DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO.SU/Sci./B.Sc. Syll./31/2015

It is hereby notified for information to all the concerned that, on the recommendation of the various Board of Studies, Ad-hoc Boards & Committees the Hon'ble Vice-Chancellor has accepted the **revised semester-wise syllabi in the Faculty of Science as under** on behalf of the Academic Council under Section-14[7] of the Maharashtra Universities Act, 1994 :-

Sr. No.	Name of the Subject	Semester
[1]	**B.Sc. Automobile Technology IInd Year, [Three Year Degree Course].**	**III & IV**
[2]	**B.Sc. Horticulture IInd Year, [Optional].**	**III & IV**
[3]	**B.Sc. Chemistry IIIrd Year, [Optional].**	**V & VI**
[4]	**B.Sc. Analytical Chemistry IIIrd Year, [Optional].**	**V & VI**
[5]	**B.Sc. Agrochemical & Fertilizer IIIrd Year, [Optional].**	**V & VI**
[6]	**B.Sc. Geology IIIrd Year, [Optional].**	**V & VI**
[7]	**B.Voc. Multimedia & Animation, [Three Year Degree Course].**	**I to IV**
[8]	**B.Voc. [1] Industrial Automation, [2] Automobile & [3] Travel & Tourism, [Three Year Degree Course].**	**I to VI**
[9]	**B.Voc. Jewellery Design & Gemology, IInd Year [Three Year Degree Course].**	**III & IV**
[10]	**Diploma in Industrial Automation for Community College at University Campus.**	

This is effective from the Academic Year 2015-16 & onwards as appended herewith.

All concerned are requested to note the contents of the circular and bring the notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
REF.NO.ACAD/SU/SCI./
2015/6860-7259
Date:- 08-07-2015.

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Director,
Board of College and University Development.

Copy forwarded with compliments to:-

1] The Director, C.V.E.T., Dr. Babasaheb Ambedkar Marathwada University Campus, Aurangabad.

2] The Principals, affiliated concerned colleges, Dr. Babasaheb Ambedkar Marathwada University

Copy to :-

1] The Controller of Examinations,
2] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter, Dr. Babasaheb Ambedkar Marathwada University,
3] The Superintendent, [B.Sc. Unit],
4] The Superintendent, [B.C.S. Unit],
5] The Programmer [Computer Unit-1] Examinations,
6] The Programmer [Computer Unit-2] Examinations,
7] The Record Keeper.

Dr. Babasaheb Ambedkar Marathwada University.

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S*/-090715/-

Dr. Babasaheb Ambedkar Marathwada University

Aurangabad- 431004 (MS) India

Center for Vocational Education and Training (CVET)

COMMUNITY COLLEGE

Diploma in Vocation

(D. Voc.)

Course Structure and Curriculum

(As per UGC guidelines for implementing D. Voc. program)

for

Industrial Automation

(Choice Based Credit System)

(Effective from June 2015 and onwards)

- Students will have to earn 30 credits for the award of Six Month Certificate in Vocation.
- Students will have to earn 60 credits for the award of One Year Diploma in Vocation.

Credit-to-contact hour Mapping:

(a) One Credit would mean equivalent of 15 periods of 60 minutes each for theory lecture.

(b) For lab-course/ workshops/internship/field work/project, the credit weightage for equivalent hours shall be 50% that for lectures /workshop

(c) For self- learning, based on e-content or otherwise, the credit weightage for equivalent hours of study should be 50% or less of that for lectures/workshops.

Attendance:

Students must have 75 % of attendance in each course for appearing examination otherwise he / she will not be strictly allowed for appearing the examination of each course.

Departmental Committee:

The Departmental Committee (DC) of the Centre will monitor the smooth functioning of the programme.

Results Grievances / Redressal Committee

Grievances / redressal committee will be constituted in the department to resolve all grievances relating to the evaluation. The committee shall consist of Head of the department, the concerned teacher of a particular course and senior faculty member of Department of Committee. The decision of Grievances / redressal committee will have to be approved by Department committee.

Evaluation Methods:

- The assessment will be based on 50: 50 ratio of continuous internal assessment (CIA) and semester end examination (SEE).

Continuous Internal Assessment (CIA):

(A) For 4 credit courses-

- There will be 50 marks for Continuous Internal Assessment. Distribution of 50 marks will be as follows- 05 marks for tutorials, 05 marks for assignment, 10 marks for seminar presentation and 30 marks for weekly tests. Weekly tests of 10 marks each based on subjective short questions will be conducted every week during the semester as a part of continuous assessment. At the end of the semester average of all weekly tests will be converted into 30 marks. The setting of the question papers and the assessment will be done by the concerned teacher.

(B) For 4 credit courses-

- There will be 25 marks for Continuous Internal Assessment. Distribution of 25 marks will be as follows- 05 marks for tutorials, 05 marks for assignment, 05 marks for seminar presentation and 10 marks for weekly tests. Weekly tests of 10 marks each based on subjective short questions will be conducted every week during the semester as a part of continuous assessment. At the end of the semester, average of all weekly tests will be considered for calculation of final marks. The setting of the question papers and the assessment will be done by the concerned teacher.

Semester End Examination (SEE):

- The semester end theory examination for each theory course will be of 50 marks. The total marks shall be 100 for 4 credit theory course (50 marks semester end exam + 50 marks CIA) and 50 for 2 credit theory course (25 marks semester end exam + 25 marks CIA).

- Semester end examination (SEE) time table will be declared by the departmental committee (as per the university annual calendar). The paper setting and assessment of theory courses, laboratory courses and research project will done by external (50 %) and internal (50%) examiners. However, in case of non-availability of external examiner for either paper setting or assessment or both, department committee will be empowered to take appropriate decision.

- Pattern of semester end question paper will be as below:

(A) For 4 credit courses-

- ~~The semester end examination of theory course will have two parts (10+40 = 50 Marks)~~
- Part A will be consisting of 10 questions having 1 marks each (multiple choice questions / fill in the blanks/ answer in sentence) as compulsory questions and it should cover entire course curriculum (10 Marks)

- Part B will carry 8 questions (02 questions from each of 04 units and students will have to attempt any one). Therefore, students will have to attempt 04 questions out of 08 (40 Marks).
- 20 to 30% weightage can be given to problems/ numerical wherein use of non-programmable scientific calculator may be allowed.
- Number of sub questions (with allotment of marks) in a question may be decided by the examiner.

(B) For 2 credit courses-

- The semester end examination of theory course will have two parts (05+20 = 25 Marks)
- Part A will be consisting of 05 questions having 1 marks each (multiple choice questions / fill in the blanks/ answer in sentence) as compulsory questions and it should cover entire course curriculum (05 Marks)
- Part B will carry 8 questions (02 questions from each of 04 units and students will have to attempt any one). Therefore, students will have to attempt 04 questions out of 08 (2 0 Marks).
- 20 to 30% weightage can be given to problems/ numerical wherein use of non-programmable scientific calculator may be allowed.
- Number of sub questions (with allotment of marks) in a question may be decided by the examiner.

- Assessment of laboratory courses and project will also have 50 % internal and 50 % semester end assessment. Semester end practical examination will be of 25 marks and 25 marks will be for internal examination. Student must perform at least eight experiments from each laboratory course. The semester end practical examination will be conducted at the end of each semester along with the theory examination.

- At the end of each semester the Departmental Committee will assign grades to the students. The result sheet will be prepared in duplicate.

- The Director of the Centre shall send all results to the Controller of Examination for further processing.

- Every student will have privilege for revaluation of answer sheets or recounting of marks for each semester end examination. However, students will have to submit an application within 15 days from the date of declaration of results.

- Applications received for revaluation / recounting will be discussed in the Departmental committee and examiners will be appointed accordingly.

- The results of revaluation / recounting will be approved by Departmental committee and forwarded to Controller of Examination for further processing.

Earning Credits:

At the end of every semester, a letter grade will be awarded in each course for which a student had registered. A student's performance will be measured by the number of credits that he/she earned by the weighted Grade Point Average (GPA). The SGPA (Semester Grade Point Average) will be awarded after completion of respective semester and the CGPA (Cumulative Grade Point Average) will be awarded at the respective exit point.

Grading System:

- The grading reflects a student-own proficiency in the course. A ten point rating scale shall be used for the evaluation of the performance of the students to provide letter grade for each course and overall grade for the Master Programme. Grade points are based on the total number of marks obtained by him / her in all heads of the examination of the course. The grade points and their equivalent range of marks are shown in Table-I

Table – I : Ten point grade and grade description

Marks Obtained (%)	Grade Point	Letter Grade	Description
90-100	9.00- 10	O	Outstanding
80-89	8.00-8.90	A^{++}	Exceptional
70-79	7.00-7.90	A^{+}	Excellent
60-69	6.00-6.90	A	Very Good
55-59	5.50-5.90	B^{+}	Good
50-54	5.00-5.40	B	Fair
45-49	4.50-4.90	C^{++}	Average (Above)
41-44	4.1-4.49	C	Average
40	4.0	P	Pass
< 40	0.0	F	Fail (Unsatisfactory
	0.0	AB	Absent

- Non-appearance in any examination / assessment shall be treated as the students have secured zero marks in that subject examination / assessment.
- Minimum P grade (4.00 grade points) shall be the limit to clear / pass the course / subject. A student with F grade will be considered as "failed" in the concerned course and he / she has to clear the course by appearing in the next successive semester examinations. There will be no revaluation or recounting under this system.
- Every student shall be awarded grade points out of maximum 10 points in each subject (based on 10 point scale). Based on the grade points obtained in each subject, Semester Grade Point Average (SGPA) and then Cumulative Grade Point

Average (CGPA) shall be computed. Results will be announced at the end of each semester and CGPA will be given at respective exit point.

Computation of SGPA (Semester Grade Point Average) and CGPA (Cumulative Grade Point Average)

Grade in each subject / course will be calculated based on the summation of marks obtained in all five modules.

The computation of SGPA and CGPA will be as below

- Semester Grade Point Average (SGPA) is the weighted average points obtained by the students in a semester and will be computed as follows

$$SGPA = \frac{\text{Sum (Course Credits) X Number of Grade Points in concerned Course Gained by the Student}}{\text{Sum (Course Credits)}}$$

The SGPA will be mentioned on the grade card at the end of every semester.

- The Cumulative Grade Point Average (CGPA) will be used to describe the overall performance of a student in all semester of the course and will be computed as under.

$$CGPA = \frac{\text{Sum (All six Semester SGPA)}}{\text{Total Number of Semester}}$$

The SGPA and CGPA shall be rounded off to the second place of decimal.

Grade Card

Results will be declared by the Centre and the grade card (containing the grades obtained by the student along with SGPA) will be issued by the university after completion of every semester. The grade card will be consisting of following details.

- Title of the courses along with code opted by the student.
- Credits associated with the course.
- Grades and grade points secured by the student.
- Total credits earned by the student in a particular semester.
- Total credits earned by the students till that semester.
- SGPA of the student.
- CGPA of the student (at respective exit point).

Cumulative Grade Card

The grade card showing details grades secured by the student in each subject in all semesters along with overall CGPA will be issued by the University at respective exit point.

Course Structure

Paper No	Paper Title	Credits
	Semester - I	
General Education Components		
VOC 101	Linguistic Proficiency-I(English& Marathi) with Lang. lab training	4
VOC 102	Computer Fundamentals-I (Information Technology) : Theory	2
VOC 103	Computer Fundamentals-I (Information Technology): Lab- Course	2
VOC 104	Professional Ethics and Management Practices	4
Skill Development Components		
VOC 111	Analog and Digital Electronics	2
VOC 112	Electrical Systems	2
VOC 113	Industrial Electronics	2
VOC 114	Industrial Instrumentation	2
VOC 115	Laboratory Coursework – I (Analog and Digital Electronics)	2
VOC 116	Laboratory Coursework – II (Electrical Systems)	2
VOC 117	Laboratory Coursework – III (Industrial Electronics)	2
VOC 118	Laboratory Coursework – IV (Industrial Instrumentation)	2
VOC 119	In-plant Training – I (MCC and PCC panel Wiring)	2
Total Credits = General Education Components + Skill Development Components		30 (12+18)
	Semester - II	
General Education Components		
VOC 201	Linguistic Proficiency-II(English & Hindi) with Lang. lab training	4
VOC 202	Computer Fundamentals-II (Basic Computer Hardware System) : Theory	2
VOC 203	Computer Fundamentals-II (Basic Computer Hardware System) : Lab- Course	2
VOC 204	Environment Management	4
Skill Development Components		
VOC 211	Interfacing and Signal Conditioning	2
VOC 212	Control Systems Fundamentals	2
VOC 213	Fundamentals of Drives	2
VOC 214	PLC Fundamentals	2
VOC 215	Laboratory Coursework – V (Interfacing and Signal Conditioning)	2
VOC 216	Laboratory Coursework – VI (Control Systems Fundamentals)	2
VOC 217	Laboratory Coursework – VII (Fundamentals of Drives)	2
VOC 218	Laboratory Coursework – VIII (PLC Fundamentals)	2
VOC 219	In-plant Training – II (Control Panel Design and Wiring)	2
Total Credits = General Educational Components + Skill Development Components		30 (12+18)
Total Credits earned after Semester I and II (30 + 30)		**60**

Paper Code Description:

Each course will be identified by a unique three digit code. The details of code nomenclature is as per following -

First digit: Refers to semester number

Second digit:
0 - Refers to General paper / course
1 - Refers to Skill Development Course
Third digit: Refers to incremental number for paper / course of respective semester.

SEMESTER – I

Semester – I

General Education Components

VOC 101: Linguistic Proficiency-I (English and Marathi) with language lab training

Learning Objectives:

1. To facilitate the students to understand the fundamental of communicative English and Marathi
2. To facilitate the students to develop skills of communication in English and Marathi.

Learning Outcomes:

1. Expression power, and communication skill of the students in English and Marathi will improve
2. Students will be able to identify the necessities of behavioral and expressive attitudes as per situations.

Part A: BASIC STRUCTURE OF THE ENGLISH LANGUAGE

Module – I **(10 hours)**

Tenses:

1.Present tense (includes all four types of tenses each)
2. Past tense
3. Future tense

Module – II

Spoken English: **(10 hours)**

1. Basic of pronunciation : Vowels, diphthongs,
2. Certain basic sounds including th, dh, gh sounds, fricatives etc.
3. Differences in the sounds of the letters, especially, w/v, f/ph etc.
4. Phonetic transcriptions.
5. **Module – III** **(12 hours)**

1. Introducing yourself (The communicator)
2. Introducing people to others
3. Giving personal information
4. Getting people's attention and interrupting
5. Giving instructions and seeking clarifications
6. Making requests and responding to requests

References:

1. Business Communicator – V.K. Jain, O. P. Biyani, S. Chand, New Delhi.
2. The Communicator – Board of Editors , Orient Blackswan Pvt. Ltd
3. The Art of Powerful Communication – Dinesh K. Vohra, Are Maria Publications, Pune

Part B :BASIC STRUCTURE OF THE MARATHILANGUAGE

(ON NEXT PAGE....)

भाग- ब)

अभ्यासक्रमाचे स्वरूप -

मराठी भाषेच्या अभ्यासाची व वापराची विविध क्षेत्रे लक्षात घेऊन हा अभ्यासक्रम तयार करण्यात आला आहे. हा अभ्यासक्रम प्रामुख्याने कृतीनिष्ठ असल्याने लेखी परीक्षे इतकेच प्रत्यक्षकृतीला त्यात महत्त्व दिले गेले आहे. भाषा व्यवहार, संज्ञापन, कार्यालयीन लेखन व्यवहार, आधुनिकतंत्रोपकरणे यांच्याशी तो संबंधित आहे. हा अभ्यासक्रम दोन श्रेयांकांचा असून दीड श्रेयांक लेखी परीक्षेशी संबंधित आहे, तर अर्धा श्रेयांक प्रकल्पाशी संबंधित आहे.

उद्दिष्टे -

(16 hours)

१) संज्ञापनाचे स्वरूप आणि प्रकार, संज्ञापन व्यवहारातील भाषेचे महत्त्व आणि कार्य यांचे महत्त्व समजावून देणे.

२) भाषा व्यवहाराची अपारंपरिक आणि अनौपचारिक क्षेत्रे, औपचारिक भाषा व्यवहाराची क्षेत्रे आणि त्याचे क्षेत्रनिहाय स्वरूप समजावून देणे.

३) विविध स्तरावरील भाषिक कौशल्ये आणि क्षमता विकसित करणे.

४) प्रसार माध्यमांचे स्वरूप आणि त्यासाठी आवश्यक असलेल्या भाषा व्यवहाराचे स्वरूप समजावून देणे.

५) कार्यालयीन / लेखन व्यवहारातील भाषेचे स्वरूप समजावून घेणे.

६) परिभाषानिष्ठ भाषाव्यवहार म्हणजेच निरनिराळ्या शास्त्रीय विषयांवरील लेखना करिता क्षमता विकसित करणे.

७) भाषाव्यवहारातील आधुनिक तंत्रोपकरणांची (व तंत्रांची) माहिती करून देणे, मराठीतून व्यवहार करणाऱ्या संस्थांना भेटी देणे इत्यादी.

घटक१

संज्ञापन व भाषिक कौशल्ये

अ) संज्ञापन म्हणजे काय ? संज्ञापनाचे प्रकार - संज्ञापनातील भाषेचे, महत्त्व आणि कार्य भाषेचे औपचारिक व अनौपचारिक उपयोग.

आ) भाषेची प्राथमिक कौशल्ये (श्रवण, भाषण, वाचन, लेखन)

इ) भाषेची प्रगत कौशल्ये -

१) वर्णन, कथन, निवेदन, संभाषण, सूत्रसंचालनइ.
२) आकलन, संक्षेप, विस्तार, भाषांतर, गद्य रूपांतर, संवादलेखन इ.

औपचारिक भाषाव्यवहाराचे विविध प्रकार

अ) इतिवृत्त, टिप्पणी, अर्जलेखन, कार्यालयीन पत्रलेखन, निवेदन प्रसिध्दीपत्रक, निविदा इ.
ब) मुलाखत लेखन

स्मरणिका / गौरविका / संस्थापत्रिका / वार्षिक अहवाल इत्यादींचे संपादन

Module V : Tutorials, assignments and presentation based on Module I to IV **(12 hours)**

संदर्भ पुस्तके:

१) मराठी शुध्दलेखन प्रदीप - मो. रा. वाळंबे, गो. य. राणे प्रकाशन
२) मुद्रित शोधन - य. ए. थायगुडे - वि. पूना प्रेस ऑनर्स असो.
३) मराठी शुध्दलेखनविवेक - द. न. गोखले - सोSहं प्रकाशन
४) शुध्दशब्दसूची - स्नेहल तावरे - स्नेहवर्धन
५) राजभाषापरिचय -
६) व्यावहारिक मराठी - पुणेविद्यापीठ
७) व्यावहारिक मराठी - ल. रा. नसिराबादकर -फडके बुकसेलर्स,कोल्हापूर
८) व्यावहारिक मराठी - प्रकाश परब
९) वार्तासंकलन - चंद्रकांत लाम्हणे
१०) व्यावहारिक मराठी - (संपादकडॉ. स्नेहल सावरे) स्नेहवर्धन प्रकाशन, पुणे

VOC 102: Computer Fundamentals–I (Information Technology)

Learning Objectives:

1. To facilitate the students to study Instructional Designing theories, basic IT skills using application software tools,
2. To facilitate the students to make functional use of IT skills in teaching – learning process.

Learning Outcomes:

1. Students will have command on basic IT skills
2. Students will be able to use computer and internet facilities for their academic and holistic development purpose

Software for Hands-on:

- Windows Vista
- MS Office 2007
- Internet Explorer
- Online collaboration tools

This course offers the following modules:

Module - I: Word Processing **(12 hours)**

- Overview of Word Processing
- Creating and Editing a Document (Exercise 1 - Creating Notice)
- Revising and Refining a Document (Exercise 2 - Revise your notice)
- Using Additional Word Features (Exercise 3 – Creating notice for different classes)
- Changing the Display of the Document (Exercise 4 - Changing the display of your notice)
- Using Mail Merge (Exercise 5 – Sending notice using Mail Merge)
- Using Standard Templates (Exercise 6–Create notice using standard templates)
- Word Processing in Other Languages (Exercise 7 - Creating a notice in Marathi)

Module - II: Spreadsheet and Presentation Graphics **(12 hours)**

- Overview of Excel
- Creating and Editing (Exercise 1 – Creating attendance sheet)
- Using Charts (Exercise 2 – Creating a chart)
- Managing a Workbook (Exercise 3 – Managing Attendance Sheet)
- Overview of Presentation Graphics
- Creating a Presentation (Exercise 1 – Creating a Annual Day Presentation)
- Modifying and Refining a Presentation (Exercise 2 – Modifying and Refining Presentation)
- Using Advanced Presentation Features (Exercise 3 – Advanced Features for Presentation)

Module - III: Database Management Systems **(12 hours)**

- Overview
- Creating a Database (Exercise 1 – Creating a Student Database)
- Modifying a Table (Exercise 2 – Modifying a Student Database)
- Creating Forms (Exercise 3 – Creating Form for Student Database)
- Queries and Reports (Exercise 4 – Creating Report)
- Protecting the Database (Exercise 5 – Protecting a Student Database)

Module - IV: Internet **(12 hours)**

- Internet Basics
- Navigating the Web (Exercise 1 – Navigating the web site)
- Finding Information on the Web (Exercise 2 – Searching result on the web)
- Communication Using E-Mail (Exercise 3 – Communicate result to your friends)

Module - V : Tutorials, assignments and presentation based on Module I to IV **(12 hours)**

References:

1. Microsoft Office Word 2007 a Beginners Guide: A Training Book of Microsoft Word 2007, By W.R. Mills, United States of America, Bloomington, Indiana.
2. Microsoft Office Word 2007: Illustrated Co: Illustrated Complete, By Jennifer A. Duffy, Carol M. Cram
3. Sams Teach Yourself Microsoft Office 2007 All in One, By Greg Perry
4. Microsoft Office Excel 2007: Comprehensive Concepts and Techniques, By Greg B. Shelly, Thomas J. Cashman, Jeffrey J. Quasney.
5. Microsoft Office Power Point 2007: Illustrated Introductory: Introductory, By David Beskeen
6. Microsoft Office Power Point 2007: Top 100 Simplified Tips & Tricks, By Paul McFedries.
7. Microsoft Office Access 2007: Comprehensive Concepts and Techniques, By Thomas J. Cashman, Philip J. Pratt
8. New Perspectives on Microsoft Office Access 2007, Comprehensive, Joseph J. Adamski, Kathleen T. Finnegan
9. Basic Internet, By O.H.U. Heathcote
10. Microsoft Office 2007 Power Point: A Training Book for Microsoft Power Point 2007, By W. R. Mills

VOC 103: Computer Fundamentals-I (Information Technology)

Laboratory course work

1. Experiment(s) based on word processing
2. Experiment(s) based on spread sheet
3. Experiment(s) based on presentation graphics
4. Experiment(s) based on Database Management
5. Experiments based on Internet

Rather than performing a certain prescribed number of experiments, this laboratory coursework is meant for providing sufficient hands on practice of the students with computer. However, for purpose of evaluation, at least six experiments, more or less equally divided from above listed sectors, are to be performed.

VOC 104: Professional Ethics and Management Practices

Learning Objectives:

1. Clarify personal and professional values and recognize their impact on decision making and professional behavior.
2. To appreciate ethical dilemma while discharging duties in professional life.
3. To know the need of business ethics.
4. To be aware of the need for Corporate Social Responsibility.
5. To orient students to Corporate Citizenship; thereby instilling in them Organizational Understanding, principles of Management & behavior that favor Corporate Citizenship Behavior.

Learning Outcomes:

1. Students will become aware of professional ethics and fundamentals of management practice
2. Students will acquire understanding of responsibilities of corporate sector towards the society
3. This course will improve the leadership quality in the students

Pre-requisite:

The students are expected to come prepared with the basic conceptualization & searching for relevant data through the web / References.

Module – I: Moral Values and Ethics: **(12 hours)**

Morals Values: Definition – Need for Values, Kinds of Values, Value conflicts, value clarification and value acceptance .**Ethics:** Definition and meaning, Elements/components— Autonomy, Integrity, Work ethics, Service Learning, Civic Virtue, Respect of others, Living peacefully, Caring, Sharing, Honesty, Courage, Valuing at Time, Co-operation, Commitment, Empathy, Self Confidence, Character, Spirituality.

Module – II: Profession and Ethical Practices: **(12 hours)**

Meaning of Profession: Two models of Professionalism; Three types of Ethics or morality; Ethics in different professions, Code of Professional Ethics, Implementation of Ethical code in Organization, **Ethical Practices and Issues:** Professional organization statement, positions, Barriers to ethical practices, Strategies for individuals. Ethical Decision making; Corporate Social responsibilities.

Module – III: Management Practices - Conceptualization: **(08 hours)**

Concept, Management as a function of various Social Sciences, Evolution of Management Thought, Managerial Processes, Functions, Skills & Roles of a Manager organization; Management by Objectives (MBO).

Module –IV: Individual Behavior, Group Dynamics and Social Citizenship: **(14 Hours)**

Perception, Personality Types, Values & Ethics, Attitudes, Individual Learning Behaviors Individual Motivation & Work Motivation, Individual & Group Decision Making, Group Communication, Decision Making & Problem Solving, Organizational Leadership, Understanding & managing group processes, Organizational Design & Structure, Recreation & Work Stress, Corporate Social Responsibility; Social Leadership

Module -V: Tutorials, assignments and presentation based on Module I to IV **(12 Hours)**

References:

1) The Professional by Subroto Bagchi
2) Mike Martin and Roland Schinzinger, "Ethics in Engineering", McGraw-Hill, New York 1996.
3) Govindarajan M, Natarajan S, Senthil Kumar V. S, "Engineering Ethics", Prentice Hall of India, New Delhi, 2004.
4) Charles D. Fleddermann, "Engineering Ethics", Pearson Education / Prentice Hall, New Jersey, 2004 (Indian Reprint now available).
5) Charles E Harris, Michael S. Protchard and Michael J Rabins, "Engineering Ethics – Concepts and Cases", Wadsworth Thompson Leatning, United States, 2000 (Indian Reprint now available)
6) John R Boatright, "Ethics and the Conduct of Business", Pearson Education, New Delhi, 2003.
7) Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists and Engineers", Oxford University Press, Oxford, 2001.
8) Principles of management - Suri, Sontakki and Deshpande, Mcgrow Hill publishing co. Ltd.
9) Principles of management - Dr. Davar
10) Organization and Management Practices - P. Drucker
11) Organization behavior - By Dwivedi
12) Management Principles and Practices, By Dr M. Sakunthivel Murugan; New age International Publishers, New Delhi
13) Consumer Behaviour, By Matin Khan New Age International Publishers, 2nd Edition, New Delhi
14) Fundamental of Management, Concept, Functions, Role and Profiles : By M. W. Samarth and Pratibha M. Siriya; S. Chand and Co. Ltd
15) John R Boatright, "Ethics and the Conduct of Business", Pearson Education, New Delhi, 2003.
16) Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists and Engineers", Oxford University Press, Oxford, 2001.

Skill Development Components

VOC 111: Analog and Digital Electronics

Learning Objectives:

1. To introduce students with basic concepts of electronics components, semiconductor devices, power supply and digital electronics
2. To introduce students with the scopes of above components/concepts in practical applications.

Learning Outcomes:

1. Students will able to understand the functioning of basic semiconductor devices, digital components.
2. Students will be able to apply the same for designing of simple applications.

Module -1: Basic Electronic Components **(06 hours)**

Basic Electronic Components - Resistor – Study of Resistor, Types of resistor, construction, and Color Coding of resistor; Capacitor - Study of capacitor, Types of capacitor and their construction; Inductor - Study of inductor & their types
Semiconductor Devices – P-N Junction Diode, Zener Diode, Light Emitting Diode, Photodiode, Transistor (CE,CB, CC modes), Phototransistor, Field Effect Transistor

Module -2: Power Supply Fundamentals **(06 hours)**

Power supply building blocks, Rectifier, Need of rectifier, Types of Rectifier, Filter and their types, Zener Diode as voltage regulator, Transistorized voltage regulator, Three terminal voltage regulator such as IC 78XX and IC 79 XX, Adjustable voltage regulator using LM-317

Module -3: Number system and Logic gates **(06 hours)**

Number System – Decimal, Binary, Octal, Hexadecimal and their conversion. Binary addition, subtractions
Logic Gates – Basic logic gates – AND, OR, NOT; Basic Circuit, Symbol, Truth table, universal gates & their truth table
Boolean Algebra – Basic Laws, De Morgan's Theorem, Conversion of Boolean expression to logic diagram, Simplification Techniques

Module – 4: Combinational Logic **(06 hours)**

Combination of Logic Gates: Converting a Boolean Expression to a Logic Diagram, Converting a Truth Table to a Boolean Expression, Converting a logic diagram to a truth table, AND-OR logic, Minterm, OR-AND logic, Maxterm, EX-OR gate, EX-NOR Gate, NAND and NOR gate, Universal Property of NAND and NOR gate

Module – 5: **(06 hours)**

Tutorials, assignments, demonstrations and presentation based on Module I to IV

References:

1. Electronic Devices- Thomas I. Floyd; Pearson Education, Ninth Edition, 2012, New Jersey
2. Principles of Electronics- V. K. Mehta, Rohit Mehta; S. Chand Publishers, Twelfth Edition, 2008, New Delhi
3. Semiconductor Electronics – A. K. Sharma; New Age International publishers, 2001 Reprint, New Delhi
4. Electronic Principles- A. P. Malvino, D. J Bates; Mc. Graw Hill (India Pvt. Ltd), Seventh Indian Edition, 2007, New Delhi
5. Digital Fundamental- Thomas L. Floyd; Third Edition, 1987, Universal Book Stall, New Delhi/ Tenth Edition, 2008, Pearson
6. Digital Design: Principles and Practices- John F. Walkerly; Fourth Edition, Second Impression, 2009,Prentice Hall of India, New Delhi
7. Modern Digital Electronics- R. P. Jain; Fourth Edition,2010, Tata Mc. Graw Hill, New Delhi

VOC 112: Electrical Systems

Learning Objectives:

1. To introduce students with basic concepts of single and three phase AC and electrical machines.

Learning Outcomes:

1. Students will be able to perform basic circuit analysis.
2. Students will be able to understand the operation of transformers and different variants of motors.
3. Students will have basic knowledge of electricity generation through non-conventional sources.

Module -1: Basic Circuit Elements and D.C. Network Analysis **(06 Hours)**

Basic Circuit Elements -Idea of Electric Potential and Current, Resistance -Unit, Law, Conductance and Conductivity, Effect Of Temperature on Resistance, Temperature Coefficient of Resistance, Ohms Law, Resistance and Parallel, Voltage Divider Rule, Short and Open Circuits, Equivalent Resistance. Inductance- Self inductance, mutually induced EMF, Capacitance – Charging & Discharging, Time Constant

D.C. Network Analysis- Introduction (Circuit, Parameters, Types of Circuits, Types of Networks, Node, Branch, loops, Mesh), Kirchoff's Volatage and Current Law, Thevenin Theorem, Norton's Theorem, Maximum Power Transfer Theorem, Delta /Star and Star /Delta Transformation.

Module -2: Electrical Fundamentals and Transformer **(08 Hours)**

Single Phase AC - Generation of Alternating Voltage and Current, Equation of Alternating Voltage & Current, Simple Waveform, Complex waveform, Cycle, Time Period, Frequency, Amplitude Different form of EMF Equations, Phase, Phase Difference, Root mean Square Value(RMS) , Representation of Alternating Quantities.

Three Phase AC - Generation of Three phase voltage, Phase Sequence, Phase sequence at load, Numbering of phases, Interconnection of phases (Star and delta Connection), Concept of balance and unbalanced Load

Single Phase Transformers- Construction, Working Principle, EMF Equations, Transformation Ratio, Working of Transformer On no load and with load, losses, efficiency

Three Phase Transformers- Construction, Working Principle, Three phase transformer connections; Instrument transformers (Current and Potential transformer)

Module -3: Electric Motors **(08 Hours)**

AC motors – Principle, Stator construction and operation (two and three phase), Single Phase Induction motors, Motor characteristics, Resistance-start-induction-run motor, capacitor start- induction run motor, Three phase motors, Induction motor, Synchronous motor, parameters on motor nameplate

DC motors - Principle, Basic motor Construction, Motor classifications, Significance of back e.m.f., Rotary Motion, control of field flux, Counterelectromotive force, Armature reaction, Armature torque and shaft torque, Torque and speed of a DC motor, DC motor characteristics Speed control of DC motor

Module -4: Energy Sources **(05 Hours)**

Energy Sources – Renewable and non-renewable, Thermal & Nuclear Power Plant - Working principle, application, advantages & limitations, Solar & Wind Power plant – Working principle, application, advantages & limitations

Module – 5: **(03 hours)**

Tutorials, assignments, demonstrations and presentation based on Module I to IV

References:

1. Electrical Technology (Vol I and 2)- B.L.Thereja, A. K. Thereja; S. Chand Publishers; First multicolour edition, 2005; New Delhi
2. Network Analysis and Synthesis- Ravish R. Singh; Mc. Graw Hill Education (India) Pvt. Ltd. First Edition, 2013, New Delhi
3. Grob's Basic Electronics- M.E. Schultz; Mc.Graw Hill Pvt. Ltd., Special Indian Edition (Tenth) 2007, New Delhi
4. Industrial Electronics – Terry Bartlet; Cengage Learning India Edition, Second Indian Reprint, 2006, New Delhi
5. Non Conventional Energy Resources- B.H. Khan; Mc. Graw Hill Education, Second Edition, 2009, New Delhi

VOC 113: Industrial Electronics

Learning Objectives :-
1) To introduce students with concept of Industrial Electronic system. Why it is needed, What are various parts in it, how they work.
2) Understand classifications of various Power devices and know their construction, working principle, how they are controlled by small power, advantages, disadvantages.
3) Understand how the Power devices are used to make various industrial electronic systems like controlled rectifier, chopper, inverter etc.

Learning Outcomes :-
1) Students will acquire terminologies in Industrial electronic systems.
2) Students will be able to understand which device to be used for what applications.
3) Students will be able to understand how various industrial electronic systems work.

Module- 1: Power Electronic Devices (06 Hours)

Introduction – Concept, Applications, Power electronic devices

Silicon Controlled Rectifiers (SCRs) – Static I-V characteristics, Switching on and off of SCR, SCR protection (Snubber circuits, overvoltage protection, overcurrent protection, gate protection), Heating, cooling and mounting

Members of Thyristor Family- LASCR, DIAC, TRIAC, ASCR, RCT; Triggering Devices- UJT, PUT

Module- 2: Turn ON and Turn OFF methods of SCR (06 Hours)

Turn ON mechanism of SCR- High Voltage triggering, thermal triggering, Illumination triggering, dv/dt triggering Gate triggering.

Gate trigger circuits - R triggering circuit, RC triggering circuit, UJT triggering circuit (Operation, applications and limitations). Use of Pulse transformer in triggering circuit,

Turn OFF Circuits - Concept of Turn OFF / commutation mechanism of SCR through various methods

Module -3: Phase Controlled Rectifiers (06 Hours)

Phase control – Basic concept (Firing Angle α and conduction angle θ)

Phase Control Rectifiers - Single phase half wave controlled rectifier with R, RL load, Effect of freewheeling diode; Single phase centre tapped full wave controlled rectifier with

R, RL load; Effect of freewheeling diode; Single phase Bridge type full wave controlled rectifier with R, RL load; Effect of freewheeling diode (operation and waveforms). (Basic three phase half wave uncontrolled and controlled rectifier; Need and Uses of Poly phase rectifier.

Understand need and use of Isolation transformer and Power scope.

Module - 4: Choppers & Inverters **(06 Hours)**

Choppers- Fundamental Concept, basic circuit and its operation using SCR and MOSFET Step Up and Step down Chopper

Inverters- Fundamental Concept, Need of an inverter, Classification of inverters, Important applications of inverter, Working principle of Series, Parallel, bridge inverter, Performance parameters of inverter.

Block diagram and working principle of SMPS and UPS.

Module – 5: **(06 hours)**

Tutorials, assignments, demonstrations and presentation based on Module I to IV

References:

1. Power Electronics - Dr. P.S. Bhimbra, Khanna Publishers, Fifth Edition, 2014 Reprint, New Delhi
2. Power Electronics - M.D. Singh, K. Khanchandani, Tata Mc. Graw Hill Publishers, Second Edition, 2008 Third Reprint, New Delhi
3. Industrial and Power Electronics - Deodatta Shingare, Electrotech Publication, Second Edition, 2004, Pune
4. Industrial Electronics – Terry Bartlet; Cengage Learning India Edition, Second Indian Reprint, 2006, New Delhi
5. Power Electronics Circuits Devices and Applications - Muhammad H. Rashid; Prentice Hall of India; Third Edition, Seventh Impression, 2009, New Delhi
6. Power Electronics and Its Applications - Alok Jain; Penram International Publishing (India) Pvt. Ltd., Second Edition, 2004, Mumbai

VOC 114: Industrial Measurements and Instrumentation

Learning Objectives :-

1) To introduce students with concept of Instrumentation system. Why it is needed, What are various parts in it, how they work.
2) Understand classifications of various transducers and know there construction, working principle, advantages, disadvantages.
3) Understand how the transducer output is conditioned, processed, displayed and controlled.
4) Study the various systems for measurement of different physical parameters.

Learning Outcomes :-

1) Students will acquire terminologies in Instrumentation systems.
2) Students will be able to understand which transducer to be used for what applications.
3) Students will be able to understand how to select transducer for specific application.

Module - 1: Displacement and Detection Sensors **(07 Hours)**

Instrumentation System- Block diagram, Function of each block
Sensors and Transducers- Definition, Needs, Classification, Selection criteria
Measurement of Linear and Angular Displacement - Linear and Angular Potentiometers, Capacitive Transducers, LVDT
Detection Sensors – Limit Switches, Proximity Detectors, Hall Effect Sensor, Photoelectric sensors, Ultrasonic Sensors

Module – 2: Temperature and Pressure Sensors **(08 Hours)**

Temperature measurement - Temperature: Definition and units, Different temperature scales & their conversions; Classification of temperature measuring transducers: Gas Filled thermometer, Bimetallic thermometer, Thermistors, RTD – (PT-100) , 2 wire systems (circuit diagram only), Thermocouple – Seeback & Peltier effect, Types J, K, R , S, T(Based on material, temperature ranges)
Pressure measurement - Pressure: Definition, Types - Absolute, Gauge, Atmospheric, Vacuum (Definition, Units), Classification of Pressure measuring devices; Non elastic pressure transducer: U tube, Inclined Tube, Well type manometer; Elastic pressure transducer: Bourdon Tube, Bellows, Diaphragm, Capsule, Electronic pressure transducers- Bourdon tube with LVDT Diaphragm with Strain gauge

Module – 3 : Flow and Level Sensors **(08 Hours)**

Flow measurement - Flow: Definition, Types of Flow – Laminar, turbulent , Reynolds number Classification of flow measuring transducers : Variable head flow meter- Venturimeter, orifice plate meter, Variable area flow meter – Rota meter, Electromagnetic Flow meter, Ultrasonic flow meter- Doppler Type, Solid flow measurement, Flow measurement

Level Measurement - Classification of level measurement methods: Float type – linear & rotary potentiometer (Contact type), Capacitive type (Contact type), Ultrasonic type (Non-contact type) Radiation type (Non-contact type), RADAR type (Non-contact type)

Module – 4 : Special Purpose Sensors **(05 Hours)**

Humidity: Definition, unit, Types - Absolute, relative
Humidity measurement devices: Psychrometer - Dry & wet Bulb thermometer type, Hygrometer- hair type ,
Speed : Definition, unit, Classification of speed measurement methods. Photoelectric pick-up & Proximity sensor (Non contact type)
Weight: Definition, unit, Classification of weight measurement methods. Load cells.
Vibration Sensor, Thickness Sensor

Module – 5: **(02 hours)**

Tutorials, assignments, demonstrations and presentation based on Module I to IV

References:

1. Electrical and Electronic Measurements and Instrumentation - A.K.Sawhney; Dhanpat Rai & Sons.
2. Industrial Instrumentation & Control - S.K.Singh; Tata McGraw Hill Publishing Co. Ltd; 2006, Second Edition, New Delhi
3. Principles of Industrial Instrumentation - D. Patranabis; Tata McGraw Hill Publishing Co. Ltd; Third Edition, 1995, New
4. Electronics Instrumentation – H. S. Kalsi; Second Edition, 2004, Tata McGraw Hill Publishing Co. Ltd; N. Delhi
5. Industrial Electronics – Terry Bartlet; Cengage Learning India Edition, Second Indian Reprint, 2006, New Delhi
6. Mechatronics- M.D.Singh, B.Joshi; First Edition, 2006,Prentice Hall of India, New Delhi

VOC 115: Laboratory Coursework – I (Analog and Digital Electronics)

1. Study of P-N junction diode characteristics.
2. Study of characteristics of CE configuration of transistor.
3. Study of transistor as small signal amplifier (CE configuration).
4. Study of Transistor as switching device.
5. Study of SCR characteristics.
6. Study of Zener diode characteristics.
7. Study of rectifiers (half wave, full wave , bridge rectifier)
8. Study of Series and shunt Voltage regulator using transistor
9. Study of Sener diode as voltage regulator
10. Study of Voltage regulator IC-78XX & IC-79Xx
11. Study of adjustable voltage regulator using IC-317
12. Study of digital logic gates
13. Study of De'morgans theorem using logic gates
14. Study of discreet components (diodes and transistors) as logic gates
15. Study of universal logic gates NAND & NOR gates

Any six experiments should be performed from above list

VOC 116: Laboratory Coursework – II (Electrical Systems)

1. Study of Series and parallel resistive circuit
2. Study of Charging and discharging of Capacitor
3. Study of KCL and KVL
4. Study of Superposition Theorem
5. Study of Norton's Theorem
6. Study of Thevenin's Theorem
7. Study of Maximum Power Transfer Theorem
8. Study of Single Phase Transformer
9. Study of Three phase power supply configurations
10. Study of voltages and currents in passive loads in Three phase star Configuration
11. Study of voltages and currents in passive loads in Three phase star Configuration
12. Study of three phase circuits with balanced load
13. Study of three phase circuit with unbalanced load
14. Study and verify Load Characteristics of DC Shunt Motor
15. Study and verify Load Characteristics of DC Series Motor
16. Study of single Phase Induction motor
17. Study of three phase squirrel cage motor

Any six experiments should be performed from above list

VOC 117: Laboratory Coursework – III (Industrial Electronics)

1. Study of DC characteristics of SCR
2. Study of switching characteristics of SCR
3. Study of firing circuits for SCR
4. Study of SCR Commutation Techniques (Any two)
5. Study of DIAC
6. Study of TRIAC
7. Study of the effects of variation of R, C in R and RC triggering circuits on firing angle and output voltage of SCR.
8. Study of the output waveforms of single phase full wave controlled rectifier with R, RL load, freewheeling diode and measure load voltage.
9. Study of the output voltage waveform of three phase half - wave controlled rectifier with resistive load and measure load voltage.
10. Study of the effect of firing angle on output voltage in DIAC - TRIAC phase control circuit.
11. Study of the output voltage waveform of step up / step down Chopper with R, RL load and measure load voltage.
12. Study of the output voltage waveform of Series inverter with R, RL load and measure load voltage.
13. Study of the output voltage waveform of Parallel inverter with R, RL load and measure load voltage.
14. Study of the output voltage waveform of Bridge inverter with R, RL load and measure load voltage.
15. Study of Step UP/Down chopper (with SCR/MOSFET/Transistor)

Any six experiments should be performed from above list

VOC 118: Laboratory Coursework – IV (Industrial Instrumentation)

1. Study of proximity sensors
2. Study of Hall effect switch
3. Study of photoelectric sensors
4. Study of temperature of liquid using Resistance Temperature Detector (PT 100)
5. Study of temperature of liquid using thermocouple
6. Displacement measurement using LVDT
7. Weight Measurement using strain gauge transducer with cantilever setup
8. Pressure Measurement using Bourdon tube pressure gauge
9. Determine the rate of flow of liquid in pipe using orifice, ventury, Rotameter
10. Level measurement using by capacitive/float/conductive probe method
11. Observe and interpret humidity of air using wet and dry bulb Hygrometer
12. Measure speed of motor using non contact type photo electric / Inductive pick up/Tachogenerator

Any five experiments should be performed from above list

VOC 119: In-plant Training

In-plant coursework on MCC and PCC panel wiring

SEMESTER – II

Semester II

General Education Components

VOC - 201: Linguistic Proficiency-II

Part - A: English

Learning Objectives:
To improve the writing skills of students

Learning Outcomes:
1. Students will be able to write formal letters
2. Presentations skill of students will improve
3. Students will be able to face interviews

Module –I: Introducing written communication **(12 Hours)**

1. Writing Notices
2. Drafting Agendas (Synergy)
3. Writing minutes
4. Note taking
5. Basic of spoken English

Module-II: Writing applications, letters and business CORRESPONDENCE (Introducing Business Correspondence): **(12 Hours)**

1. Writing applications for various jobs, referring to the ads.

2. Writing letters:

   a. Letters of inquiry
   b. Letters of order
   c. Letters of complaint
   d. Letters of indent
   e. Letters of credit
   f. Bills of lading

   (Exercises from Synergy) Orient Longman

Module- III: Introducing listening skills **(12 Hours)**

1. Approaches to listening skills
2. Barriers to effective listening
3. Tips for effective listening
4. Preparing for interview, Interview facing techniques
5. Preparing -
    a. Speeches
    b. Presentations
    c. Meetings
    d. Surveys
    e. Report writing
    f. Making Project reports
    g. Preparing Proposals
    h. Seeking financial assistance / loan for your proposal

References:

1) Synergy: Communication in English and study skills (Orient Blackswan) – (2008)
2) Macmillan foundation English – R. K. Dwivedi, A. Kumar: Macmillan India Ltd. 2001
3) Mastring Communication – Nicky Stanlon: Palgrave Macmillan (2009)
4) Scientists must write – Robert Barrass: Routledge Publication, London
5) Functional Grammar and Spoken and Communication in English – Bikram K. Das: Orient Longman Publication (2006)

PART-B: BASIC STRUCTURE OF THE HINDI LANGUAGE

(ON NEXT PAGE.....)

Part-B: Hindi

संप्रेषणमूलक व्यावसायिक हिंदी:

Module- IV: **(12 Hours)**

वाणिज्य व्यवसाय और हिंदी:

- वाणिज्य व्यापार से तात्पर्य एंव व्यावसायिक व्यापार के साधन
- वाणिज्य व्यापार और भाषिक प्रकार्य
- वाणिज्य-व्हावसायिक संरचनात्मक विशेषताएँ
- भाषा कौशल्य:

  श्रवण, भाषण, वाचन, लेखन

व्यावसायिक - संप्रेषण:

- संप्रेषण के तात्पर्य एवं स्वरुप
- संप्रेषण के प्रमुख प्रकार: भाषिक तथा भाषेतर
- व्यावसयिक पत्राचार

क) व्यापारिक- व्हावहारिक सामाण्यपत्रा, आवेदनपत्र, यासाखपत्रा, संदर्भ तथा साखपत्रा के जॉचपत्रा, मुल्य ज्ञापनपत्र, आदेशोके निरसन सम्बंधीपत्रा, शिकायतपत्रा, समायोजनपत्र, तगादायावसूलीपत्र, विक्रय प्रतिनिधत्व संबंधीपत्र,

ख) विशेष व्यावहारिकपत्र:

-बीमातथाबीमा - पत्र

-रेल तथा जहाज द्वारा माल परिवहन से संबंधितपत्र

ग) प्रकल्प / सर्वेक्षण / प्रात्यक्षिक:

- भाषिक कौशल्य अभ्यास
- वाणिज्य - व्हावसायके भाषिक प्रकार्यो कासर्वेक्षण
- व्यापरिक संप्रेषण - पत्रलेखन का अभ्यास

Module – 5: **(12 hours)**

Tutorials, assignments, demonstrations and presentation based on Module I to IV

सहायक ग्रंथः-

१. व्यावसयिक संप्रेषणः डॉ. अनूपचंद्र मायानी, राजपाल एण्ड संस, नईदिल्ली

२. भाषाशिक्षणःसिध्दांतऔरप्रक्रिया - मनोरमागुप्त, केंद्रियहिंदीसंस्थान, आगरा

३.मीडियालेखनः सिध्दांतऔरव्यवहार - डॉ. चंद्रप्रकाश

४. व्यावसायिकहिंदी - डॉ. दिलीपसिंह, वाणीप्रकाशन, काशन, नईदिल्ली.

५. संप्रेषणमूलक व्यावसायिक हिंदी - डॉ. माधवसोनटक्केः ओरियण्ट ब्लैक स्वाईन, दिल्ली.

VOC – 202: Computer Fundamentals-II
(Basic Computer Hardware System)

Learning Objectives:

To introduce students with computer hardware system, troubleshooting techniques

Learning Outcomes:

1. Students can solve general hardware related issues
2. They can install various devices as well as operating system in the computer
3. Students can build their own computer system

Module-I: **(12 hours)**

Computer Architecture, Mother Board and its all components, Computer Components (Input/ Output Devices, Primary and Secondary Memory, Power Supply, Monitor).

Observation of all parts of Floppy drives, HDD, CD, and SMPS. Identification of cables and computers. Mounting Motherboard in cabinet, Installation of cards, devices and then connecting cables. Fitting of cabinet. CMOS – Setup, Troubleshooting.

Module-II: **(12 hours)**

Computer Assembling, Make your own Computer, Operating System Installation, Windows Vista, Software Installation, Trouble Shooting, Bios Setups, Identifications of Components. Advanced Trouble Shooting and Maintenance.

Module-III: **(12 hours)**

Types of printers and printing mechanism, How printer works, Inject printer, working of laser printer, Fonts/Type faces, Trouble shooting printers. Types of Scanners and its used.

Module-IV **(12 hours)**

Introduction to Laptops, Portable System background, System Features, Processors, Mother Boards, Memory, Power, Expansion Bus, Hard Disk & Removable Storage Devices, Laptop Components, Laptop Maintenance & Assembling, Linux, Multimedia, Internet, Computer VIRUS, Wi-Fi Network Trouble Shooting.

Module V : Tutorials, assignments and presentation based on Module I to IV **(12 hours)**

Text Books:

(01) Hardware bible By : Winn L Rosch, Techmedia publications
(02) Trouble shooting, maintaining and repairing PCs By : Stephon J Bigelow Tata McGraw Hill Publication
(03) Modern All about printers By :Manohar Lotia, Pradeep Nair, BijalLotia BPB publications.

REFERENCES:

(01) The complete PC upgrade and maintenance guide By : Mark Minasi, BPB Publications.

VOC – 203: Computer Fundamentals-II (Basic Computer Hardware System)

Laboratory Coursework

1. Handling of all Computer Peripherals
2. PC Troubleshooting
3. Windows Installation
4. PC Assembling
5. Fault finding in PC and recovering
6. Installation and use of Printers and Scanners
7. Fault Finding and Troubleshooting on Laptop

Rather than performing a certain prescribed number of experiments, this laboratory coursework is meant for providing sufficient hands on practice of the students with computer. However, for purpose of evaluation, at least six experiments, more or less equally divided from above listed sectors, are to be performed.

VOC 204: Environment Management

Learning Objectives:

1. To create awareness between the students about our ecosystem, related problemsand our role in that.
2. To encourage students to solve the environment related problems

Learning Outcomes:

1. Students will think on ecosystem and environment problems.
2. They can make other people aware about environment problems
3. They will be introduced to environmental policies a regulations

Module - I: Ecosystems and Natural Resources **(12 hours)**

Introduction: Introduction and scope of environmental science; Need of public awareness.

Ecosystem: Structure and function of ecosystem; Energy flow in an ecosystem: food chains, food webs and ecological succession. Case studies of the following ecosystems: a) Forest ecosystem b) Grassland ecosystem c) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Natural Resources: Land resources and landuse change; Land degradation, soil erosion and desertification; Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity; Water: Use and over-exploitation of surface and ground water, floods, droughts; Energy resources: Renewable and non-renewable energy sources, growing energy needs.

Module - II: Environment Pollution, Waste Management and Role of Human being **(12 hours)**

Environmental pollution: types, causes, effects and controls; Air, water, soil and noise pollution, Nuclear hazards and human health risks;Case Studies: Bhopal Tragedy, Cherbonyl disaster etc.

Waste management: Control and treatment measures of urban and industrial waste; Trade in Wastes; Industrial Ecology and Recycling Industry Waste trade;

Human population growth: Impacts on environment, human health and welfare. Growth Limits. Resettlement and rehabilitation of project affected persons; case studies.

Disaster management: floods, earthquake, cyclones and landslides. Environmental movements: Chipko, Silent valley, Bishnois of Rajasthan. Environmental ethics

Module -III: Biodiversity and Conservation **(12 hours)**

Levels of biological diversity: Genetic, species and ecosystem diversity; Biogeographic zones of India; India as a mega-biodiversity nation; Endangered and endemic species of India

Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

Module- IV: Environment Policies & Practices **(12 hours)**

Fundamentals: Sustainability and sustainable development;
Urban problems: global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture; Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act;
Environment Management System: EMS Standards, ISO 19011 & ISO 14000 Series, Bharat-II and EURO- II, Eco-Audit Scheme, Clearance/ Permission for establishing Industry

Module - V : Tutorials, assignments and presentation based on Module I to IV **(12 hours)**

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Skill Development Components

VOC 211 Interfacing and Signal Conditioning

VOC 212 Control Systems Fundamentals

VOC 213 Fundamentals of Drives

VOC 214 PLC Fundamentals

VOC 215 Laboratory Coursework – V (Interfacing and Signal Conditioning)

VOC 216 Laboratory Coursework – VI (Control Systems Fundamentals)

VOC 217 Laboratory Coursework – VII (Fundamentals of Drives)

VOC 218 Laboratory Coursework – VIII (PLC Fundamentals)

VOC 219 In-plant Training – II (Control Panel Design and Wiring)