# CRITERION 7 – Institution Values and Best Practices

## Key Indicator - 7.1 Institutional Values and Social Responsibilities

**7.1.15 The institution offers a course on Human Values and professional ethics:**

| Sr. No | Metric No | Department | Class | Semester | Name of Course | Year | Document Details | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | 7.1.15 | Civil Engineering | S.E. | I | Awareness to Civil Engineering Practices | 2017 -18 | Structure | |
| | | | | | | | Syllabus | |
| 2 | | | | II | Road Safety Management | | Structure | |
| | | | | | | | Syllabus | |
| 3 | | Mechanical Engineering | S.E. | I | Value Education | | Structure | |
| | | | | | | | Syllabus | |
| 4 | | | T.E | II | Intellectual Property Right | | Structure | |
| | | | | | | | Syllabus | |
| 5 | | E & TC Engineering | S.E. | I | Road Safety Management | | Structure | |
| | | | | | | | Syllabus | |
| 6 | | | | II | Cyber Crime and Law | | Structure | |
| | | | | | | | Syllabus | |
| 7 | | | T.E. | I | Cyber and Information Security | | Structure | |
| | | | | | | | Syllabus | |
| 8 | | | | II | Embedded System Design using MSP430 | | Structure | |
| | | | | | | | Structure | |
| 9 | | Computer Engineering | S.E | I | Environmental Studies | | Structure | |
| | | | | | | | Syllabus | |
| 10 | | | | II | Intellectual Property Rights and Patents | | Structure | |
| | | | | | | | Syllabus | |
| 11 | | | T.E | I | Professional Ethics and Etiquettes | | Structure | |
| | | | | | | | Syllabus | |
| 12 | | | | II | Digital and Social Media Marketing | | Structure | |
| | | | | | | | Syllabus | |
| 13 | | | | II | Green Computing | | Syllabus | |

Rajgad Dnyanpeeth's DTE:6324 SPPU:4071 Dhangawadi Pune 412206 Shri Chhatrapati Shivajiraje College of Engg.

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

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

| Semester I | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | **Audit Course 1** Awareness to Civil Engineering Practices | -- | -- | -- | -- | -- | -- | -- | -- | -- | Grade | |
| **Total** | | **20** | **01** | **08** | **250** | **250** | **100** | **50** | **100** | **750** | **25** | |

**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, Pune**
**Second Year Civil Engineering (2015 Course)**
**Awareness to Civil Engineering Practices**
**Audit Course**
**(Certificate to be issued by institute based on performance assessment)**

Civil Engineering is the oldest engineering profession comprising of a variety of sub-disciplines such as structural engineering, geotechnical, water resources, environmental engineering, construction, transportation etc. Undergraduate programmes are designed with different theoretical approaches on the application of basic sciences to solve different societal problems by engineering knowledge. However, there is a need to make the students aware about how the Civil Engineering industry operates and how theories taught in different courses are applied in practice. The students can learn from the experience gained from different workplaces such civil engineering consultancies, contracting companies, construction sites etc. The course aims to provide insight of the different practices followed by the industry such use of different contracts in civil engineering practice, local by-laws, duties and responsibilities of the Engineers, site records and diaries, Health and Safety practices on site, etc.

**Course Objectives:**

1) To provide basic overview of functioning of different civil engineering related industries / firms.
2) To provide awareness on application of different drawings, contract documents in civil engineering.
3) To provide insight of code of ethics, duties and responsibilities as a Civil Engineer.

**Course Outcomes:**

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

1) Different types of civil engineering industries and their functioning.
2) Applications of different documents, drawings, regulations in Civil Engineering industries.
3) Code of ethics to be practiced by a Civil Engineer and understand duties and responsibilities as a Civil Engineer
4) Different safety practices on the site.

**Course Contents**

1. Awareness lectures by professionals.
2. Visit to construction site/ architectural firms/ structural engineering firms etc.
3. Discuss on issues such as sustainability, eco-friendly techniques, use of locally available materials etc. directly related to techno economic development of society.

**Guidelines for assessment**

1. Presentation
2. Visit report
3. Group discussion

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

| Semester II | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | **Audit Course 2** Road Safety Management | -- | -- | -- | -- | -- | -- | -- | -- | -- | Grade | |
| | | **19** | **01** | **10** | **250** | **250** | **100** | **50** | **100** | **750** | **25** | |

**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, Pune
## S.E. (Civil Engineering) 2015 Course

### Road Safety Management
### Audit Course
### (Certificate to be issued by institute based on performance assessment)

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:**

1) To provide basic overview on road safety & traffic management issues in view of the alarming increase in vehicular population of the country.
2) To explain the engineering & legislative measures for road safety.
3) To discuss measures for improving road safety education levels among the public.

**Course Outcomes:**

On completion of the course, learners will:

1) Show changes in awareness levels, knowledge and understanding.
2) Demonstrate a change in attitudes / behavior e.g. against drink-drive.
3) Utilize remedial education for those who make mistakes and for low level offences where this is more effective than financial penalties and penalty points.
4) Improve road safety together leading to casualty reduction

**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 Engineering Measures for Improving Road Safety

| |
|---|
| **Guidelines for Conduction** (Any one or more of following but not limited to)<br>1. Guest Lectures.<br>2. Visits and reports.<br>3. 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).<br>4. Mini Project |
| **Guidelines for Assessment** (Any one of following but not limited to)<br>1. Written Test 2. Practical Test 3. Presentation 4. Report |

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

### Semester-I

| Subject Code | Subject | Teaching Scheme Hours/Week | | | Examination Scheme | | | | | Total Marks | Credits | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | L | Tut. | PR | In-Sem (online) | End-Sem | TW | PR. | Oral | | Lect/Tut | PR/OR |
| 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 | | | | | | | | | | | |
| | | | | | -- | -- | | | | | | |
| | **Total** | **19** | **02** | **08** | **250** | **250** | 100 | 50 | 100 | **750** | **20** | **05** |
| | **Total of Part-I** | **29 Hrs** | | | | **750** | | | | | **25** | |

**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 Hours/Week | | | Examination Scheme | | | | | Total Marks | Credits | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | L | Tut. | PR | In-Sem (online) | End-Sem | TW | PR. | Oral | | Lect/Tut | PR/OR |
| 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 |
| | **Total** | **18** | **02** | **10** | **250** | **250** | **100** | **100** | **50** | **750** | **18** | **07** |
| | **Total of Part-II** | **30 Hrs** | | | | **750** | | | | | **25** | |

**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.

## Audit Course1

In addition to credits courses, it is recommended that there should be audit course (non-credit course) from second year of Engineering. The student will be awarded grade as AP on successful completion of audit course. The student may opt for one of the audit courses, starting in second year first semester. Though not mandatory, such audit courses can help the student to get awareness of different issues which make impact on human lives and enhance their skill sets to improve their employability. List of audit courses offered in each semester is provided in curriculum. Student can choose one audit course from the list. Evaluation of audit course will be done at institute level. Method of conduction and method of assessment for audit courses is suggested.

The student registered for audit course shall be awarded the grade AP and shall be included such 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/revised-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

**List of courses under Audit Course1**

| Course Code | Audit Course Title |
|---|---|
| 202054 A | Road Safety |
| 202054 B | Innovations in engineering field / Agriculture |
| 202054 C | Value Education |

The detail course contents of above mentioned audit courses are available in Mechanical Engineering 2015 course syllabus. Moreover students can opt for any other audit course from the list of Audit Course1 of any branch of engineering.

## 202054: Value Education

| Teaching Scheme: | Credits | Examination Scheme: | |
|---|---|---|---|
| TH: -- | Tut:01 | TH | In-Sem: -- |
| | | | End-Sem: -- |
| Tutorial: 01 hr/ week | TW:-- | | PR: -- |
| | | | OR: -- |
| | | | TW: 25 |

**Course Objectives:**

- To enable the students to understand meaning of values and select their goals by self-investigation based on personal values.
- To enable the students to understand value of truth, commitments, honesty, sacrifice, care, unity, team work and relationship.
- To educate and make the young generation students aware of their social responsibilities.
- To increase awareness among students about environment and create attitude towards sustainable lifestyle.

**Course Outcomes:**

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

- Understood human values, their significance and role in life.
- Promote self-reflection and critical inquiry that foster critical thinking of one's value and the values of others.
- Practice respect for human rights and democratic principles.
- Familiarized with various living and non-living organisms and their interaction with environment.
- Understood the basics regarding the leadership and to become a conscious professional.

**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:**

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

**References:**

1. Chakravarthy S. K., "Values and ethics for Organizations: Theory and Practice", Oxford University Press, New Delhi, 1999.
2. Man Singh Das, Vijay Kumar Gupta, "Social values among young adults: A changing scenario", MD Publications Pvt. Ltd, 1995.
3. Ram Ahuja, "Social Problems in India", Rawat Publications, 2012.
4. Leah Levin, "HUMAN RIGHTS Questions and Answers", UNESCO Publishing, 2012.
5. P D Sharma, Ecology and Environment, Rastogi publications, 2005.
6. Kalam A P J, Arun Tiwari, "Wings of Fire", University Press Publications, 2003.
7. http://www.ncert.nic.in/recent/env_edu.html
8. http://www.unipune.ac.in/pdf_files/Final%20Book_03042012.pdf
9. https://engineering.purdue.edu/MSE/Academics/Undergrad/ethics.pdf

# 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$ | 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$ | 3 | - | 2 | 30 | 70 | - | - | 25 | 125 | 3 | 1 |
| 302046 | Skill Development | - | - | 2 | - | - | 25 | 25 | - | 50 | - | 1 |
| Total | | 17 | 1 | 10 | 150 | 350 | 100 | 75 | 75 | 750 | 17 | 6 |
| | | | | | | | | | | | 23 | |

## 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% | 3 | 1 | | 30 | 70 | - | - | 25 | 125 | 3 | 1 |
| 302051 | Manufacturing - Process-II$ | 3 | - | - | 30 | 70 | - | - | - | 100 | 3 | - |
| 302052 | Machine Shop-II$ | - | - | 2 | - | - | 50 | - | - | 50 | - | 1 |
| 302053 | Seminar$ | - | - | 2 | - | - | 25 | - | 25# | 50 | - | 1 |
| 302054 | Audit Course* | -- | -- | -- | -- | -- | - | - | - | - | - | - |
| Total | | 17 | 1 | 10 | 150 | 350 | 100 | 50 | 100 | 750 | 17 | 6 |
| | | | | | | | | | | | 23 | |

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

**Course Code: 302054** **Course Name : Audit Course III - Intellectual Property Right**

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

**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

# 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 |
| **204192** | **Audit Course 1** | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | **Total** | 19 | 1 | 10 | 250 | 250 | 100 | 100 | 50 | 750 | 20 | 05 |
| | | | | | | | | | | **Total Credits** | **25** | |

**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)**

**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

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

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

| Audit course-II<br>**204193:Cyber Crime and law** |
|---|
| **Introduction to Cyber Crime and law:**<br><br>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**<br>Firewalls and Packet Filters, password Cracking, Keyloggers and Spyware, Virus and Warms, Trojan and backdoors, Steganography, DOS and DDOS attack, SQL injection, Buffer Overflow, Attack on wireless Networks |
| **Guidelines for Conduction**<br><br>(Any one or more of following but not limited to)<br>• Guest Lectures<br>• Visiting lectures |
| **Guidelines for Assessment** (Any one of following but not limited to)<br>• Written Test<br>• Practical Test<br>• Presentation<br>• Paper<br>• Report |

# Third Engineering-E&TC (2015 Course)

**(With effect from Academic Year 2017-18)**

**Semester I**

| Course Code | Course | Teaching Scheme Hours / Week | | | Semester Examination Scheme of Marks | | | | | | Credits | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Theory | Tutorials | Practicals | In-Sem | End-Sem | TW | PR | OR | Total | TH/TW | PR+OR |
| 304181 | Digital Communication | 4 | -- | -- | 30 | 70 | -- | -- | -- | 100 | 4 | -- |
| 304182 | Digital Signal Processing | 4 | -- | -- | 30 | 70 | -- | -- | -- | 100 | 4 | -- |
| 304183 | Electromagnetics | 3 | 1 | -- | 30 | 70 | -- | -- | -- | 100 | 4 | -- |
| 304184 | Microcontrollers | 3 | -- | -- | 30 | 70 | -- | -- | -- | 100 | 3 | 1 |
| 304185 | Mechatronics | 3 | -- | -- | 30 | 70 | -- | -- | -- | 100 | 3 | 1 |
| 304191 | Signal Processing and Communications Lab (DC/DSP) | -- | -- | 4 | -- | -- | 50 | 50 | | 100 | -- | 2 |
| 304192 | Microcontrollers and Mechatronics Lab | -- | -- | 4 | -- | -- | 50 | 50 | | 100 | | |
| 304193 | Electronics System Design | 2 | -- | 2 | -- | -- | - | -- | 50 | 50 | 2 | 1 |
| | **Audit Course 3** | -- | -- | -- | -- | -- | -- | -- | -- | -- | ---- | |
| | **Total** | 19 | 1 | 10 | 150 | 350 | 100 | 100 | 50 | 750 | | |
| | | | | | | | | | | **Total Credits** | **25** | |

**Abbreviations:**

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

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

Unit 1 : Introduction to Kanji Script,

Describing one's daily routine. To ask what someone does.

Expressions of Giving & Receiving.

Unit 2 : Adjectives (Types of adjectives)

Asking impression or an opinion about a thing / person / place that the listener

Has experienced, visited, or met

Describing things / person / places with the help of the adjectives.

Unit 3 : Expressions of Like & Dislikes. Expressing one's ability, hobby

Comparison between objects, persons & cities

## Audit Course 3

### Cyber and Information Security

Course objective :

1.Students will able to learn the issues of security in IT

2. Students will able to investigate various security threats in IT

Course Outcomes :

On completion of course students

1. will increase the awareness about cyber security

2. will increase the awareness about information and network security

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**Basic Concepts of Technology and Law**

Basics of Information Technology, Basics of Indian Legal System, Information Technology Act 2000 (Amended), Relevant Amendments in all other laws.E-ContractThe essence of digital contracts, Law of Contract, Construction of E-contracts, Issues of security, Employment contracts, Consultant Agreements and Digital signature

**Intelligent Property Issues in Cyber space:** Doman names and related issues, Copyright in digital media, Patents in cyber world. Rights of Neitzens and E- Governance:Privacy and freedom issues in cyber world, E-Governance, Cyber crimes and Cyber laws.

**Information Security Fundamentals**:Background, Importance, Statistics, National and International Scenario, Goals of security, Confidentiality, Privacy, Integrity, Non-repudiation, Availability.

Essentials of computer security - Sources of security threats – Intruders, Viruses, Worms and related threats - Threat identification - Threat analysis -Vulnerability identification and Assessment.

**Security Investigation:** Need for Security, Business Needs, Threats, Attacks, Legal, Ethical and Professional Issues Access Control, Intrusion Detection and Server Management, Firewalls: Overview of Identification and Authorization, Overview of IDS, Intrusion, Detection Systems and Intrusion Prevention Systems, User Management, Overview of Firewalls, Types of Firewalls, DMZ and firewall features

**Security Policies and Management:**Security Policy Design, Designing Security Procedures, Risk Management and Assessment Techniques, Security stan

dards, Security Models.Security Management Practices, Security Laws, Information Classificatio

n Process, Risk Management, Security Proceduresand Guidelines, Business Continuity and Disaster Recovery, Ethics and Best Practices, Security Assurance

# Third Engineering-E&TC (2015 Course)

**(With effect from Academic Year 2017-18)**

**Semester II**

| Course Code | Course | Teaching Scheme Hours / Week | | | Semester Examination Scheme of Marks | | | | | | Credit | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Theory | Tutorials | Practicals | In-Sem | End-Sem | TW | PR | OR | Total | TH/TW | PR +OR |
| 304186 | Power Electronics | 4 | -- | -- | 30 | 70 | -- | -- | -- | 100 | 4 | -- |
| 304187 | Information Theory, Coding and Communication Networks | 4 | -- | -- | 30 | 70 | -- | -- | -- | 100 | 4 | -- |
| 304188 | Business Management | 3 | -- | -- | 30 | 70 | -- | -- | -- | 100 | 3 | -- |
| 306189 | Advanced Processors | 4 | -- | -- | 30 | 70 | -- | -- | -- | 100 | 4 | 1 |
| 304190 | System Programming and Operating Systems | 3 | -- | -- | 30 | 70 | | -- | -- | 100 | 3 | 1 |
| 304194 | Power and ITCT Lab | -- | -- | 4 | -- | -- | 50 | 50 | -- | 100 | -- | 2 |
| 304195 | Advanced Processors and System Prograaming. Lab | -- | -- | 4 | -- | -- | 50 | 50 | -- | 100 | | |
| 304196 | Employability Skills and Mini Project | 2 | -- | 2 | -- | -- | -- | -- | 50 | 50 | 2 | 1 |
| | **Audit Course 4** | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | **Total** | 20 | --- | 10 | 150 | 350 | 100 | 100 | 50 | 750 | | |
| | | | | | | | | | | **Total Credits** | **25** | |

**Abbreviations:**

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

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

- One will develop interest to pursue professional Japanese Language course.

**Course Content**

Unit 1 : Stating existence or a presence of thing (s), person (s)
Relative positions, Counters

Unit 2 : Expressing one's Desire & wants Verb groups,
Asking, Instructing a person to do something

Unit 3 : Indicating an action or motion is in progress. Describing habitual action
Describing a certain continuing state which resulted from a certain action in the past. Express permission & prohibition.

## Audit Course 4

### Embedded System Design using MSP430

Embedded applications like automation and control, consumer electronics, test and measurement equipment's, HVAC and building control, remote monitoring and other embedded applications require Low power CPU's with more GPIO's, in-build ADC and dedicated Embedded protocols. MCU workshop is based upon Low power 16-bit MSP430 series platforms. Participants will be exposed to complete application-building concept using 16-bit MSP430 series MCUs. The workshop will be designed to give hands-on experience so that every participant will get expertise in using MSP430 platform. From Standalone applications to Embedded Networking applications (Embedded Wi-Fi) will be covered with exposure to real world interfacing techniques.

**Learning outcomes:**

At the end of the workshop participant will be able to learn/understand

- Embedded C programming techniques for 16-bit platform
- Embedded protocols and its interfacing techniques
- Embedded Wireless networking concepts and its implementation with application oriented projects and case studies.

**Prerequisite:**

Must have exposure to building embedded applications for 8-bit platforms

Basic knowledge of C language programming

**Digital Electronics fundamentals**

Introduction to Embedded Curriculum: framework, concept map and role of faculty mentors.

Embedded Systems and role of TI platforms

**Introduction to MSP430 series platforms**: scope, application and tools in Embedded ecosystem

Programming MSP430 using CCS

MSP430's Internal Architecture and Programmer's model

Various Configuration registers of in-build modules and their programming ( GPIO, PWM, ADC )

Clock tree structure and its role

**Interfacing Analog sensors**

Enabling Low power modes and understanding Interrupt based programming techniques

Various Serial Communication Interfaces : UART / I2C / SPI

**UART programming and data logging applications**

Programming SPI Interface, Programming I2C Interface

Embedded Wi-Fi and Internet of things

Real-time data gathering (humidity, temperature, pressure etc.) and remote monitoring for Wireless Sensor Network applications and related use cases.

## 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 | Discrete Mathematics | 04 | -- | -- | 50 | 50 | -- | -- | -- | 100 | 04 | -- |
| 210242 | Digital Electronics and Logic Design | 04 | -- | -- | 50 | 50 | -- | -- | -- | 100 | 04 | -- |
| 210243 | Data Structures and Algorithms | 04 | -- | -- | 50 | 50 | -- | -- | -- | 100 | 04 | -- |
| 210244 | Computer Organization and Architecture | 04 | -- | -- | 50 | 50 | -- | -- | -- | 100 | 04 | -- |
| 210245 | Object Oriented Programming | 04 | -- | -- | 50 | 50 | -- | -- | -- | 100 | 04 | -- |
| 210246 | Digital Electronics Lab | -- | -- | 02 | -- | -- | 25 | 50 | -- | 75 | -- | 01 |
| 210247 | Data Structures Lab | -- | -- | 04 | -- | -- | 25 | 50 | -- | 75 | -- | 02 |
| 210248 | Object Oriented Programming Lab | -- | -- | 02 | -- | -- | 25 | 50 | -- | 75 | -- | 01 |
| 210249 | Soft Skills | -- | -- | 02 | -- | -- | 25 | -- | -- | 25 | -- | 01 |
| Total | | | | | | | | | | | 20 | 05 |
| 210250 | Audit Course 1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | Grade | |
| Total | | 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)
## 210250: Audit Course 1
## AC1-III: Environmental Studies

Environmental studies are the field that examines this relationship between people and the environment. An environmental study is an interdisciplinary subject examining the interplay between the social, legal, management, and scientific aspects of environmental issues.

**Course Objectives:**

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understand and realize the multi-disciplinary nature of the environment, its components, and inter-relationship between man and environment
- Understand the relevance and importance of the natural resources in the sustenance of life on earth and living standard

**Course Outcomes:**

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

- Comprehend the importance of ecosystem and biodiversity
- To correlate the human population growth and its trend to the environmental degradation and develop the awareness about his/her role towards environmental protection and prevention
- Identify different types of environmental pollution and control measures
- To correlate the exploitation and utilization of conventional and non-conventional resources

**Course Contents:**

1. **Natural Resources:** Introduction, Renewable and non-renewable, Forest, water, mineral, food, energy and land resources, Individual and conservation of resources, Equitable use of resources.
2. **Ecosystems:** Concept, Structure, Function, Energy flow, Ecological succession, Forest, grassland, desert and aquatic ecosystems - Introduction, characteristic features, structure and function.
3. **Biodiversity:** Genetic, Species and ecological diversity, Biogeographical classification of India, Value and hot spots, Biodiversity at global, national and local levels, India as mega-biodiversity nation, Threats to biodiversity, Endangered and endemic species of India, Conservation of Biodiversity, Endangered and endemic species, Conservation of biodiversity.
4. **Pollution:** Definition, Causes, effects and control measures of the pollution – Air, soil, Noise, Water, Marine and Thermal and Nuclear Pollution, Solid waste management, Role of Individual in Prevention of Pollution, Pollution case studies, Disaster management

**References:**

1. Bharucha, E., ―Textbook of Environmental Studies", Universities Press (2005), ISBN-10:8173715408
2. Mahua Basu, ―Environmental Studies", Cambridge University Press, ISBN-978-1-107-5317-3

## 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 | Engineering Mathematics III | 04 | 01 | -- | 50 | 50 | 25 | -- | -- | 125 | 05 | -- |
| 210251 | Computer Graphics | 04 | -- | -- | 50 | 50 | -- | -- | -- | 100 | 04 | -- |
| 210252 | Advanced Data Structures | 04 | -- | -- | 50 | 50 | -- | -- | -- | 100 | 04 | -- |
| 210253 | Microprocessor | 04 | -- | -- | 50 | 50 | -- | -- | -- | 100 | 04 | -- |
| 210254 | Principles of Programming Languages | 03 | -- | -- | 50 | 50 | -- | -- | -- | 100 | 03 | -- |
| 210255 | Computer Graphics Lab | -- | -- | 02 | -- | -- | 25 | 50 | -- | 75 | -- | 01 |
| 210256 | Advanced Data Structures Lab | -- | -- | 04 | -- | -- | 25 | 50 | -- | 75 | -- | 02 |
| 210257 | Microprocessor Lab | -- | -- | 04 | -- | -- | 25 | 50 | -- | 75 | -- | 02 |
| Total | | | | | | | | | | | 20 | 05 |
| 210258 | Audit Course 2 | | -- | -- | -- | -- | -- | -- | -- | -- | Grade | |
| | Total | 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 Pune University
## Second Year of Computer Engineering (2015 Course)
## 210258: Audit Course 2
## AC2-II: Intellectual Property Rights and Patents

Intellectual property is the area of law that deals with protecting the rights of those who create original works. It covers everything from original plays and novels to inventions and company identification marks. The purpose of intellectual property laws is to encourage new technologies, artistic expressions and inventions while promoting economic growth.

Innovation and originality have great potential value. Whatever line of activity you are engaged in, future success depends on them. The last few years have seen intellectual property rights become an issue of general interest: the smart phone "patent wars", the introduction of Digital Rights management (DRM) and the rise of generic pharmaceuticals and open-source software are just some examples that have been in the public eye. Protecting your intellectual rights appropriately should be a top priority. Yet too many people embark on their chosen professions without even a basic awareness of intellectual property.

**Course Objectives:**

- To encourage research, scholarship, and a spirit of inquiry
- To encourage students at all levels to develop patentable technologies.
- To provide environment to the students of the Institute for creation, protection, and commercialization of intellectual property and to stimulate innovation.

**Course Outcomes:**

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

- Understand the fundamental legal principles related to confidential information, copyright, patents, designs, trademarks and unfair competition
- Identify, apply and assess principles of law relating to each of these areas of intellectual property
- Apply the appropriate ownership rules to intellectual property you have been involved in creating

**Course Contents:**

- **Introduction to Intellectual Property Law** – The Evolutionary Past - The IPR Tool Kit- Para -Legal Tasks in Intellectual Property Law
- **Introduction to Trade mark** – Trade mark Registration Process – Post registration Procedures – Trade mark maintenance - Transfer of Rights – Inter partes Proceeding – Infringement - Dilution Ownership of Trade mark
- **Introduction to Copyrights** – – Principles of Copyright Principles -The subjects Matter of Copy right – The Rights Afforded by Copyright Law – Copy right Ownership, Transfer and duration – Right to prepare Derivative works
- **Introduction to Trade Secret** – Maintaining Trade Secret – Physical Security – Employee Limitation - Employee confidentiality agreement

**References:**


1. Debirag E. Bouchoux: "Intellectual Property". Cengage learning ISBN-10:1111648573
2. Ferrera, Bird, Darrow, "Cyber Law. Texts & Cases", South- ISBN:0-324-39972-3
3. Prabhuddha Ganguli: "Intellectual Property Rights" TMH, ISBN-10:0070077177

**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 | Theory of Computation | 03 | -- | -- | 30 | 70 | -- | -- | -- | 100 | 03 | -- |
| 310242 | Database Management Systems (DBMS) | 03 | -- | -- | 30 | 70 | -- | -- | -- | 100 | 03 | -- |
| 310243 | Software Engineering & Project Management | 03 | -- | -- | 30 | 70 | -- | -- | -- | 100 | 03 | -- |
| 310244 | Information Systems & Engineering Economics | 03 | -- | -- | 30 | 70 | -- | -- | -- | 100 | 03 | -- |
| 310245 | Computer Networks (CN) | 04 | -- | -- | 30 | 70 | -- | -- | -- | 100 | 04 | -- |
| 310246 | Skills Development Lab | -- | 02 | 04 | -- | -- | 50 | -- | 50 | 100 | 02 | 02 |
| 310247 | DBMS Lab | -- | -- | 04 | -- | -- | 25 | 50 | -- | 75 | -- | 02 |
| 310248 | CN Lab | -- | -- | 02 | -- | -- | 25 | 50 | -- | 75 | -- | 01 |
| | | | | | | | | | | Total Credit | 18 | 05 |
| | Total | 16 | 02 | 10 | 150 | 350 | 100 | 100 | 50 | 750 | 23 | |
| 310249 | Audit Course 3 | | | | | | | | | | 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, Pune
## Third Year of Computer Engineering (2015 Course)
## 310249: Audit Course 3
## AC3 – II: Professional Ethics and Etiquettes

Professional ethics is the underlying concept behind the successful accomplishment of any act of a professional towards achieving the individual and societal goals. These goals should ultimately result in morally, legally, ethically and even culturally acceptable good things for all. Engineers being special group of professionals need to be more conscious of their acts since their duties, rights and responsibilities permeate into the society and the surroundings. To practice professional ethics, understanding of values and concepts are essential.

**Course Objectives:**

- To create awareness on professional ethics and Human Values.
- To provide basic familiarity about Engineers as responsible Experimenters, Research Ethics, Codes of Ethics, Industrial Standards.
- To inculcate knowledge and exposure on Safety and Risk.
- To expose students to right attitudinal and behavioral aspects

**Course Outcome:**

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

- understand the basic perception of profession, professional ethics, various moral issues & uses of ethical theories
- Understand various social issues, industrial standards, code of ethics and role of professional ethics in engineering field.
- Follow Ethics as an engineering professional and adopt good standards & norms of engineering practice.
- apply ethical principles to resolve situations that arise in their professional lives

**Course Contents:**

1. **Human Values And Engineering Ethics:** Morals, values and Ethics, Integrity, Work ethic, Civic virtue , Valuing time, Cooperation, Commitment, Empathy, Self-confidence , stress management, Senses of Engineering Ethics, Kohlberg"s theory, Gilligan"s theory, Models of professional roles, Uses of Ethical Theories.
2. **Research Ethics and Codes of Ethics:** Industrial standardization, ethical code and its importance, ethical accountability, law in engineering, engineering as social experimentation.
3. **Safety, Responsibilities And Rights:** Safety and Risk, Assessment of Safety and Risk, Risk Benefit Analysis and Reducing Risk collegiality, Collective Bargaining , Confidentiality , Conflicts of Interest, Professional Rights, Employee Rights, Intellectual Property Rights (IPR), Discrimination, Utilitarianism
4. **Professional Etiquette:** Etiquette at Meetings, Public Relations Office(PRO)'s Etiquettes, Technology Etiquette Phone Etiquette, Email Etiquette, Social Media Etiquette, Video Conferencing Etiquette, Interview Etiquette, Dressing Etiquettes : for Interview, offices and social functions, Ethical Values: Importance of Work Ethics.

**Books:**


1. Caroline Whitbeck, "Ethics in Engineering Practice and Research", Cambridge Press, ISBN:978-1-107-66847-8
2. Prabhuddha Ganguli: —Intellectual Property Rightsl Tata Mc-Graw –Hill, New Delhi, ISBN-10:0070077177
3. Professional Ethics and Etiquette (Mastering Career Skills), Checkmark, ISBN-10: 0816071179
4. A Alavudeen, "Professional Ethics And Human Values" Firewall, ISBN13 : 8131803066

**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 | Design & Analysis of Algorithms | 04 | -- | -- | 30 | 70 | -- | -- | -- | 100 | 04 | |
| 310251 | Systems Programming & Operating System (SP & OS) | 04 | -- | -- | 30 | 70 | -- | -- | -- | 100 | 04 | -- |
| 310252 | Embedded Systems & Internet of Things (ES & IoT) | 04 | -- | -- | 30 | 70 | -- | -- | -- | 100 | 04 | -- |
| 310253 | Software Modeling and Design | 03 | -- | -- | 30 | 70 | -- | -- | -- | 100 | 03 | -- |
| 310254 | Web Technology | 03 | -- | -- | 30 | 70 | -- | -- | -- | 100 | 03 | -- |
| 310255 | Seminar & Technical Communication | -- | 01 | -- | -- | -- | 50 | -- | -- | 50 | 01 | -- |
| 310256 | Web Technology Lab | -- | -- | 02 | -- | -- | 25 | 50 | -- | 75 | -- | 01 |
| 310257 | SP & OS Lab | -- | -- | 04 | -- | -- | 25 | 50 | -- | 75 | -- | 02 |
| 310258 | ES & IoT Lab | -- | -- | 02 | -- | -- | 50 | -- | -- | 50 | -- | 01 |
| | | | | | | | | | Total | Credit | 19 | 04 |
| | Total | 18 | 01 | 08 | 150 | 350 | 150 | 100 | -- | 750 | 23 | |
| 310259 | Audit Course 4 | | | | | | | | | | 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 Pune University, Pune
## Third Year of Computer Engineering (2015 Course)
## 310259: Audit Course 4
## AC4 – I: Digital & Social Media Marketing

The importance of social media's role in modern marketing efforts can no longer be ignored. It's an integral component in almost all successful marketing strategies. With this increasing emphasis on integrated social media strategies, there is an Irrefutable need for marketing professionals and organizations to have end- to- end social media expertise. Through case studies, interactive sessions, and class exercises, students will learn best practices and develop the skills to connect business objectives with social media strategy, platforms and tactics. Topics will include choosing appropriate platforms, creating effective and engaging social media content, content management, social listening and creating a social media policy

**Course Objectives:**

- Identify best practices for Social Media Marketing, including platform level best practices.
- Connect business objectives to appropriate Social Media tactics.
- Create strong content that engages their target audience with their marketing message.

**Course Outcome:**

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

- Create editorial calendars to manage content distribution.
- Use Social Listening tools to create timely, relevant content.
- Create Social Media policies that combine business objectives with appropriate use of social media channels and content.

**Course Contents:**

1. Introductions and review class objectives, Discuss class goals and individual goals, Fill out questionnaire, Introduction to Blogging, Create a blog post for your project. Include headline, imagery, links and post.
2. Introduction to Facebook and channel advertising and campaigns, Introduction to Twitter and channel advertising and campaigns, Creative Campaign examples across social channels
3. Introduction to both Google+ and LinkedIn. Provide an overview on LinkedIn advertising, Create Google+ and LinkedIn outlines for your project and include: types of posts and an example post for each platform.
4. Introduction to both Instagram and Pinterest as well as channel advertising and campaigns, Create Instagram and Pinterest outlines for your project and include: types of posts and an example post for each platform, review a content calendar, Lay out your own content calendar.

**References:**

1. Vandana Ahuja, Digital Marketing, Oxford Press, ISBN: 9780199455447,
2. Wiley, Jeanniey Mullen, David Daniels, David Gilmour " Email Marketing: An Hour a Day", ISBN: 978-0-470-38673-6
3. David Scott, "The New Rules of Marketing and PR", Wiley India, ISBN: 978-1-119-07048-1

# Savitribai Phule Pune University, Pune
## Third Year of Computer Engineering (2017 Course)
## 310259: Audit Course 4
## AC4 – II: Green Computing

Green computing is the study and practice of using computing resources efficiently. Green computing or green IT, refers to environmentally sustainable computing or IT. The goals of green computing are similar to green chemistry; reduce the use of hazardous materials, Maximize energy efficiency during the product's lifetime, and promote the recyclability or biodegradability of defunct products and factory waste.

**Course Objectives:**

- To acquire knowledge to adopt green computing practices to minimize negative impacts on the environment.
- To examine technology tools that can reduce paper waste and carbon footprint by user.
- To understand how to minimize equipment disposal requirements.
- To gain skill in energy saving practices in their use of hardware

**Course Outcome:**

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

- Understand the concept of green IT and relate it to sustainable development.
- Apply the green computing practices to save energy.
- Discuss how the choice of hardware and software can facilitate a more sustainable operation,
- Use methods and tools to measure energy consumption

**Course Contents:**

1. **Fundamentals of Green IT:** Green IT Fundamentals: Business, IT, and the Environment – Green computing: carbon foot Print - Measuring, Details, reasons to bother, Plan for the Future, Cost Savings: Hardware, Power.
2. **Green Assets and Power Problems:** Green Assets: Buildings, Data Centers, Networks, and Devices, Green Information Systems : Design and Development Models, Monitoring Power Usage, Servers, Low-Cost Options, Reducing Power Use, Data De-Duplication, Low-Power Computers and peripheral devices
3. **Greening Information Systems:** Initial Improvement Calculations, Selecting Metrics, Tracking Progress, Change Business Processes, Customer Interaction, Paper Reduction, Green Supply Chain, Improve Technology Infrastructure, Reduce PCs and Servers, Shared Services, Hardware Costs, Cooling
4. **Green Grid Framework:** Virtualization of IT systems – Role of electric utilities, Telecommuting, teleconferencing and teleporting – Materials recycling – Best ways for Green PC – Green Data center Case Studies – Applying Green IT Strategies and Applications to a Home Hospital, Packaging Industry and Telecom Sector

**References:**

1. Woody Leonhard, Katherrine Murray, –Green Home Computing for Dummies", August2009, ISBN: 978-0-470-46745-9
2. Alvin Galea, Michael Schaefer, Mike Ebbers, –Green Data Center: steps for the Journey", Shoff/IBM rebook, 2011. ISBN: 10: 1-933742-05-4; 13: 978-1-933742-05-2
3. John Lamb, –The Greening of IT", Pearson Education, 2009, ISBN 10: 0137150830
4. Jason Harris, –Green Computing and Green IT- Best Practices on regulations & industry",Lulu.com, 2008, ISBN: 1558604898
5. Bud E. Smith, –Green Computing Tools and Techniques for Saving Energy, Money and Resources", CRC Press, 2014, 9781466503403