचिव (परीक्षा समन्वय)
१७. वरिष्ठ कायदा अधिकारी
१८. जनसंपर्क अधिकारी
१९. कक्षाधिकारी (बहिःस्थ)
२०. प्रमुख, विद्यापीठ उपकेंद्र : अहमदनगर, नाशिक.

वि.प. ठराव क्र. ब ०५ पीए/०५/२०१६, दि. २९ नोव्हेंबर, २०१६

§ : Mandatory subjects of first, second and third semester must include at least 40 credits for Engineering Physics, Engineering Chemistry, Engineering Mathematics, social science and soft skills  
In addition to above credits, there should be audit courses in semester five, six and seven to develop the various skills.

The detail structure is given in Tables

**TABLE - 2 Structure for Semester-1**

Code	Subjects	Short Name	Weekly Work Load (in Hrs)			Semester Examination Scheme of Marks						Credits
			Lectures	Tutorials	PR/DR G	Theory		TW	PR	OR	Max. Marks	
						In-Semester Exam	End-Semester Exam					
107001	Engineering Mathematics I		4	1	-	50	50	25	-	-	125	5
# 107002 / 107009.	Engineering Physics OR Engineering Chemistry		4	-	2	50	50	25	-	-	125	5
102006	Engineering Graphics I		3	-	2	50	50	-	-	-	100	4
# 103004 / 104012	Basic Electrical Engineering OR Basic Electronics Engineering		3	-	2	50	50	25	-	-	125	4
101005	Basic Civil and Environmental Engineering		3	-	2	50	50	25	-	-	125	4
110003	Fundamentals of Programming Languages I		1	-	2	-	-	-	50*	-	50	2
111007	Workshop Practice		-	-	2	-	-	50	-	-	50	1
<b>Total of Semester I</b>			18	1	12	250	250	150	50	-	700	25

**TABLE - 3 Structure for Semester-2**

Code	Subjects	Short Name	Weekly Work Load (in Hrs)			Semester Examination Scheme of Marks						Credits
			Lectures	Tutorials	PR/DRG	Theory		TW	PR	OR	Max. Marks	
						In-Semester Exam	End-Semester Exam					
107008	Engineering Mathematics II		4	-	-	50	50	-	-	-	100	4
# 107009 / 107002	Engineering Chemistry OR Engineering Physics		4	-	2	50	50	25	-	-	125	5
102013	Basic Mechanical Engineering		3	-	2	50	50	25	-	-	125	4
101011	Engineering Mechanics		4	-	2	50	50	25	-	-	125	5
# 104012 / 103004.	Basic Electronics Engineering OR Basic Electrical Engineering		3	-	2	50	50	25	-	-	125	4
110010	Fundamentals of Programming Languages II		1	-	2	-	-	-	50*	-	50	2
102014	Engineering Graphics II		-	-	2	-	-	50	-	-	50	1
<b>Total of Semester II</b>			19	-	12	250	250	150	50	-	700	25

**Instructions:**

1. PR/Tutorial must be conducted in minimum three batches (batch size 22 maximum) per division
2. Minimum number of required Experiments/Assignments in PR/DRG/Tutorial be carried out as mentioned in the syllabi of related subjects.
3. \* for FPL-I and FPL-II: S.P. Pune University Online Practical Examination shall be conducted at the semester end.
4. # Every student should appear for Engineering Physics, Engineering Chemistry, Basic Electronics Engineering and Basic Electrical Engineering during the year.
5. # College is allowed to distribute Teaching Workload of subjects Physics, Chemistry, BEE, BXE in semester I and II by dividing number of FE divisions appropriately in two groups.

**Savitribai Phule Pune University**  
**S.E. (Civil Engineering) 2015 Course**

<b>Semester I</b>												
Course Code	Course	Teaching Scheme Hours / Week			Semester Examination Scheme of Marks						Credit	
		Theory (TH)	Tutorials (TUT)	Practical (PR)	In-Sem	End-Sem	TW	PR	OR	Total	TH / TUT	PR/OR/ TW
201001	Building Technology and Materials	04	--	02	50	50	50	--	--	150	04	01
207001	Engineering Mathematics III	04	01	--	50	50	50	--	--	150	05	
201006	Surveying	04	--	02	50	50	--	50	--	150	04	01
201002	Strength of Materials	04	--	02	50	50	--	--	50	150	04	01
201003	Geotechnical Engineering	04	--	02	50	50	--	--	50	150	04	01
	<b>Audit Course 1</b> Awareness to Civil Engineering Practices	--	--	--	--	--	--	--	--	--	Grade	
<b>Total</b>		<b>20</b>	<b>01</b>	<b>08</b>	<b>250</b>	<b>250</b>	<b>100</b>	<b>50</b>	<b>100</b>	<b>750</b>	<b>25</b>	

**Note:** For audit courses students are given certificate by the institutes based on the assignment submitted by them.

**Abbreviations:** **TW:** Term Work, **OR:** Oral, **PP:** Passed (Only for non credit courses), **NP:** Not Passed (Only for non credit courses).



**Savitribai Phule Pune University**  
**S.E. (Civil Engineering) 2015 Course**

<b>Semester II</b>												
Course Code	Course	Teaching Scheme Hours / Week			Semester Examination Scheme of Marks						Credit	
		Theory (TH)	Tutorials (TUT)	Practical (PR)	In-Sem	End-Sem	TW	PR	OR	Total	TH / TUT	PR/OR/ TW
201004	Fluid Mechanics I	04	--	02	50	50	--	--	50	150	04	01
201005	Architectural Planning and Design of Buildings	04	--	02	50	50	--	50	--	150	04	01
201008	Structural Analysis I	03	01	--	50	50	--	--	--	100	04	--
207009	Engineering Geology	04	--	02	50	50	50	--	--	150	04	01
201007	Concrete Technology	04	--	02	50	50	--	--	50	150	04	01
201010	Soft Skill	--	--	02	--	--	50	--	--	50	--	01
	<b>Audit Course 2</b> Road Safety Management	--	--	--	--	--	--	--	--	--	Grade	
		<b>19</b>	<b>01</b>	<b>10</b>	<b>250</b>	<b>250</b>	<b>100</b>	<b>50</b>	<b>100</b>	<b>750</b>	<b>25</b>	

**Note:** For audit courses students are given certificate by the institutes based on the assignment submitted by them.

**Abbreviations:** **TW:** Term Work, **OR:** Oral, **PP:** Passed (Only for non credit courses), **NP:** Not Passed (Only for non credit courses).

**Savitribai Phule University of Pune**  
**Third Year Civil Engineering**  
**(2015 Course)**

**Semester I**

Course Code	Course	Teaching Scheme hour/week			Semester Examination Scheme of marks						Credit	
		Theory	Tutorial	Practical	In-Sem	End-Sem	T W	OR	PR	Total	TH/TUT	PR/OR/TW
301001	Hydrology and water resource engineering.	03	--	02	30	70	--	50	--	<b>150</b>	03	01
301002	Infrastructure Engineering and Construction Techniques	03	--	--	30	70	--	--	--	<b>100</b>	04	--
301003	Structural Design-I	04	--	04	30	70	50	50	--	<b>200</b>	04	02
301004	Structural Analysis-II	04	--	--	30	70	--	--	--	<b>100</b>	03	--
301005	Fluid Mechanics-II	04	--	02	30	70	--	50	--	<b>150</b>	04	01
301006	Employability Skills development	--	--	02	--	--	50	--	--	<b>50</b>	--	01
Total		18	--	10	<b>150</b>	<b>350</b>	<b>100</b>	<b>150</b>		<b>750</b>	<b>18</b>	<b>05</b>

### Semester II

Course Code	Course	Teaching Scheme hour/week			Semester Examination Scheme of marks						Credit	
		Theory	Tutorial	Practical	In-Sem	End-Sem	T W	OR	PR	Total	TH/TUT	PR/OR/TW
301007	Advanced Surveying	03	--	02	30	70	50	--	--	<b>150</b>	03	01
301008	Project Management and Engineering Economics	04	--	--	30	70	--	--	--	<b>100</b>	04	--
301009	Foundation Engineering	03	--	--	30	70	--	--	--	<b>100</b>	03	--
301010	Structural Design-II	04	--	04	30	70	50	50	--	<b>200</b>	04	02
301011	Environmental Engineering-I	04	--	02	30	70	--	--	50	<b>150</b>	04	01
301012	Seminar	--	--	01	--	--	--	50	--	<b>50</b>	--	01
Total		18	--	09	<b>150</b>	<b>350</b>	<b>100</b>	<b>100</b>	<b>50</b>	<b>750</b>	<b>18</b>	<b>05</b>

**Savitribai Phule Pune University**

**Board of Studies in Civil Engineering**

**Structure for B.E. Civil 2012 Course (w.e.f. June 2015)**

Subject code	Subject	Semester – I							
		Teaching Scheme Hrs/Week			Examination Scheme				
		Lect	Tu	Pr	In-Semester Assessment	TW	Or	End - Semester Exam	Total
401 001	Environmental Engineering II	3		2	30	--	50	70	150
401 002	Transportation Engineering	3		2	30	50	--	70	150
401 003	Structural Design and Drawing III	4		2	30	--	50	70	150
401 004	Elective I	3		2	30	50		70	150
401 005	Elective II	3			30			70	100
401 006	Project Phase I	--	2			50			50
	<b>Total →</b>	16	2	8	150	150	100	350	750

Subject code	Subject	Semester – II							
		Teaching Scheme Hrs/Week			Examination Scheme				
		Lect	Tu	Pr	In-Semester Assessment	TW	Or	End - Semester Exam	Total
401 007	Dams and Hydraulic Structures	3	--	2	30	---	50	70	150
401 008	Quantity Surveying, Contracts and Tenders	3	--	2	30	--	50	70	150
401 009	Elective III	3	--	2	30	50	--	70	150
401 010	Elective IV	3	--	2	30	50	--	70	150
401 006	Project	--	6		--	50	100	--	150
	<b>Total →</b>	12	6	8	120	150	200	280	750

Following will be the list of electives..

### Semester I

<b>Elective-I 401 004</b> 1. Structural Design of Bridges 2. Systems Approach in Civil Engineering 3.. Advanced Concrete Technology 4. Architecture and Town Planning 5. Advanced Engineering Geology with Rock Mechanics	<b>Elective-II 401 005</b> 1. Matrix Methods of Structural Analysis 2. Integrated Water Resources and Planning 3. TQM & MIS in Civil Engineering 4. Earthquake Engineering 5. Advanced Geotechnical Engineering
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### Semester II

<b>Elective-III 401 009</b> 1. Advanced Structural Design 2. Advanced Foundation Engineering 3. Hydropower Engineering 4. Air Pollution and control 5. Finite Element Method in Civil Engineering	<b>Elective-IV 401 010</b> 1 Construction Management 2. Advanced Transportation Engineering 3. Statistical Analysis and Computational Methods in Civil Engineering 4. Open Elective a). Plumbing Engineering b) Green Building Technology c) Ferrocement Technology d) Sub sea Engineering e) Wave Mechanics
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**Savitribai Phule Pune University**

**Board of Studies in Civil Engineering**

**Structure for B.E. Civil 2012 Course (w.e.f. June 2015)**

Subject code	Subject	Semester – I							
		Teaching Scheme Hrs/Week			Examination Scheme				
		Lect	Tu	Pr	In-Semester Assessment	TW	Or	End - Semester Exam	Total
401 001	Environmental Engineering II	3		2	30	--	50	70	150
401 002	Transportation Engineering	3		2	30	50	--	70	150
401 003	Structural Design and Drawing III	4		2	30	--	50	70	150
401 004	Elective I	3		2	30	50		70	150
401 005	Elective II	3			30			70	100
401 006	Project Phase I	--	2			50			50
	<b>Total →</b>	16	2	8	150	150	100	350	750

Subject code	Subject	Semester – II							
		Teaching Scheme Hrs/Week			Examination Scheme				
		Lect	Tu	Pr	In-Semester Assessment	TW	Or	End - Semester Exam	Total
401 007	Dams and Hydraulic Structures	3	--	2	30	---	50	70	150
401 008	Quantity Surveying, Contracts and Tenders	3	--	2	30	--	50	70	150
401 009	Elective III	3	--	2	30	50	--	70	150
401 010	Elective IV	3	--	2	30	50	--	70	150
401 006	Project	--	6		--	50	100	--	150
	<b>Total →</b>	12	6	8	120	150	200	280	750

Following will be the list of electives..

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### Semester I

<b>Elective-I 401 004</b> 1. Structural Design of Bridges 2. Systems Approach in Civil Engineering 3.. Advanced Concrete Technology 4. Architecture and Town Planning 5. Advanced Engineering Geology with Rock Mechanics	<b>Elective-II 401 005</b> 1. Matrix Methods of Structural Analysis 2. Integrated Water Resources and Planning 3. TQM & MIS in Civil Engineering 4. Earthquake Engineering 5. Advanced Geotechnical Engineering
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### Semester II

<b>Elective-III 401 009</b> 1. Advanced Structural Design 2. Advanced Foundation Engineering 3. Hydropower Engineering 4. Air Pollution and control 5. Finite Element Method in Civil Engineering	<b>Elective-IV 401 010</b> 1 Construction Management 2. Advanced Transportation Engineering 3. Statistical Analysis and Computational Methods in Civil Engineering 4. Open Elective a). Plumbing Engineering b) Green Building Technology c) Ferrocement Technology d) Sub sea Engineering e) Wave Mechanics
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**Savitribai Phule Pune University**

**Board of Studies in Civil Engineering**

**Structure for B.E. Civil 2012 Course (w.e.f. June 2015)**

Subject code	Subject	Semester – I							
		Teaching Scheme Hrs/Week			Examination Scheme				
		Lect	Tu	Pr	In-Semester Assessment	TW	Or	End - Semester Exam	Total
401 001	Environmental Engineering II	3		2	30	--	50	70	150
401 002	Transportation Engineering	3		2	30	50	--	70	150
401 003	Structural Design and Drawing III	4		2	30	--	50	70	150
401 004	Elective I	3		2	30	50		70	150
401 005	Elective II	3			30			70	100
401 006	Project Phase I	--	2			50			50
	<b>Total →</b>	16	2	8	150	150	100	350	750

Subject code	Subject	Semester – II							
		Teaching Scheme Hrs/Week			Examination Scheme				
		Lect	Tu	Pr	In-Semester Assessment	TW	Or	End - Semester Exam	Total
401 007	Dams and Hydraulic Structures	3	--	2	30	---	50	70	150
401 008	Quantity Surveying, Contracts and Tenders	3	--	2	30	--	50	70	150
401 009	Elective III	3	--	2	30	50	--	70	150
401 010	Elective IV	3	--	2	30	50	--	70	150
401 006	Project	--	6		--	50	100	--	150
	<b>Total →</b>	12	6	8	120	150	200	280	750

Following will be the list of electives..



### Semester I

<b>Elective-I 401 004</b> 1. Structural Design of Bridges 2. Systems Approach in Civil Engineering 3. Advanced Concrete Technology 4. Architecture and Town Planning 5. Advanced Engineering Geology with Rock Mechanics	<b>Elective-II 401 005</b> 1. Matrix Methods of Structural Analysis 2. Integrated Water Resources and Planning 3. TQM & MIS in Civil Engineering 4. Earthquake Engineering 5. Advanced Geotechnical Engineering
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### Semester II

<b>Elective-III 401 009</b> 1. Advanced Structural Design 2. Advanced Foundation Engineering 3. Hydropower Engineering 4. Air Pollution and control 5. Finite Element Method in Civil Engineering	<b>Elective-IV 401 010</b> 1. Construction Management 2. Advanced Transportation Engineering 3. Statistical Analysis and Computational Methods in Civil Engineering 4. Open Elective a). Plumbing Engineering b) Green Building Technology c) Ferrocement Technology d) Sub sea Engineering e) Wave Mechanics
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## University of Pune

**Structure of B.E. (Civil Engineering) 2008 Course (To be commenced w.e.f. July, 2011)**

### Semester I

Sub code No.	Subject Title	Teaching Scheme Hours per week			Examination Scheme				Total Marks
		Lect.	Tut.	Pract/ Drg	Paper	TW	Pract	Oral	
401001	Environmental Engineering-II	4	--	2	100	25	--	50	175
401002	Dams and Hydraulic Structures	4	--	2	100	25	--	50	175
401003	Structural Design-III	4	--	2	100 **	25	--	50	175
401004	Elective -I	4	--	2	100	25	--	--	125
401005	Elective -II	4	--	--	100	--	--	--	100
401006	Project Work	--	--	2	--	*	--	--	--
<b>Total</b>		<b>20</b>	<b>--</b>	<b>10</b>	<b>500</b>	<b>100</b>		<b>150</b>	<b>750</b>

\* It is mandatory to present a seminar and submit report based on work of first semester.  
hrs. duration

\*\* Theory paper of 4

### Semester II

Sub code No.	Subject Title	Teaching Scheme Hours per week			Examination Scheme				Total Marks
		Lect.	Tut.	Pract/ Drg	Paper	TW	Pract	Oral	
401007	Elective -III	4	--	2	100	25	--	--	125
401008	Elective-IV	4	--	--	100	--	--	--	100
401009	Quantity Surveying ,Contracts and Tenders	4	--	4	100 **	50	--	50	200
4010010	Transportation Engineering-II	4	--	2	100	25	--	50	175
401006	Project Work	--	--	6	--	100	--	50	150
<b>Total</b>		<b>16</b>	<b>--</b>	<b>14</b>	<b>400</b>	<b>200</b>		<b>150</b>	<b>750</b>

\*\* Theory paper of 4 hrs. duration

### Semester I

<b>Elective-I</b> 1. Structural Design of Bridges 2. Systems Approach in Civil Engineering <b>3. Air Pollution and Control</b> 4. Architecture and Town Planning 5. Advanced Geotechnical Engineering	<b>Elective-II</b> 1. Matrix Methods of Structural Analysis 2. Hydroinformatics 3. TQM & MIS in Civil Engineering 4. Earthquake Engineering <b>5. Advanced Concrete Technology</b>
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### Semester II

<b>Elective-III</b> 1. Advanced Structural Design 2. Advanced Foundation Engineering 3. Advanced Engineering Geology with Rock Mechanics 4. Advanced Environmental Management <b>5. Construction Management</b>	<b>Elective-IV</b> 1. Integrated Water Resources and Planning 2. Advanced Transportation Engineering <b>3. Statistical Analysis And Computational Methods in Civil Engg.</b> <b>4. Open Elective</b> Finite Element Method in civil engg. Geoinformatics <b>Hydropower Engineering</b> Industrial Waste Water Management
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## University of Pune

**Structure of B.E. (Civil Engineering) 2008 Course (To be commenced w.e.f. July, 2011)**

### Semester I

Sub code No.	Subject Title	Teaching Scheme Hours per week			Examination Scheme				Total Marks
		Lect.	Tut.	Pract/ Drg	Paper	TW	Pract	Oral	
401001	Environmental Engineering-II	4	--	2	100	25	--	50	175
401002	Dams and Hydraulic Structures	4	--	2	100	25	--	50	175
401003	Structural Design-III	4	--	2	100 **	25	--	50	175
401004	Elective -I	4	--	2	100	25	--	--	125
401005	Elective -II	4	--	--	100	--	--	--	100
401006	Project Work	--	--	2	--	*	--	--	--
<b>Total</b>		<b>20</b>	<b>--</b>	<b>10</b>	<b>500</b>	<b>100</b>		<b>150</b>	<b>750</b>

\* It is mandatory to present a seminar and submit report based on work of first semester.

\*\* Theory paper of 4

hrs. duration

### Semester II

Sub code No.	Subject Title	Teaching Scheme Hours per week			Examination Scheme				Total Marks
		Lect.	Tut.	Pract/ Drg	Paper	TW	Pract	Oral	
401007	Elective -III	4	--	2	100	25	--	--	125
401008	Elective-IV	4	--	--	100	--	--	--	100
401009	Quantity Surveying ,Contracts and Tenders	4	--	4	100 **	50	--	50	200
4010010	Transportation Engineering-II	4	--	2	100	25	--	50	175
401006	Project Work	--	--	6	--	100	--	50	150
<b>Total</b>		<b>16</b>	<b>--</b>	<b>14</b>	<b>400</b>	<b>200</b>		<b>150</b>	<b>750</b>

\*\* Theory paper of 4 hrs. duration

#### Semester I

##### Elective-I

1. Structural Design of Bridges
2. Systems Approach in Civil Engineering
3. Air Pollution and Control
4. Architecture and Town Planning
5. Advanced Geotechnical Engineering

##### Elective-II

1. Matrix Methods of Structural Analysis
2. Hydroinformatics
3. TQM & MIS in Civil Engineering
4. Earthquake Engineering
5. Advanced Concrete Technology

#### Semester II

##### Elective-III

1. Advanced Structural Design
2. Advanced Foundation Engineering
3. Advanced Engineering Geology with Rock Mechanics
4. Advanced Environmental Management
5. Construction Management

##### Elective-IV

1. Integrated Water Resources and Planning
2. Advanced Transportation Engineering
3. Statistical Analysis And Computational Methods in Civil Engg.
4. Open Elective
  - Finite Element Method in civil engg.
  - Geoinformatics
  - Hydropower Engineering
  - Industrial Waste Water Management

§ : Mandatory subjects of first, second and third semester must include at least 40 credits for Engineering Physics, Engineering Chemistry, Engineering Mathematics, social science and soft skills

In addition to above credits, there should be audit courses in semester five, six and seven to develop the various skills.

The detail structure is given in Tables

**TABLE - 2 Structure for Semester-1**

Code	Subjects	Short Name	Weekly Work Load (in Hrs)			Semester Examination Scheme of Marks						Credits
			Lectures	Tutorials	PR/DRG	Theory		TW	PR	OR	Max. Marks	
						In-Semester Exam	End-Semester Exam					
107001	Engineering Mathematics I		4	1	-	50	50	25	-	-	125	5
# 107002 / 107009.	Engineering Physics OR Engineering Chemistry		4	-	2	50	50	25	-	-	125	5
102006	Engineering Graphics I		3	-	2	50	50	-	-	-	100	4
# 103004 / 104012	Basic Electrical Engineering OR Basic Electronics Engineering		3	-	2	50	50	25	-	-	125	4
101005	Basic Civil and Environmental Engineering		3	-	2	50	50	25	-	-	125	4
110003	Fundamentals of Programming Languages I		1	-	2	-	-	-	50*	-	50	2
111007	Workshop Practice		-	-	2	-	-	50	-	-	50	1
<b>Total of Semester I</b>			<b>18</b>	<b>1</b>	<b>12</b>	<b>250</b>	<b>250</b>	<b>150</b>	<b>50</b>	<b>-</b>	<b>700</b>	<b>25</b>

**TABLE - 3 Structure for Semester-2**

Code	Subjects	Short Name	Weekly Work Load (in Hrs)			Semester Examination Scheme of Marks						Credits
			Lectures	Tutorials	PR/DRG	Theory		TW	PR	OR	Max. Marks	
						In-Semester Exam	End-Semester Exam					
107008	Engineering Mathematics II		4	-	-	50	50	-	-	-	100	4
# 107009 / 107002	Engineering Chemistry OR Engineering Physics		4	-	2	50	50	25	-	-	125	5
102013	Basic Mechanical Engineering		3	-	2	50	50	25	-	-	125	4
101011	Engineering Mechanics		4	-	2	50	50	25	-	-	125	5
# 104012 / 103004.	Basic Electronics Engineering OR Basic Electrical Engineering		3	-	2	50	50	25	-	-	125	4
110010	Fundamentals of Programming Languages II		1	-	2	-	-	-	50*	-	50	2
102014	Engineering Graphics II		-	-	2	-	-	50	-	-	50	1
<b>Total of Semester II</b>			19	-	12	250	250	150	50	-	700	25

**Instructions:**

1. PR/Tutorial must be conducted in minimum three batches (batch size 22 maximum) per division
2. Minimum number of required Experiments/Assignments in PR/DRG/Tutorial be carried out as mentioned in the syllabi of related subjects.
3. \* for FPL-I and FPL-II: S.P. Pune University Online Practical Examination shall be conducted at the semester end.
4. # Every student should appear for Engineering Physics, Engineering Chemistry, Basic Electronics Engineering and Basic Electrical Engineering during the year.
5. # College is allowed to distribute Teaching Workload of subjects Physics, Chemistry, BEE, BXE in semester I and II by dividing number of FE divisions appropriately in two groups.

Savitribai Phule Pune University												
Second Year of Computer Engineering (2015 Course)												
(With effect from Academic Year 2016-17)												
Semester I												
Course Code	Course Name	Teaching Scheme Hours / Week			Examination Scheme & Marks						Credit	
		Theory	Tutorial	Practical	In-Sem	End-Sem	TW	PR	OR	Total	TH + TUT	PR
210241	<u>Discrete Mathematics</u>	04	--	--	50	50	--	--	--	100	04	--
210242	<u>Digital Electronics and Logic Design</u>	04	--	--	50	50	--	--	--	100	04	--
210243	<u>Data Structures and Algorithms</u>	04	--	--	50	50	--	--	--	100	04	--
210244	<u>Computer Organization and Architecture</u>	04	--	--	50	50	--	--	--	100	04	--
210245	<u>Object Oriented Programming</u>	04	--	--	50	50	--	--	--	100	04	--
210246	<u>Digital Electronics Lab</u>	--	--	02	--	--	25	50	--	75	--	01
210247	<u>Data Structures Lab</u>	--	--	04	--	--	25	50	--	75	--	02
210248	<u>Object Oriented Programming Lab</u>	--	--	02	--	--	25	50	--	75	--	01
210249	<u>Soft Skills</u>	--	--	02	--	--	25	--	--	25	--	01
<b>Total</b>											20	05
210250	<u>Audit Course 1</u>	--	--	--	--	--	--	--	--	--	Grade	
<b>Total</b>		20	--	10	250	250	100	150	--	750	25	

## Abbreviations:

TW: Term Work  
OR: Oral  
PR: Practical

TH: Theory  
TUT: Tutorial  
Sem: Semester

Savitribai Phule Pune University												
Second Year of Computer Engineering (2015 Course)												
(With effect from Academic Year 2016-17)												
Semester II												
Course Code	Course Name	Teaching Scheme Hours / Week			Examination Scheme & Marks						Credits	
		Theory	Tutorial	Practical	In-Sem	End-Sem	TW	PR	OR	Total	TH+TUT	PR
207003	<u>Engineering Mathematics III</u>	04	01	--	50	50	25	--	--	125	05	--
210251	<u>Computer Graphics</u>	04	--	--	50	50	--	--	--	100	04	--
210252	<u>Advanced Data Structures</u>	04	--	--	50	50	--	--	--	100	04	--
210253	<u>Microprocessor</u>	04	--	--	50	50	--	--	--	100	04	--
210254	<u>Principles of Programming Languages</u>	03	--	--	50	50	--	--	--	100	03	--
210255	<u>Computer Graphics Lab</u>	--	--	02	--	--	25	50	--	75	--	01
210256	<u>Advanced Data Structures Lab</u>	--	--	04	--	--	25	50	--	75	--	02
210257	<u>Microprocessor Lab</u>	--	--	04	--	--	25	50	--	75	--	02
<b>Total</b>											20	05
210258	<u>Audit Course 2</u>		--	--	--	--	--	--	--	--	Grade	
<b>Total</b>		19	01	10	250	250	100	150	--	750	25	

## Abbreviations:

TW: Term Work  
OR: Oral  
PR: Practical

TH: Theory  
TUT: Tutorial  
Sem: Semester

Savitribai Phule University of Pune													
Third Year Computer Engineering (2015 Course)													
(with effect from 2017-18)													
Semester I													
Course Code	Course	Teaching Scheme Hours / Week			Examination Scheme and Marks						Credit		
		Theory	Tutorial	Practical	In-Sem	End-Sem	TW	PR	OR	Total	TH/ TUT	PR	
310241	<u>Theory of Computation</u>	03	--	--	30	70	--	--	--	100	03	--	
310242	<u>Database Management Systems (DBMS)</u>	03	--	--	30	70	--	--	--	100	03	--	
310243	<u>Software Engineering &amp; Project Management</u>	03	--	--	30	70	--	--	--	100	03	--	
310244	<u>Information Systems &amp; Engineering Economics</u>	03	--	--	30	70	--	--	--	100	03	--	
310245	<u>Computer Networks (CN)</u>	04	--	--	30	70	--	--	--	100	04	--	
310246	<u>Skills Development Lab</u>	--	02	04	--	--	50	--	50	100	02	02	
310247	<u>DBMS Lab</u>	--	--	04	--	--	25	50	--	75	--	02	
310248	<u>CN Lab</u>	--	--	02	--	--	25	50	--	75	--	01	
<b>Total Credit</b>											<b>18</b>	<b>05</b>	
<b>Total</b>		<b>16</b>	<b>02</b>	<b>10</b>	<b>150</b>	<b>350</b>	<b>100</b>	<b>100</b>	<b>50</b>	<b>750</b>	<b>23</b>		
310249	<u>Audit Course 3</u>											<b>Grade</b>	

**310249-Audit Course 3 (AC3) Options:**

AC3-I: Cyber Security

AC3-II: Professional Ethics and Etiquettes

AC3-III: Emotional Intelligence

AC3-IV: MOOC- Learn New Skills

AC3-V: Foreign Language (Japanese- Module 3)

**Abbreviations:**

TW: Term Work TH: Theory OR: Oral TUT: Tutorial PR: Practical Sem: Semester



Savitribai Phule University of Pune													
Third Year Computer Engineering (2015 Course)													
(with effect from 2017-18)													
Semester II													
Course Code	Course	Teaching Scheme Hours / Week			Examination Scheme and Marks						Credit		
		Theory	Tutorial	Practical	In-Sem	End-Sem	TW	PR	OR	Total	TH/TUT	PR	
310250	<u>Design &amp; Analysis of Algorithms</u>	04	--	--	30	70	--	--	--	100	04		
310251	<u>Systems Programming &amp; Operating System (SP &amp; OS)</u>	04	--	--	30	70	--	--	--	100	04	--	
310252	<u>Embedded Systems &amp; Internet of Things (ES &amp; IoT)</u>	04	--	--	30	70	--	--	--	100	04	--	
310253	<u>Software Modeling and Design</u>	03	--	--	30	70	--	--	--	100	03	--	
310254	<u>Web Technology</u>	03	--	--	30	70	--	--	--	100	03	--	
310255	<u>Seminar &amp; Technical Communication</u>	--	01	--	--	--	50	--	--	50	01	--	
310256	<u>Web Technology Lab</u>	--	--	02	--	--	25	50	--	75	--	01	
310257	<u>SP &amp; OS Lab</u>	--	--	04	--	--	25	50	--	75	--	02	
310258	<u>ES &amp; IoT Lab</u>	--	--	02	--	--	50	--	--	50	--	01	
<b>Total Credit</b>											<b>19</b>	<b>04</b>	
<b>Total</b>		<b>18</b>	<b>01</b>	<b>08</b>	<b>150</b>	<b>350</b>	<b>150</b>	<b>100</b>	<b>--</b>	<b>750</b>	<b>23</b>		
310259	<u>Audit Course 4</u>											<b>Grade</b>	

**310259-Audit Course 4(AC4) Options:**

AC4-I: Digital and Social Media Marketing

AC4-II: Green Computing

AC4-III: Sustainable Energy Systems

AC4-IV: Leadership and Personality Development

AC4-V: Foreign Language (Japanese- Module 4)

**Abbreviations:**

TW: Term Work TH: Theory OR: Oral TUT: Tutorial PR: Practical Sem: Semester

**SAVITRIBAI PHULE PUNE UNIVERSITY**  
**BE (COMPUTER ENGINEERING)- 2012 COURSE STRUCTURE**  
**Term-I**

Subject Code	Subject	Teaching Scheme			Examination Scheme				Total Marks
		Lect	Tut	Pract	In Sem Asmnt	PR/TW	OR/TW	End Sem Asmnt	
410441	Design & Analysis of Algorithms	03	—	—	30	—	—	70	100
410442	Principles of Modern Compiler Design	04	—	—	30	—	—	70	100
410443	Smart System Design and Applications	03	—	—	30	—	—	70	100
410444	Elective-I	03	—	—	30	—	—	70	100
410445	Elective-II	03	—	—	30	—	—	70	100
410446	Computer laboratory-I	—	—	04	—	50	50	—	100
410447	Computer Laboratory-II	—	—	04	—	50	50	—	100
410448	Project	—	02	—	—	50	—	—	50
	<b>Total</b>	<b>16</b>	<b>02</b>	<b>08</b>	<b>150</b>	<b>150</b>	<b>100</b>	<b>350</b>	<b>750</b>
	<b>Term-II</b>								
410449	Software Design Methodologies & Testing	03	—	—	30	—	—	70	100
410450	High Performance Computing	03	—	—	30	—	—	70	100
410451	Elective-III	03	—	—	30	—	—	70	100
410452	Elective-IV Open Elective	03	—	—	30	—	—	70	100
410453	Computer laboratory-III	—	—	04	—	50	50	—	100
410454	Computer Laboratory-IV	—	—	04	—	50	50	—	100
410455	Project	—	06	—	—	50	100	—	150
	<b>Total</b>	<b>12</b>	<b>06</b>	<b>08</b>	<b>120</b>	<b>150</b>	<b>200</b>	<b>280</b>	<b>750</b>

**Electives:**

<b>Semester-I</b>		<b>Semester-II</b>	
	<b>ELECTIVE-I</b>		<b>ELECTIVE-III</b>
1.	Image Processing	1.	Mobile Computing
2.	Computer Network Design and Modeling	2.	Web Technology
3.	Advanced Computer Programming	3.	Cloud Computing
4.	Data Mining Techniques and Applications	4.	Cyber Security
	<b>ELECTIVE-II</b>		<b>ELECTIVE-IV (Open Elective)</b>
1.	Problem Solving with Gamification	1.	Business Analytic and Intelligence
2.	Pervasive Computing	2.	Operations Research for Algorithms in Scientific Applications
3.	Embedded Security	3.	Mobile Applications
4.	Multidisciplinary NLP	4.	Open Elective

**Open Elective:** The listed open electives or any other Elective that is being taught in the current semester (semester-II) under the faculty of engineering or individual college and Industry can define new elective with complete (6 units) syllabus using defined framework of Elective IV and GET IT APPROVED FROM THE BOARD OF STUDIES (COMPUTER ENGINEERING) AND OTHER NECESSARY STATUTORY SYSTEMS IN THE SAVITRIBAI PHULE PUNE UNIVERSITY BEFORE 30th DECEMBER.

**SAVITRIBAI PHULE PUNE UNIVERSITY**  
**BE (COMPUTER ENGINEERING)- 2012 COURSE STRUCTURE**

**Term-I**

Subject Code	Subject	Teaching Scheme			Examination Scheme				Total Marks
		Lect	Tut	Pract	In Sem Asmnt	PR/TW	OR/TW	End Sem Asmnt	
410441	Design & Analysis of Algorithms	03	—	—	30	—	—	70	100
410442	Principles of Modern Compiler Design	04	—	—	30	—	—	70	100
410443	Smart System Design and Applications	03	—	—	30	—	—	70	100
410444	Elective-I	03	—	—	30	—	—	70	100
410445	Elective-II	03	—	—	30	—	—	70	100
410446	Computer laboratory-I	—	—	04	—	50	50	—	100
410447	Computer Laboratory-II	—	—	04	—	50	50	—	100
410448	Project	—	02	—	—	50	—	—	50
	<b>Total</b>	<b>16</b>	<b>02</b>	<b>08</b>	<b>150</b>	<b>150</b>	<b>100</b>	<b>350</b>	<b>750</b>
	<b>Term-II</b>								
410449	Software Design Methodologies & Testing	03	—	—	30	—	—	70	100
410450	High Performance Computing	03	—	—	30	—	—	70	100
410451	Elective-III	03	—	—	30	—	—	70	100
410452	Elective-IV Open Elective	03	—	—	30	—	—	70	100
410453	Computer laboratory-III	—	—	04	—	50	50	—	100
410454	Computer Laboratory-IV	—	—	04	—	50	50	—	100
410455	Project	—	06	—	—	50	100	—	150
	<b>Total</b>	<b>12</b>	<b>06</b>	<b>08</b>	<b>120</b>	<b>150</b>	<b>200</b>	<b>280</b>	<b>750</b>

**Electives:**

Semester-I		Semester-II	
<b>ELECTIVE-I</b>		<b>ELECTIVE-III</b>	
1.	Image Processing	1.	Mobile Computing
2.	Computer Network Design and Modeling	2.	Web Technology
3.	Advanced Computer Programming	3.	Cloud Computing
4.	Data Mining Techniques and Applications	4.	Cyber Security
<b>ELECTIVE-II</b>		<b>ELECTIVE-IV (Open Elective)</b>	
1.	Problem Solving with Gamification	1.	Business Analytic and Intelligence
2.	Pervasive Computing	2.	Operations Research for Algorithms in Scientific Applications
3.	Embedded Security	3.	Mobile Applications
4.	Multidisciplinary NLP	4.	Open Elective

**Open Elective:** The listed open electives or any other Elective that is being taught in the current semester (semester-II) under the faculty of engineering or individual college and Industry can define new elective with complete (6 units) syllabus using defined framework of Elective IV and GET IT APPROVED FROM THE BOARD OF STUDIES (COMPUTER ENGINEERING) AND OTHER NECESSARY STATUTORY SYSTEMS IN THE SAVITRIBAI PHULE PUNE UNIVERSITY BEFORE 30th DECEMBER.

**SAVITRIBAI PHULE PUNE UNIVERSITY**  
**BE (COMPUTER ENGINEERING)- 2012 COURSE STRUCTURE**

**Term-I**

Subject Code	Subject	Teaching Scheme			Examination Scheme				Total Marks
		Lect	Tut	Pract	In Sem Asmnt	PR/TW	OR/TW	End Sem Asmnt	
410441	Design & Analysis of Algorithms	03	—	—	30	—	—	70	100
410442	Principles of Modern Compiler Design	04	—	—	30	—	—	70	100
410443	Smart System Design and Applications	03	—	—	30	—	—	70	100
410444	Elective-I	03	—	—	30	—	—	70	100
410445	Elective-II	03	—	—	30	—	—	70	100
410446	Computer laboratory-I	—	—	04	—	50	50	—	100
410447	Computer Laboratory-II	—	—	04	—	50	50	—	100
410448	Project	—	02	—	—	50	—	—	50
	<b>Total</b>	<b>16</b>	<b>02</b>	<b>08</b>	<b>150</b>	<b>150</b>	<b>100</b>	<b>350</b>	<b>750</b>
	<b>Term-II</b>								
410449	Software Design Methodologies & Testing	03	—	—	30	—	—	70	100
410450	High Performance Computing	03	—	—	30	—	—	70	100
410451	Elective-III	03	—	—	30	—	—	70	100
410452	Elective-IV Open Elective	03	—	—	30	—	—	70	100
410453	Computer laboratory-III	—	—	04	—	50	50	—	100
410454	Computer Laboratory-IV	—	—	04	—	50	50	—	100
410455	Project	—	06	—	—	50	100	—	150
	<b>Total</b>	<b>12</b>	<b>06</b>	<b>08</b>	<b>120</b>	<b>150</b>	<b>200</b>	<b>280</b>	<b>750</b>

**Electives:**

<b>Semester-I</b>		<b>Semester-II</b>	
<b>ELECTIVE-I</b>		<b>ELECTIVE-III</b>	
1.	Image Processing	1.	Mobile Computing
2.	Computer Network Design and Modeling	2.	Web Technology
3.	Advanced Computer Programming	3.	Cloud Computing
4.	Data Mining Techniques and Applications	4.	Cyber Security
<b>ELECTIVE-II</b>		<b>ELECTIVE-IV (Open Elective)</b>	
1.	Problem Solving with Gamification	1.	Business Analytic and Intelligence
2.	Pervasive Computing	2.	Operations Research for Algorithms in Scientific Applications
3.	Embedded Security	3.	Mobile Applications
4.	Multidisciplinary NLP	4.	Open Elective

**Open Elective:** The listed open electives or any other Elective that is being taught in the current semester (semester-II) under the faculty of engineering or individual college and Industry can define new elective with complete (6 units) syllabus using defined framework of Elective IV and GET IT APPROVED FROM THE BOARD OF STUDIES (COMPUTER ENGINEERING) AND OTHER NECESSARY STATUTORY SYSTEMS IN THE SAVITRIBAI PHULE PUNE UNIVERSITY BEFORE 30th DECEMBER.

## BE (COMPUTER ENGINEERING)- 2008 COURSE STRUCTURE

### Term-I

Subject Code	Subject	Teaching Scheme		Examination Scheme				Total Marks
		Lect.	Pract.	Th	TW	Pr	Or	
410441	Design & Analysis of Algorithms	04		100		—		100
410442	Principles of Compiler Design	04	—	100	—	—	—	100
410443	Object Oriented Modeling & Design	04	02	100	25	—	50	175
410444	Elective-I	03	02	100	25	—	50	175
410445	Elective-II	03		100	----	—	---	100
410446	Computer Laboratory-I	—	04	—	----	50	—	050
410447	Project Work	---	02	---	50	---	---	050
	<b>Total</b>	<b>18</b>	<b>10</b>	<b>500</b>	<b>100</b>	<b>50</b>	<b>100</b>	<b>750</b>
	<b>Total of Part I (A)</b>	<b>28 Hrs</b>		<b>750</b>				

### Term II

Subject Code	Subject	Teaching Scheme		Examination Scheme				Total Marks
		Lect.	Pract	Th	TW	Pr	Or	
410448	Distributed Operating Systems	04	---	100	---	---	---	100
410449	Advanced Computer Architecture	04		100				100
410450	Elective-III	04	02	100	50	—	50	200
410451	Elective-IV	04	---	100	---	—	---	100
410452	Computer Laboratory II	—	04	— —	50	50	—	100
410447	Project Work	—	06	—	100	—	50	150
	<b>Total</b>	<b>16</b>	<b>12</b>	<b>400</b>	<b>200</b>	<b>50</b>	<b>100</b>	<b>750</b>
	<b>Total of Part II (B)</b>	<b>28 Hrs</b>		<b>750</b>				
	<b>Grand Total (A+B)</b>			<b>1500</b>				

**Th: Theory TW: Term Work**

**Pr: Practical Or: Oral**



#### **Elective I**

- 1) Image Processing
- 2) Design & Analysis of Computer Networks
- 3) Artificial Intelligence
- 4) Software Architecture

#### **Elective III**

- 1) Pattern Recognition
- 2) High Performance networks
- 3) Neural Networks
- 4) Advanced Databases

#### **Elective II**

- 1) Multimedia Systems
- 2) Mobile Computing
- 3) Embedded Systems
- 4) Software Testing & Quality Assurance

#### **Elective IV**

- 1) VLSI & Digital System Design
  - 2) Operations Research
  - 3) Cloud Computing
  - 4) Information Security
- or Open Elective

**Open Elective:** Any other Electives that are being taught in Term II under the Faculty of Engineering or individual college and Industry, together, can define new elective using framework of Elective IV defined in syllabus structure and GET IT APPROVED FROM BOARD OF STUDIES COMPUTER ENGINEERING AND OTHER NECESSARY STATUTORY SYSTEMS IN THE UNIVERSITY OF PUNE BEFORE 30<sup>th</sup> DECEMBER.

The BE Project Term work assessment for Term I will be done by selecting panel of examiners amongst senior teachers of Computer Engineering. Existing prevailing practices are followed for all remaining examinations and assessment work.

**BE (COMPUTER ENGINEERING)- 2008 COURSE STRUCTURE**

**Term-I**

Subject Code	Subject	Teaching Scheme		Examination Scheme				Total Marks
		Lect.	Pract.	Th	TW	Pr	Or	
410441	Design & Analysis of Algorithms	04		100		—		100
410442	Principles of Compiler Design	04	—	100	—	—	—	100
410443	Object Oriented Modeling & Design	04	02	100	25	—	50	175
410444	Elective-I	03	02	100	25	—	50	175
410445	Elective-II	03		100	----	—	---	100
410446	Computer Laboratory-I	—	04	—	----	50	—	050
410447	Project Work	---	02	---	50	---	---	050
	<b>Total</b>	<b>18</b>	<b>10</b>	<b>500</b>	<b>100</b>	<b>50</b>	<b>100</b>	<b>750</b>
	<b>Total of Part I (A)</b>	<b>28 Hrs</b>		<b>750</b>				

**Term II**

Subject Code	Subject	Teaching Scheme		Examination Scheme				Total Marks
		Lect.	Pract	Th	TW	Pr	Or	
<b>410448</b>	<b>Distributed Operating Systems</b>	<b>04</b>	<b>—</b>	<b>100</b>	<b>---</b>	<b>---</b>	<b>---</b>	<b>100</b>
410449	Advanced Computer Architecture	04		100				100
410450	Elective-III	04	02	100	50	—	50	200
410451	Elective-IV	04	---	100	---	—	---	100
410452	Computer Laboratory II	—	04	---	50	50	—	100
410447	Project Work	—	06	—	100	—	50	150
	<b>Total</b>	<b>16</b>	<b>12</b>	<b>400</b>	<b>200</b>	<b>50</b>	<b>100</b>	<b>750</b>
	<b>Total of Part II (B)</b>	<b>28 Hrs</b>		<b>750</b>				
	<b>Grand Total (A+B)</b>			<b>1500</b>				

**Th: Theory TW: Term Work**

**Pr: Practical Or: Oral**

#### **Elective I**

- 1) Image Processing
- 2) Design & Analysis of Computer Networks
- 3) Artificial Intelligence
- 4) Software Architecture

#### **Elective III**

- 1) Pattern Recognition
- 2) High Performance networks
- 3) Neural Networks
- 4) Advanced Databases

#### **Elective II**

- 1) Multimedia Systems
- 2) Mobile Computing
- 3) Embedded Systems
- 4) Software Testing & Quality Assurance

#### **Elective IV**

- 1) VLSI & Digital System Design
  - 2) Operations Research
  - 3) Cloud Computing
  - 4) Information Security
- or Open Elective

**Open Elective:** Any other Electives that are being taught in Term II under the Faculty of Engineering or individual college and Industry, together, can define new elective using framework of Elective IV defined in syllabus structure and GET IT APPROVED FROM BOARD OF STUDIES COMPUTER ENGINEERING AND OTHER NECESSARY STATUTORY SYSTEMS IN THE UNIVERSITY OF PUNE BEFORE 30<sup>th</sup> DECEMBER.

The BE Project Term work assessment for Term I will be done by selecting panel of examiners amongst senior teachers of Computer Engineering. Existing prevailing practices are followed for all remaining examinations and assessment work.

\$ : Mandatory subjects of first, second and third semester must include at least 40 credits for Engineering Physics, Engineering Chemistry, Engineering Mathematics, social science and soft skills

In addition to above credits, there should be audit courses in semester five, six and seven to develop the various skills.

The detail structure is given in Tables

**TABLE - 2 Structure for Semester-1**

Code	Subjects	Short Name	Weekly Work Load (in Hrs)			Semester Examination Scheme of Marks						Credits
			Lectures	Tutorials	PR/DRG	Theory		TW	PR	OR	Max. Marks	
						In-Semester Exam	End-Semester Exam					
107001	Engineering Mathematics I		4	1	-	50	50	25	-	-	125	5
# 107002 / 107009.	Engineering Physics OR Engineering Chemistry		4	-	2	50	50	25	-	-	125	5
102006	Engineering Graphics I		3	-	2	50	50	-	-	-	100	4
# 103004 / 104012	Basic Electrical Engineering OR Basic Electronics Engineering		3	-	2	50	50	25	-	-	125	4
101005	Basic Civil and Environmental Engineering		3	-	2	50	50	25	-	-	125	4
110003	Fundamentals of Programming Languages I		1	-	2	-	-	-	50*	-	50	2
111007	Workshop Practice		-	-	2	-	-	50	-	-	50	1
<b>Total of Semester I</b>			<b>18</b>	<b>1</b>	<b>12</b>	<b>250</b>	<b>250</b>	<b>150</b>	<b>50</b>	<b>-</b>	<b>700</b>	<b>25</b>

**TABLE - 3 Structure for Semester-2**

Code	Subjects	Short Name	Weekly Work Load (in Hrs)			Semester Examination Scheme of Marks						Credits
			Lectures	Tutorials	PR/DRG	Theory		TW	PR	OR	Max. Marks	
						In-Semester Exam	End-Semester Exam					
107008	Engineering Mathematics II		4	-	-	50	50	-	-	-	100	4
# 107009 / 107002	Engineering Chemistry OR Engineering Physics		4	-	2	50	50	25	-	-	125	5
102013	Basic Mechanical Engineering		3	-	2	50	50	25	-	-	125	4
101011	Engineering Mechanics		4	-	2	50	50	25	-	-	125	5
# 104012 / 103004.	Basic Electronics Engineering OR Basic Electrical Engineering		3	-	2	50	50	25	-	-	125	4
110010	Fundamentals of Programming Languages II		1	-	2	-	-	-	50*	-	50	2
102014	Engineering Graphics II		-	-	2	-	-	50	-	-	50	1
<b>Total of Semester II</b>			19	-	12	250	250	150	50	-	700	25

**Instructions:**

1. PR/Tutorial must be conducted in minimum three batches (batch size 22 maximum) per division
2. Minimum number of required Experiments/Assignments in PR/DRG/Tutorial be carried out as mentioned in the syllabi of related subjects.
3. \* for FPL-I and FPL-II: S.P. Pune University Online Practical Examination shall be conducted at the semester end.
4. # Every student should appear for Engineering Physics, Engineering Chemistry, Basic Electronics Engineering and Basic Electrical Engineering during the year.
5. # College is allowed to distribute Teaching Workload of subjects Physics, Chemistry, BEE, BXE in semester I and II by dividing number of FE divisions appropriately in two groups.

**Savitribai Phule Pune University, Pune**  
**SE(E&TC/Electronics Engineering) 2015 Course**

**(With effect from Academic Year 2016-17)**

Semester I												
Course Code	Course	Teaching Scheme Hours / Week			Semester Examination Scheme of Marks						Credit	
		Theory	Tutorials	Practicals	In-Sem (On line)	End-Sem (Theory)	TW	PR	OR	Total	TH/TUT	PR+OR
204181	Signals & Systems	3	1	-	50	50	25	-	-	125	4	-
204182	Electronic Devices & Circuits	4	-	2	50	50	-	50	-	150	4	1
204183	Electrical Circuits and Machines	3	-	2	50	50	25	-	-	125	3	1
204184	Data Structures and Algorithms	4	-	2	50	50	-	-	50	150	4	1
204185	Digital Electronics	4	-	2	50	50	-	50	-	150	4	1
204186	Electronic Measuring Instruments & Tools	1	-	2	-	-	50	-	-	50	1	1
<b>204192</b>	<b>Audit Course 1</b>	--	--	--	--	--	--	--	--	--		
<b>Total</b>		19	1	10	250	250	100	100	50	750	20	05
<b>Total Credits</b>											<b>25</b>	

**Abbreviations:**

Th : Theory

TW: Term Work

OR: Oral

TUT : Tutorial

PR : Practical

**Note: Interested students of S.E. (Electronics/E&TC) can opt any one of the audit course from the audit courses prescribed by BoS (Electronics/Computer/IT/Electrical/Instrumentation)**

**SE(E&TC/Electronics Engineering) 2015 Course****(With effect from Academic Year 2016-17)****Semester II**

Course Code	Course	Teaching Scheme Hours / Week			Semester Examination Scheme of Marks						Credit	
		Theory	Tutorials	Practicals	In-Sem (on line)	End-Sem (Theory)	TW	PR	OR	Total	TH/TUT	PR+OR
207005	Engineering Mathematics III	4	1	-	50	50	25	-	-	125	5	-
204187	Integrated Circuits	4	-	2	50	50	25	50	-	175	4	1
204188	Control Systems	3	-	-	50	50	-	-	-	100	3	-
204189	Analog Communication	3	-	2	50	50	-	50	-	150	3	1
204190	Object Oriented Programming	3	-	4	50	50	-	-	50	150	3	2
204191	Employability Skill Development	2	-	2	-	-	50	-	-	50	2	1
<b>204193</b>	<b>Audit Course 2</b>	--	--	--	--	--	--	--	--	--		
<b>Total</b>		19	1	10	250	250	100	100	50	750	20	05
<b>Total Credits</b>											<b>25</b>	

**Abbreviations:**

TH: Theory  
 TW: Term Work  
 OR: Oral

TUT: Tutorial  
 PR: Practical

**Note: Interested students of S.E (Electronics/E&TC) can opt any one of the audit course from the audit courses prescribed by BoS (Electronics/Computer/IT/Electrical/Instrumentation)**

### Third Year E&TC Engineering (2015 Course) (With effect from Academic Year 2017-18)

Semester II												
Course Code	Course	Teaching Scheme			Semester Examination Scheme of						Credit	
		Hours / Week			Marks						Th+Tut	PR/OR/ TW
		Theory	Tutorials	Practicals	In-Sem	End-Sem	TW	PR	OR	Total		
304186	Power Electronics	3	--	--	30	70	--	--	--	100	3	--
304187	Information Theory, Coding and Communication Networks	4	--	--	30	70	--	--	--	100	4	--
304188	Business Management	3	--	--	30	70	--	--	--	100	3	--
306189	Advanced Processors	3	--	--	30	70	--	--	--	100	3	--
304190	System Programming and Operating Systems	3	--	--	30	70	--	--	--	100	3	--
304194	Power and ITCT Lab	--	--	4	--	--	50	50	--	100	--	2
304195	Advanced Processors and System Programming Lab	--	--	4	--	--	50	50	--	100	--	2
304196	Employability Skills and Mini Project	2	--	2	--	--	--	--	50	50	2	1
	<b>Audit Course 4</b>	--	--	--	--	--	--	--	--	--		
	<b>Total</b>	18	---	10	150	350	100	100	50	750	18	5
<b>Total Credits</b>											<b>23</b>	



**BE (E & TC) Structure**  
**2012 Course w.e.f. June 2015**

**Semester-I**

Subject Code	Subject	Teaching Scheme			Examination Scheme					Marks
		LECT	TUT	PR	In Semester Assessment Phase I	PR	OR	TW	End Semester Examination	Total
									Phase II	
404181	VLSI Design & Technology	3			30					
404182	Computer Networks	3			30				70	100
404183	Microwave Engineering	4			30				70	100
404184	Elective I	3			30				70	100
404185	Elective II	3			30				70	100
404186	Lab Practice I (CN & MWE)			4			50	50		100
404187	Lab Practice II (VLSI & Elective I)			4		50		50		100
404188	Project Phase I		2				50			50
	<b>Total</b>	<b>16</b>	<b>2</b>	<b>8</b>	<b>150</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>350</b>	<b>750</b>

**Elective I**

1. Digital Image Processing
2. **Embedded Systems & RTOS**
3. Software Defined Radio
4. Industrial Drives and Control

**Elective II**

1. Multi rate & Adaptive Signal Processing
2. **Electronic Product Design**
3. PLCs and Automation
4. Artificial Intelligence

## Semester-II

Subject Code	Subject	Teaching Scheme			Examination Scheme					Marks
		LECT	TUT	PR	In Semester Assessment	PR	OR	TW	End Semester Examination	Total
					Phase I				Phase II	
404189	Mobile Communication	4			30				70	100
404190	Broadband Communication Systems	4			30				70	100
404191	Elective III	3			30				70	100
404192	Elective IV	3			30				70	100
404193	Lab Practice III(MC & BCS)			4			50	50		100
404194	Lab Practice IV(Elective III)			2		50		50		100
404195	Project Phase II		6			50		100		150
	<b>Total</b>	<b>14</b>	<b>6</b>	<b>6</b>	<b>120</b>	<b>100</b>	<b>50</b>	<b>200</b>	<b>280</b>	<b>750</b>

### Elective III

1. Speech & Audio Signal Processing
2. RF Circuit Design
3. Audio Video Engineering
4. Soft Computing

### Elective IV

1. Biomedical Signal Processing
2. Nano Electronics & MEMS
3. Detection & Estimation Theory
4. Wireless Networks
5. Open Elective\*

\*Any one subject from the list of Elective IV of computer/IT/Electrical/Instrumentation or Institute can offer elective IV based on any industry need with prior approval from BoS(Electronics). Repetition of subjects or topics is to be avoided.

**Dr. D. S. Bormane**  
Chairman, BOS(Electronics)

**BE (E & TC) Structure**  
**2012 Course w.e.f. June 2015**

**Semester-I**

Subject Code	Subject	Teaching Scheme			Examination Scheme					Marks
		LECT	TUT	PR	In Semester Assessment	PR	OR	TW	End Semester Examination	Total
					Phase I				Phase II	
404181	VLSI Design & Technology	3			30				70	100
404182	Computer Networks	3			30				70	100
404183	Microwave Engineering	4			30				70	100
404184	Elective I	3			30				70	100
404185	Elective II	3			30				70	100
404186	Lab Practice I (CN & MWE)			4			50	50		100
404187	Lab Practice II (VLSI & Elective I)			4		50		50		100
404188	Project Phase I		2				50			50
	<b>Total</b>	<b>16</b>	<b>2</b>	<b>8</b>	<b>150</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>350</b>	<b>750</b>

**Elective I**

1. Digital Image Processing
2. Embedded Systems & RTOS
3. Software Defined Radio
4. Industrial Drives and Control

**Elective II**

1. Multi rate & Adaptive Signal Processing
2. Electronic Product Design
3. PLCs and Automation
4. Artificial Intelligence

## Semester-II

Subject Code	Subject	Teaching Scheme			Examination Scheme					Marks
		LECT	TUT	PR	In Semester Assessment	PR	OR	TW	End Semester Examination	Total
					Phase I				Phase II	
404189	Mobile Communication	4			30				70	100
404190	Broadband Communication Systems	4			30				70	100
404191	Elective III	3			30				70	100
404192	Elective IV	3			30				70	100
404193	Lab Practice III(MC & BCS)			4			50	50		100
404194	Lab Practice IV(Elective III)			2		50		50		100
404195	Project Phase II		6			50		100		150
	<b>Total</b>	<b>14</b>	<b>6</b>	<b>6</b>	<b>120</b>	<b>100</b>	<b>50</b>	<b>200</b>	<b>280</b>	<b>750</b>

### Elective III

1. Speech & Audio Signal Processing
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3. Audio Video Engineering
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**BE (E & TC) Structure**  
**2012 Course w.e.f. June 2015**

**Semester-I**

Subject Code	Subject	Teaching Scheme			Examination Scheme					Marks
		LECT	TUT	PR	In Semester Assessment	PR	OR	TW	End Semester Examination	Total
					Phase I				Phase II	
404181	VLSI Design & Technology	3			30				70	100
404182	Computer Networks	3			30				70	100
404183	Microwave Engineering	4			30				70	100
404184	Elective I	3			30				70	100
404185	Elective II	3			30				70	100
404186	Lab Practice I (CN & MWE)			4			50	50		100
404187	Lab Practice II (VLSI & Elective I)			4		50		50		100
404188	Project Phase I		2				50			50
	<b>Total</b>	<b>16</b>	<b>2</b>	<b>8</b>	<b>150</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>350</b>	<b>750</b>

**Elective I**

1. Digital Image Processing
2. Embedded Systems & RTOS
3. Software Defined Radio
4. Industrial Drives and Control

**Elective II**

1. Multi rate & Adaptive Signal Processing
2. Electronic Product Design
3. PLCs and Automation
4. Artificial Intelligence

## Semester-II

Subject Code	Subject	Teaching Scheme			Examination Scheme					Marks
		LECT	TUT	PR	In Semester Assessment	PR	OR	TW	End Semester Examination	Total
					Phase I				Phase II	
404189	Mobile Communication	4			30				70	100
404190	Broadband Communication Systems	4			30				70	100
404191	Elective III	3			30				70	100
404192	Elective IV	3			30				70	100
404193	Lab Practice III(MC & BCS)			4			50	50		100
404194	Lab Practice IV(Elective III)			2		50		50		100
404195	Project Phase II		6			50		100		150
	<b>Total</b>	<b>14</b>	<b>6</b>	<b>6</b>	<b>120</b>	<b>100</b>	<b>50</b>	<b>200</b>	<b>280</b>	<b>750</b>

### Elective III

1. Speech & Audio Signal Processing
2. RF Circuit Design
3. Audio Video Engineering
4. Soft Computing

### Elective IV

1. Biomedical Signal Processing
2. Nano Electronics & MEMS
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5. Open Elective\*

\*Any one subject from the list of Elective IV of computer/IT/Electrical/Instrumentation or Institute can offer elective IV based on any industry need with prior approval from BoS(Electronics). Repetition of subjects or topics is to be avoided.

**Dr. D. S. Bormane**  
Chairman, BOS(Electronics)

## STRUCTURE OF

### B.E. (ELECTRONICS & TELECOMMUNICATIONS) 2008 COURSE

#### TERM - I

SUBJECT CODE	NAME OF SUBJECT	TH	PR	TUT	PP	TW	OR	PR	TOTAL MARKS
404181	ELECTRONICS PRODUCT DESIGN	3		1	100	25			125
404182	VLSI DESIGN & TECHNOLOGY	4	2		100			50	150
404183	COMPUTER NETWORK	4	2		100		50		150
404184	ELECTIVE-I	4	2		100	25		50	175
404185	ELECTIVE-II	4			100				100
404186	PROJECT (PART-1)		2			50			50
		19	8	1	500	100	50	100	750

#### Elective -I

1. Digital Image Processing
2. Embedded System and RTOS
3. Industrial Drives Control
4. Microwave Communication and Radar

#### Elective-II

1. Entrepreneurship Development
2. Joint Time Frequency Analysis
3. Micro-electromechanical-system and System on chip ( MEMS and SOC)
4. Mobile Communication

**TERM – II**

SUBJECT CODE	NAME OF SUBJECT	TH	PR	TUT	PP	TW	OR	PR	TOTAL MARKS
404187	TELECOMMUNICATION & SWITCHING SYSTEM	4	2	1	100		50		150
404188	OPTICAL FIBER COMMUNICATION	4	2		100	25		50	175
404189	ELECTIVE-III	4	2		100	25		50	175
404190	ELECTIVE-IV	4			100				100
404191	PROJECT (PART-II)***		6			100	50		150
		16	12	0	400	150	100	100	750

**Elective-III**

1. Soft Computing
2. Speech Processing
3. Television and Video Engineering
4. Test and Measurement Systems

**Elective-IV**

1. Artificial intelligence
2. Automotive Electronics
3. Nanotechnology
4. PLC and Industrial Process Automation
5. Any one subject from the list of Elective IV of Computer/IT/Electrical/Instrumentation OR institute can offer an elective-IV based on any industry need with prior approval of BOS (Electronics)

**Note:**

- 1) All Theory papers are three hours duration
- 2) Practical/Oral shall be based on term-work
- 3) Term-work of Project Part I consist of project report based on project
- 4) \* \* \* Exam at the end of II term



## STRUCTURE OF

### B.E. (ELECTRONICS & TELECOMMUNICATIONS) 2008 COURSE

#### TERM - I

SUBJECT CODE	NAME OF SUBJECT	TH	PR	TUT	PP	TW	OR	PR	TOTAL MARKS
404181	ELECTRONICS PRODUCT DESIGN	3		1	100	25			125
404182	VLSI DESIGN & TECHNOLOGY	4	2		100			50	150
404183	COMPUTER NETWORK	4	2		100		50		150
404184	ELECTIVE-I	4	2		100	25		50	175
404185	ELECTIVE-II	4			100				100
404186	PROJECT (PART-1)		2			50			50
		19	8	1	500	100	50	100	750

#### Elective -I

1. Digital Image Processing
2. Embedded System and RTOS
3. Industrial Drives Control
4. Microwave Communication and Radar

#### Elective-II

1. Entrepreneurship Development
2. Joint Time Frequency Analysis
3. Micro-electromechanical-system and System on chip ( MEMS and SOC)
4. Mobile Communication

**TERM – II**

SUBJECT CODE	NAME OF SUBJECT	TH	PR	TUT	PP	TW	OR	PR	TOTAL MARKS
404187	TELECOMMUNICATION & SWITCHING SYSTEM	4	2	1	100		50		150
404188	OPTICAL FIBER COMMUNICATION	4	2		100	25		50	175
404189	ELECTIVE-III	4	2		100	25		50	175
404190	ELECTIVE-IV	4			100				100
404191	PROJECT (PART-II)***		6			100	50		150
		16	12	0	400	150	100	100	750

**Elective-III**

1. Soft Computing
2. Speech Processing
3. Television and Video Engineering
4. Test and Measurement Systems

**Elective-IV**

1. Artificial intelligence
2. Automotive Electronics
3. Nanotechnology
4. PLC and Industrial Process Automation
5. Any one subject from the list of Elective IV of Computer/IT/Electrical/Instrumentation OR institute can offer an elective-IV based on any industry need with prior approval of BOS (Electronics)

**Note:**

- 1) All Theory papers are three hours duration
- 2) Practical/Oral shall be based on term-work
- 3) Term-work of Project Part I consist of project report based on project
- 4) \*\* \* Exam at the end of II term

§ : Mandatory subjects of first, second and third semester must include at least 40 credits for Engineering Physics, Engineering Chemistry, Engineering Mathematics, social science and soft skills  
In addition to above credits, there should be audit courses in semester five, six and seven to develop the various skills.

The detail structure is given in Tables

**TABLE - 2 Structure for Semester-1**

Code	Subjects	Short Name	Weekly Work Load (in Hrs)			Semester Examination Scheme of Marks						Credits
			Lectures	Tutorials	PR/DRG	Theory		TW	PR	OR	Max. Marks	
						In-Semester Exam	End-Semester Exam					
107001	Engineering Mathematics I		4	1	-	50	50	25	-	-	125	5
# 107002 / 107009.	Engineering Physics OR Engineering Chemistry		4	-	2	50	50	25	-	-	125	5
102006	Engineering Graphics I		3	-	2	50	50	-	-	-	100	4
# 103004 / 104012	Basic Electrical Engineering OR Basic Electronics Engineering		3	-	2	50	50	25	-	-	125	4
101005	Basic Civil and Environmental Engineering		3	-	2	50	50	25	-	-	125	4
110003	Fundamentals of Programming Languages I		1	-	2	-	-	-	50*	-	50	2
111007	Workshop Practice		-	-	2	-	-	50	-	-	50	1
<b>Total of Semester I</b>			<b>18</b>	<b>1</b>	<b>12</b>	<b>250</b>	<b>250</b>	<b>150</b>	<b>50</b>	<b>-</b>	<b>700</b>	<b>25</b>

**TABLE - 3 Structure for Semester-2**

Code	Subjects	Short Name	Weekly Work Load (in Hrs)			Semester Examination Scheme of Marks						Credits
			Lectures	Tutorials	PR/DRG	Theory		TW	PR	OR	Max. Marks	
						In-Semester Exam	End-Semester Exam					
107008	Engineering Mathematics II		4	-	-	50	50	-	-	-	100	4
# 107009 / 107002	Engineering Chemistry OR Engineering Physics		4	-	2	50	50	25	-	-	125	5
102013	Basic Mechanical Engineering		3	-	2	50	50	25	-	-	125	4
101011	Engineering Mechanics		4	-	2	50	50	25	-	-	125	5
# 104012 / 103004.	Basic Electronics Engineering OR Basic Electrical Engineering		3	-	2	50	50	25	-	-	125	4
110010	Fundamentals of Programming Languages II		1	-	2	-	-	-	50*	-	50	2
102014	Engineering Graphics II		-	-	2	-	-	50	-	-	50	1
<b>Total of Semester II</b>			19	-	12	250	250	150	50	-	700	25

**Instructions:**

1. PR/Tutorial must be conducted in minimum three batches (batch size 22 maximum) per division
2. Minimum number of required Experiments/Assignments in PR/DRG/Tutorial be carried out as mentioned in the syllabi of related subjects.
3. \* for FPL-I and FPL-II: S.P. Pune University Online Practical Examination shall be conducted at the semester end.
4. # Every student should appear for Engineering Physics, Engineering Chemistry, Basic Electronics Engineering and Basic Electrical Engineering during the year.
5. # College is allowed to distribute Teaching Workload of subjects Physics, Chemistry, BEE, BXE in semester I and II by dividing number of FE divisions appropriately in two groups.

**Structure of S.E. (Mechanical Engineering/ Automobile Engineering)  
2015 Course**

**Semester-I**

Subject Code	Subject	Teaching Scheme			Examination Scheme					Total Marks	Credits	
		Hours/Week			In-Sem (online)	End-Sem	TW	PR.	Oral		Lect/Tut	PR/OR
		L	Tut.	PR								
207002	Engineering Mathematics – III	04	01	-	50	50	25	-	-	125	05	-
202041	Manufacturing Process-I	03	-	02	50	50	50	-	-	150	03	01
202042	Computer Aided Machine Drawing	01	-	02	--	--		50	-	50	01	01
202043	Thermodynamics	04	-	02	50	50	-	-	50	150	04	01
202044	Material Science	03	01	-	50	50	25	-	-	125	03	01
202051	Strength of Materials	04	-	02	50	50	-	-	50	150	04	01
202055	Audit course											
	<b>Total</b>	<b>19</b>	<b>02</b>	<b>08</b>	<b>250</b>	<b>250</b>	<b>100</b>	<b>50</b>	<b>100</b>	<b>750</b>	<b>20</b>	<b>05</b>
	<b>Total of Part-I</b>	<b>29 Hrs</b>					<b>750</b>				<b>25</b>	

**Note:** Material Science and Engineering Mathematics-III practical may be carried out fortnightly for two hours, so that the tutorial hours may be used as practical.

**Semester-II**

Subject Code	Subject	Teaching Scheme			Examination Scheme					Total Marks	Credits	
		Hours/Week			In-Sem (online)	End-Sem	TW	PR.	Oral		Lect/Tut	PR/OR
		L	Tut.	PR								
202045	Fluid Mechanics	04	-	02	50	50	-	50	-	150	04	01
202047	Soft Skills	-	-	02	--	--	25	-	-	25	-	01
202048	Theory of Machines – I	04	01	-	50	50	25	-	25	150	04	01
202049	Engineering Metallurgy	03	01	-	50	50	-	-	25	125	03	01
202050	Applied Thermodynamics	04	-	02	50	50	-	50	-	150	04	01
203152	Electrical and Electronics Engineering	03	-	02	50	50	25	-	-	125	03	01
202053	Machine Shop – I	-	-	02	--	--	25	-	-	25	-	01
	<b>Total</b>	<b>18</b>	<b>02</b>	<b>10</b>	<b>250</b>	<b>250</b>	<b>100</b>	<b>100</b>	<b>50</b>	<b>750</b>	<b>18</b>	<b>07</b>
	<b>Total of Part-II</b>	<b>30 Hrs</b>					<b>750</b>				<b>25</b>	

**Note:** Theory of Machine-I and Engineering Metallurgy practical may be carried out fortnightly for two hours, so that the tutorial hours may be used as practical.

**Savitribai Phule Pune University**  
**T.E. Mechanical Engineering 2015 – Course**  
**T. E. (Mechanical) (2015 Course) Semester – I**

Code	Subject	Teaching Scheme Hrs / week			Examination Scheme					Total Marks	Credits	
		Lecture	Tut	Pract	In-Sem	ESE	TW	PR	OR		Th	TW / PR / OR
302041	Design of Machine Elements-I	4	-	2	30@	70@	50	-	-	150	4	1
302042	Heat Transfer*	4	-	2	30	70	-	50	-	150	4	1
302043	Theory of Machines-II <sup>§</sup>	3	1	-	30	70	25	-	25	150	3	1
302044	Turbo Machines	3	-	2	30	70	-	-	25	125	3	1
302045	Metrology and Quality Control <sup>§</sup>	3	-	2	30	70	-	-	25	125	3	1
302046	Skill Development	-	-	2	-	-	25	25	-	50	-	1
<b>Total</b>		<b>17</b>	<b>1</b>	<b>10</b>	<b>150</b>	<b>350</b>	<b>100</b>	<b>75</b>	<b>75</b>	<b>750</b>	<b>17</b>	<b>6</b>
<b>23</b>												

**T. E. (Mechanical) (2015 Course) Semester – II**

Code	Subject	Teaching Scheme Hrs / week			Examination Scheme					Total Marks	Credits	
		Lecture	Tut	Pract	In-Sem	ESE	TW	PR	OR		Th	TW / PR / OR
302047	Numerical Methods and Optimization*	4	-	2	30	70	-	50	-	150	4	1
302048	Design of Machine Elements-II	4	-	2	30@	70@	25	-	25	150	4	1
302049	Refrigeration and Air Conditioning	3	-	2	30	70	-	-	25	125	3	1
302050	Mechatronics <sup>%</sup>	3	1	-	30	70	-	-	25	125	3	1
302051	Manufacturing - Process-II <sup>§</sup>	3	-	-	30	70	-	-	-	100	3	-
302052	Machine Shop-II <sup>§</sup>	-	-	2	-	-	50	-	-	50	-	1
302053	Seminar <sup>§</sup>	-	-	2	-	-	25	-	25#	50	-	1
302054	Audit Course*	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>		<b>17</b>	<b>1</b>	<b>10</b>	<b>150</b>	<b>350</b>	<b>100</b>	<b>50</b>	<b>100</b>	<b>750</b>	<b>17</b>	<b>6</b>
<b>23</b>												

# Though it is under Oral head Internal Panel to be appointed by Principal and HOD.

Examination schedule will not be prepared at University level.

\* Marked subjects are common with TE (Auto. Engg.) and TE Mech. Sandwich

§ Marked subjects are common with TE (Auto. Engg.) only

% Marked subjects are common with TE Mech. Sandwich only

@ Examination time for Insem examination 1 Hr 30 Min. and Endsem examination 3Hrs.

# Savitribai Phule Pune University, Pune 2012 Course

## B. E. (Mechanical) Semester – I

(w. e. f. Academic year 2015 - 16)

Code	Subject	Teaching Scheme (Weekly Load in hrs)			Examination Scheme(Marks)					
		Lect.	Tut	Practical	In-Sem	End-Sem	TW	PR <sup>+</sup>	OR <sup>+</sup>	Total
402041	Refrigeration and Air Conditioning	3	--	2	30	70	25	--	50	175
402042	CAD/ CAM Automation	3	--	2	30	70	--	50	--	150
402043	Dynamics of Machinery	4	--	2	30	70	25	--	50	175
402044	Elective – I	3	--	--	30	70	--	--	--	100
402045	Elective – II	3	--	--	30	70	--	--	--	100
402046	Project – I	--	2	--	--	--	50*	--	--	50
Total of Semester – I		16	2	6	150	350	100	50	100	750

## B. E. (Mechanical) Semester – II

Code	Subject	Teaching Scheme (Weekly Load in hrs)			Examination Scheme(Marks)					
		Lect.	Tut	Practical	In-Sem	End-Sem	TW	PR <sup>+</sup>	OR <sup>+</sup>	Total
402047	Power Plant Engineering	4	--	2	30	70	25	--	50	175
402048	Mechanical System Design	4	--	2	30	70	--	--	50	150
402049	Elective-III	4	--	--	30	70	--	--	--	100
402050	Elective- IV	4	--	2	30	70	25	--	--	125
402051	Project – II	--	6	--	--	--	150	--	50	200
Total of Semester – II		16	6	6	120	280	200	--	150	750

+ For all Oral/Practical heads: Examination will be based on term work and Theory Subject

\* Assessment should be carried out by panel of examiners from same Institute

Elective-I		Elective-II	
Code	Subject	Code	Subject
402044 A	Energy Audit Management	402045 A	Gas Turbine Propulsion
402044 B	Tribology	402045 B	Product Design and Development
402044 C	Reliability Engineering	402045 C	Operation Research
402044 D	Machine Tool Design	402045 D	Advanced Manufacturing Processes
Elective-III		Elective-IV	
Code	Subject	Code	Subject
402049 A	Refrigeration and Air Conditioning Equipment Design	402050 A	Computational Fluid Dynamics
402049 B	Robotics	402050 B	Finite Element Analysis
402049 C	Industrial Engineering	402050 C	Design of Pumps, Blowers and Compressors
402049 D	Open Elective **		

\*\* : Open Elective – Board of studies ( BoS ) - Mechanical will declare the list of subjects which can be taken under open electives or any other Electives that are being taught in the current semester, to the same level, as Elective – III under engineering faculty or individual college and Industry can define new elective with proper syllabus using defined framework of Elective III and GET IT APPROVED FROM BOARD OF STUDIES AND OTHER NECESSARY STATUTORY SYSTEMS IN THE SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE, BEFORE 30th NOVEMBER. Without approval from University statutory system, no one can introduce the open elective in curriculum.

# Savitribai Phule Pune University, Pune 2012 Course

## B. E. (Mechanical) Semester – I

(w. e. f. Academic year 2015 - 16)

Code	Subject	Teaching Scheme (Weekly Load in hrs)			Examination Scheme(Marks)					
		Lect.	Tut	Practical	In-Sem	End-Sem	TW	PR <sup>+</sup>	OR <sup>+</sup>	Total
402041	Refrigeration and Air Conditioning	3	--	2	30	70	25	--	50	175
402042	CAD/ CAM Automation	3	--	2	30	70	--	50	--	150
402043	Dynamics of Machinery	4	--	2	30	70	25	--	50	175
402044	Elective – I	3	--	--	30	70	--	--	--	100
402045	Elective –II	3	--	--	30	70	--	--	--	100
402046	Project –I	--	2	--	--	--	50*	--	--	50
Total of Semester – I		16	2	6	150	350	100	50	100	750

## B. E. (Mechanical) Semester – II

Code	Subject	Teaching Scheme (Weekly Load in hrs)			Examination Scheme(Marks)					
		Lect.	Tut	Practical	In-Sem	End-Sem	TW	PR <sup>+</sup>	OR <sup>+</sup>	Total
402047	Power Plant Engineering	4	--	2	30	70	25	--	50	175
402048	Mechanical System Design	4	--	2	30	70	--	--	50	150
402049	Elective-III	4	--	--	30	70	--	--	--	100
402050	Elective-IV	4	--	2	30	70	25	--	--	125
402051	Project – II	--	6	--	--	--	150	--	50	200
Total of Semester – II		16	6	6	120	280	200	--	150	750

+ For all Oral/Practical heads: Examination will be based on term work and Theory Subject

\* Assessment should be carried out by panel of examiners from same Institute

Elective-I		Elective-II	
Code	Subject	Code	Subject
402044 A	Energy Audit Management	402045 A	Gas Turbine Propulsion
402044 B	Tribology	402045 B	Product Design and Development
402044 C	Reliability Engineering	402045 C	Operation Research
402044 D	Machine Tool Design	402045 D	Advanced Manufacturing Processes
Elective-III		Elective-IV	
Code	Subject	Code	Subject
402049 A	Refrigeration and Air Conditioning Equipment Design	402050 A	Computational Fluid Dynamics
402049 B	Robotics	402050 B	Finite Element Analysis
402049 C	Industrial Engineering	402050 C	Design of Pumps, Blowers and Compressors
402049 D	Open Elective **		

\*\* : Open Elective – Board of studies ( BoS ) - Mechanical will declare the list of subjects which can be taken under open electives or any other Electives that are being taught in the current semester, to the same level, as Elective – III under engineering faculty or individual college and Industry can define new elective with proper syllabus using defined framework of Elective III and GET IT APPROVED FROM BOARD OF STUDIES AND OTHER NECESSARY STATUTORY SYSTEMS IN THE SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE, BEFORE 30th NOVEMBER. Without approval from University statutory system, no one can introduce the open elective in curriculum.



# Savitribai Phule Pune University, Pune 2012 Course

## B. E. (Mechanical) Semester – I

(w. e. f. Academic year 2015 - 16)

Code	Subject	Teaching Scheme (Weekly Load in hrs)			Examination Scheme(Marks)					
		Lect.	Tut	Practical	In-Sem	End-Sem	TW	PR <sup>+</sup>	OR <sup>+</sup>	Total
402041	Refrigeration and Air Conditioning	3	--	2	30	70	25	--	50	175
402042	CAD/ CAM Automation	3	--	2	30	70	--	50	--	150
402043	Dynamics of Machinery	4	--	2	30	70	25	--	50	175
402044	Elective – I	3	--	--	30	70	--	--	--	100
402045	Elective –II	3	--	--	30	70	--	--	--	100
402046	Project –I	--	2	--	--	--	50*	--	--	50
Total of Semester – I		16	2	6	150	350	100	50	100	750

## B. E. (Mechanical) Semester – II

Code	Subject	Teaching Scheme (Weekly Load in hrs)			Examination Scheme(Marks)					
		Lect.	Tut	Practical	In-Sem	End-Sem	TW	PR <sup>+</sup>	OR <sup>+</sup>	Total
402047	Power Plant Engineering	4	--	2	30	70	25	--	50	175
402048	Mechanical System Design	4	--	2	30	70	--	--	50	150
402049	Elective-III	4	--	--	30	70	--	--	--	100
402050	Elective- IV	4	--	2	30	70	25	--	--	125
402051	Project – II	--	6	--	--	--	150	--	50	200
Total of Semester – II		16	6	6	120	280	200	--	150	750

+ For all Oral/Practical heads: Examination will be based on term work and Theory Subject

\* Assessment should be carried out by panel of examiners from same Institute

Elective-I		Elective-II	
Code	Subject	Code	Subject
402044 A	Energy Audit Management	402045 A	Gas Turbine Propulsion
402044 B	Tribology	402045 B	Product Design and Development
402044 C	Reliability Engineering	402045 C	Operation Research
402044 D	Machine Tool Design	402045 D	Advanced Manufacturing Processes
Elective-III		Elective-IV	
Code	Subject	Code	Subject
402049 A	Refrigeration and Air Conditioning Equipment Design	402050 A	Computational Fluid Dynamics
402049 B	Robotics	402050 B	Finite Element Analysis
402049 C	Industrial Engineering	402050 C	Design of Pumps, Blowers and Compressors
402049 D	Open Elective **		

\*\* : Open Elective – Board of studies ( BoS ) - Mechanical will declare the list of subjects which can be taken under open electives or any other Electives that are being taught in the current semester, to the same level, as Elective – III under engineering faculty or individual college and Industry can define new elective with proper syllabus using defined framework of Elective III and GET IT APPROVED FROM BOARD OF STUDIES AND OTHER NECESSARY STATUTORY SYSTEMS IN THE SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE, BEFORE 30th NOVEMBER. Without approval from University statutory system, no one can introduce the open elective in curriculum.

**University of Pune, Pune**  
**B. E. (Mechanical) Structure (2008 Course)**

**With effect from June 2011**

Code	Subject	Teaching Scheme		Examination Scheme				
		L	P/D	P	TW	Or	Pr	Total
<b>Semester I</b>								
402041	CAD/CAM Automation	4	2	100	25	--	50	175
402042	Dynamics of Machinery	4	2	100	25	50		175
402043	Industrial Fluid Power	4	2	100	25	50		175
402044	Elective I ***	4	2	100	25			125
402045	Elective II	4		100				100
402046 A	Project Work		2					
<b>Total of Semester I</b>		<b>20</b>	<b>10</b>	<b>500</b>	<b>100</b>	<b>100</b>	<b>50</b>	<b>750</b>
<b>Semester II</b>								
402046 B	Project Work		6		100	50		150
402047	Power Plant Engineering	4	2	100	25	50		175
402048	Mechanical System Design **	4	2	100	25	50		175
402049	Elective III ***	4	2	100	50			150
402050	Elective IV	4		100				100
<b>Total of Semester II</b>		<b>16</b>	<b>12</b>	<b>400</b>	<b>200</b>	<b>150</b>		<b>750</b>

\*\* Theory paper of 4 hours duration

\*\*\* The term work marks shall be based on assignments / seminar as prescribed by subject syllabus.

\*\*\* 402050D Open Elective – BoS Mechanical will declare the list of subjects which can be taken under open electives or any other Electives that are being taught in the current semester as Elective – IV under engineering faculty or individual college and Industry can define new elective with proper syllabus using defined framework of Elective IV and GET IT APPROVED FROM BOARD OF STUDIES AND OTHER NECESSARY STATUTORY SYSTEMS IN THE UNIVERSITY OF PUNE BEFORE 30th DECEMBER.

**Elective I**

- 402044 A Energy Audit and Management
- 402044 B Product Design and Development
- 402044 C Design of Pumps, Blowers and Compressors
- 402044 D Tribology

**Elective II**

- 402045 A Automobile Engineering
- 402045 B Machine Tool Design
- 402045 C Quantitative and decision making Techniques

**Elective III**

- 402049 A Computational Fluid Dynamics
- 402049 B Finite Element Method
- 402049 C Robotics
- 402049 D Advanced Air Conditioning and Refrigeration

**Elective IV**

- 402050 A Industrial Heat Transfer Equipments
- 402050 B Management Information System
- 402050 C Reliability Engineering
- 402050 D Open Elective

**Legend:** L Lecture  
P/D Practical/ Drawing  
P Paper

TW Term work  
Or Oral  
Pr Practical

Dean, Faculty of Engineering

Chairman, BOS  
Mechanical Engineering

## B.E. Mechanical 2008 Structure (w.e.f. June – 2011)

### FIRST TERM

CODE	SUBJECT	TEACHING SCHEME		EXAMINATION SCHEME				
		Lect.	Pract/Dwg	Paper	TW	Oral	Pr	Total
402041	CAD/CAM Automation	4	2	100	25	50	-	175
402042	Dynamics of Machinery	4	2	100	25	50	-	175
402043	Industrial Fluid Power	4	2	100	25	50	-	175
402044	Elective I ***	4	-	100	25	-	-	125
402045	Elective II	4	-	100	-	-	-	100
402046	Project Work	-	2	-	-	-	-	-
<b>Total of First Term</b>		<b>20</b>	<b>8</b>	<b>500</b>	<b>100</b>	<b>150</b>	<b>-</b>	<b>750</b>

### SECOND TERM

CODE	SUBJECT	TEACHING SCHEME		EXAMINATION SCHEME				
		Lect.	Pract/Dwg	Paper	TW	Oral	Pr	Total
402046	Project Work	-	6	-	100	50	-	150
402047	Power Plant Engineering	4	2	100	25	50	-	175
402048	Mechanical System Design**	4	2	100	25	50	-	175
402049	Elective III	4	2	100	50	-	-	150
402050	Elective IV	4	-	100	-	-	-	100
<b>Total of Second Term</b>		<b>16</b>	<b>12</b>	<b>400</b>	<b>200</b>	<b>150</b>	<b>-</b>	<b>750</b>

\*\* Theory paper of 4 Hours duration

\*\*\* The Term Work marks will be based on the Assignments / Seminar as prescribed by subject syllabus

\*\*\*\* Open Elective Subject- BOS Mechanical will declare the list of subjects which can be taken under open elective..

Elective 1		Elective 2	
402044A	Energy Audit & Management	402045A	Automobile Engineering
402044B	Product Design & Development	402045B	Machine Tool Design

402044C	Theory & Design of Pumps, Blowers and Compressors	402045C	Quantitative & Decision Making Techniques
402044D	Tribology	402045D	Open Elective Subject (self study)****

Elective 3		Elective 4	
402049A	Computational Fluid Dynamics	402050A	Industrial Heat Transfer Equipment
402049B	Finite Element Method	402050B	Management Information System
402049C	Robotics	402050C	Reliability Engineering
402049D	Advance Air-conditioning & Refrigeration	402050D	Open Elective Subject (self study )****

### 1.2.2 List of Audit courses implemented during the last five years

Name of the Audit Courses	Program Name	Program Code	Course Code	Year of Implementation of Audit Courses
<b>TE Computer 2015 Pattern</b>				
Professional Ethics and Etiquettes	Computer Engineering	632412	310549 AC3-II	2017-18
Emotional Intelligence	Computer Engineering	632412	310249 AC3-III	2017-18
Digital and Social Media Marketing	Computer Engineering	632412	310259 AC4-I	2017-18
Green Computing	Computer Engineering	632412	310259 AC4-II	2017-18
<b>SE Computer 2015 Pattern</b>				
Humanities and Social Sciences	Computer Engineering	632412	210250	2017-18
Environmental Studies	Computer Engineering	632412	210250	2017-18
Intellectual Property Rights and Patents	Computer Engineering	632412	210258	2017-18
Water Management	Computer Engineering	632412	210258	2017-18
<b>SE E&amp;TC 2015 Pattern</b>				
Road Safety Management	E& TC Engineering	632413	204192	2017-18
Cyber Crime and law	E& TC Engineering	632413	204193	2017-18
<b>SE Mechanical 2015 Pattern</b>				
Value Education	Mechanical Engineering	632414	202055	2017-18
<b>TE Mechanical 2015 Pattern</b>				
Intellectual Property Rights and Patents	Mechanical Engineering	632414	302054	2017-18
<b>SE Computer 2015 Pattern</b>				
Humanities and Social Sciences	Computer Engineering	632412	210250	2016-17
Environmental Studies	Computer Engineering	632412	210250	2016-17
Intellectual Property Rights and Patents	Computer Engineering	632412	210258	2016-17
Water Management	Computer Engineering	632412	210258	2016-17
<b>SE E&amp;TC 2015 Pattern</b>				
Road Safety Management	E& TC Engineering	632413	204192	2016-17
Cyber Crime and law	E& TC Engineering	632413	204193	2016-17
<b>SE Mechanical 2015 Pattern</b>				
Value Education	Mechanical Engineering	632414	202055	2016-17

Savitribai Phule University of Pune													
Third Year Computer Engineering (2015 Course)													
(with effect from 2017-18)													
Semester II													
Course Code	Course	Teaching Scheme Hours / Week			Examination Scheme and Marks						Credit		
		Theory	Tutorial	Practical	In-Sem	End-Sem	TW	PR	OR	Total	TH/TUT	PR	
310250	<u>Design &amp; Analysis of Algorithms</u>	04	--	--	30	70	--	--	--	100	04		
310251	<u>Systems Programming &amp; Operating System</u> (SP & OS)	04	--	--	30	70	--	--	--	100	04	--	
310252	<u>Embedded Systems &amp; Internet of Things</u> (ES & IoT)	04	--	--	30	70	--	--	--	100	04	--	
310253	<u>Software Modeling and Design</u>	03	--	--	30	70	--	--	--	100	03	--	
310254	<u>Web Technology</u>	03	--	--	30	70	--	--	--	100	03	--	
310255	<u>Seminar &amp; Technical Communication</u>	--	01	--	--	--	50	--	--	50	01	--	
310256	<u>Web Technology Lab</u>	--	--	02	--	--	25	50	--	75	--	01	
310257	<u>SP &amp; OS Lab</u>	--	--	04	--	--	25	50	--	75	--	02	
310258	<u>ES &amp; IoT Lab</u>	--	--	02	--	--	50	--	--	50	--	01	
Total Credit											19	04	
Total		18	01	08	150	350	150	100	--	750	23		
310259	<u>Audit Course 4</u>											Grade	

#### 310259-Audit Course 4(AC4) Options:

AC4-I: Digital and Social Media Marketing

AC4-II: Green Computing

AC4-III: Sustainable Energy Systems

AC4-IV: Leadership and Personality Development

AC4-V: Foreign Language (Japanese- Module 4)

#### Abbreviations:

TW: Term Work TH: Theory OR: Oral TUT: Tutorial PR: Practical Sem: Semester

Savitribai Phule University of Pune													
Third Year Computer Engineering (2015 Course)													
(with effect from 2017-18)													
Semester I													
Course Code	Course	Teaching Scheme Hours / Week			Examination Scheme and Marks						Credit		
		Theory	Tutorial	Practical	In-Sem	End-Sem	TW	PR	OR	Total	TH/ TUT	PR	
310241	<u>Theory of Computation</u>	03	--	--	30	70	--	--	--	100	03	--	
310242	<u>Database Management Systems (DBMS)</u>	03	--	--	30	70	--	--	--	100	03	--	
310243	<u>Software Engineering &amp; Project Management</u>	03	--	--	30	70	--	--	--	100	03	--	
310244	<u>Information Systems &amp; Engineering Economics</u>	03	--	--	30	70	--	--	--	100	03	--	
310245	<u>Computer Networks (CN)</u>	04	--	--	30	70	--	--	--	100	04	--	
310246	<u>Skills Development Lab</u>	--	02	04	--	--	50	--	50	100	02	02	
310247	<u>DBMS Lab</u>	--	--	04	--	--	25	50	--	75	--	02	
310248	<u>CN Lab</u>	--	--	02	--	--	25	50	--	75	--	01	
Total Credit											18	05	
Total		16	02	10	150	350	100	100	50	750	23		
310249	<u>Audit Course 3</u>											Grade	

### 310249-Audit Course 3 (AC3) Options:

AC3-I: Cyber Security

AC3-II: Professional Ethics and Etiquettes

AC3-III: Emotional Intelligence

AC3-IV: MOOC- Learn New Skills

AC3-V: Foreign Language (Japanese- Module 3)

### Abbreviations:

TW: Term Work TH: Theory OR: Oral TUT: Tutorial PR: Practical Sem: Semester

**Savitribai Phule Pune University**  
**Second Year of Computer Engineering (2015 Course)**  
**210258: Audit Course 2**

In addition to credits, it is recommended that there should be audit course in preferably in each semester from second year to supplement their knowledge and skills. Student will be awarded the bachelor's degree if he/she earns 190 credits and clears all the audit courses specified in the syllabus. The student will be awarded grade as AP on successful completion of audit course.

The student may opt for one of the audit courses per semester, starting in second year first semester. Though not mandatory, such a selection of the audit courses helps the learner to explore the subject of interest in greater detail resulting in achieving the very objective of audit course's inclusion. List of options offered is provided. Each student has to choose one audit course from the list per semester. Evaluation of audit course will be done at institute level itself. Method of conduction and method of assessment for audit courses are suggested.

**Criteria:**

The student registered for audit course shall be awarded the grade AP(Audit Course Pass) and shall be included such AP grade in the Semester grade report for that course, provided student has the minimum attendance as prescribed by the Savitribai Phule Pune University and satisfactory in-semester performance and secured a passing grade in that audit course. No grade points are associated with this 'AP' grade and performance in these courses is not accounted in the calculation of the performance indices SGPA and CGPA. Evaluation of audit course will be done at institute level itself. (Ref- [http://www.unipune.ac.in/Syllabi\\_PDF/revise-2015/engineering/UG\\_RULE\\_REGULATIONS\\_FOR\\_CREDIT\\_SYSTEM-2015\\_18June.pdf](http://www.unipune.ac.in/Syllabi_PDF/revise-2015/engineering/UG_RULE_REGULATIONS_FOR_CREDIT_SYSTEM-2015_18June.pdf))

**Guidelines for Conduction and Assessment (Any one or more of following but not limited to)**

- Lectures/ Guest Lectures
- Visits (Social/Field) and reports
- Demonstrations
- Surveys
- Mini Project
- Hands on experience on specific focused topic

**Guidelines for Assessment (Any one or more of following but not limited to)**

- Written Test
- Demonstrations/ Practical Test
- Presentations
- IPR/Publication
- Report

**Audit Course 2 Options**

Audit Course Code	Audit Course Title
AC2-I	Water Management
AC2-II	Intellectual Property Rights and Patents
AC2-III	The Science of Happiness
AC2-IV	Stress Relief: Yoga and Meditation
AC2-V	Foreign Language (one of Japanese/Spanish/French/German) <u>Course contents for Japanese( Module 2) are provided. For other languages institute may design suitably.</u>



**Savitribai Phule Pune University**  
**Second Year of Computer Engineering (2015 Course)**  
**210250: Audit Course 1**

In addition to credits, it is recommended that there should be audit course in preferably in each semester from second year to supplement knowledge and skills. A student will be awarded the bachelor's degree if he/she earns 190 credits and clears all the audit courses specified in the syllabus. The student will be awarded grade as AP on successful completion of audit course.

The student may opt for one of the audit courses per semester, starting from second year first semester. Though not mandatory, such a selection of the audit courses helps the learner to explore the subject of interest in greater details resulting in achieving the very objective of audit course's inclusion. List of options offered is provided. Each student has to choose one audit course from the list per semester. Evaluation of audit course will be done at institute level itself. Method of conduction and method of assessment for audit courses are suggested.

**Criteria:**

The student registered for audit course shall be awarded the grade AP (Audit Course Pass) and shall be included such AP grade in the Semester grade report for that course, provided student has the minimum attendance as prescribed by the Savitribai Phule Pune University and satisfactory in-semester performance and secured a passing grade in that audit course. No grade points are associated with this 'AP' grade and performance in these courses is not accounted in the calculation of the performance indices SGPA and CGPA. Evaluation of audit course will be done at institute level itself. (Ref- [http://www.unipune.ac.in/Syllabi\\_PDF/revise&ed-2015/engineering/UG\\_RULE\\_REGULATIONS\\_FOR\\_CREDIT\\_SYSTEM-2015\\_18June.pdf](http://www.unipune.ac.in/Syllabi_PDF/revise&ed-2015/engineering/UG_RULE_REGULATIONS_FOR_CREDIT_SYSTEM-2015_18June.pdf))

**Guidelines for Conduction and Assessment** (Any one or more of following but not limited to)

- Lectures/ Guest Lectures
- Visits (Social/Field) and reports
- Demonstrations
- Surveys
- Mini Project
- Hands on experience on specific focused topic

**Guidelines for Assessment** (Any one or more of following but not limited to)

- Written Test
- Demonstrations/ Practical Test
- Presentations
- IPR/Publication
- Report

**Audit Course 1 Options**

Course Code	Audit Course Title
AC1-I	Road Safety
AC1-II	Humanities and Social Sciences
AC1-III	Environmental Studies
AC1-IV	Smart Cities
AC1-V	Foreign Language (one of Japanese/Spanish/French/German). <u>Course contents for Japanese (Module 1) are provided. For other languages institute may design suitably.</u>

## Audit course-II

## 204193:Japanese Language module II

**About course:**

With changing times, the competitiveness has gotten into the nerves and 'Being the Best' at all times is only the proof of it. Nonetheless, 'being the best' differs significantly from 'Communicating the best'! The best can merely be communicated whilst using the best... suited Language!!

Japanese is the new trend of 21<sup>st</sup> century. Not only youngsters but even the professionals seek value in it. It is the engineer's companion in current times with an assertion of a thriving future. Pune has indisputably grown to become a major center of Japanese Education in India while increasing the precedence for Japanese connoisseurs.

Japanese certainly serves a great platform to unlock a notoriously tough market & find a booming career. While the companies prefer candidates having the knowledge of the language, it can additionally help connect better with the native people thus prospering in their professional journey. Learning Japanese gives an extra edge to the 'resume' since the recruiters consciously make note of the fact it requires real perseverance and self-discipline to tackle one of the most complex languages.

It would be easy for all time to quit the impossible; however it takes immense courage to reiterate the desired outcomes, recognize that improvement is an ongoing process and ultimately soldier on it.

The need of an hour is to introduce Japanese language with utmost professionalism to create awareness about the bright prospects and to enhance the proficiency and commitment. It will then prove to be the ultimate path to the quest for professional excellence!

**Course Objectives:**

- To meet the needs of ever growing industry with respect to language support.
- To get introduced to Japanese society and culture through language.

**Course Outcomes:**

On completion of the course student

- will have ability of basic communication.
- will have the knowledge of Japanese script.
- will get introduced to reading , writing and listening skills
- will develop interest to pursue professional Japanese Language course.

**Audit course-II****204193: Cyber Crime and law****Introduction to Cyber Crime and law:**

Cyber Crimes, Types of Cybercrime, Hacking, Attack vectors, Cyberspace and Criminal Behavior, Clarification of Terms, Traditional Problems Associated with Computer Crime, Introduction to Incident Response, Digital Forensics, Computer Language, Network Language, Realms of the Cyber world, A Brief History of the Internet, Recognizing and Defining Computer Crime, Contemporary Crimes, Computers as Targets, Contaminants and Destruction of Data, Indian IT ACT 2000

**Introduction to Cyber Crime Investigation**

Firewalls and Packet Filters, password Cracking, Keyloggers and Spyware, Virus and Worms, Trojan and backdoors, Steganography, DOS and DDOS attack, SQL injection, Buffer Overflow, Attack on wireless Networks

**Guidelines for Conduction**

(Any one or more of following but not limited to)

- Guest Lectures
- Visiting lectures

**Guidelines for Assessment (Any one of following but not limited to)**

- Written Test
- Practical Test
- Presentation
- Paper
- Report

**Audit Course-I****204192: Road Safety Management**

Road transport remains the least safe mode of transport, with road accidents representing the main cause of death of people. The boom in the vehicle population without adequate road infrastructure, poor attention to driver training and unsatisfactory regulation has been responsible for increase in the number of accidents. India's vehicle population is negligible as compared to the World statistics; but the comparable proportion for accidents is substantially large.

The need for stricter enforcement of law to ensure greater safety on roads and an environment-friendly road transport operation is of paramount importance. Safety and security are growing concerns for businesses, governments and the traveling public around the world, as also in India. It is, therefore, essential to take new initiatives in raising awareness, skill and knowledge of students as one of the ibid stake holders who are expected to follow the rules and policies of the government in order to facilitate safety of individual and safe mobility of others.

**Course Objectives:**

- Provide basic overview on road safety & traffic management issues in view of the alarming increase in vehicular population of the country.
- Insight into the transportation system management (TSM) techniques.
- Overview of the engineering & legislative measures for road safety.
- Discuss measures for improving road safety education levels among the public.

**Course Outcomes:**

On completion of the course, society will observe –

- Changes in awareness levels, knowledge and understanding
- A change in attitudes / behavior e.g. against drink-drive;
- Casualty Reduction;
- That remedial education for those who make mistakes and for low level offences where this is more effective than financial penalties and penalty points;
- Improving Road Safety Together

**Course Contents**

1. Existing Road Transport Scenario
2. Accident Causes & Remedies
3. Road Accident Investigation & Investigation Methods
4. Vehicle Technology – CMVR & Road Safety
5. Regulatory / Legislative Provisions for Improving Road Safety
6. Behavioral Training for Drivers for Improving Road Safety
7. Road Safety Education
8. Road Engineering Measures for Improving Road Safety

**Guidelines for Conduction** (Any one or more of following but not limited to)

- Guest Lectures
- Visits and reports
- Assist authorities like RTO for audits (e.g. Particular road safety audit as critical on-site assessment of the shortcomings in the various elements of the road)
- Mini Project

**Audit course-I****204192: Japanese Language module-I****About course:**

With changing times, the competitiveness has gotten into the nerves and 'Being the Best' at all times is only the proof of it. Nonetheless, 'being the best' differs significantly from 'Communicating the best'! The best can merely be communicated whilst using the best... suited Language!!

Japanese is the new trend of 21<sup>st</sup> century. Not only youngsters but even the professionals seek value in it. It is the engineer's companion in current times with an assertion of a thriving future. Pune has indisputably grown to become a major center of Japanese Education in India while increasing the precedence for Japanese connoisseurs.

Japanese certainly serves a great platform to unlock a notoriously tough market & find a booming career. While the companies prefer candidates having the knowledge of the language, it can additionally help connect better with the native people thus prospering in their professional journey. Learning Japanese gives an extra edge to the 'resume' since the recruiters consciously make note of the fact it requires real perseverance and self-discipline to tackle one of the most complex languages.

It would be easy for all time to quit the impossible; however it takes immense courage to reiterate the desired outcomes, recognize that improvement is an ongoing process and ultimately soldier on it.

The need of an hour is to introduce Japanese language with utmost professionalism to create awareness about the bright prospects and to enhance the proficiency and commitment. It will then prove to be the ultimate path to the quest for professional excellence!

**Course Objectives:**

- To meet the needs of ever growing industry with respect to language support.
- To get introduced to Japanese society and culture through language.

## 202054 A: Innovations in Engineering Field/ Agriculture

### Prerequisites:

1. Knowledge of Mathematics, Physics, and Chemistry is necessary.
2. Out of box/ unconventional thinking for solving typical problems.
3. Adapting analytical tools traditionally.
4. Application oriented thinking of learnt topics

### Course Objectives:

- To develop holistically built thinking habit needed for innovative ideas.
- To make students aware about key field of agriculture contributing to sustenance and development of a mankind.
- To expose students to their roles and responsibilities of building a nation through engineering insights in agriculture
- To be updated with innovations and technological advancements in respective fields of engineering.

### Course Outcomes:

On completion of the course, learner will be able to -

- Understand what is thinking, its tools and process and its application to innovation
- Practice application of innovation in engineering
- Understand important terms like national productivity, sustainable development and inclusive growth
- Throw a light on developing technologies in agriculture
- Learn Interdisciplinary Engineering applications in Agriculture

### Course Contents

#### Unit I: Thinking and thinking process (2 Hrs)

Thinking and thinking tools: Thinking, Types of thinking, Top-Down (Analysis) & Bottom-Up (Synthesis) thinking and combination of both, Judgement and Creativity, Concept Maps-Connecting the ideas, Generating ideas. Communicating ideas. Systems thinking and beyond. Critical thinking. Definition of innovation. Example of application of thinking process to any one practical innovation.

#### Unit II: Engineering Innovation and its scope (2 Hrs)

Incremental, radical and disruptive Innovation. Scope of innovation: Product innovation, Process innovation, Position innovation, Paradigm innovation. Innovation within the engineering profession. Awareness about latest technological advancements.

<p><b>Unit III: Agriculture and innovation</b> <span style="float: right;"><b>(2 Hrs)</b></span></p> <p>Definition of agriculture? Role of Agriculture in our life and in national productivity. Concept of sustainable development and inclusive growth. India's urban awakening. Innovation in agriculture and its types. Importance of agriculture innovation.</p>
<p><b>Unit IV: Developing technologies in agriculture</b> <span style="float: right;"><b>(2 Hrs)</b></span></p> <p>Favorable conditions for Agriculture innovation. Dynamics of Innovation System. Role and responsibility of Engineers in agricultural innovations and making India the net exporter of major agricultural produces. FINOvation Awards. Ideas on developing technologies in agriculture viz. Vehicle automation, Engine emissions technology, Fire suppression technology etc. The future of robotics on farms.</p>
<p><b>Unit V: Interdisciplinary Engineering in Agriculture</b> <span style="float: right;"><b>(2 Hrs)</b></span></p> <p>Technological innovations that are revolutionizing Indian agriculture. Case study presenting Interdisciplinary Engineering application in Agriculture.</p>
<p><b>Books:</b></p>
<p><b>Text:</b></p> <ol style="list-style-type: none"> <li>1. Kasser, J., E., 2015. Holistic Thinking: Creating Innovative Solutions to Complex Problems: Volume 1 (Solution Engineering). Create Space Independent Publishing Platform; 2 edition.</li> <li>2. Wenwu Zhang, 2011. Intelligent Energy Field Manufacturing: Interdisciplinary Process Innovations. CRC Press, Taylor &amp; Francis Group.</li> <li>3. Educating engineers to drive the innovation economy, 2012. Publisher: The Royal Academy of Engineering, London.</li> </ol>
<p><b>Reference:</b></p> <ol style="list-style-type: none"> <li>1. Crowder, J., A., Carbone, J., N., Demijohn, R., 2016. Multidisciplinary Systems Engineering: Architecting the Design Process. Springer Publishing.</li> <li>2. India's urban awakening: Building inclusive cities, sustaining economic growth, 2010. Mckinsey Global Institute report.</li> </ol>

**List of Tutorials/Assignments:**

1. What is 'thinking?' What are different tools of thinking? Write a note on Analysis and Synthesis and combination of both. Give any one example of application of thinking process to a practical innovation.
2. What are the types of innovations? What is its scope? Write a note on Innovation within engineering. State and explain 10 engineering innovations took place in last year.
3. What is agriculture? Explain its role in our life and in national productivity. What is sustainable development? What is inclusive growth? What is innovation in agriculture? What is importance of agriculture innovation?
4. What is favorable condition for agriculture innovation? Write a note on dynamics of innovation system. Discuss the ideas of developing technologies in agriculture. Write a note on future of robotics in agriculture.
5. State and explain minimum 10 Technological innovations that are revolutionizing Indian agriculture. Discuss any one case study encompassing Interdisciplinary Engineering application in Agriculture

**Notes:** All above 5 tutorials/ assignments are compulsory



## 202054 B : Road Safety

### Prerequisites:

1. Awareness about traffic rules and road accidents.
2. Understanding the need of studying such topics.
3. Considerations to other, sensitivity and care while travelling/ driving.

### Course Objectives:

- To acquire knowledge and understanding of the road environment.
- To inculcate decision making and behavioral skills necessary to survive in the road environment.
- To impart knowledge and understanding of the causes and consequences of accidents.
- To understand roles and responsibilities in ensuring road safety.

### Course Outcomes:

On completion of the course, learner will be able to–

- Generate awareness about number of people dying every year in road accidents, traffic rules and characteristics of accident.
- Gain information and knowledge about people responsible for accidents and their duties
- Understand the importance of multidisciplinary approach to planning for traffic safety and rehabilitation
- Acquire a certificate of coordination/ participation in compulsory events based on the topic under study

### Course Contents

#### Unit I: Introduction to Road Safety

(2 Hrs)

Road traffic accidents scenario in India and in world. Road Safety and its importance. Traffic Rules and Driving Behavior. Characteristics of accidents, accidents vs. crash.

#### Unit II: Planning for Road safety

(2 Hrs)

Awareness about rules and regulations of traffic. Assisting Traffic control authorities. Multidisciplinary approach to planning for traffic safety and injury control. Vulnerable road users: crashes related to pedestrian and bicyclists, their safety, provision for disabled.

#### Unit III: Responsibility of Road accidents and Safety measures

(2 Hrs)

People responsible for accident prevention: Police, Politicians, Community members, Policy makers, Teachers, Parents, Infrastructure authorities, Drivers and Official road safety body. Reasons of students/ children have accidents. 4 E's of Accidents Prevention: 1. Engineering - by altering the environment 2. Enforcement - by imposing laws 3. Encouragement - by the use of publicity campaigns 4. Education - by gaining and using knowledge.

<p><b>Unit IV: Road Safety Education</b> <span style="float: right;"><b>(2 Hrs)</b></span></p> <p>Introduction to Road Safety Education. 5 P's of Road safety education: 1. Pre-school road safety education 2. Practical rather than theory education 3. Principles of own development as regards to road safety education 4. Presentations on road safety education 5. Place for road safety education in syllabus</p>
<p><b>Unit V: Road Safety Events</b> <span style="float: right;"><b>(2 Hrs)</b></span></p> <p>Discussions on efforts done by Government on Road Safety. Celebration of Road Safety week or Workshop on Road Safety week/ Organization of seminar on Road Safety. This is to be entirely organized by students under the mentorship of concerned Head of the Department.</p>
<p><b>Books:</b></p>
<p><b>Text:</b></p> <ol style="list-style-type: none"> <li>4. Kadiyali L.R., Traffic Engineering &amp; Transport Planning, Khanna Publishers, 2003</li> <li>5. CROWN AGENTS Ref: TEA/A369, 1995. (Unpublished contractors report for Ministry of Transport and Communications, Ghana). Road safety study and the institutional strengthening of the vehicle examination and licensing division.</li> <li>6. TRRL OVERSEAS UNIT, 1991. Towards safer roads in developing countries: a guide for planners and engineers. Crow Thorne: Transport and Road Research Laboratory.</li> </ol>
<p><b>Reference:</b></p> <ol style="list-style-type: none"> <li>3. Indian Roads Congress, Highway Safety Code, IRC: SP-44:1996</li> <li>4. Indian Roads Congress, Road Safety Audit Manual, IRC:SP-88-2010</li> </ol>
<p><b>List of Tutorials/ Assignments:</b></p> <ol style="list-style-type: none"> <li>6. Discussion and presentations on: Road traffic accidents scenario in India. Traffic Rules and Driving Behavior. Characteristics of accidents, accidents vs. crash.</li> <li>7. Discussion and presentations on: Assisting Traffic control authorities, Multidisciplinary approach to planning for traffic safety and injury control. Vulnerable road users: crashes related to pedestrian and bicyclists, their safety, provision for disabled.</li> <li>8. Discussion and presentations on: People responsible for accident prevention, 4 E's of Accidents Prevention.</li> <li>9. Introduction to Road Safety Education. 5 P's of Road safety education</li> <li>10. Organization of One Day seminar/ workshop by students on Road Safety. Participation for every student is compulsory. They are expected to prepare brief report of about 3 to 4 pages of this event.</li> </ol>
<p><b>Notes:</b> All above 5 tutorials/ assignments are compulsory</p>

## 202054 C: Value Education

### Course Contents

**UNIT 1: Introduction of Value Education (2 Hrs)**

**Value Education:** Definition, Need, Content, Process and relevance to present day. Concept of Human Values, self introspection.

**UNIT 2: Salient values for life (2 Hrs)**

Truth, commitment, honesty and integrity, forgiveness and love, empathy and ability to sacrifice, care, unity, punctuality, Interpersonal and Intra personal relationship, Team work , Positive and creative thinking.

**UNIT 3: Human Rights (2 Hrs)**

Universal Declaration of Human Rights, Right to Information Act -2005, National Integration, Peace and non-violence, Dr. A P J Kalam's ten points for enlightened Citizenship. The role of media in value building.

**UNIT 4: Environment and Ecology (2 Hrs)**

Ecological balance, interdependence of all beings – living and non-living. Man and nature, Environment conservation and enrichment...

**UNIT 5: Social values & Ethical values (2 Hrs)**

**Social values** - Social consciousness and responsibility, Consumer rights and responsibilities.

**Ethical values** - Professional ethics, Code of ethics of engineers, Influence of ethics on family life, Leadership qualities and Personality development.

**Books:**

**Text:**

3. Dr. N. Venkataiah, "Value Education", APH Publishing Corporation, 2007
4. M. Govindarajan, S. Natarajan, V. S. Senthil Kumar, "Professional Ethics & Human Values", PHI Learning Press, 2013.

Savitribai Phule Pune University, Pune

**Third Year of Mechanical, Mechanical Sandwich & Automobile  
(2015 Course)**

Course Code: 302054

**Course Name : Audit Course I :- Fire & Safety Technology**

Teaching Scheme:	Credits	Examination Scheme: Audit (P/F) Written and MCQ
PR:	Th/Tut:--	TH In-Sem: -- End-Sem: --
Tut:	TW:	PR: -- OR: --

**Description:**

To generate, develop and sustain a voluntary movement on Fire & Safety Engineering at the National Level aimed at educating and influencing society to adopt appropriate policies, practices and procedures that prevent and mitigate human suffering and economic loss arising from all types of accidents.

**Course Objective:**

On completion of this Basic Fire Safety Course, participants will be able to:-

- Describe the chemistry of fire
- Identify fire hazards in the workplace
- Follow evacuation procedures
- Select and use appropriate firefighting equipment

**Course Outcome:****• Students will be able**

1. To create and sustain a community of learning in which students acquire knowledge in fire, safety and hazard management and learn to apply it professionally with due consideration for ethical, human life & property safety issues.
2. To pursue research and development in fire safety engineering, hazard management and disseminate its findings.
3. To meet the challenges of today and tomorrow in the most effective, efficient and contemporary educational manner.
4. To help in building national capabilities in fire safety engineering, disaster management, hazard management, industrial safety education through practical training to ensure a fire safe nation.

## **Course Contents:**

### **1. Fire & Safety Overview**

Fire & safety legislation, Safety Personnel Supplier for construction sites/commissioning of plants. Understanding the physics and chemistry of fire. Development and spread of fire. Action in the event of fire

### **2. Fire Fighting Techniques**

Means of raising alarm, means of summoning the fire brigade, action on hearing the fire alarm  
Evacuation procedures Practical demonstration in the use of foam and CO<sub>2</sub> fire extinguishers using our state of the art gas fired training system.

### **3. Fundamentals of Fire Engineering Science**

Fire Tech & Design, Fire Risk Assessment, Fire Control Technology, Fire Fighting Drills, Fire Tender with Crew on Hire. Fire & Safety Audit. Fire & Safety Consultancy Services.

### **4. Industrial Aspects of Fire & Safety**

Industrial Training on Fire & Safety and Disaster Management. Repair of all kinds of Fire Equipment including Flooding System. Repair of Fire Tender including Pump and power take-off systems.

### **5. Maintenance of Fire Safety Equipments**

AMC of Fire System. Refilling of Fire Extinguishers. Ultrasonic Thickness Test of Extinguishers, Vessels and Pipe lines. Hydro Testing of Fire Extinguishers, Vessels and Pipe Lines. Supply of Fire & Safety Equipment and Spares.

**Case Study & Group Work:**

- Identification of fire & safety technology
- To study the Fire Fighting Properties of Foam Concentrate
- Case Studies of Salvage operations in different types of occupancy
- Design and drawing of parts contained in the syllabus
- Compilation of Results & Presentation
- Case Study on the projects (products or processes) carried out by your institution or an organization in your vicinity, for safety.

**Books:****References:**

1. Accident Prevention manual for Industrial Operations, NSC, Chicago 1982.
2. The manual of fire ship – 6 – A by HMSO
3. Electricity Fire Risks – G.S. Hodges
4. Fire Pumps and Hydraulics: I.E. Ditts and T. M. Harris.
5. Fire Service Manual (Volume 2) Fire Service Operations – Petrochemical Incidents
6. The Principles and Practice of Fire Salvage Operation by Fire Salvage association.

**Savitribai Phule Pune University, Pune**  
**Third Year of Mechanical, Mechanical Sandwich & Automobile**  
**(2015 Course)**

**Course Code: 302054**

**Course Name : Audit Course II - Entrepreneurship Development**

<b>Teaching Scheme:</b>	<b>Credits</b>	<b>Examination Scheme: Audit (P/F)</b> Written and MCQ	
<b>PR:</b>	<b>Th/Tut:--</b>	<b>TH</b>	<b>In-Sem: --</b>
			<b>End-Sem: --</b>
<b>Tut:</b>	<b>TW:</b>		<b>PR: --</b>
			<b>OR: --</b>

**Description:**

EDP is a program meant to develop entrepreneurial abilities among the people. In other words, it refers to inculcation, development, and polishing of entrepreneurial skills into a person needed to establish and successfully run his enterprise. Thus, the concept of entrepreneurship development programme involves equipping a person with the required skills and knowledge needed for starting and running the enterprise.

This course will help in developing the awareness and interest in entrepreneurship and create employment for others. Students get familiar with the characteristics and motivation of successful entrepreneurs. Students learn how to identify and refine market opportunities, how to secure financing, how to develop and evaluate business plans and manage strategic partnerships. Students learn various concepts including the basics of management, leadership, motivation, decision-making, conflict management, human resource development, marketing and sustaining an organization. Students also get basic knowledge of accounting practices and finance. The core course in Entrepreneurship Development & Management equips students with skills and knowledge required to start and sustain their own business.



**Course Objective:**

- To impart basis managerial knowledge and understanding;
- Develop and strengthen entrepreneurial quality, i.e., motivation or need for achievement.
- To analyze environmental set up relating to small industry and promoting it.
- Collect and use the information to prepare project report for business venture.
- Understand the process and procedure involved in setting up small units.
- Develop awareness about enterprise management.

**Course Outcome:****The students will be able to**

- Appreciate the concept of Entrepreneurship
- Identify entrepreneurship opportunity.
- Develop winning business plans

**Course Contents:**

**Entrepreneurship-** Definition; Growth of small scale industries in developing countries and their positions large industries; role of small scale industries in the national economy; characteristics and types of small scale industries; demand based and resources based ancillaries Government policy for small scale industry; stages in starting a small scale industry, requirements to be an entrepreneur, SWOT Analysis.

**Projects:** Identification and Selection of projects; project report: contents and formulation, concept of project evaluation, methods of project evaluation: internal rate of return method and net present value method.

**Market Assessment and Product feasibility**

Marketing -Concept and Importance Market Identification,  
Customer needs assessment, Market Survey Product feasibility analysis

**Business Finance & Accounts**

**Business Finance:** Costing basics, Sources of Finance, Break Even Analysis,

**Business Accounts:** Preparation of balance sheets and assessment of economic viability, decision, making, expected costs, planning and production control, quality control, marketing, Book Keeping, Financial Statements, Financial Ratios and its importance, Concept of Audit.

**Project Planning and control:**

The financial functions cost of capital approach in project planning and control. Economic evaluation, risk analysis, capital expenditures, policies and practices in public enterprises. Profit planning and programming, planning cash flow, capital expenditure and operations. Control of financial flows, control and communication.

**Institutional Support and Policies:** institutional support towards the development of entrepreneurship in India, technical consultancy organizations, E-Commerce: Concept and process, government policies for small scale enterprises.

**Case Study & Group Work:**

- Assess yourself-are you an entrepreneur?
- Prepare a Project Report for starting a small scale business.
- An Interview with an Entrepreneur.

**Books:****References:**

1. Ram Chandran, 'Entrepreneurial Development', Tata McGraw Hill, New Delhi
2. Saini, J. S., 'Entrepreneurial Development Programmes and Practices', Deep & Deep Publications (P), Ltd.
3. Khanka, S. S. 'Entrepreneurial Development', S Chand & Company Ltd. New Delhi
4. Badhai, B 'Entrepreneurship for Engineers', Dhanpat Rai & co. (p) Ltd.
5. Desai, Vasant, 'Project Management and Entrepreneurship', Himalayan Publishing House, Mumbai, 2002.
6. Gupta and Srinivasan, 'Entrepreneurial Development', S. Chand & Sons, New Delhi.

**Savitribai Phule Pune University, Pune**  
**Third Year of Mechanical, Mechanical Sandwich & Automobile**  
**(2015 Course)**

**Course Code: 302054**

**Course Name : Audit Course III - Intellectual Property Right**

<b>Teaching Scheme:</b>	<b>Credits</b>	<b>Examination Scheme: Audit (P/F)</b> Written and MCQ	
<b>PR:</b>	<b>Th/Tut:--</b>	<b>TH</b>	<b>In-Sem: --</b>
			<b>End-Sem: --</b>
<b>Tut:</b>	<b>TW:</b>		<b>PR: --</b>
			<b>OR: --</b>

**Objective:**

Intellectual property refers to the rights which are attached to the creation of the mind and which take the form of a property. Though intangible in nature, intellectual property has become the driving force of many companies today. Fortune 500+ companies undoubtedly are the best examples of what a company can achieve through the proper understanding and management of IPR.

Thus the study of intellectual property rights is inevitable for managers, considering the fact that India is fast emerging as an economy with considerable investment in cutting-edge research and development. India is also emerging as an economy where foreign companies propose to invest considerably, both technically and financially, provided proper protection is guaranteed to their intangible assets which form the cornerstone of their business.

## **Topics:**

### 1. Introduction

- Concepts of IPR
- The history behind development of IPR
- Necessity of IPR and steps to create awareness of IPR

### 2. IP Management

- Concept of IP Management
- Intellectual Property and Marketing
- IP asset valuation

### 3. Patent Law

- Introduction to Patents
- Procedure for obtaining a Patent
- Licensing and Assignment of Patents
  - Software Licensing
  - General public Licensing
  - Compulsory Licensing
- Infringement of Patents
- Software patent US and Indian scenario

### 4. Copyrights

- Concept of Copyright Right
- Assignment of Copyrights
- Registration procedure of Copyrights
- Infringement (piracy) of Copyrights and Remedies
- Copyrights over software and hardware

### 5. Designs

- Concept of Industrial Designs
- Registration of Designs
- Piracy of registered designs and remedies

### 6. Trademark Law

- Concept of trademarks
- Importance of brands and the generation of “goodwill”
- Trademark registration procedure
- Infringement of trademarks and Remedies available
- Assignment and Licensing of Trademarks

**Case Study & Group Work:**

- Identify the projects (products or processes) carried out by your institution or an organization in your vicinity, which have been patented.
- A case study on significance of patents for a developing nation like India.
- Group discussion on creative / novel ideas and the feasibility of converting the idea into product or process.
- Discussion on Correlation between IPR and Entrepreneurship in the backdrop of Make in India Initiative.

**References:**

1. Ganguli Prabuddha, 'Intellectual Property Rights: Unleashing the knowledge economy', Tata McGraw Hill, New Delhi
2. Wadehra R. L., 'Law Relating to patents, trademarks, copyrights, designs and geographical indicators – 2<sup>nd</sup>', Universal Law Publishing.
3. Narayan P. S. 'Intellectual Property Law in India', Asia Law House Hyderabad.

**Savitribai Phule Pune University, Pune**  
**Third Year of Mechanical, Mechanical Sandwich & Automobile**  
**(2015 Course)**

**Course Code: 302054**

**Course Name : Audit Course IV - Lean Management**

<b>Teaching Scheme:</b>	<b>Credits</b>	<b>Examination Scheme: Audit (P/F)</b> Written and MCQ	
<b>PR:</b>	<b>Th/Tut:--</b>	<b>TH</b>	<b>In-Sem: --</b>
			<b>End-Sem: --</b>
<b>Tut:</b>	<b>TW:</b>		<b>PR: --</b>
			<b>OR: --</b>

**Course Objective:**

- To learn Lean Thinking and its applications
- To get knowledge of Tools & Techniques used in Lean Management
- To understand Business Impact of Lean Management

**Course Outcome: Students**

- Will be able to do practice Lean Management at the workplace
- Will be able to contribute in Continuous Improvement program of the Organization

**Course Contents:**

- Brief History of Lean Thinking
- Toyota Production System
- Five Steps to Lean
- Seven Types of MUDA – Waste in Manufacturing
- MURA – Unevenness / Fluctuation
- MURI – Overburden, Physical Strain
- Lean Tools & Techniques
- Value Stream Mapping
- Five ‘S’
- Visual Management
- Plan-Do-Check-Act (PDCA)
- Kanban
- Lean Distribution
- Various Lean Management Systems
- Just In Time Production
- Total Quality Management (TQM)
- Total Productive Maintenance (TPM)
- Problem Solving Techniques
- A3 Reporting Technique

**Books:****References:**

1. Lean Thinking: Banish Waste and Create Wealth in Your Corporation, Second Edition James P. Womack and Daniel T. Jones, Free Press, June 2003, ISBN: 0743249275
2. Learning to See: Value Stream Mapping to Create Value and Eliminate Muda Mike Rother and John Shook, Lean Enterprise Institute, June 2003, ISBN: 0966784308
3. Lean Production Simplified: A Plain-Language Guide to the World's Most Powerful Production System, Second Edition Pascal Dennis, Productivity Press Inc, September 2007, ISBN: 9781563273568
4. Gemba Kaizen: A Commonsense, Low-Cost Approach to Management Masaaki Imai, McGraw-Hill, March 1997, ISBN: 0070314462
5. World of Kaizen : By Shyam Talawadekar Paperback Publisher: Kaizen Publisher; 4 th edition (2016) ISBN-10: 819326780X ISBN-13: 978-8193267806



**Savitribai Phule Pune University, Pune**  
**Third Year of Mechanical, Mechanical Sandwich & Automobile**  
**(2015 Course)**

**Course Code: 302054**

**Course Name : Audit Course V - Smart Manufacturing**

<b>Teaching Scheme:</b>	<b>Credits</b>	<b>Examination Scheme:</b> Audit(P/F) Written and MCQ	
<b>PR:</b>	<b>Th/Tut:--</b>	<b>TH</b>	<b>In-Sem: --</b>
			<b>End-Sem: --</b>
<b>Tut:</b>	<b>TW:</b>		<b>PR: --</b>
			<b>OR: --</b>

**Description:**

Smart Manufacturing is an amalgamation of Information Technology, Cloud Computing & traditional Mechanical, Production Engineering towards achieving excellence in manufacturing. Maximum results with minimum resources being used. The course will introduce the concepts of Smart Manufacturing, how various technologies can be leveraged to achieve minimum breakdowns, First Time Right Production, 100% Delivery on Time with minimum turnaround time. Nine Pillars of Smart Manufacturing will be explained to the Students.

The course will make the students aware of developments in Technology those are going to alter the Traditional Manufacturing scenario. The following topics may be broadly covered in the classroom. The practical will be in the form of Group Discussion based on Case Study.

**Course Objective:**

- To know more about Smart Manufacturing & Industry 4.0
- To get knowledge of various converging Technologies
- To prepare ourselves for the ever changing Manufacturing Techniques

**Course Outcome: The students will be**

- Comfortable with terminology and practices in Smart Manufacturing
- Able to face the challenges in Industry & also contribute towards advancement.
- Active part of Industry 4.0 (Fourth Industrial Revolution)

**Course Contents:**

- Introduction to Industry 4.0
- Historical Background
- Nine Pillars of Smart Manufacturing
- Big Data & analytics
- Autonomous Robots
- Simulation
- Universal System Integration
- IIOT – Industrial Internet of Things
- 3 D Printing – Additive Manufacturing
- Cloud Computing
- Augmented Reality
- Convergence of Nine Pillars
- Business Propositions delivered with Smart Manufacturing
- Adding Smartness to Manufacturing – Adoption & Scaling
- Economic Aspects
- Ecosystem Required for Smart Manufacturing
- Skill set Required for Smart Manufacturing
- Effects on 4 M- Man, Machine, Materials & Methods in Smart Manufacturing

**References:**

1. Smart Manufacturing by Shoukat Ali; Publisher: LAP LAMBERT Academic Publishing (10 August 2016)Language: EnglishISBN-10: 3659933554ISBN-13: 978-3659933554
2. Industry 4.0: The Industrial Internet of Things 2016by Alasdair Gilchrist (Author)  
Publisher: Apress; 1st ed. edition (30 July 2016)  
Language: English  
ISBN-10: 1484220463  
ISBN-13: 978-1484220467
3. Industry 4.0 Data Analytics31 July 2016 by Rajesh Agnihotri and Samuel New  
Publisher: CreateSpace Independent Publishing Platform (31 July 2016)  
Language: English  
ISBN-10: 1534778284  
ISBN-13: 978-1534778283
4. 3D Printing: The Next Industrial Revolution4 May 2013by Christopher Barnatt  
Publisher: Createspace Independent Publishing Platform (4 May 2013)  
Language: English  
ISBN-10: 148418176X  
ISBN-13: 978-1484181768
5. Augmented Reality: Principles and Practice by Dieter Schmalstieg and Tobias Hollerer  
Publisher: Pearson Education; First edition (5 October 2016)  
Language: English  
ISBN-10: 9332578494  
ISBN-13: 978-9332578494

## **LIST OF EXPERIMENTS / CASE STUDIES**

### **Case Study & Group Work:**

- Identification of areas where Smart Manufacturing can flourish
- Business Goals achieved through Smart Manufacturing
- Compilation of Results & Presentation