



CRITERION 7 –Institution Values and Best Practices

Key Indicator -7.1 Institutional Values and Social Responsibilities

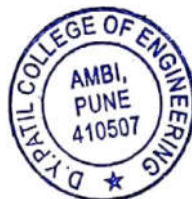
7.1.15: The institution offers a course on Human Values and professional ethics.


Sr. No	Core course related to	Name of the course
1	Human values	Road safety (Computer)
2		Cyber Security(Computer)
3		Stress Relief: Yoga and Meditation (IT)
4		Health and Fitness Management (IT)
5		Smart Cities (IT)
6		Road safety management (E & TC)
7		Cyber and information Security (E & TC)
8		Human Behavior (E & TC)
9		Embedded System Design using MSP430(E & TC)
10		Environment issues & Disasters Management (E & TC)
11	Professional Ethics	Leadership and personality development (Computer)
12		Intellectual Property Rights and Patents(Computer)
13		Business Intelligence(Computer)
14		Leadership and personality development (IT)
15		Statistical Learning model Using R (IT)
16		IOT-Application of Engineering Field (IT)
17		Entrepreneurship Development(Mech)
18		Innovation in Engineering Field(Mech)

Faculty of Engineering
Savitribai Phule Pune University



Syllabus
of
Second Year of Computer Engineering
(Course 2015)
(with effect from June 2016)



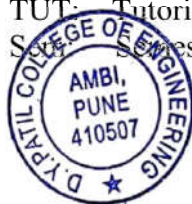

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D. Y. Patil College of Engineering
Ambi, Talegaon MIDC Road,
Talegaon Dabhade, Pune-410507

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			Examination Scheme & Marks						Credit	
		Hours / Week			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
Total											20	05
210250	<u>Audit Course 1</u>	--	--	--	--	--	--	--	--	--	Grade	
Total		20	--	10	250	250	100	150	--	750	25	

Abbreviations:

TW: Term Work
OR: Oral
PR: Practical

TH: Theory
TUT: Tutorial
Semester



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D. Y. Patil College of Engineering
Ambi, Talegaon MIDC Road,
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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	

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 Sem: Semester



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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–

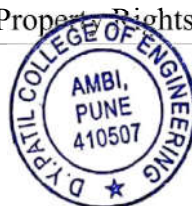
- Understand the fundamental legal principles related to confidential information, copyright, patents, designs, trademarks and unfair competition
- Identify, apply and assess principles of law relating to each of these areas of intellectual property
- Apply the appropriate ownership rules to intellectual 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 Pune University, Pune
Third Year of Computer Engineering (2015 Course)
310259: Audit Course 4
AC4 – IV: Leadership and Personality Development

Personality is considered as one of the integral part of an individual's existence. Where a student is concerned, paying close attention to **Personality** which is extremely important to enhance holistic development of students and improve their employability skills

Course Objectives:

- To develop inter personal skills and be an effective goal oriented team player.
- To develop professionals with idealistic, practical and moral values.
- To develop communication and problem solving skills.
- To re-engineer attitude and understand its influence on behavior

Course Outcome:

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

- Enhance holistic development of students and improve employability skills

Course Contents:

- 1. Introduction to Personality and working towards developing it:** Definition & Basics of personality, Analyzing strengths & weaknesses, Corporate theories on personality Development, Increasing Vocabulary, Body Language, gestures, Preparation of Self Introduction
- 2. Communication skill and handling attitude:** Communication Skills, Listening, Communication Barriers, Overcoming these Barriers, Building Self Esteem and Self Confidence, Working on attitudes: aggressive, assertive, and submissive
- 3. Leadership Techniques in Personality development:** Introduction to Leadership, Leadership Styles, Group Dynamics, Team Building
- 4. Stress and time management skills:** Interpersonal Relationships, Analysis of Ego States, transactions & Life positions, Stress Management: Causes, Impact & Managing Stress, Introduction to conflict management, Time Management: Concept of time management, Steps towards better time management

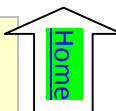
References:

1. SOFT SKILLS, “ Career Development Centre”, Green Pearl Publications
2. Covey Sean,” Seven Habits of Highly Effective Teens”, New York, Fireside Publishers, 1998, ISBN: 978-1476764665
3. Carnegie Dale, “ How to win Friends and Influence People”, New York: Simon & Schuster, 1998, ISBN: 1-4391-6734-6
4. Thomas A Harris, I am ok, You are ok , New York Harper and Row, 1972, ISBN 13: 978-0060724276 ISBN:
5. Daniel Coleman, Emotional Intelligence, Bantam Book, 2006, ISBN: 055380491X, 9780553804911
6. Shiv Khera, “You Can Win”, A&C Black, ISBN: 9780230331198.



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Ambi, Talegaon MIDC Road,
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Fourth Year of Computer Engineering (2015 Course)
410257: Audit Course 6
AC6 – I: Business Intelligence

Course Objectives:

- To understand the concept of Business Intelligence
- To know the details of Decision Support System
- To inculcate the concepts of Data Warehousing
- To understand the basics of design and management of BI systems

Course Outcome:

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

- Apply the concepts of Business Intelligence in real world applications
- Explore and use the data warehousing wherever necessary
- Design and manage practical BI systems

Course Contents:

- 1. Concepts with Mathematical treatment :** Introduction to data, Information and knowledge, Decision Support System, Theory of Operational data and informational data, Introduction to Business Intelligence, Determining BI Cycle, BI Environment and Architecture, Identify BI opportunities, Benefits of BI. Role of Mathematical model in BI, Factors Responsible for successful BI Project, Obstacle to Business Intelligence in an Organization
- 2. Decision Making Concepts :** Concepts of Decision Making, Techniques of Decision Support System (DSS), Development of Decision Support System (DSS), Applications of DSS, Role of Business Intelligence in DSS.
- 3. Data-Warehouse :** Introduction: Data warehouse Modeling, data warehouse design, data-warehouse technology, Distributed data warehouse, and materialized view
- 4. Data Pre-processing and outliers:** Data Analytics life cycle, Discovery, Data preparation, Preprocessing requirements, data cleaning, data integration, data reduction, data transformation, Data discretization, and concept hierarchy generation, Model Planning, Model building, Communicating Results and Findings, Operationalizing, Introduction to OLAP. Real-world Applications, types of outliers, outlier challenges, Outlier detection Methods, Proximity-Based Outlier analysis, Clustering Based Outlier analysis.
- 5. Designing and managing BI systems :** Determining infrastructure requirements, planning for scalability and availability, managing and maintenance of BI systems, managing BI operations or business continuity

Books:

1. R. Sharda, D. Delen, and E. Turban, Business Intelligence and Analytics. Systems for Decision Support, 10th Edition. Pearson/Prentice Hall, 2015. ISBN-13: 978-0-13-305090-5, ISBN-10: 0-13-305090-4;
2. Business Process Automation, Sanjay Mohapatra, PHI.
3. Introduction to business Intelligence and data warehousing, IBM, PHI, ISBN: 9788120339279



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Audit Course 4 – IV : Health & Fitness Management

Prerequisites:

Awareness about healthy living.

Course Objectives:

1. To provide students a general concept of Health education and fitness.
2. To provide knowledge and understanding regarding health and nutrition.
3. To familiarize the students regarding safety education and health primitive measures for day to day life.
4. To promote and understanding of the value of physical and mental fitness for life skill development.

Course Outcomes:

1. Identify the health- and skill-related fitness components.
2. Understand the benefits of physical fitness, and the underlying principles, physiology, and practices for fitness development.
3. Apply of fitness management skills and strategies for the development of physical activity habits and personal fitness by the students.
4. Aware about healthy diet for physical and mental fitness of an individual.
5. Understand importance of mental fitness along with physical fitness by practicing yoga, meditation and relaxation techniques.

UNIT I

Importance of Health and Fitness, Physical fitness and mental fitness, Health and fitness issues in India, Government policies for Healthy Society, World Health Organization (WHO), and practicing good Habits for Healthy living.

UNIT II

Nutrition and Health : Concept of Food and Nutrition, Nutrients and Nutrient types, ,Balanced Diet, Vitamins – Malnutrition–Deficiency Diseases, Determining Caloric Intake and Expenditure, Obesity, Causes and Preventing Measures – Role of Diet.

UNIT III

Physical Exercise : Physical Activity and Health Benefits, Effect of Exercise on Body systems, Circulatory, Respiratory, Endocrine, Skeletal and Muscular, Role of Physical Education Programme on Community Health Promotion (Individual, Family and Society).

UNIT IV

Mental Health and Relaxation Techniques: Importance of mental health, Perspectives of mental health, Role of Emotional and Ethical Values in Mental Health, Preventing mental illness, Practicing Yoga and Meditation, Relaxation Techniques, Stress management Techniques.

References:

1. Fitness Management by Stephen J. Tharrett, James A. Peterson, Healthy Learning, ISBN: 9781606792155.
2. What to Eat by Marion Nestle, Macmillan Publication, ISBN 978-0865477384.
3. Light on Yog by B.K.S. Iyengar, Yehudi Menuhin, ISBN: 9780805210316.
4. Managing Your Mind: The Mental Fitness Guide by Gillian Butler, Tony Hope, ISBN: 9780195314533.



J. J. J.
Principal

D. Y. Patil College of Engineering
Ambi, Talegaon MIDC Road,
Talegaon Dabhade, Pune-410507

Audit Course 6 (2)

Environmental Issues And Disaster Management

About the Course:

The importance of environmental science and environmental studies cannot be disputed. The need for sustainable development is a key to the future of mankind. Continuing problems of pollution, loss of forest, solid waste disposal, degradation of environment, issues like economic productivity and national security, Global warming, the depletion of ozone layer and loss of biodiversity have made everyone aware of environmental issues.

It is clear that no citizen of the earth can afford to be ignorant of environment issues. Environmental management has captured the attention of health care managers. Managing environmental hazards has become very important. In spite of the deteriorating status of the environment, study of environment has so far not received adequate attention in our academic programmes.

Course objective :

- To develop understanding of Environment Issues and Biodiversity
- To introduce to the students the environment, Disaster Management
- To enable students to understand ecosystem and preservation of environment
- To understand Disaster Management and handling them

Course Outcomes :

On completion of course students will be able:

1. To learn the different environmental issues and disasters.
2. To deal with problems associated with environment and effectively handle the disasters.

Unit 1: Environmental Pollution

A) Definition, Cause, effects and control measures of :-

Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear hazards, Solid waste Management, urban and industrial wastes.

Role of an individual in prevention of pollution. Pollution case studies.

B) Social Issues and the Environment:

Water conservation, rain water harvesting, watershed management, Resettlement and rehabilitation of people; its problems and concerns.

Unit 2 : Ecosystems, Biodiversity and its conservation

A) Concept of an ecosystem.

Structure and function of an ecosystem, Producers, consumers and decomposers, • Energy flow in the ecosystem, Ecological succession, Food chains, food webs and ecological pyramids.


Structure and function of the following ecosystem :

- a. Forest ecosystem
- b. Grassland ecosystem
- c. Desert ecosystem
- d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Biodiversity at global, National and local levels, India as a mega-diversity nation

Hot-spots of biodiversity, Threats to biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts, Endangered and endemic species of India, Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity.




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Unit 3 : Disaster Management

a) Causes – Natural disaster and Manmade disaster

b) Speed of onset – Sudden and Slow

Natural Disasters

These types of disaster naturally occur in proximity to, and pose a threat to, people, structures or economic assets.

Examples are Storm, Flood, Earthquake, Tsunamis

Manmade Disasters

Accidents: Road, Rail, Air, Sea, Building collapse.

Industrial Mishaps: Gas leak, Explosion, Safety.

Fire: Building, Coal, Oil.

Forest Fire (In tropical countries, forest fires are often manmade)

Speed of onset

1 Sudden onset: little or no warning, minimal time to prepare. For example, an earthquake, tsunami, cyclone, volcano, etc.

2 Slow onset: adverse event slow to develop; first the situation develops; the second level is an emergency; the third level is a disaster.

For example, drought, civil strife, etc.


Unit 4: Case Studies

- Environmental ethics: Awareness, Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust.
- Wasteland reclamation.
- Consumerism and waste products.
- Environment Protection Act.
- Air and Water (Prevention and Control of Pollution) Act
- Wildlife Protection Act and Forest Conservation Act
- Issues involved in enforcement of environmental legislation.
- Role of an individual in prevention of pollution and case studies.

References:

1. Disaster Management: Disaster Manager's Handbook by W. Nick Carter, Asian Development Bank.
2. An Introduction To Disaster Management EBook By S. Vidyanathan - Publisher: IKON
3. Textbook for environmental studies ,ErachBharucha For UGC.




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Ambi, Talegaon MIDC Road,
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