**GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT**
**COURSE CURRICULUM**

Course Title: Basics Mathematics
(Code: 3300001)

| Diploma Programmes in which this course is offered | Semester in which offered |
|---|---|
| Automobile Engineering, Biomedical Engineering, Ceramic Engineering, Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Electronics & Communication Engineering, Environment Engineering, Fabrication Technology, Information Technology, Instrumentation & Control Engineering, Mechanical Engineering, Mechatronics Engineering, Metallurgy Engineering, Mining Engineering, Plastic Engineering, Power Elctronics Engineering, Printing Technology, Textile Manufacturing Technology, Textile Processing Technology, Transportation Engineering | **First Semester** |
| | |

## 1. RATIONALE

The subject is classified under Basic Sciences and students are intended to know about the basic concepts and principles of Mathematics as a tool to analyze the Engineering problems. Mathematics has the potential to understand the Core Technological studies.

## 2. LIST OF COMPETENCIES

The course content should be taught so as to understand and perform the Engineering concepts and computations. Aim to develop the different types of Mathematical skills leading to the achievement of the following competencies:

i. **Apply the concepts and principles of mathematics to solve simple engineering problems**

## 3. TEACHING AND EXAMINATION SCHEME

| Teaching Scheme (In Hours) | | | Total Credits (L+T+P) | Examination Scheme | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Theory Marks | | Practical Marks | | Total Marks |
| L | T | P | C | ESE | PA | ESE | PA | |
| 2 | 2 | 0 | 4 | 70 | 30 | 0 | 0 | **100** |

**Legends:**
**L**-Lecture; **T** – Tutorial/Teacher Guided Theory Practice; **P** -Practical;**C** – Credit;
**ESE** -End Semester Examination; **PA** - Progressive Assessment.

## 4. DETAILED COURSE CONTENTS

| Unit | Major Learning Outcomes | Topics and Sub-topics |
|---|---|---|
| **Unit – I Logarithm** | 1.1 Solve simple problems using concepts of Logarithms | Concept ,Rules and related Examples |
| **Unit– II Determinants and Matrices** | 2.1 Solve simultaneous equations using concepts of Determinants and Matrices | Idea of Determinant and Matrix, Addition/Subtraction, Product, Inverse up to 3X3 matrix, Solution of Simultaneous Equations(up to three variables) |
| **Unit– III Trigonometry** | 3.1 Solve simple problems using concepts of Trigonometry | Units of Angles(degree and radian), Allied & Compound Angles, Multiple –Submultiples angles, Graph of Sine and Cosine, Periodic function, sum and factor formulae, Inverse trigonometric function |
| **Unit– IV Vectors** | 4.1 Solve simple problems using concepts of Vectors | Basic concept of Vector and Scalar, addition & subtraction, Product of Vectors, Geometric meaning of Scalar and Vector Product. Angle between two vectors, Applications of Dot (scalar) and Cross (vector) Product, Work Done and Moment of Force. |
| **Unit-V Menstruation** | 5.1 Calculate the surface area and volume of different shapes and bodies. | Area of Triangle, Square, Rectangle, Trapezium, Parallelogram, Rhombus and Circle<br>Surface & Volume of Cuboids, Cone, Cylinder and Sphere. |

## 5. SUGGESTED SPRCIFICATION TABLE WITH HOURS AND MARKS (THEORY)

| Unit No. | Unit Title | Teaching Hours | Distribution of Theory Marks | | | |
|---|---|---|---|---|---|---|
| | | | R Level | U Level | A Level | Total |
| 1. | Logarithms | 03 | 4 | 4 | 2 | 10 |
| 2. | Determinants and Matrices | 08 | 6 | 8 | 4 | 18 |
| 3. | Trigonometry | 08 | 8 | 6 | 4 | 18 |
| 4. | Vectors | 06 | 5 | 5 | 4 | 14 |
| 5. | Mensuration | 03 | 3 | 3 | 4 | 10 |
| **Total** | | **28** | **26** | **26** | **18** | **70** |

**Legends:**
R = Remembrance; U= Understanding; A= Application and above levels (Revised Bloom's Taxonomy)

## 6. SUGGESTED LIST OF EXERCISES (During tutorial hours)

The exercises should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the competency.

| S. No. | Unit No. | Exercises/Tutorial |
|---|---|---|
| 1 | 1 | Logarithms-Simple Examples related Definition and Rules |
| 2 | | Examples on various types and Graphs |
| 3 | 2 | Determinants, Simple Examples on Matrix Addition/Subtraction and Product |
| 4 | | Co-factors, Adjoint and Inverse of Matrix |
| 5 | 2 | Solution of Simultaneous Equation using 3X3 Matrix and its Applications |
| 6 | 3 | Practice Examples: Allied & Compound Angles |
| 7 | | Practice Examples: Periodic functions, Sum/Diff and factor formulae, Inverse Trigonometric function etc. |
| 8 | | Simple Graphs of Sine and Cosine Functions(Explain Spherical Trigonometry, if possible, for Applications) |
| 9 | 4 | Practice Simple Examples Vectors |
| 10 | | Example related to Dot and Cross Products and Applications |
| 11 | 5 | Examples on Area |
| 12 | | Surface Area & Volume and its Applications |

Note: The above Tutor sessions are for guideline only. The remaining Tutorial hours are for revision and practice.

## 7. SUGGESTED LIST OF STUENT ACTIVITIES

Following is the list of proposed student activities like: course/topic based seminars, internet based assignments, teacher guided self learning activities, course/library/internet/lab based Mini-Projects etc. These could be individual or group-based.

1. Applications to solve identified Engineering problems and use of Internet.
2. Learn MathCAD to use Mathematical Tools and solve the problems of Calculus.
3. .Learn MATLAB and use to solve the identified problems.

## 8. SUGGESTED LEARNING RESOURCES

### A. List of Books

| S.No. | Author | Title of Books | Publication |
|---|---|---|---|
| 1 | Anthony croft and others | Engineering Mathematics (third edition) | Pearson Education |
| 2 | W R Neelkanth | Applied Mathematics-I | Sapna Publication |
| 3 | S P Deshpande | Polytechnic Mathematics | Pune Vidyarthi Gruh Prakashan |
| 4 | Rudra Pratap | Getting Started with MATLAB-7 | OXFORD University Press |

**B. List of Major Equipment/ Instrument**

1. Simple Calculator
2. Computer System with Printer, Internet
3. LCD Projector

**C. List of Software/Learning Websites**

1. Excel
2. DPlot
3. MathCAD
4. MATLAB

You may use other Software like Mathematica and other Graph Plotting software. Use wikipedia.org, mathworld.wolfram.com Etc…

## 9. COURSE CURRICULUM DEVELOPMENT COMMITTEE:

**Faculty Members from Polytechnics**

- **Dr.N.R.Pandya**, HOD-General Dept. Govt. Polytechnic, Ahmedabad
- **Dr N. A. Dani**, Lecturer, Govt. Polytechnic, Junagadh.
- **Smt R. L. Wadhwa**, Lecturer, Govt. Polytechnic, Ahmedabad
- **Shri H. C. Suthar**, Lecturer, BPTI, Bhavnagar
- **Shri P. N. Joshi**, Lecturer, Govt. Polytechnic, Rajkot
- **Shri P. T. Polara**, Lecturer, Om Institute of Engg. And Tech, Junagadh,
- **Smt Ami C. Shah**, Lecturer, BBIT, V. V. Nagar.

**Coordinator and Faculty Member From NITTTR Bhopal**

- **Dr. P. K. Purohit**, Associate Professor, Dept. of Science, NITTTR, Bhopal

**GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT**
**COURSE CURRICULUM**

Course Title: English
(Code: 3300002)

| Diploma Programmes in which this course is offered | Semester in which offered |
|---|---|
| Architectural Assistanship, Automobile Engineering, Biomedical Engineering, Ceramic Engineering, Chemical Engineering, Civil Engineering,Computer Aided Costume Design & Dress Making, Computer Engineering, Electrical Engineering, Electronics & Communication Engineering, Environment Engineering, Fabrication Technology, Information Technology, Instrumentation & Control Engineering, Mechanical Engineering, Mechatronics Engineering, Metallurgy Engineering, Mining Engineering, Plastic Engineering, Power Elctronics Engineering, Printing Technology, Textile Designing, Textile Manufacturing Technology, Textile Processing Technology, Transportation Engineering | **First Semester** |
| | |



## 1. RATIONALE

English language has become a dire need to deal successfully in the globalized and competitive market and hence this curriculum aims at developing the functional and communicative abilities of the students in English. Proficiency in English is one of the basic needs of technical students. A technician has to communicate all the time with peers, superiors, subordinates and clients in his professional life. Hence this course is being offered.

## 2. LIST OF COMPETENCIES

The course content should be taught and implemented with the aim to develop different types of skills leading to the achievement of the following competencies:

i. **Communicate verbally and in writing in English.**
ii. **Comprehend the given passages and summarize them.**

## 3. TEACHING AND EXAMINATION SCHEME

| Teaching Scheme (In Hours) | | | Total Credits (L+T+P) | Examination Scheme | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Theory Marks | | Tutorial Marks | | Total Marks |
| L | T | P | C | ESE | PA | ESE | PA | 150 |
| 3 | 2 | 0 | 5 | 70 | 30 | 20 | 30 | |

**Legends: L**-Lecture; **T** – Tutorial/Teacher Guided Theory Practice; **P** - Practical; C – Credit;
**ESE** - End Semester Examination; **PA** - Progressive Assessment.

## 4. DETAILED COURSE CONTENTS

| Unit | Major Learning Outcomes | | Topics and Sub-topics |
|---|---|---|---|
| | **Writing Skills** | **Speaking Skills** | |
| **Unit – I Grammar** | 1.1 Apply correct verb in the given sentence | 1b. Use grammatically correct sentence in day to day communication | **1.1 Tenses**<br>- Present Tense (Simple, Continuous, Perfect, Perfect Continuous)<br>- Past Tense (Simple, Continuous, Perfect)<br>- Future Tense (Simple) |
| | 1.2 Distinguish among various Determiners | 1d. Distinguish among determiners and apply correctly in communicative usage. | **1.2 Determiners**<br>- Articles (A, An, The) Some, Any, Much, Many, All, Both, Few, A few, The few, Little, A little, The little, Each, Every. |
| | 1.3 Use appropriate modal auxiliaries in a given expression | 1f. Choose appropriate modals in situations where different modes of expressions are used. | **1.3 Modal Auxiliaries**<br>Can, Could, May, Might, Shall, Should, Will, Would, Must, Have to, Need, Ought to |
| | 1.4 Choose the correct verb for the given subject | 1h. Use the correct verb depending on the subject in a sentence. | **1.4 Subject- Verb Agreement** |
| | 1.5 Distinguish between Active and Passive structures. Apply correct model auxiliary in the given sentence. | 1j. Apply the correct voice in formal communication | **1.5 The Passive Voice**<br>Simple Tenses, Perfect Tenses And Modal Auxiliary Verbs |
| | 1.6 Use appropriate preposition in a sentence | 1l. Usage of correct preposition as per time, place and direction. | **1.6 Prepositions**: Time, Place and Direction |
| | 1.7 Identify different connectors and their usage. | 1n. Join words or sentences using connectors and bring out the desired meaning. | **1.7 Connectors**: And, But, Or, Nor, Though, Although, If, Unless, Otherwise, Because, as, Therefore, So, Who, Whom, Whose, Which, Where, When, Why. |

| Unit | Major Learning Outcomes | | Topics and Sub-topics |
|---|---|---|---|
| | **Writing Skills** | **Speaking Skills** | |
| **Unit – II Comprehension Passages** | 2.1 Formulate sentences using new words.<br>2.2 Enrich vocabulary through reading.<br>2.3 Write short as well as long answers to questions.<br>2.4 Express ideas in English in written form effectively | 2e.Discuss the content of the passage/story in the class.<br>2f. Ask appropriate questions as well to answer them.<br>2g. Follow oral instructions and interpret them to others.<br>2h. Present topics effectively and clearly.<br>2i.Use dictionary, thesaurus and other reference books.<br>2j.Describe an object or product.<br>2k. Use correct pronunciations and intonations.<br>2l. Give instructions orally | **2.1 Comprehension Passages**<br>• Lincoln's Letter to His Son's Teacher (Abraham Lincoln)<br>• What we must Learn from the West (Narayana Murthy)<br>• Dabbawallas: Mumbai's Best Managed Business (Amberish K. Diwanji)<br>• Internet (Jagdish Joshi)<br><br>**2.2 Vocabulary Items:**<br>-Matching items (word and its Meaning)<br>- One word Substitution<br>- Phrases and idioms<br>- S ynonyms and Antonyms from given MCQs |
| **Unit – III Short Stories** | | 3a Express ideas and views on given topics.<br>3b. Speak briefly on a given topic fluently and clearly.<br>3c. Participate in formal and informal conversations<br>3d. Recapitulate orally the facts or ideas presented by the speaker | • My Lost Dollar by Stephen Leacock<br>• The Snake in the Grass by R K Narayan<br>• A Day's Wait by Earnest Hemingway |
| **Unit – IV**<br><br>**Writing Skills** | 4.1 Write letters and dialogues on given topics / situations. | 4b.Face oral examinations and interviews | **4.1 Dialogue Writing**<br>**4.2 Samples for Practice:**<br>- Meeting ad Parting<br>- Introducing and Influencing<br>- Requests<br>- Agreeing and Disagreeing<br>- Inquiries and Information<br>**4.3 Letter:**<br>- Placing an order<br>- Letter to Inquiry<br>- Letter of Complaint<br>- Letter of Adjustment<br>- Letter seeking permission |
| **Unit – V Speaking Skills** | | 5a.Follow correct pronunciation, stress and intonation in everyday conversation. | **For 28 hours of practical periods**, digital language laboratory is recommended to be established in every polytechnic. But as polytechnics currently do not have digital language laboratories practical periods will be engaged encouraging the students to speak as per the text taught in the class. |

## 5. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (THEORY )

| Unit Title | Teaching Hours 42+28 | Distribution of Theory Marks | | | |
|---|---|---|---|---|---|
| | | R Level | U Level | A Level | Total |
| **Unit – I** Grammar | 14 | 8 | 8 | 9 | 25 |
| **Unit – II** Comprehension Passages | 07 | 4 | 6 | 5 | 15 |
| **Unit – III** Short Stories | 07 | 4 | 5 | 5 | 14 |
| **Unit – IV** Writing Skills | 14 | 3 | 6 | 6 | 15 |
| **Unit – V** Speaking Skills | 28 | 1 | | | 01 |
| **Total** | **70** | **20** | **25** | **25** | **70** |

**Legends:** R = Remembrance; U = Understanding; A = Application and above levels (Revised Bloom's taxomonoy )

## 6. SUGGESTED LIST OF TUTORIAL EXERCISES

The tutorial exercises should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the above mentioned competencies.

| S. No. | Unit No. | Experiment |
|---|---|---|
| 1 | I | **Conversation**<br>1. Introducing oneself<br>2. Introduction about family<br>3. Discussion about the weather<br>4. Seeking Permission to do something<br>5. Description about hobbies<br>6. Seeking Information at Railway Station/ Airport<br>7. Taking Appointments from superiors and industry personnel<br>8. Conversation with the Cashier- College/ bank<br>9. Discussing holiday plans<br>10. Asking about products in a shopping mall<br>11. Talking on the Telephonic<br>12. Wishing Birthday to a Friend<br>13. Talking about Favourite Sports |
| 2 | II | **Presentation Skills**<br>General Presentations pertaining to Unit I, II, III |

## 7. SUGGESTED LIST OF PROPOSED STUDENT ACTIVITIES

Following is the list of proposed student activities like:

- course/topic based seminars,
- internet based assignments,
- teacher guided self learning activities,
- course/library/internet/lab based mini-projects etc.

These could be individual or group-based.

## 8. SUGGESTED LEARNING RESOURCES

### A. Text Book

| Sr. No. | Author/s | Title of Books | Publication |
|---|---|---|---|
| 1 | Juneja & Qureshi | **Active English** | Macmillan |

### B. List of Reference Books

| Sr. No. | Author/s | Title of Books | Publication |
|---|---|---|---|
| 1 | Wren & Martin | High School English Grammar | S. Chand & Co. Ltd |
| 2 | M. Gnanamurali | English Grammar at Glance | S. Chand & Co. Ltd. |
| 3 | E. Suresh Kumar & Others | Effective English | Pearson |
| 4 | S. Chandrashekhar & Others | English Communication for Polytechnics | Orient BlackSwan |
| 5 | - | English Fluency Step 1 & 2 | Macmillan |
| 6 | - | Active English Dictionary | Longman |

### C. List of Major Equipment/ Instrument

i. Digital English Language Laboratory
ii. Computers for language laboratory software
iii. Headphones with microphone
iv. Computer furniture

### D. List of Software/Learning Websites

i. http://www.free-english-study.com/
ii. http://www.english-online.org.uk/course.htm
iii. http://www.english-online.org.uk/
iv. http://www.talkenglish.com/
v. http://www.learnenglish.de/

## 9. COURSE CURRICULUM DEVELOPMENT COMMITTEE

**Polytechnic Faculty Members**

- **Prof. K. H. Talati**, Govt. Polytechnic, Gandhinagar (Convener)
- **Ms. Almas Juneja**, Gujarat Technological University, Ahmedabad.
- **Shri. D. M. Patel**, Govt. Polytechnic, Ahmedabad.
- **Dr. Sonal K. Mehta**, Govt. Girls Polytechnic, Ahmedabad.
- **Shri. Bhadresh J. Dave**, Govt. Polytechnic, Rajkot.
- **Dr. Peena Thanki**, Govt. Polytechnic, Jamnagar.
- **Dr. Chetan Trivedi**, Govt. Engineering College, Bhavnagar.
- **Dr. Raviraj Raval**, Govt. Polytechnic, Rajkot.
- **Shri Vaseem Qureshi**, Vishwakarma Govt. Engineering College, Chandkheda, Ahmedabad.

**NITTTR Bhopal Faculty and Co-ordinator**

- **Dr. Joshua Earnest,** , NITTTR, Bhopal
- **Prof.(Mrs.) Susan S. Mathew,** NITTTR, Bhopal

# GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT
# COURSE CURRICULUM

## Course Title: Environment Conservation & Hazard Management
## (Code: 3300003)

| Diploma Programmes in which this course is offered | Semester in which offered |
|---|---|
| Biomedical Engineering, Ceramic Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Environment Engineering, Fabrication Technology, Information Technology, Instrumentation & Control Engineering, Mechanical Engineering, Mining Engineering, Textile Design, Transportation Engineering | **First Semester** |
| Architecture Assistantship, Automobile Engineering, Chemical Engineering, Electronics & Communication, Mechatronics Engineering, Metallurgy Engineering, Plastic Engineering, Power Electronics, Printing Technology, Textile Manufacturing, Textile Processing | **Second Semester** |

## 1. RATIONALE

For a country to progress, sustainable development is one of the key factors. Environment conservation and hazard management is of much importance to every citizen of India. The country has suffered a lot due to various natural disasters. Considerable amount of energy is being wasted. Energy saved is energy produced. Environmental pollution is on the rise due to rampant industrial mismanagement and indiscipline. Renewable energy is one of the answers to the energy crisis and also to reduce environmental pollution. Therefore this course has been designed to develop a general awareness of these and related issues so that the every student will start acting as a responsible citizen to make the country and the world a better place to live in.

## 2. COMPETENCIES

The course content should be taught and implemented with the aim to develop different types of skills leading to the achievement of the following competencies.

i. **Take care of issues related to environment conservation and disaster management while working as diploma engineer.**

## 3. TEACHING AND EXAMINATION SCHEME

| Teaching Scheme (In Hours) | | | Total Credits (L+T+P) | Examination Scheme | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Theory Marks | | Practical Marks | | Total Marks |
| L | T | P | C | ESE | PA | ESE | PA | |
| 4 | 0 | 0 | 4 | 70 | 30 | 0 | 0 | **100** |

**Legends: L**-Lecture; **T** – Tutorial/Teacher Guided Theory Practice; **P** - Practical; C – Credit;
**ESE** - End Semester Examination; **PA** - Progressive Assessment.

## 4. DETAILED COURSE CONTENTS

| Unit | Major Learning Outcomes | Topics and Sub-topics |
|---|---|---|
| **Unit – I Ecology and environment** | 1.1 Enhance knowledge about engineering aspects of Environment<br>1.2 Correlate the facts of ecology and environment A<br>1.3 assess the effect of pollution<br>1.4 List the causes of environmental pollution<br>1.5 State the major causes of air, water and noise pollution<br>1.6 Describe how industrial waste contaminates the land<br>1.7 Describe the effects of radiation on vegetables, animals | 1.1 Importance of environment and scope<br>1.2 Engineering and environment issues<br>1.3 The natural system, Biotic and a-Biotic components and processes of natural system<br>1.4 Eco system, food chain and webs and other biological Systems,<br>1.5 Causes of environmental pollution<br>1.6 Pollution due to solid waste<br>1.7 water pollution, air pollution, the Noise as pollution,<br>1.8 Pollution of land due to industrial and chemical waste<br>1.9 Radiation and its effects on vegetables and animals |
| **Unit– II Sustainable Development** | 2.1 Explain the concept of sustainable development<br>2.2 Justify the need for renewable energy<br>2.3 Describe the growth of renewable energy in India<br>2.4 Explain the concepts of waste management and methods of recyling | 2.1 Concept of sustainable development,<br>2.2 Natural resources, a-biotic and biotic resources<br>2.3 Principles of conservation of energy and management<br>2.4 Need of Renewable energy<br>2.5 Growth of renewable energy in India and the world<br>2.6 Concept of waste management and recyling |
| **Unit – III Wind Power** | 3.1 Describe the growth of wind power in India<br>3.2 State the differences between VAWTs and HAWTs<br>3.3 Explain the differences between drag and lift type wind turbines<br>3.4 Describe the working of large wind turbines<br>3.5 List the types of aerodynamic control of large wind turbines<br>3.6 Name the generators used in large wind turbines | 3.1 Growth of wind power in India<br>3.2 Types of wind turbines – Vertical axis wind turbines (VAWT) and horizontal axis wind turbines (HAWT)<br>3.3 Types of HAWTs – drag and lift types<br>3.4 Working of large wind turbines<br>3.5 Aerodynamic control of large and small wind turbines<br>3.6 Types of electrical generators used in small and large wind turbines |
| **Unit – IV Solar Power** | 4.1 Describe the salient features of solar thermal and PV systems<br>4.2 Describe a solar cooker and solar water heater<br>4.3 Describe the working of solar PV system<br>4.4 State the salient features of polycrystalline, monocrystalline and thin film PV systems | 4.1 Features of solar thermal and PV systems<br>4.2 Types of solar cookers and solar water heaters<br>4.3 Solar PV systems and its components and their working<br>4.4 Types of solar PV cells<br>4.5 Solar PV and solar water heaters, rating and costing |
| **Unit – V Biomass energy** | 5.1 State the different types of biomass energy sources<br>5.2 Describe about the energy content in biomass<br>5.3 Describe the working of simple biogas plant | 5.1 Types of Biomass Energy Sources<br>5.2 Energy content in biomass of different types<br>5.3 Types of Biomass conversion processes<br>5.4 Biogas production |

| Unit | Major Learning Outcomes | Topics and Sub-topics |
|---|---|---|
| **Unit – VI Seismic Engineering and disaster management** | 6.1 Explain the principles of seismic Engineering in design of structure<br>6.2 State the appropriate actions to be taken during disasters | 6.1 Introduction of seismic engineering and its application civil engineering designs<br>6.2 Features of disasters such as Floods, Earthquakes, Fires, Epidemics, Gas/radioactive leaks etc.<br>6.3 Management and mitigation of above disasters |

## 5. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (THEORY)

| Unit No. | Unit Title | Teaching Hours | Distribution of Theory Marks | | | |
|---|---|---|---|---|---|---|
| | | | R Level | U Level | A Level | Total Marks |
| 1. | Ecology and Environment | 8 | 4 | 4 | 0 | 8 |
| 2. | Sustainable Development | 10 | 4 | 5 | 1 | 10 |
| 3. | Wind Power | 10 | 4 | 6 | 4 | 14 |
| 4. | Solar Power | 10 | 4 | 6 | 4 | 14 |
| 5. | Biomass energy | 8 | 4 | 4 | 2 | 10 |
| 6. | Seismic Engineering and disaster | 10 | 6 | 6 | 2 | 14 |
| | **Total** | **56** | **26** | **31** | **13** | **70** |

**Legends:**
R = Remembrance; U = Understanding; A = Application and above levels (Revised Bloom's taxomonoy

## 6. SUGGESTED LIST OF EXPERIMENTS/PRACTICAL EXERCISES

**Nil**

## 7. SUGGESTED LIST OF STUDENT ACTIVITIES

i. Prepare paper on various sustainable development
ii. Make a report after gathering information the values of water, noise pollution and air pollution in your city/town and compare the values in other cities and towns in India with respect to environmentally acceptable levels
iii. Prepare a paper on air and water pollution in an industry/institute
iv. Undertake some small mini projects in any one of the renewable energies
v. Visit an energy park and submit project on various sources of energy
vi. Prepare powerpoint on clean and green technologies
vii. Prepare a list of do's and don'ts applicable during disasters
viii. Submit a report on garbage disposal system in your city/town.

## 8. SUGGESTED LEARNING RESOURCES

### A. List of Books

| S. No. | Title of Book | Author | Publication/Year |
|---|---|---|---|
| 1 | Renewable Energy Technologies | Solanki, Chetan Singh | PHI Learning, New Delhi, 2010 |
| 2 | Ecology and Control of the Natural Environment | Izrael,Y.A. | Kluwer Academic Publisher |
| 3 | Environment Engineering and Disaster Management | Sharma, Sanjay K. | Luxmi Publications, New Delhi |
| 4 | Environmental Noise Pollution and Its Control | Chhatwal,G.R.; Katyal,T.; Katyal, | Anmol Publications, New Delhi |
| 5 | Wind Power Plants and Project Development | Earnest, Joshua & Wizelius, Tore | PHI Learning, New Delhi, 2011 |
| 6 | Renewable Energy Sources and Emerging Technologies | Kothari, D.P. Singal, K.C., Ranjan, Rakesh | PHI Learning, New Delhi, 2009 |
| 7 | Environmental Studies | Anandita Basak | Pearson |
| 8 | Environmental Science and Engineering | Alka Debi | University Press |
| 9 | Coping With Natural Hazards, Indian Context | K. S. Valadia | Orient Longman |
| 10 | Engineering and Environment | Edward S. Rubin | Mc Graw Hill Publ. |

### B. List of Major Equipment/ Instrument

i. Digital sound level meters (to check noise pollution)
ii. Digital air quality meter (to measure air pollution)
iii. Digital handheld anemometer (to measure wind speeds)
iv. Digital hand held pyranometer (to measure solar radiation levels)

### C. List of Software/Learning Websites

i. http://www1.eere.energy.gov/wind/wind_animation.html
ii. http://www.nrel.gov/learning/re_solar.html
iii. http://www.nrel.gov/learning/re_biomass.html
iv. http://www.mnre.gov.in/schemes/grid-connected/solar-thermal-2/
v. http://www.mnre.gov.in/schemes/grid-connected/biomass-powercogen/

## 9. COURSE CURRICULUM DEVELOPMENT COMMITTEE

**Faculty Members from Polytechnics**

- **Prof. H.L.Purohit** , HOD, Civil Engg. Dept. L.E.College. Morbi
- **Shri. P.A.Pandya**, LCE, Civil Engg. Dept, G.P , Himatnagar

**Co-ordinator and Faculty Members from NITTTR Bhopal**

- **Dr. J.P.Tegar**, Professor Dept of Civil and Environmental Engg, NITTTR, Bhopal.
- **Dr. Joshua Earnest,** Professor and Head, Dept. of Electrical & Electronics Engg, NITTTR, Bhopal

**GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT**
**COURSE CURRICULUM**

Course Title: Computer Programming
(Code: 3310701)

| Diploma Programmes in which this course is offered | Semester in which offered |
|---|---|
| Computer Engineering, Information Technology, | **First Semester** |
| | |

## 1. RATIONALE

This Course intends to develop programming skills in the students, using a popular structured programming language `C'. The students will learn step by step procedure (i.e. flowcharting & Algorithm) of any program development process. The programming skills thus acquired using `C' language can be used for acquiring necessary programming skill to work with advance level programming languages which in turn will be helping in developing programs for the scientific, research and business purposes.

## 2. LIST OF COMPETENCIES

The course content should be taught and implemented with the aim to develop the following competencies.

i. **Develop Simple Programs using 'C' Language**

## 3. TEACHING AND EXAMINATION SCHEME

| Teaching Scheme (In Hours) | | | Total Credits (L+T+P) | Examination Scheme | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Theory Marks | | Practical Marks | | Total Marks |
| **L** | **T** | **P** | **C** | **ESE** | **PA** | **ESE** | **PA** | **200** |
| 3 | 0 | 4 | 7 | 70 | 30 | 40 | 60 | |

**Legends: L**-Lecture; **T** – Tutorial/Teacher Guided Theory Practice; **P** - Practical; **C** – Credit;
**ESE** - End Semester Examination; **PA** - Progressive Assessment.

## 4. DETAILED COURSE CONTENTS

| Unit | Major Learning Outcomes | Topics and Sub-topics |
|---|---|---|
| **Unit – 1: Flowchart and Algorithm** | 1.1. Draw flow chart to solve given problem logically.<br>1.2. Develop Algorithm to solve given program. | **Flowchart and Algorithm**<br>➢ Flowchart<br>• Definition and Importance of flowchart.<br>• Symbols of Flowchart.<br>• Flow lines, Terminals, Input/Output ,Processing Decision, Connection off-page connectors<br>• Guidelines for preparing Flowchart.<br>• Flowchart structure<br>o Sequence, selection, repetition.<br>• Limitation of flowchart<br>➢ Algorithm<br>• Developing and writing algorithm using pseudo codes |
| **Unit– 2: Basics of 'C'** | 2.1. Comprehend general structure of 'C' program<br>2.2. Declare and define variables<br>2.3. Write and execute simple program in 'C' | ➢ **Basics of 'C'**<br>• General structure of 'C' program and standard directories<br>• Advantages of C language.<br>• Character set, 'C' tokens<br>• Keywords and Identifiers , Constants and Variables<br>• Data Types in 'C'<br>• Rules for defining variables<br>• Declaration and Initialization<br>• Dynamic initialization<br>• Type modifiers and type conversion<br>• Constant and volatile variable<br>• Input and Output statements in 'C'<br>• Write, compile, execute a simple 'C' program |
| **Unit– 3: Operators and Expression** | **3.1.** Use arithmetic, relational and logical operators for forming expressions.<br>**3.2.** Format input and output using 'C' statements. | **Operators and Expression**<br>• Introduction of different types of operators and their symbolic representation<br>• Properties of operator<br>• Priority of operator and their clubbing<br>• Comma and conditional operator<br>• Arithmetic operators<br>• Relational operators<br>• Assignment operators and expressions<br>• Logical operators<br>• Bitwise operators<br>• Formatted input and output in 'C' |
| **Unit–4: Decision Statements** | 4.1. Develop programs using decision making statements in 'C' language. | **Decision Statements**<br>• Unconditional branching: goto statement<br>• Conditional branching statements: If statement<br>• If-else statement<br>• Nested If-else statement<br>• If-else-if Ladder statement<br>• break, continue and goto statements<br>• switch statements |
| **Unit–5: Loop Control** | 5.1. Develop programs using | **Loop Control Statements** |

| Unit | Major Learning Outcomes | Topics and Sub-topics |
|---|---|---|
| **Statements** | structured loop control statements in 'C' language. | • for loop<br>• Nested for loop<br>• While loop<br>• Do-while loop |
| **Unit– 6: Introduction of Array (one dimensional)** | 6.1. Declare and define array.<br>6.2. Develop programs using array in 'C' language. | **Introduction of Array (one dimensional)**<br>• Array Terminology<br>• A characteristics of an array<br>• Array Declaration<br>• Array initialization<br>• Accessing an array<br>• Storing value in an array (Bubble Sort) |

## 5. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (THEORY)

| Unit No. | Unit Title | Teaching Hours | Distribution of Theory Marks | | | |
|---|---|---|---|---|---|---|
| | | | R Level | U Level | A Level | Total |
| 1. | Flowchart and Algorithm | 6 | 3 | 5 | 4 | 12 |
| 2. | Basics of 'C' | 6 | 3 | 3 | 4 | 10 |
| 3. | Operators and Expression | 8 | 4 | 4 | 3 | 11 |
| 4. | Decision Statements | 8 | 3 | 5 | 5 | 13 |
| 5. | Loop Control Statements | 8 | 4 | 5 | 5 | 14 |
| 6. | Introduction of Array (one dimensional) | 6 | 2 | 3 | 5 | 10 |
| | **Total** | **42** | **19** | **25** | **26** | **70** |

**Legends:** R = Remembrance; U = Understanding; A = Application and above levels (Revised Bloom's Taxonomy)

## 6. SUGGESTED LIST OF EXERCISES/PRACTICAL/EXPERIMENTS

The exercises/practical/experiments should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the competency. Following is the list of exercises/practical/experiments for guidance.

| S. No. | Unit No. | Practical Exercises |
|---|---|---|
| **1** | 1 | Draw Flow Chart and write algorithm for at least four problems. |
| 2 | 2 | Write minimum 5 programs using Constants, Variables & arithmetic expression. |
| 3 | 2 | Write programs to understand Data types, Type modifiers and Type conversion. |
| 4 | 2 | Write programs providing insight to formatted and unformatted input and output in C. |
| 5 | 3 | Write minimum 5 programs providing understanding of Relational operators. |
| 6 | 3 | Write programs using logical and bitwise operators. |
| 7 | 4 | Make programs using If, If-else, If-else-if and Nested If statements. |
| 8 | 4 | Make programs using break, continue, goto and switch statements. |
| 9 | 5 | Write programs to understand simple For loop and nested loops. |

| | | |
|---|---|---|
| 10 | 5 | Write programs using While Loop and Do-while loop. |
| 11 | 6 | Write programs on arrays. (Sorting, merging, finding particular value etc.) |

## 7. SUGGESTED LIST OF PROPOSED STUDENT ACTIVITIES

Following is the list of proposed student activities:

- Search and Identify areas where C programming is widely used as sole programming language.
- Development of charts explaining various flow chart features.

## 8. SUGGESTED LEARNING RESOURCES

### A. List of Books

| Sr.No. | Author | Title of Books | Publication |
|---|---|---|---|
| **1** | Kamthane Ashok N. | Programming with ANSI And Turbo C | Pearson publication, Latest Edition |
| 2 | Balaguruswami E. | Programming in ANSI C | Tata McGraw-Hills publication, Latest Edition |
| 3 | Kanetkar Yashavant | Let us 'C' | BPB publications, Latest Edition |

### B. List of Major Equipment/ Instrument

Computer System with latest configuration and memory

### C. List of Software/Learning Websites

- Introduction to C Programming Language, http://www.learnconline.com/2010/03/introduction.html
- Comp.lang.C Frequently Asked Questions, http://www.c-faq.com
- C Tutorial, http://www.cprogramming.com/tutorial/c-tutorial.html

## 9. COURSE CURRICULUM DEVELOPMENT COMMITTEE

**Faculty Members from Polytechnics**

- **Prof. P.P.Kotak**, Head, Dept. of Computer Engg., AVPTI Polytechnic, Rajkot
- **Prof. R. M Shaik**, Head, Dept. of Computer Engg., KD Polytechnic, Patan.
- **Prof. K. N. Raval**, Head, Dept. of Computer Engg., RCTI Polytechnic,Ahmedabad
- **Shri Sachin. D. Shah** Lecturer in Computer Engg., RCTI Polytechnic, Ahmedabad

**Coordinator and Faculty Members from NITTTR Bhopal**

- **Dr. K. James Mathai**, Associate Professor, Dept. of Computer Engg. & Application, NITTTR, Bhopal
- **Prof.R. K .Kapoor**, Associate Professor, Dept. of Computer Engg. & Application, NITTTR, Bhopal

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**GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT**
**COURSE CURRICULUM**

Course Title: Fundamental of Digital Electronics
(Code: 3310702)

| Diploma Programmes in which this course is offered | Semester in which offered |
|---|---|
| Computer Engineering, Information Technology, | **First Semester** |
| Biomedical Engineering | **Second Semester** |

## 1. RATIONALE

The objective of Fundamental of Digital Electronics is to make the students understand functioning of a digital circuit. The course contains description of digital components using core structure of digital logic. This includes number system, Logic gates, Boolean algebra, Combinational logic. This Course will enable student to solve various Boolean expressions, to design and implement digital logic circuits.

## 2. LIST OF COMPETENCIES

The course content should be taught and implemented with the aim to develop different types of skills leading to the achievement of the following competencies.

- Design sequential and combinational circuits of any electronic device.

## 3. TEACHING AND EXAMINATION SCHEME

| Teaching Scheme (In Hours) | | | Total Credits (L+T+P) | Examination Scheme | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Theory Marks | | Practical Marks | | Total Marks |
| **L** | **T** | **P** | **C** | **ESE** | **PA** | **ESE** | **PA** | **150** |
| 3 | 0 | 2 | 5 | 70 | 30 | 20 | 30 | |

**Legends: L**-Lecture; **T** – Tutorial/Teacher Guided Theory Practice; **P** - Practical; **C** – Credit;
**ESE** – End Semester Examination; **PA** - Progressive Assessment.

## 4. DETAILED COURSE CONTENTS

| Unit | Major Learning Outcomes | Topics and Sub-topics |
|---|---|---|
| **Unit – 1: Binary Systems** | 1.1. Comprehend Number systems and binary codes<br>1.2. Convert Number systems and its complements | **Binary Systems**<br>➢ **Introduction of Digital Computers and Digital Systems**<br>➢ **Binary Numbers**<br>➢ **Base Conversion**<br>•BINARY<br>•DECIMAL<br>•HEX<br>•OCTAL<br>➢ Complements<br>•R's Complement<br>•2' and 10's Complement<br>•(R-1)'s Complement<br>•1's and 9's Complement<br>➢ Binary Codes<br>•Decimal Codes<br>•Error Detection codes<br>•Reflected Code |
| **Unit– 2: Binary Logic And Boolean Algebra** | 2.1. Explain Binary Logic<br>2.2. List and explain working of Logic Gates<br>2.3. Solve Boolean algebra<br>2.4. Define and solve various Boolean theorems<br>2.5. Solve Boolean expression | **Binary Logic And Boolean Algebra**<br>➢ Basic Binary logic<br>➢ Logic Gates<br>•AND , OR, INVERTER<br>➢ Postulates<br>➢ Boolean algebra<br>•Two value Boolean algebra<br>➢ Basic theorems of Boolean algebra<br>➢ De-Morgan's Theorems<br>➢ Boolean functions<br>➢ Boolean forms<br>•Canonical<br>•Standard |
| **Unit– 3: Boolean Function Implementation** | 3.1 Explain Boolean function Implementation and simplification | **Boolean Function Implementation**<br>➢ Need for simplification<br>➢ K – Map method<br>•2 – Variable K – map<br>•3 – Variable K – map<br>•4 – variable K – map<br>➢ K – Map using Don't care condition<br>➢ Universal Gates<br>•NAND Gate<br>•NOR Gate<br>➢ NAND Implementation<br>➢ NOR Implementation |

| Unit | Major Learning Outcomes | Topics and Sub-topics |
|---|---|---|
| **Unit– 4: Basic Combinational Logic** | 4.1 Explain Basic Combinational Logic<br>4.2 Design half adder, full adder, Half Subtractor & full Subtractor<br>4.3 Explain multiplexer and demultiplexers | **Basic Combinational Logic**<br>➢ Design procedure of combinational logic<br>➢ Adder<br>•Half Adder<br>•Full Adder<br>➢ Subtractor<br>•Half Subtractor<br>•Full Subtractor<br>➢ Code Conversion<br>•BCD – Excess-3 conversion |
| **Unit– 5: Combinational Logic Using MSI And LSI** | 5.1 Design MSI Combinational Logic & LSI<br>5.1 Implement combination logic circuit using mux and Dmux | **Combinational Logic Using MSI And LSI**<br>➢ Binary Parallel Adder<br>➢ Magnitude Comparator<br>•2 Input Comparator<br>➢ Decoder<br>•2 – 4 Decoder<br>•3 – 8 Decoder<br>➢Encoder<br>•4 – 2 Encoder<br>•8 – 3 Encoder<br>➢ Multiplexer<br>•4 – 1 multiplexer<br>➢ Demultiplexers<br>•1 – 4 Demultiplexers |

## 5. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (THEORY)

| Unit No. | Unit Title | Teaching Hours | Distribution of Theory Marks | | | |
|---|---|---|---|---|---|---|
| | | | R Level | U Level | A Level | Total |
| 1. | Binary Systems | 06 | 2 | 4 | 4 | 10 |
| 2. | Binary Logic and Boolean algebra | 08 | 2 | 4 | 6 | 12 |
| 3. | Boolean function Implementation | 08 | 4 | 4 | 6 | 14 |
| 4. | Basic Combinational Logic | 10 | 4 | 6 | 6 | 16 |
| 5. | Combinational Logic Using MSI and LSI | 10 | 4 | 6 | 8 | 18 |
| | **Total** | **42** | **16** | **24** | **30** | **70** |

**Legends:**
R = Remembrance; U = Understanding; A = Application and above levels (Revised Bloom's taxonomy

## 6. SUGGESTED LIST OF PRACTICALS

The experiments should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the competency .

| S. No. | Unit No. | Practical's |
|---|---|---|
| 1 | 1 | Convert Number system to another (HEX ,OCTAL,DECIMAL,BINARY) |
| 2 | 1 | Calculate R's and (R-1)'s Complements |
| 3 | 2 | Realize the basic logic gates. |
| 4 | 2 | Realize the NAND gate as a universal building block. |
| 5 | 2 | Realize the NOR gate as a universal building block. |
| 6 | 3 | Simplify and design Boolean expression using basic logic gates |
| 7 | 3 | Simplify and design Boolean expression using Universal gates |
| 8 | 4 | Design and implement Half Adder and full adder circuit. |
| 9 | 4 | Design and implement Half Subtractor and full Subtractor circuit. |
| 10 | 5 | Realize the Binary Parallel Adder circuit |
| 11 | 5 | Realize Multiplexer and Demultipxer circuit |
| 12 | 5 | Realize Decoder and Encoder circuit |

## 7. SUGGESTED LIST OF PROPOSED STUDENT ACTIVITIES

Following is the list of proposed student activities like: course/topic based seminars, internet based assignments, teacher guided self learning activities, course/library/internet/lab based mini-projects etc. These could be individual or group-based.

## 8. SUGGESTED LEARNING RESOURCES

### A. List of Books

| S.No. | Author | Title of Books | Publication |
|---|---|---|---|
| 1 | Mano M. Morris | Digital logic and Computer Design | Pearson publication, Latest Edition ISBN: 81-203-0417-9 |
| 2 | Jain R.P. | Modern Digital Electronics | Tata McGraw-Hills publication, Latest Edition |
| 3 | Malvino & Leech | Digital electronics Principles | Tata McGraw-Hills publication, Latest Edition |
| 4 | Anand Kumar | Fundamentals of Digital Circuits | Prentice-Hall of India, Latest Edition |

### B. List of Major Equipment/ Instrument

i). Binary to Decimal Converter & Decimal to Binary Converter
ii). Binary to Gray code Converter & Gray to Binary code Converter
iii).BCD to Seven Segment Decoder (Common Cathode Display)
iv).Basic Logic Gates using Diode & Transistor
v). AND, OR, NOT Gate Characteristics kit
vi). OR,NOR,EX-OR Gate Characteristics kit
vii).De-Morgan's Theorem kit
viii).NAND & NOR as Universal Gate
ix).Flip-Flop Trainer ( D, T, JK, MS Types )

x). Multiplexer / De-multiplexer using Gates
xi).Half & Full Adder
xii).Half & Full Sub tractor
xiii). A To D Converter using Successive Approximation Method / D to A Converter using Binary Weighed Method (4 bit )
xiv).Parity Generator / Even & Odd parity Checker
xv). Bread Board Trainer (For Digital IC's)

### C. List of Software/Learning Websites

i).Digital Electronics Tutorial

ii). http://www.asic-world.com/digital/tutorial.html

## 9. COURSE CURRICULUM DEVELOPMENT COMMITTEE

**Faculty Members from Polytechnics**

i) M.P.PARMAR, Incharge Head and Senior Lecturer, Information Technology Department, Government Polytechnic, Ahmedabad
ii)M.D.PATEL, Incharge Head and Senior Lecturer, Information Technology Department Dr. S. S. Gandhy College Surat.

**Co-ordinator and Faculty Member from NITTTR Bhopal**

i).Dr.Shailendra Singh, Professor, Dept. of Computer Engineering & Application, NITTTR, Shamla Hills, Bhopal
ii).Dr.K.James Mathai, Associate Professor, Dept. of Computer Engineering & Application, NITTTR, Shamla Hills, Bhopal

**GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT**
**COURSE CURRICULUM**

# Course Title: Fundamental Computer Application
# (Code: 3310703)

| Diploma Programmes in which this course is offered | Semester in which offered |
|---|---|
| Computer Engineering, Information Technology, | **First Semester** |
| | |

## 1. RATIONALE

This objective of this subject is to make the students understand the functioning MS-Office. It will also helps the student to have hands on experience on various application software's used for office automation like MS-Word, MS-Excel and MS-PowerPoint, day-to-day problem solving, in particular for creating business documents, data analysis and graphical representations.

## 2. LIST OF COMPETENCIES

The course content should be taught and implemented with the aim to develop the following competencies.

i. **Use MS Office software for word-processing, data analysis and preparing presentation.**

ii. **Develop static web pages using HTML.**

## 3. TEACHING AND EXAMINATION SCHEME

| Teaching Scheme (In Hours) | | | Total Credits (L+T+P) | Examination Scheme | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Theory Marks | | Practical Marks | | Total Marks |
| **L** | **T** | **P** | **C** | **ESE** | **PA** | **ESE** | **PA** | **100** |
| 0 | 0 | 4 | 4 | 0 | 0 | 40 | 60 | |

**Legends: L**-Lecture; **T** – Tutorial/Teacher Guided Theory Practice; **P** - Practical; **C** – Credit;
**ESE** – End Semester Examination; **PA** - Progressive Assessment.

## 4. DETAILED COURSE CONTENTS

| Unit | Major Learning Outcomes | Topics |
|---|---|---|
| **Unit – 1 Basics of Computer System** | 1.1 Describe computer hardware and software<br>1.2 Identify I/O devices<br>1.3 Describe functioning of CU ALU and memory unit<br>1.4 Differentiate various types of printers<br>1.5 Explain use of OS<br>1.6 Demonstrate various file handling operations | **Basics of Computer System**<br>• Concept of Hardware and Software<br>• Computer block diagram<br>• Input Output unit<br>• CPU, Control Unit, Arithmetic logic Unit (ALU), Memory Unit<br>• Monitor, Printers: Dot matrix, Laser, Inkjet, Plotters, Scanner<br>• System software and Application Software<br>• Operating system concepts, purpose and functions<br>• Operations of Windows OS.<br>• Creating and naming of file and folders<br>• Copying file, renaming and deleting of files and folders,<br>• Searching files and folders, installation application, creating shortcut of application on the desktop<br>• Overview of control Panel, Taskbar. |
| **Unit– 2 Using MS - Word 2007** | 2.1 Use basics text formatting features<br>2.2 Manipulate text<br>2.3 Use page Setup features<br>2.4 Use spell and grammar utility<br>2.5 Work with graphics/ clipart<br>2.6 Create and manipulate table<br>2.7 Use auto shapes and its formatting with text | **Using MS - Word 2007**<br>• Overview of Word processor<br>• Basics of Font type, size, colour,<br>• Effects like Bold, italic , underline, Subscript and superscript,<br>• Case changing options,<br>• Inserting, deleting, undo and redo, Copy and Moving (cutting) text within a document,<br>• Formatting Paragraphs and Lists<br>• Setting line spacing; single<br>• Page settings and margins including header and footer<br>• Spelling and Grammatical checks<br>• Table and its options, Inserting rows or columns, merging and splitting cells, Arithmetic Calculations in a Table.<br>• Working with pictures, Inserting Pictures from Files,<br>• Using Drawings and WordArt; Lines and Shapes, Modifying Drawn Objects, Formatting Drawn Objects, options for Creating and Modifying a WordArt Object |
| **Unit– 3 Using MS - Excel 2007** | 3.1 Use basic formatting and data entry features<br>3.2 Use formula and functions<br>3.3 Work with graphics<br>3.4 Create and manipulate charts<br>3.5 Use header and footer options<br>3.6 Setup page layout and print worksheet | **Using MS - Excel 2007**<br>• Introduction to Excel 2007,<br>• Introduction to data, Cell address, Excel Data Types, Concept of hyperlink<br>• Introduction to formatting, number, text and date formatting<br>• Concept of worksheet and workbook<br>• Understanding formulas, Operators in Excel 2007, Operators Precedence, Understanding Functions, Common Excel Functions such as sum, average, min, max, date, transpose, In, And, or, sqrt, power, upper, lower.<br>• Types of graphics : Word art, auto shapes , Images<br>• Introduction to charts, overview of different types of charts available with Excel<br>• Concept of print area, margins, header, footer and other page setup options |

| Unit | Major Learning Outcomes | Topics |
|---|---|---|
| **Unit – 4 Using MS - PowerPoint 2007** | 4.1 Create new presentation and apply basic formatting features<br>4.2 Use master slide<br>4.3 Create and manipulate table<br>4.4 Work with objects and clips<br>4.5 Work with video<br>4.6 Work with audio<br>4.7 Use special effects<br>4.8 Use navigation and hyper linking | **Using MS - PowerPoint 2007**<br>• Outline of an effective presentations,<br>• Starting a New Presentation Files, Saving work,<br>• Creating new Slides, Working with textboxes.<br>• Changing a slides Layout, Applying a theme, Changing Colours, fonts and effects, Creating and managing custom Colour & font theme, Changing the background<br>• Managing slides master, Managing theme.<br>• Changing the font, font size, font colour, text fill,<br>• Adjusting character spacing and line spacing Formatting text boxes.<br>• Word arts, styles,<br>• Formatting bulleted lists and numbered list,<br>• Finding and replacing text, Correcting your spelling<br>• Creating a new and editing a table's structure,<br>• Selecting, deleting, moving, copying, resizing and arranging objects,<br>• Working with drawing tools, Applying shape or picture styles, Applying object borders, object fill, object effects.<br>• Working with clip art collection and modifying clip art,<br>• Embed a video, Link to a video, Size a video, Video playback options,<br>• Configuring a sound playback, Assigning sound to an object, Adding a digital music sound track, Transition effects and timings,<br>• Creating hyperlinks**,** Using action buttons |
| **Unit – 5 Using HTML** | 5.1 Comprehend the HTML page structure<br>5.2 Use basic formatting tags in HTML<br>5.3 Create and format tables<br>5.4 Insert and format images in HTML page<br>5.5 Create various types of hyper linking<br>5.6 Work with video and sound files | **Basic structure of HTML**<br>• Structure of HTML Page<br>• Inserting formatting tags for Text: bold, italic, underline, line break, special character, predefine headings, paragraph, comments.<br>• Font color, size, Alignment<br>• Margin with body tag, background and text color<br>• Ordered and unordered lists<br>• Use of Frames for structured viewing<br>**Tables, Images and Links in HTML**<br>• Tables – basic structure, Using TD, TR, TH tags, use of basic elements in table : border, cellpadding, cellspacing, width, caption, align, bgcolor<br>• Images in web page: inserting and formatting of images using SRC, border, Vspace, Hspace, align, ALT, height, width and background in HTML page<br>• Types of links: Linking two or more web pages, linking within a web page, linking to external page, linking to a specific point in another web page, linking image file, mailto.<br>**Working with Multimedia Objects**<br>• Video and sound file. Add marquees of scrolling text. Inserting and controlling video and audio in HTML page |

## 5. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (THEORY)

| Unit No. | Unit Title | Teaching/Practical Hours | Distribution of Practical Marks | | | |
|---|---|---|---|---|---|---|
| | | | R Level | U Level | A Level | Total |
| 1. | Basics of Computer System. | 08 | - | - | - | |
| 2. | Using MS-Word 2007 | 12 | - | - | - | |
| 3. | Using MS - Excel 2007 | 11 | - | - | - | |
| 4. | Using MS - PowerPoint 2007 | 11 | - | - | - | |
| 5. | Using HTML | 14 | - | - | - | |
| | **Total** | **56** | | | | |

**Legends:** R = Remembrance; U = Understanding; A = Application and above levels (Revised Bloom's taxonomy)

## 6. SUGGESTED LIST OF EXERCISES/PRACTICAL/EXPERIMENTS

The exercises/practical/experiments should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the competency. Following is the list of exercises/practical/experiments for guidance.

| S. No. | Unit No. | Practical Exercises/Experiments |
|---|---|---|
| **1** | 1 | Create and manage files and folder tree |
| 2 | 1 | Use accessories utilities of windows OS |
| 3 | 2 | Entering and editing text in document file. |
| 4 | 2 | Apply formatting features on Text like Bold, Italics, Underline, font type, colour and size. |
| 5 | 2 | Apply features like bullet, numbering |
| 6 | 2 | Create documents, insert images, format tables |
| 7 | 2 | Create and manipulate tables |
| 8 | 3 | Entering and editing data in worksheet |
| 9 | 3 | Apply formula and functions in the sheet |
| 10 | 4 | Use graphics and auto shapes in Excel sheet |
| 11 | 4 | Create and manipulate EXCEL charts |
| 12 | 4 | Create Pay bills, Pay slips, Electricity bills using Excel |
| 13 | 4 | Print sheet using print area |
| 14 | 5 | Basic operations of Power point, Create PPT and inset and delete slides |
| 15 | 5 | Create Project presentations, Lecture presentations. |
| 16 | 5 | Use of Mater Slide in Presentation |
| 17 | 5 | Apply basic formatting features in presentation like font, font size, font colour, text fill, spacing and line spacing Formatting text boxes, word arts, styles bullet and numbering |
| 18 | 5 | Working with drawing tools, Applying shape or picture styles, Applying object borders, object fill, object effects. |
| 19 | 5 | Working with video, Link to video and sound files. |
| 20 | 5 | Creating hyperlinks, Using action buttons |

## 7. SUGGESTED LIST OF PROPOSED STUDENT ACTIVITIES

Following is the list of proposed student activities like: assignments based on MS-Office, teacher guided self learning activities and lab based mini-projects on MS-Word, MS-Excel and MS-PowerPoint. These could be individual or group-based.

- Manage files and folder using Windows.
- Prepare letter document Project report in MS-Word
- Generate student marks and represent data in graphical mode using MS-Excel
- Develop effective presentation of Project report using MS-PowerPoint.

## 8. SUGGESTED LEARNING RESOURCES

### A. List of Books

| S.No. | Author | Title of Books | Publication |
|---|---|---|---|
| 1. | R. Taxali | Computer Course | Tata McGraw Hills. New Delhi. |
| 2. | Wallace Wang | MS-Office for Dummies | Wiley India, New Delhi |
| 3. | Dr. Shailendra Singh, Pawan Thakur, Anurag Jain | Basic Computer Engineering | Satya Prakashan, New Delhi, India. |
| 4. | Steven Hozner | HTML: Black Book | Dreamtech Press India |

### B. List of Major Equipment/ Instrument

Computer System with latest configuration along with Windows Operating System

### C. List of Software/Learning Websites

1. Windows7 Professional
2. MS-Office 2007
3. HTML Tutorials, http://www.w3schools.com/html/default.asp

## 9. COURSE CURRICULUM DEVELOPMENT COMMITTEE

**Faculty Members from Polytechnics**

- **Shri Parvez Faruki**, Lecturer in Information Technology, G.P. Ahmedabad.
- **Shri P. V. Garach**, Lecturer in Information Technology, Govt. Girls Polytechnic, Ahmedabad.

**Coordinator and Faculty Members from NITTTR Bhopal**

- **Dr. Shailendra Singh**, Professor, Dept. of Computer Engg. & Application, NITTTR Bhopal
- **Dr. M. A. Rizvi**, Associate Professor, Dept. of Computer Engg. & Application, NITTTR Bhopal