PPSU

P P SAVANI UNIVERSITY

# SCHOOL OF ENGINEERING

**DIPLOMA**

**COMPUTER ENGINEERING**

**SYLLABUS BOOK**

**AY 2024-25**

| INSTITUTE VISION |
|---|
| To emerge as an Institute of Excellence by imparting value-based education aided with Research, Innovation and Entrepreneurial skills. |

| INSTITUTE MISSION | |
|---|---|
| 1. | To impart the holistic engineering education of highest quality & prepare socially responsible professionals with entrepreneurial skills. |
| 2. | To prepare value-aided engineering professionals to meet up global industry requirements by imparting cutting edge professional education. |
| 3. | To inculcate the attitude of research and innovation among the stake holders through experiential and project-based teaching-learning pedagogy. |
| 4. | To acquire global talent pool by providing world class amenities for teaching, learning & research. |

Graduates will demonstrate ability to:

| PEO No | PROGRAMME EUCATIONAL OBJECTIVES |
|---|---|
| PEO 1 | Solve real-world engineering problems, design and develop innovative and cost-effective solutions exhibiting engineering skills/fundamentals to cater needs of society. |
| PEO 2 | Excel in Industry/technical profession, higher studies, and entrepreneurship exhibiting comprehensive competitiveness. |
| PEO 3 | Exhibit professional ethics & values, effective communication, teamwork, multidisciplinary approach, and ability to relate engineering issues to broader societal framework. |

| PO No | PROGRAMME OUTCOMES |
|---|---|
| PO 1 | Engineering knowledge:<br>Apply knowledge of engineering fundamentals, science, mathematics & engineering specialization for the solution of complex engineering problems. |
| PO 2 | Problem analysis:<br>Identify, formulate and analyze complex engineering problems leading to substantial conclusions using basic principles of mathematics, science and engineering. |
| PO 3 | Design/development of solutions:<br>Develop solutions for complex engineering problems and design system components or processes meeting specified needs having due consideration for the safety and societal & environmental considerations. |
| PO 4 | Conduct investigations of complex problems:<br>Use research-based knowledge & methods like design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid & viable conclusions. |
| PO 5 | Modern tool usage:<br>Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools for prediction and modeling of complex engineering activities with an understanding of the limitations. |
| PO 6 | The engineer and society:<br>Apply cognitive learning by the contextual knowledge to assess societal, health, safety, legal and cultural issues and following responsibilities relevant to the professional engineering practice. |
| PO 7 | Environment and sustainability:<br>Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge & skill needed for sustainable development. |
| PO 8 | Values & Ethics:<br>Apply basic moral values & ethical principles and pledge to professional ethics/norms and responsibilities of the engineering practice. |
| PO 9 | Individual and team work:<br>Function effectively as an individual/as a team member or as a leader in diverse teams, and in multidisciplinary settings. |
| PO 10 | Communication:<br>Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. |
| PO 11 | Project management and finance:<br>Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects in multidisciplinary environments. |
| PO 12 | Life-long learning:<br>Recognize the need, do necessary preparation and ability to engage in independent and life-long learning in the broadest context of technological change. |

| PSO No | PROGRAMME SPECIFIC OUTCOMES (PSO)<br>COMPUTER ENGINEERING |
|---|---|
| PSO 1 | Develop expertise in utilizing contemporary tools and technologies in cybersecurity to identify, analyze and mitigate threats, ensuring data integrity, confidentiality and availability of digital assets and systems. |
| PSO 2 | Design and implement secure information systems and policies, applying principles of cryptography, network security, and risk management to solve real-world cybersecurity challenges and enhance the security posture across various sectors. |
| PSO 3 | Prepare technically competent employee, researcher, entrepreneur, and excel in competitive exams, and increase passion for higher studies. |

| Credit Guidelines (General) | | | |
|---|---|---|---|
| **Component** | **Hour/Week** | **Credit** | **Total Hours/Semester** |
| Theory | 1 | 1 | 15 |
| Practical | 2 | 1 | 30 |
| Tutorial | 1 | 1 | 15 |
| Note: In specific cases; extra credits can be granted for specific/important subjects. | | | |

| CO-PO Mapping Guidelines | | |
|---|---|---|
| **Mapping Level** | **% age Mapping** | **Indicator** |
| 0 / - | 0 | No Mapping |
| 1 | 0-33 | Low Level (Slightly Mapped) |
| 2 | 33-66 | Medium Level (Moderately Mapped) |
| 3 | >66 | High Level (Strongly Mapped) |

# Syllabus Book

# Diploma in Computer Engineering

**P P Savani University**

School of Engineering
Institute of Diploma Studies

Effective From: 2024-25
Authored by: P P Savani University

# CONTENT

# FIRST YEAR
# DIPLOMA IN COMPUTER ENGINEERING

| P P SAVANI UNIVERSITY | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCHOOL OF ENGINEERING | | | | | | | | | | | | | | | |
| INSTITUTE OF DIPLOMA STUDIES | | | | | | | | | | | | | | | |
| TEACHING & EXAMINATION SCHEME FOR DIPLOMA ENGINEERING PROGRAMME AY:2024-25(BATCH:2024) | | | | | | | | | | | | | | | |
| **Sem.** | **Course Code** | **Course Title** | **Offered By** | **Teaching Scheme** | | | | | **Examination Scheme** | | | | | | |
| | | | | **Contact Hours** | | | | **Credit** | **Theory** | | **Practical** | | **Tutorial** | | **Total** |
| | | | | **Theory** | **Practical** | **Tutorial** | **Total** | | **CE** | **ESE** | **CE** | **ESE** | **CE** | **ESE** | |
| 1 | IDSH1010 | Fundamentals of Mathematics | SH | 3 | 0 | 2 | **5** | 5 | 40 | 60 | 0 | 0 | 50 | 0 | **150** |
| | IDSH1020 | Engineering Physics | SH | 3 | 2 | 0 | **5** | 4 | 40 | 60 | 20 | 30 | 0 | 0 | **150** |
| | IDME1010 | Basics of Mechanical & Civil Engineering | ME | 2 | 4 | 0 | **6** | 4 | 40 | 60 | 40 | 60 | 0 | 0 | **200** |
| | IDCE1010 | Computer Applications | CE | 3 | 4 | 0 | **7** | 5 | 40 | 60 | 40 | 60 | 0 | 0 | **200** |
| | IDME1020 | Engineering Workshop | ME | 0 | 2 | 0 | **2** | 1 | 0 | 0 | 50 | 0 | 0 | 0 | **50** |
| | CFLS1030 | Functional English-I | CFLS | 2 | 0 | 0 | **2** | 2 | 40 | 60 | 0 | 0 | 0 | 0 | **100** |
| | | | | | | **Total** | **27** | **21** | | | | | | | **850** |
| 2 | IDSH1040 | Engineering Mathematics | SH | 3 | 0 | 2 | **5** | 5 | 40 | 60 | 0 | 0 | 50 | 0 | **150** |
| | IDSH1050 | Fundamentals of Chemistry | SH | 3 | 2 | 0 | **5** | 4 | 40 | 60 | 20 | 30 | 0 | 0 | **150** |
| | IDCV1010 | Engineering Mechanics | CV | 3 | 2 | 0 | **5** | 4 | 40 | 60 | 20 | 30 | 0 | 0 | **150** |
| | IDIT1010 | Introduction to Computer Programming | IT | 3 | 4 | 0 | **7** | 5 | 40 | 60 | 40 | 60 | 0 | 0 | **200** |
| | IDSH1060 | Electrical & Electronics Workshop | SH | 0 | 2 | 0 | **2** | 1 | 0 | 0 | 50 | 0 | 0 | 0 | **50** |
| | CFLS1040 | Functional English-II | CFLS | 2 | 0 | 0 | **2** | 2 | 40 | 60 | 0 | 0 | 0 | 0 | **100** |
| | | | | | | **Total** | **26** | **21** | | | | | | | **800** |

# SEMESTER 1

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Applied Science & Humanities

Course Code: IDSH1010
Course Name: Fundamentals of Mathematics
Prerequisite Course(s): Algebra, Geometry, Trigonometry till 9th Standard level

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 3 | 0 | 2 | 5 | 40 | 60 | - | - | 50 | 0 | 150 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the course:**
To help learners to

- outline logarithm properties.
- implement concepts of Determinants and Matrices for solving science and engineering problems.
- present usefulness of trigonometry.
- acquire knowledge of co-ordinate geometry and ability to work with applications to Engineering Mathematics.

**Course Content:**

| **SECTION-I** | | | |
|---|---|---|---|
| Module No. | Content | Hours | Weightage in % |
| 1. | **Logarithm**<br>Basic concept of logarithm, Rules and related examples, Applications of logarithm. | 5 | 14 |
| 2. | **Determinants and Matrices**<br>Basic concept of determinants and matrices, Addition and subtraction, Product, Inverse up to 3X3 matrix, Solution of simultaneous equations up to three variables, Applications of Determinants and matrices. | 9 | 18 |
| 3. | **Trigonometry**<br>Basic concept 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, Applications oftrigonometry. | 9 | 18 |
| **SECTION-II** | | | |

| | | | |
|---|---|---|---|
| 4. | **Co-ordinate geometry**<br>Introduction, Point, Distance formula, Mid-point, Locus of a point, Straight lines, Slope of a line, Equation of a straight line, The general equation, Angle between two lines, Circle, Tangent and normal, Equation of tangent and normal | 6 | 15 |
| 5. | **Vectors**<br>Basic concept of vector and scalar, Addition and subtraction, Product of vectors, Geometric meaning of scalar and vector product, Angle between two vectors, Applications of dot and cross product, Work done and moment of force. | 8 | 15 |
| 6. | **Mensuration**<br>Basic concept of Mensuration, Area of Triangle, Square, Rectangle, Trapezium, Parallelogram, Rhombus and Circle surface, Volume of Cuboids, Cone, Cylinder and Sphere. | 8 | 20 |

**List of Tutorials:**

| Sr. No. | List of Tutorial | Hours |
|---|---|---|
| 1. | Logarithm-1 | 2 |
| 2. | Logarithm-2 | 2 |
| 3. | Determinants and Matrices-1 | 2 |
| 4. | Determinants and Matrices-2 | 2 |
| 5. | Determinants and Matrices-3 | 2 |
| 6. | Trigonometry-1 | 2 |
| 7. | Trigonometry-2 | 2 |
| 8. | Trigonometry-3 | 2 |
| 9. | Co-ordinate geometry-1 | 2 |
| 10. | Co-ordinate geometry-2 | 2 |
| 11. | Vectors-1 | 2 |
| 12. | Vectors-2 | 2 |
| 13. | Mensuration-1 | 2 |
| 14. | Mensuration-2 | 2 |
| 15. | Mensuration-3 | 2 |

**Text Book:**

| Title | Author(s) | Publication |
|---|---|---|
| Advanced Mathematics for Polytechnic | Dr. N. R. Pandya | Macmillan Publication |
| Engineering Mathematics - 3rd Edition | Anthony croft & others | Pearson Education Publication |

**Reference Book:**

| Title | Author(s) | Publication |
|---|---|---|
| Basic Mathematics | G.C. Patel and Ami C. Shah | Atul Prakashan |
| Applied Mathematics for Polytechnics - 10th Edition | H. K. Dass | H. K. Dass |
| Applied Mathematics | W. R.Neelkanth | Sapna Publication |

**Course Evaluation:**

**Theory:**

- Continuous Evaluation consists of two tests, each of 30 marks and 1 hour of duration and average of the same will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination consists of 60 marks.

**Tutorial:**

- Continuous evaluation consists of performance of tutorial which will be evaluated out of 10 Marks for each tutorial and average of the same will be converted to 30 marks.
- MCQ based examination consists of 20 marks.

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| **IDSH1010** | **FUNDAMENTALS OF MATHEMATICS** |
|---|---|
| CO 1 | Explain logarithmic properties and solve exponential expressions. |
| CO 2 | Demonstrate the ability to crack engineering related problems based on determent and matrices. |
| CO 3 | Define properties of trigonometry and vectors in construction. |
| CO 4 | Establish the knowledge of coordinate geometry, and ability to solve engineering problems. |
| CO 5 | Explain the surface area and volume of different shapes and bodies. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| **Module No** | **Content** | **RBT Level** |
|---|---|---|
| 1 | Logarithm | 1,2,3,5 |
| 2 | Determinants and Matrices | 2,3,4,5 |
| 3 | Trigonometry | 2,3,4,5,6 |
| 4 | Coordinate geometry | 2,3,5 |
| 5 | Vectors | 2,3,5 |
| 6 | Mensuration | 1,2,3,5 |

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Applied Science & Humanities

Course Code: IDSH1020
Course Name: Engineering Physics
Prerequisite Course(s): Concept of Science up to 9th Standard

**Teaching & Examination Scheme**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 3 | 2 | 0 | 4 | 40 | 60 | 20 | 30 | 0 | 0 | 150 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the course:**
To help learners to

- demonstrate the ability to think in core concept of their engineering application bystudying various topics involved in branch specific applications.
- demonstrate the ability to use appropriate mathematical techniques and concepts to obtain quantitative solutions to problems in physics.
- demonstrate the ability to collect and analyze data and to prepare coherent reports of his or her findings.

**Course Content:**

| **SECTION-I** | | | |
|---|---|---|---|
| Module No. | Content | Hours | Weightage in % |
| 1. | **SI Units & Measurements:** Need of measurement and unit in engineering and science, Definition of unit and requirements of standard unit, Systems of units- CGS, MKS and SI, Fundamental and Derived quantities and their units, Least count and range of instrument, Vernier caliper, Micrometer screw gauge, Accuracy, Precision, Error and types of error, Estimation of errors - Absolute error, Relative error and Percentage error, Rules and identification of significant figures | 5 | 10 |
| 2. | **Motion in a Plane:** Scalar and vector quantities, Position and displacement vectors, General vectors and their notations, Equality of vectors, multiplication of vectors by a real number, Addition and subtraction of vectors, Relative velocity, Unit vector, Resolution of a vector in a plane - rectangular components, Scalar and Vector | 6 | 15 |

| | | | |
|---|---|---|---|
| | product of vectors, Motion in a plane, Cases of uniform velocity and uniform acceleration-projectile motion, Uniform circular motion | | |
| 3. | **Force and Motion:**<br>Recapitulation of equations of motion, Newton's 1st law of motion, Force, basic forces in motion, Gravitational force, Electrostatic force, Electromagnetic force, Nuclear force, Inertia, types of inertia, Momentum and Newton's 2nd law of motion, Impulse of force, Impulse as the product of force and time, impulse as the difference of momentum, Newton's 3rd law of motion and its examples, Law of conservation of momentum | 6 | 15 |
| 4. | **Work, Energy and Power:**<br>Work done by a constant force and a variable force, Kinetic energy, Work-energy theorem, Power, Notion of potential energy, Potential energy of a spring, Conservative forces, Conservation of mechanical energy (kinetic and potential energies), Non-conservative forces, Motion in a vertical circle, Elastic and inelastic collisions in one and two dimensions | 6 | 10 |
| **SECTION-II** | | | |
| 5. | **Mechanical Properties of Solids and fluids:**<br>Deforming force, Restoring force, Elastic and plastic body, Stress and Strain with their types, Elastic limit, Hooke's law, Young's modulus, Bulk modulus, Modulus of rigidity and Relation between them (no derivation), Stress- Strain diagram, Yield point, Ultimate stress, Breaking stress, Factor of safety.<br>Pascal's law and its applications (hydraulic lift and hydraulic brakes), Effect of gravity on fluid pressure, Viscosity, Stokes' law, terminal velocity, streamline and turbulent flow, critical velocity, Bernoulli's theorem and its applications, Surface energy and surface tension, angle of contact | 7 | 20 |
| 6. | **Heat Transfer:**<br>Introduction to thermodynamics, Temperature and Heat, Transmission of heat - Conduction, Convection and Radiation, Good and bad conductor of heat with examples, Law of thermal conductivity, Coefficient of thermal conductivity and its S.I. unit<br>Heat capacity and Specific heat of materials, Celsius, Fahrenheit and Kelvin temperature scales and their conversion formula | 5 | 10 |
| 7. | **Oscillations:**<br>Periodic motion - time period, frequency, displacement as a function of time, Periodic functions, Simple harmonic motion (S.H.M) and its equation, Phase Oscillations of a spring-restoring force and force constant, Energy in S.H.M. Kinetic and potential energies, Simple pendulum derivation of expression for its time period, Free, forced and damped oscillations (qualitative ideas only), resonance | 5 | 10 |
| 8. | **Waves:**<br>Wave motion, Transverse and longitudinal waves, Speed of wave | 5 | 10 |

| | | | |
|---|---|---|---|
| | motion, Displacement relation for a progressive wave, Principle of superposition of waves, Reflection of waves, Sanding waves in strings and organ pipes, Fundamental mode and harmonics, Beats, Doppler effect | | |

**List of Practical:**

| Sr. No. | List of Practical | Hours |
|---|---|---|
| 1. | To study about basic unit conversion and dimension analysis. | 4 |
| 2. | To measure length and diameter of the given object using Vernier callipers. | 2 |
| 3. | To measure the thickness of slit and diameter of wire with help of micrometer Screw Gauge. | 2 |
| 4. | To determine the surface tension of water by capillary rise method. | 4 |
| 5. | To Verify Ohm's Law by using an Ammeter & Voltmeter | 2 |
| 6. | To determine the wavelength of sound produced (i) in an air column and the velocity of sound in air at room temperature using a resonance column and a tuning fork. | 4 |
| 7. | To determine Young's modulus of a material of a beam by the method of bending of a beam. | 4 |
| 8. | To determine the modulus of rigidity of the material of wire by dynamical method. | 2 |
| 9. | To determine the value of 'g' by using a Simple Pendulum. | 2 |
| 10. | Measurement of g: Use of a Kater's Pendulum. | 2 |
| 11. | To measure the temperature of given material by any temperature measuring instrument. | 2 |

**Text Book:**

| Title | Author(s) | Publication |
|---|---|---|
| Basic physics for Diploma group -1 | - | Atul Prakashan |

**Reference Books:**

| Title | Author(s) | Publication |
|---|---|---|
| Physics Part-I and II | Resnick and Haliday | Wiley Eastern Publication |
| Concept of Modern Physics | Arthur Beiser | Tata McGraw Hill |
| Concept of Physics | H C Verma | - |
| Fundamental of physics | Gomber & Gogia | Pradeep publications Jalandhar |
| NCERT Physics part 1 & 2 | - | NCERT |

**Course Evaluation:**

**Theory:**

- Continuous Evaluation Consist of Two Test Each of 30 Marks and 1 Hour of duration.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination will consist of 60 Marks Exam.

**Practical:**

- Continuous Evaluation Consist of Performance of Practical which should be evaluated out of 10 for each practical in the next turn and average of the same will be converted to 10 Marks.

- Internal Viva component of 10 Marks.
- Practical performance/quiz/drawing/test of 20 Marks during End Semester Exam.
- Viva/Oral performance of 10 Marks during End Semester Exam.

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| **IDSH1020** | **ENGINEERING PHYSICS** |
|---|---|
| CO 1 | Identify physical quantities, unit systems and estimate measurements with accuracy by minimizing errors to solve real life measurements. |
| CO 2 | Classify different types of motion, interpreat the equation of motion and conservation law of momentum to describe motion of rocket, recoil of gun etc. derive relationships for work, energy and power and solve related problems. |
| CO 3 | Understand the concept of elasticity, it's types and articulate in engineering applications, especially in civil engineering. the knowledge is extended to explore the properties of fluids, construct the concepts of viscosity and surface tension. |
| CO 4 | Explain the basics of heat transfer and employ the knowledge of heat and thermodynamics in different engineering sectors especially mechanical and chemical. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| **Module No** | **Content** | **RBT Level** |
|---|---|---|
| 01 | Introductory Concepts | 3,5 |
| 02 | Mechanics | 1,4 |
| 03 | Work, Energy and Power | 1,3 |
| 04 | Mechanical properties of solids | 2,6 |
| 05 | Properties of fluids | 1,5 |
| 06 | Heat transfer | 3,4 |

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Mechanical Engineering

Course Code: IDME1010
Course Name: Basics of Mechanical and Civil Engineering
Prerequisite Course(s): -

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 02 | 04 | 00 | 04 | 40 | 60 | 40 | 60 | 00 | 00 | 200 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**
To help learners to

- acquire an inclusive knowledge of fundamental concept of Mechanical Engineering.
- understand working of simple mechanical devices.
- study and gain significance of Mechanical Engineering in various fields.
- read and interpret the building drawing
- select different types of construction materials as per requirements

**Course Content:**

| **SECTION-I** | | | |
|---|---|---|---|
| Module No. | Content | Hours | Weightage in % |
| 1. | **Introduction of Mechanical Engineering:** Introduction, Scope, Importance, Basic terminologies in mechanical engineering, Basic mechanical components used in routine, Pipe and pipe fittings, Hand tools, Power tools | 02 | 7 |
| 2. | **Heat interactive equipment:** Heat transfer and its Modes, Boilers, Classification andWorking, Concept of Accessories and Mountings – Types, Applications, Prime movers, Meaning, Classification, Steam turbine working, Layout of thermal power plant, Working and applications, Internal combustion engines – Definition, Classification, Components, Working of two-stroke and four-stroke engines, S.I. and C.I. engines | 04 | 13 |
| 3. | **Power Transmission and Safety:** Power transmission: Importance, Modes, Types, Applications, Couplings in power transmission, Safety normsto be followed for preventing accidents. | 03 | 10 |

| | | | |
|---|---|---|---|
| 4. | **Hydraulic and pneumatic devices:**<br>Concept of theory of fluid flow, general properties of fluid flow, Pumps, Water turbines, and Air compressors – working principle, types, parts, performance, troubles and remedies, applications. | 03 | 10 |
| 5. | **Manufacturing processes:**<br>Overview of manufacturing processes, Welding concept and overview, Types, Arc and Gas welding, Accessories and Consumables, Precautions and Safety during arc and gas welding, Casting - Introduction, Applications. | 03 | 10 |
| **SECTION-II** | | | |
| 6. | **Civil Engineering: An Overview**<br>Introduction, Branches, Scope, Impact, Role of Civil Engineer, Unit of measurement, Unit conversion (Length, Area, Volume). | 02 | 7 |
| 7. | **Civil Engineering Surveying:**<br>Surveying & leveling (its importance and types), Necessity for leveling, Principals of surveying, Instrument/tools used for survey and level, Various methods of finding the field survey measurements, Chain and Compass Survey | 05 | 17 |
| 8. | **Civil Engineering Drawing**:<br>Types of building drawings, Abbreviation, conventions & symbols in civil drawing, building byelaws for planning of residential building and industrial building, Planning of simple residential and industrial building | 04 | 13 |
| 9. | **Construction Materials**:<br>Common construction materials such as cement, Brick, Stone, Timber, Steel and Concrete, Properties of each materials & their acceptable standards, Quality parameters of materials, Estimations and costing for simple structure (only the material cost) | 04 | 13 |

**List of Practical:**

| Sr. No. | Details of Practical | Hours |
|---|---|---|
| 1. | Study of few selected boilers, accessories and mountings | 02 |
| 2. | Numerical based on heat interactive equipment | 02 |
| 3. | Study of power and motion transmission systems | 04 |
| 4. | Numerical based on power transmission and safety | 02 |
| 5. | Study of various pumps | 04 |
| 6. | Numerical based on hydraulic and pneumatic devices | 02 |
| 7. | Study and demonstration of basic machine tools | 04 |
| 8. | Numerical based on manufacturing processes | 02 |
| 9. | Machine parameters of wheel and differential axel apparatus | 04 |
| 10. | Study and demonstration of basic mechanical equipment | 04 |
| 11. | Unit Conversation Exercise | 02 |
| 12. | Linear Measurement. | 04 |
| 13. | Angular Measurement (Prismatic Compass) | 04 |
| 14. | Angular Measurement (Surveyor Compass) | 04 |
| 15. | Determine R.L of given point by Dumpy level without change point. | 04 |

| | | |
|---|---|---|
| 16. | Determine R.L of given point by Dumpy level with change point. | 04 |
| 17. | Brick masonry bonds | 04 |
| 18. | Aggregate experiments | 02 |
| 19. | Brick masonry tests | 02 |

**Reference Book(s):**

| Title | Author/s | Publication |
|---|---|---|
| Elements of Mechanical engineering | P. S. Desai and S. B. Soni | Atul Prakashan |
| Theory of Machines | R. S. Khurmi and J. K. Gupta | S. Chand |
| Heat engine | Shah and Pandya | Charotar Publishing House |
| Hydraulic machines | Jagdish Lal | Metropolitan Book Company |
| Elements of Workshop | Hazara Chaudhary | Asia Publishing House |
| Text book on Surveying & Levelling | S. B. Junnarkar and H. J. Shah | Laxmi Publication |

**Course Evaluation:**

**Theory:**

- Continuous Evaluation Consist of Two Test Each of 30 Marks and 1 Hour of duration.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination will consist of 60 Marks Exam.

**Practical:**

- Continuous Evaluation Consist of Performance of Practical which should be evaluated out of 10 for each practical in the next turn and average of the same will be converted to 10 Marks.
- Internal Viva component of 10 Marks.
- Practical performance/quiz/drawing/test of 20 Marks during End Semester Exam.
- Viva/Oral performance of 10 Marks during End Semester Exam.

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| IDME1010 | BASICS OF MECHANICAL AND CIVIL ENGINEERING |
|---|---|
| CO 1 | Understand the mechanical engineering background. |
| CO 2 | Discover heat transfer in context with engines and boilers. |
| CO 3 | Differentiate power transmission working. |
| CO 4 | Identify the scope of civil engineering based on field experience. |
| CO 5 | Illustrate measurements of surveying & levelling & building components. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| Module No | Content | RBT Level |
|---|---|---|
| 1 | Introduction to Mechanical Engineering | 1,2 |
| 2 | Heat Interactive equipment | 2,4 |
| 3 | Power Transmission and Safety | 1,2,3 |
| 4 | Hydraulic and pneumatic devices | 2,4 |
| 5 | Manufacturing Processes | 2,4,6 |
| 6 | Civil Engineering: An Overview | 1,2 |
| 7 | Civil Engineering Drawing | 2,4 |
| 8 | Construction Materials | 2,4,5 |

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Computer Engineering

Course Code: IDCE1010
Course Name: Computer Applications
Prerequisite Course (s): --

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 03 | 04 | 00 | 05 | 40 | 60 | 40 | 60 | 00 | 00 | 200 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**
To help learners to

- Familiarize with components of computer and basic operations of it.
- Provide practical and hands-on experience of application used to create documents.
- Introduce internet and its usage.

**Course Content:**

| **SECTION-I** | | | |
|---|---|---|---|
| Module No. | Content | Hours | Weightage in % |
| 1. | **Basics of Computer System**<br>Introduction and Characteristics, Generation, Classification, Applications, describe computer hardware and software, Identify I/O, Devices, describe functioning of CU, ALU and memory unit, differentiate various types of printers, Demonstrate various file handling operations, Introduction to Memory, Memory hierarchy, Primary memory and its type, Secondary memory, Classification of Secondary memory, Cache Memory and Virtual Memory. | 08 | 20 |
| 2. | **Computer Software**<br>Software concept Classification of Software, System software and Application Software, Overview of Operating System, Objectives and Functions of O.S, Types of Operating System, Batch Processing, Multiprogramming, Time Sharing OS, Features of DOS, Windows and UNIX, Programming Languages, Compiler, Interpreter, Computer Virus Different Types of computer virus, Detection and prevention of Virus Application of computers in different Domain. Installation of device drivers and other required software, need and method of backup. | 08 | 15 |

| | | | |
|---|---|---|---|
| 3. | **Using MS-Word**<br>Use basics text formatting features, manipulate text, use page Setup features, use spell and grammar utility, Work with graphics/ clipart, Create and manipulate table, use auto shapes and its formatting with text, Use Image and table formatting. | 07 | 15 |
| **SECTION-II** | | | |
| 4. | **Using MS-Excel**<br>Use basic formatting and data entry features, use formula and functions, Work with graphics, Create and manipulate charts, Use header and footer options, Setup page layout and print worksheet | 07 | 20 |
| 5. | **Using MS - PowerPoint**<br>Create new presentation and apply basic formatting features, use master slide, Create and manipulate table, Work with objects and clips, Work with video, Work with audio, use special effects, Use navigation and hyper linking, Custom Animation and Transitions | 07 | 15 |
| 6. | **Multi Media, Internet usage and Google Applications**<br>Introduction of Multimedia, Types of Multimedia, and Use of Multimedia in various platforms, Describe Internet, WWW and Web Browsers: Web Browsing software, Surfing the Internet, Chatting on Internet, Basic of electronic mail, Using Emails, Document handling, Network definition, Common terminologies: LAN, WAN, Node, Host, Workstation, bandwidth, Network Components: Severs, Clients, Communication Media.<br>Introduction of Google Applications, Gmail, Google Drive, Docs, Spreadsheet | 08 | 15 |

**List of Practical(s):**

| Sr. No | List of Practical | Hours |
|---|---|---|
| 1. | Introduction to different hardware components of PC and Assembling of PC. | 02 |
| 2. | Installation of OS and other Software. Partitions of Drive, Compression Utilities: WinZip, Defragmenting Hard, Formatting Hard disk, etc. | 04 |
| 3. | Use accessories utilities of windows OS the User Interface, Using Mouse and Moving Icons on the screen, The My Computer Icon, The Recycle Bin, Status Bar, Start and Menu & Menu-selection, Running an Application, Windows Explorer Viewing of File, Folders and Directories, Creating and Renaming of files and folders, Opening and closing of different Windows, Control Panels, Setting the date and Sound, Create Users and password. | 02 |
| 4. | Entering and editing text in document file. Apply formatting features on Text like Bold, Italics, Underline, font type, color and size, Apply features like bullet, numbering in Microsoft word. | 04 |
| 5. | Create and manipulate tables, create documents, insert images, format tables, Smart art, Chart in Microsoft word, Insert Hyperlink, Page number and textbox in word. | 04 |
| 6. | Create Event Registration Form and Resume in Microsoft word. | 04 |
| 7. | Entering and editing data in worksheet, Fill Series, fill with formatting and without formatting Using Microsoft Excel. | 02 |

| | | |
|---|---|---|
| 8. | Create and manipulate Charts, Shape, Sparkline Charts, Clipart, and table. | 04 |
| 9. | Filter Data Using Filter and advanced filter function with more than 2 conditions, Freeze row & Column in Microsoft Excel. | 02 |
| 10. | Create Mark sheet, and Pay slips using Excel, Apply various formula and functions in the sheet. | 06 |
| 11. | Print sheet using print area, Page setting, print titles, Adjusting margins, Page break, headers and footers. | 02 |
| 12. | Basic operations of Power point, Create PPT and inset and delete slides in power point, Use of Master Slide in Presentation, Create Project presentations, Lecture presentations, Apply Custom animation & Transition. Apply basic formatting features in presentation like font, font size, font color, text fill, spacing and line spacing Formatting text boxes, word arts, styles bullet and numbering in Microsoft power point. Working with drawing tools, applying shape or picture styles, Applying object borders, object fill, object effects in Microsoft Power point. | 16 |
| 13. | Working with video, Link to video and sound files using power point. | 02 |
| 14. | Internet Searching, Browsers, Various functions of Browsers (Eg. Bookmark, Customize Settings), Study of components like switches, bridges, routers, Wi-Fi router, | 02 |
| 15. | Introduction of Google application, Compose Gmail, File attachment, add signature. | 02 |
| 16. | Demonstration of Google drive, Sharing File Using Google drive, Spreadsheet, Docs and Google slides | 02 |

**Reference Book(s):**

| Title | Author/s | Publication |
|---|---|---|
| Computer Course | R.Taxali | Tata McGraw Hills. New Delhi. |
| MS-Office for Dummies | Wallace Wang | Wiley India, New Delhi |
| Basic Computer Engineering | Petes S. J., Francis. | Tata McGraw-Hill Education, 2011 |

**Web Material Link(s):**

- http://www.digimat.in/nptel/courses/video/106104128/L01.html
- https://www.youtube.com/watch?v=3QiItmIWmOM

**Course Evaluation:**

**Theory**

- Continuous Evaluation Consist of two Tests of 30 Marks and 1 Hour of duration and average of the same will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination will consist of 60 Marks Exam.

**Practical:**

- Continuous Evaluation Consist of Performance of Practical which should be evaluated out of 10 for each practical in the next turn and average of the same will be converted to 20 Marks.
- Internal Viva component of 20 Marks.
- Practical performance/quiz/test of 30 Marks during End Semester Exam.
- Viva/Oral performance of 30 Marks during End Semester Exam.

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| IDCE1010 | COMPUTER APPLICATIONS |
|---|---|
| CO 1 | Identify the components of a computer system and demonstrate basic proficiency in commonly used applications. |
| CO 2 | Analyze, synthesize and evaluate school, work or home situations and use application software to complete information processing tasks efficiently and effectively. |
| CO 3 | Apply the concepts of microsoft office – word, excel, and powerpoint to produce professional documentation and presentation. |
| CO 4 | Access the internet and learn to use the browse, search and hyperlink capabilities of web browsers. |
| CO 5 | Identify the significance of multimedia and its utilization in various platforms. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| Module No | Content | RBT Level |
|---|---|---|
| 1 | Basics of Computer system | 1,2 |
| 2 | Computer Software | 1,2 |
| 3 | Using MS-Word | 2,3 |
| 4 | Using MS-Excel | 2,3,4 |
| 5 | Using MS-Powerpoint | 2,3 |
| 6 | Multi Media, Internet Usage and Google Applications | 2,3,5 |

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Mechanical Engineering

Course Code: IDME1020
Course Name: Engineering Workshop
Prerequisite Course(s): -

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 00 | 02 | 00 | 01 | 00 | 00 | 50 | 00 | 00 | 00 | 50 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**
To help learners to

- Understand basic know-how of various hand tools and their use in different sections of manufacturing
- Understand the use of workshop practices in day to day industrial as well domestic life that help to dissolve the routine problems
- Build the understanding of the complexity of the industrial job, along with time and skills requirements of the job
- Learn about the safety measures to be taken while working in workshop.
- Learn about operation wise tool selection.

**Course Content:**

| Module No. | Content | Hours |
|---|---|---|
| 1. | **Introduction and Demonstration of Safety Norms and various shops:** Introduction to various shops / sections and workshop layouts, Safety norms to be followed in a workshop. | - |
| 2. | **Fitting shop:** Introduction of fitting shop, Safety, Making a job as per drawing including marking and performing other operations | - |
| 3. | **Carpentry shop:** Introduction of carpentry shop, Safety, Making a job as per drawing including marking and performing other operations | - |
| 4. | **Smithy shop:** Introduction of smithy shop, Safety, Making a job as per drawing including marking and performing other operations | - |
| 5. | **Sheet metal shop:** Introduction of sheet metal shop, Safety, Making a job as per drawing including marking and performing other operations | - |

| | | |
|---|---|---|
| 6. | **Pipe fitting:**<br>Introduction of pipe fitting shop, Safety, understanding various pipe fitting tools and performing operations | - |
| 7. | **Machine Shop:**<br>Introduction and demonstration of various machines like Lathe, Drilling, Grinding, Hack Saw Cutting etc. | - |

**List of Practical:**

| Sr. No. | List of Practical | Hours |
|---|---|---|
| 1. | Introduction and Demonstration of Safety Norms and various shops. | 02 |
| 2. | To Perform a Job of Fitting Shop. | 04 |
| 3. | To Perform a Job of Carpentry Shop. | 06 |
| 4. | To Perform a Job of Black Smithy shop. | 06 |
| 5. | To Perform a Job of Sheet metal Shop. | 04 |
| 6. | To Perform a Job of Plumbing Shop | 04 |
| 7. | Introduction to Machine Tool | 04 |

**Reference Book(s):**

| Title | Author/s | Publication |
|---|---|---|
| Workshop Technology-I | Hazra and Chaudhary | Media promoters & Publisher private limited. |
| Workshop practice manual | K.Venkata Reddy | B. S. Publications |
| Mechanical workshop practice | K.C. John | PHI |

**Course Evaluation:**

**Practical:**

- Continuous Evaluation Consist of Performance of Practical which should be evaluated out of 10 for each practical in the next turn and average of the same will be converted to 20 Marks.
- Internal Viva component of 20 Marks.
- Practical performance/quiz/test of 30 Marks during End Semester Exam.
- Viva/Oral performance of 30 Marks during End Semester Exam.

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| IDME1020 | ENGINEERING WORKSHOP |
|---|---|
| CO 1 | Understand the various measuring instruments. |
| CO 2 | Understand the safety norms required in the workshop. |
| CO 3 | Understand the application of various tools required for different operations. |
| CO 4 | Remember the process of manufacture from a given raw material. |
| CO 5 | Explain various manufacturing processes in machine shop. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| Module No | Content | RBT Level |
|---|---|---|
| 1 | Introduction and Demonstration of Safety Norms and Various Shops | 2,4 |
| 2 | Fitting Shop | 2,4,6 |
| 3 | Carpentry Shop | 2,4,6 |
| 4 | Smithy Shop | 2,4,6 |
| 5 | Sheet metal shop | 2,3,4 |
| 6 | Pipe fittings | 2,3,5 |
| 7 | Machine Shop | 2,3,4 |

# P P Savani University
## Centre for Language Studies

Course Code: CFLS1030
Course Name: Functional English-I
Prerequisite Course(s): --

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 02 | 00 | 00 | 02 | 40 | 60 | 00 | 00 | -- | -- | 100 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**
To help learners to

- hone English Grammar to use language effectively in everyday life.
- use tenses to build vocabulary.
- understand and use Sentence formation and types.
- use comparative degree to express comparison.
- create sentence in active-passive voice.

**Course Content:**

| **Section I** | | | |
|---|---|---|---|
| Module No. | Content | Hours | Weightage in % |
| 1. | **Parts of Speech – I**<br>• Types of Nouns<br>• Verb<br>• Pronoun (personal, possessive)<br>• Adverbs<br>• Adjectives | 05 | 12 |
| 2. | **Parts of Speech – II**<br>• Use of Prepositions of time and place<br>• Conjunctions<br>• Interjections<br>• Articles 'A, An, and The'<br>• Indicators- this, that, these, those | 05 | 13 |
| 3. | **Tenses**<br>• Present and past simple form of 'to be' – am/is/are/was/were<br>• Present Tense (all forms)<br>• Past Tense (all forms)<br>• Future Tense (all forms) | 06 | 25 |
| **Section II** | | | |
| Module No. | Content | Hours | Weightage in % |
| 1. | **Vocabulary**<br>• Basic Vocabulary | 03 | 12 |

| | | | |
|---|---|---|---|
| | • Academic Vocabulary<br>• Jargons | | |
| 2. | **Auxiliary Verb**<br>• So, neither-nor, either-or<br>• Shall, should, can, could, may, might, must | 03 | 13 |
| 3. | **Types of Sentences**<br>• Simple, Compound, and Complex sentences<br>• Practice of Assertive, Negative, Interrogative, Exclamatory Sentences<br>• Question Tag<br>• 'WH' Questions<br>• 'How much' & 'How Many'<br>• Reported Speech<br>• Active-Passive voice | 08 | 25 |

**Text Book (s):**

| Title | Author/s | Publication |
|---|---|---|
| High School English Grammar & Composition | Wren & Martin | Blackie ELT Books (An imprint of S. Chand Publishing) |

**Reference Book (s):**

| Title | Author | Publication |
|---|---|---|
| Intermediate English Grammar (Second Edition) | Raymond Murphy | Cambridge University Press |
| Advanced English Grammar | Martin Hewings | Cambridge University Press |

**Course Evaluation:**

**Theory:**

- Continuous Evaluation consists of two tests each of 25 marks.
- End Semester Examination consists of 60 marks.

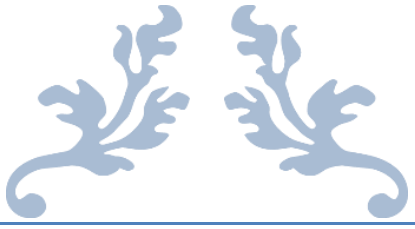
**Course Outcome(s):**

| CFLS1030 | FUNCTIONAL ENGLISH-I |
|---|---|
| CO 1 | Identify and use parts of speech effectively to express them. |
| CO 2 | Understand familiar words related to everyday communication. |
| CO 3 | Use English grammar to communicate effectively. |
| CO 4 | Utilize tenses in real-world communication. |
| CO 5 | Apply various vocabularies to express thoughts. |
| CO 6 | Express comparison effectively. |
| CO 7 | Use active-passive voice and reported speech. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| Module No | Content | RBT Level |
|---|---|---|
| 1 | Grammar & Vocabulary | 1,3 |
| 2 | Listening | 2,4,5 |
| 3 | Speaking | 3,6 |
| 4 | Reading | 2,4,5 |
| 5 | Writing | 3,6 |



# SEMESTER 2

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Applied Science & Humanities

Course Code: IDSH1040
Course Name: Engineering Mathematics
Prerequisite Course(s): Algebra, Geometry, Trigonometry till 9th Standard level

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 3 | 0 | 2 | 5 | 40 | 60 | - | - | 50 | 0 | 150 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the course:**
To help learners to

- give a comprehensive coverage at an introductory level to the subject of Functions and Limits, Differentiation, Integration and First Order Differential Equations.
- recognize importance of differentiation and integration for solving engineering problems.

**Course Content:**

| **SECTION-I** | | | |
|---|---|---|---|
| Module No. | Content | Hours | Weightage in % |
| 1. | **Functions and Limits**<br>Introduction, Function, Types of function, Classification of function, Limit of a function, Properties of limit, Standard limits, limit of trigonometric functions. | 5 | 14 |
| 2. | **Differentiation**<br>Introduction, Differentiation, Geometric meaning, Derivative using first principle, Derivative of standard functions, Working rules, Differentiation of composite function, Differentiation of parametric functions, Differentiation of implicit function, Derivative using logarithms, Successive differentiation, Applications of differentiation (Velocity, Acceleration, Maxima & Minima simple problems). | 9 | 18 |
| 3. | **Integration**<br>Introduction, Integration of standard functions, Integration by substitution, Integration by parts, Integration using partial fraction, Definite integrals, Theorem on definite integrals, Applications of Integration (Area and Volume simple problems). | 9 | 18 |
| **SECTION-II** | | | |
| 4. | **Differential Equations of First order and First degree** | 9 | 18 |

| | | | |
|---|---|---|---|
| | Introduction, Formation of differential equations, Solution of differential equations, Separation of variables, Homogeneous equations, Exact Differential Equations, Integrating factor method, Linear differential equation. | | |
| 5. | **Complex Number**<br>Introduction, Mathematical Operations, Polar form, Modulus, Amplitude Farm, De Movire's Theorem. | 6 | 18 |
| 6. | **Statistics**<br>Introduction, Central tendency, Mean, Mean of discrete observations, Mean of grouped data, Step deviation method, Median, Median for grouped data, Mode, Standard deviation, Standard deviation for grouped data. | 7 | 14 |

**List of Tutorials:**

| Sr. No. | List of Tutorial | Hours |
|---|---|---|
| 1. | Functions and Limits-1 | 2 |
| 2. | Functions and Limits-2 | 2 |
| 3. | Differentiation-1 | 2 |
| 4. | Differentiation-2 | 2 |
| 5. | Differentiation-3 | 2 |
| 6. | Integration-1 | 2 |
| 7. | Integration-2 | 2 |
| 8. | Integration-3 | 2 |
| 9. | Differential Equations of First order and First degree-1 | 2 |
| 10. | Differential Equations of First order and First degree-2 | 2 |
| 11. | Complex Number-1 | 2 |
| 12. | Complex Number-2 | 2 |
| 13. | Complex Number-3 | 2 |
| 14. | Statistics-1 | 2 |
| 15. | Statistics-2 | 2 |

**Text Book:**

| Title | Author(s) | Publication |
|---|---|---|
| Advanced Mathematics for Polytechnic | Dr. N. R. Pandya | Macmillan Publication |
| Engineering Mathematics - 3rd Edition | Anthony croft & others | Pearson Education Publication |

**Reference Book:**

| Title | Author(s) | Publication |
|---|---|---|
| Applied Mathematics for Polytechnics - 10th Edition | H. K. Dass | H. K. Dass |
| Applied Mathematics | W. R.Neelkanth | Sapna Publication |
| Polytechnic Mathematics | Deshpande S P | Pune Vidyarthi Gruh Prakashan,1984 |
| Polytechnic Mathematics | Prakash D S | S Chand,1985 |

**Course Evaluation:**

**Theory:**

- Continuous Evaluation consists of two tests, each of 30 marks and 1 hour of duration and average of the same will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination consists of 60 marks.

**Tutorial:**

- Continuous evaluation consists of performance of tutorial which will be evaluated out of 10 Marks for each tutorial and average of the same will be converted to 30 marks.
- MCQ based examination consists of 20 marks.

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| **IDSH1040** | **ENGINEERING MATHEMATICS** |
|---|---|
| CO1 | Apply differentiation and integration for solving engineering problems. |
| CO2 | Implementing statistical methods for solving real world problems. |
| CO3 | Develop the ability to apply differentiation to significant applied problems. |
| CO4 | Estimate the limiting value of algebraic and trigonometric functions. |
| CO5 | Represent complex numbers algebraically and geometrically for solving engineering related problems. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| **Module No** | **Content** | **RBT Level** |
|---|---|---|
| 1 | Functions and Limits | 1,2,3,4 |
| 2 | Differentiation | 2,3,5 |
| 3 | Integration | 2,3,5 |
| 4 | Differential Equations of First order and First degree | 1,2,3,5 |
| 5 | Complex Number | 1,2,3,4,6 |
| 6 | Statistics | 1,2,3,4,5 |

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

**Department of Chemical Engineering**

Course Code: IDSH1050
Course Name: Fundamentals of Chemistry
Prerequisite Course(s): --

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 3 | 2 | 0 | 4 | 40 | 60 | 20 | 30 | 0 | 0 | 150 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**
To help learners to

- The student will understand the interdisciplinary nature of chemistry and to integrate knowledge of mathematics, physics and other disciplines to a wide variety of chemical problems.
- The student will understand the importance of the Periodic Table of the Elements, how it came to be, and its role in organizing chemical information.
- The student will acquire a foundation of chemistry of sufficient breadth and depth.

**Course Content:**

| **SECTION-I** | | | |
|---|---|---|---|
| Module. No. | Content | Hours | Weightage in % |
| 1. | **Atomic Structure, Molecular Mass, Acids and Bases**<br>Atom Definition Fundamental particles of Atom their Mass, Charge and Location. Atomic number and Mass number, Definition Isotopes and Isobars with suitable examples. Formation of cation and anion by electronic concept of oxidation and reduction. | 06 | 15 |
| 2. | **Molecular Mass**<br>Molecule, Molecular Formula, Molecular Mass, Mole, Definition Simple calculations. Avogadro's Hypothesis – Relationship between Molecular Mass and vapour Density, Avogadro Number. | 05 | 10 |
| 3. | **Chemical Bonding and Structure of Molecules**<br>Chemical Bond, Valence, Valence Electrons, Bonding and Non Bonding Electrons, Lewis Symbols, Octet Rule. Definition, Condition for Formation of Ionic Bond, Factors Governing Formation of Ionic Bond, Metallic Bond, Covalent Bond and Co-ordinate Covalent Bond: Hydrogen Bonding, | 06 | 15 |

| | | | |
|---|---|---|---|
| 4. | **Acids and Bases**<br>Theories of Acids and Bases, Arrhenius Theory, Lowry – Bronsted Theory, Lewis Theory, Advantages of Lewis Theory, pH and pOH Definition, Numerical problems, Indicator, Definition and Examples, Buffer solution, Definition, Types of buffer solution with examples, Application of pH in Industries. | 06 | 10 |
| | **SECTION-II** | | |
| 5. | **Solutions**<br>Definition, Methods of expressing concentration of a solution Molarity, Molality, Normality, Mole fraction and Percentage Mass – Simple problems. | 05 | 10 |
| 6. | **Colloids**<br>True solution and Colloidal solution, Definition, Differences, Types of colloids – Lyophilic and Lyophobic colloids. Differences Properties, Tyndall effect, Brownian movement, Electrophoresis and Coagulation. Industrial applications of colloids, Smoke Precipitation by Cottrell's method, Purification of water, Cleansing action of soap, Tanning of leather and Sewage disposal. | 05 | 15 |
| 7. | **Electrochemistry**<br>Electrolyte definition, Strong and Weak electrolytes, Examples. Electrolysis definition, Mechanism, Industrial application of Electrolysis, Electroplating, Preparation of surface, Process Factors affecting the stability of the coating, Chrome plating, Electroless plating definition, Advantages of Electroless plating over electroplating , Applications of Electroless plating. | 06 | 15 |
| 8. | **Electrochemical-Cell**<br>Electrochemical Cell definition, Representation of a Cell, Single Electrode Potential definition, Galvanic Cell, Formation of Daniel Cell, Electrochemical Series, Definition and Significance, Electrolytic Concentration Cell definition and Formation. | 06 | 10 |

**List of Practical**

| Sr No | List of Practical/Tutorial | Hours |
|---|---|---|
| 1. | Using a chemical balance. | 02 |
| 2. | Introduction to chemistry laboratory – Molarity, Normality, Primary, Secondary standard solutions, Volumetric titrations, Quantitative analysis, Quantitative analysis etc. | 04 |
| 3. | Demonstration: Preparation of solutions of different concentrations | 04 |
| 4. | Preparation of standard solution of Oxalic acid. | 04 |
| 5. | Preparation of standard solution of Sodium Carbonate. | 04 |
| 6. | Determination of strength of a given solution of Sodium Hydroxide by titrating it against standard solution of Oxalic acid. | 04 |
| 7. | Determination of strength of a given solution of Hydrochloric acid by titrating it against standard Sodium Carbonate solution. | 04 |
| 8. | Determination of temporary and permanent hardness in water sample using EDTA as standard solution. | 02 |
| 9. | Conduct metric titration of strong acid vs. strong base | 02 |

**Text Book(s):**

| Title | Author/s | Publication |
|---|---|---|
| Text Book of Engineering Chemistry | Chawla S. | Dhanpat Rai & Co. Pvt. Ltd., Delhi, 2003. |
| Engineering Chemistry | Sharma B. K. | Krishna Prakashan Media (P) Ltd, Meerut.,2001 |

**Reference Book(s):**

| Title | Author/s | Publication |
|---|---|---|
| Concise Inorganic Chemistry | J.D. Lee | Wiley India |
| Textbook of Engineering Chemistry (4th Edition) | R. Gopalan, D. Venkappaya, S. Nagarajan | Vikas Publishing house Ltd. |

**Web Material Link(s):**

https://onlinecourses.nptel.ac.in/noc21_cy45/preview
https://nptel.ac.in/noc/courses/noc17/SEM2/noc17-cy03/

**Course Evaluation:**

**Theory:**

- Continuous Evaluation consists of two tests each of 30 marks and 1 Hour of duration, which will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the course coordinator.
- End Semester Examination consists of 60 marks.

**Practical:**

- Continuous Evaluation consists of performance of Practical which should be evaluated out of 10 marks for each practical and average of the same will be converted to 10 marks.
- Internal Viva consists of 10 marks.
- Practical performance/quiz/drawing/test of 15 marks during End Semester Exam.
- Viva/Oral presentation consists of 15 marks during End Semester Exam.

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| IDSH1050 | FUNDAMENTALS OF CHEMISTRY |
|---|---|
| CO1 | Implement and evaluate quality control procedures. |
| CO2 | Perform and validate laboratory procedures to conduct tests. |
| CO3 | Improve industrial or chemical processes and laboratory equipment. |
| CO4 | Prepare and purify compounds using standard chemical procedure |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| Module No | Content | RBT Level |
|---|---|---|
| 1 | Atomic Structure, Molecular Mass, Acids and Bases | 1, 2 |
| 2 | Molecular Mass | 1, 2, 3 |
| 3 | Chemical Bonding and Structure of Molecules | 1, 2, 3 |
| 4 | Acids and Bases | 2, 3, 4 |
| 5 | Solutions | 2, 3, 4 |
| 6 | Colloids | 2, 3, 4 |

| | | |
|---|---|---|
| 7 | Electrochemistry | 1, 2, 5 |
| 8 | Electrochemical-Cell | 1, 2, 5 |

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Civil Engineering

Course Code: IDCV1010
Course Name: Engineering Mechanics
Prerequisite Course(s): -

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 03 | 02 | 00 | 04 | 40 | 60 | 20 | 30 | 00 | 00 | 150 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**
To help learners to

- understand different types of forces, systematic evaluation of effect of these forces, behavior of rigid and deformable bodies subjected to various types of forces, at the state of rest or motion of the particles.
- understand behavior of structural element under the influence of various loads.

**Course Content:**

| **SECTION-I** | | | |
|---|---|---|---|
| Module No. | Content | Hours | Weightage in % |
| 1. | **Introduction Engineering Mechanics**<br>Basic concepts: Definitions, Basic assumptions, Scalar & Vector quantities, Free, Forced and fixed vectors, Force System: Force, Classification & Representation, | 05 | 10 |
| 2. | **Coplanar Concurrent Force system**<br>Force as a Vector, Composition of forces, Parallelogram Law, Resolution, Principle of Transmissibility of forces, Resultant of coplanar force system., Equilibrium of coplanar force system, Free body diagrams, Determination of reactions, Equilibrium of a body under three forces, Lami's theorem | 09 | 20 |
| 3. | **Coplanar Non-Concurrent force systems:**<br>Moment of a force, Vector representation, Moment for coplanarforce system, Varignon's theorem, Couple, Vector representation, Resolution of a force into a force and a couple., force Systems: Coplanar Concurrent Force system and Coplanar Non-Concurrent force system. | 09 | 20 |
| **SECTION-II** | | | |
| 4. | **Friction:**<br>Introduction, Wet and Dry friction, Theory of Dry friction, Angle of friction, Angle of Repose, Cone of friction, Coulomb's laws of friction. | 04 | 15 |

| | | | |
|---|---|---|---|
| 5. | **Centre of Gravity:**<br>Center of Gravity, Center of Mass and Centroid of curves, areas, volumes, Determination of centroid by integration, Centroid of composite bodies. | 09 | 15 |
| 6. | **Moment of Inertia:**<br>Definition of Moment of inertia of area, Perpendicular axis theorem and Polar moment of Inertia, Parallel axis theorem, Moment of inertia of simple areas by integration, Moment of Inertia of Composite Areas., Moment of Inertia of masses, Parallel axis theorem for mass moment of inertia, Mass moment of inertia of simple bodies by integration, Mass moment of inertia of composite bodies | 09 | 20 |

**List of Practical:**

| Sr. No. | List of Practical | Hours |
|---|---|---|
| 1. | Coplanar Concurrent Forces | 04 |
| 2. | Law of parallelogram | 02 |
| 3. | Coplanar Non concurrent forces | 02 |
| 4. | Lami's Theorem | 02 |
| 5. | Coefficient of static friction | 02 |
| 6. | Parallel force system | 02 |
| 7. | Numerical practice on Force System | 04 |
| 8. | Numerical practice on C.G. | 04 |
| 9. | Numerical practice on M.I. | 04 |
| 10. | Numerical practice on Friction | 04 |

**Reference Book(s):**

| Title | Author/s | Publication |
|---|---|---|
| Applied Mechanics | S. B. Junnarkar & H. J. Shah | Charotar Publication |
| Engineering Mechanics, | Meriam and Karaige, | Wiley-India |
| Engineering Mechanics: Statics & Dynamics | S Rajsekaran | Vikas Publication |
| Engineering Mechanics of Solids | Popov E.P | Prentice Hall of India |
| Engineering Mechanics, | Meriam and Karaige, | Wiley-India |

**Course Evaluation:**

**Theory:**

- Continuous evaluation consists of two tests each of 15 marks and 1 hour of duration.
- Submission of assignment which consists of solving 20 numerical and it carried 10 marks of evaluation.
- End semester examination will consist of 60 marks exam.

**Practical:**

- Continuous Evaluation consists of performance of practical which should be evaluated out of 10 marks for each practical and average of the same will be converted to 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/drawing/test consists of 15 marks during End Semester Exam.

- Viva/Oral performance consists of 15 marks during End Semester Exam.

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| IDCV1010 | ENGINEERING MECHANICS |
|---|---|
| CO 1 | Identify fundamental principles of mechanics, equilibrium, statics reactions and internal forces in statically determinate beams. |
| CO 2 | Understand, the basics of friction and its importance. |
| CO 3 | Apply principles of statics to determine c.g and m.i of a different geometrical shape. |
| CO 4 | Analyze problems and solve the problem related to mechanical elements and analyze the deformation behavior for different types of loads. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| Module No | Content | RBT Level |
|---|---|---|
| 1 | Introduction Engineering Mechanics | 1,2 |
| 2 | Coplanar Concurrent Force system | 1,2,3 |
| 3 | Coplanar Non-Concurrent force systems | 1,2,3,5 |
| 4 | Friction | 1,2,3,4,5 |
| 5 | Centre of Gravity | 1,2,4,5 |
| 6 | Moment of Inertia | 2,2,4,5 |

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Information Technology

Course Code: IDIT1010
Course Name: Introduction to Computer Programming
Prerequisite Course (s): NA

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 03 | 04 | 00 | 05 | 40 | 60 | 40 | 60 | 00 | 00 | 200 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**

To help learners to

- develop understanding of basic concepts that can be used in programming language.
- develop the algorithm as well as flowchart for particular problem.
- enforce logical thinking.
- understand the fundamentals of programming concepts and methodology.

**Course Content:**

| **SECTION-I** | | | |
|---|---|---|---|
| Module No. | Content | Hours | Weightage in % |
| 1. | **Introduction to Programming Language**<br>Classification of Programming Languages, Generations of Programming Languages - Machine Language, Assembly Language, High-Level Language, 4GL. | 04 | 05 |
| 2. | **Introduction to C, Constants, Variables and Data Types:**<br>Features of C Language, the Structure of C Program, Flow Charts and Algorithms Types of Errors, Debugging, Tracing the Execution of the Program, Watching Variables Values in Memory. Character Set, C Tokens, Keyword and Identifiers, Constants and Variables, Data Types - Declaration and Initialization, User Define Type Declarations - Typedef, Enum, Basic Input, and Output Operations, Symbolic Constants, Overflow and Underflow of Data. | 07 | 15 |
| 3. | **Operators, Expressions, and Managing I/O Operations:**<br>Introduction to Operators and its Types, Evaluation of Expressions, Precedence of Arithmetic Operators, Type Conversions in Expressions, Operator Precedence and Associatively. Introduction to Reading a Character, Writing a Character, Formatted Input and Output. | 07 | 15 |

| | | | |
|---|---|---|---|
| 4. | **Conditional Statements:**<br>Decision Making & Branching: Decision Making with If and If - else Statements, Nesting of If-else Statements, The Switch and go-to statements, Ternary (?:) Operator. Looping: The while Statement, The Break Statement & The Do. While loop, The FOR loop, Jump within loops - Programs. | 05 | 15 |
| **SECTION-II** | | | |
| 5. | **Arrays:**<br>Introduction, One-dimensional Arrays, Two-dimensional Arrays, Concept of Multidimensional Arrays. | 07 | 15 |
| 6. | **Strings:**<br>Declaring and Initializing String Variables, Arithmetic Operations on Characters, Putting Strings Together, Comparison of Two Strings, String Handling Functions. | 07 | 15 |
| 7. | **User-Defined Functions:**<br>Concepts of User-defined Functions, Prototypes, function Definition, Parameters, Parameter Passing, Calling a Function, Recursive Function, Macros and Macro Substitution | 08 | 20 |

**List of Practical:**

| Sr. No | List of Practical | Hours |
|---|---|---|
| 1. | Introduction to C programming environment, compiler, Linker, loader, and editor. C Program to display "HELLO PPSU" | 04 |
| 2. | Working with basic elements of C languages (different input functions, different output functions, different data types, and different operators) | 08 |
| 3. | Working with C control structures (if statement, if-else statement, nested if-else statement, switch statement, break statement, goto statement) | 10 |
| 4. | Working with C looping constructs (for loop, while loop, do-while and nested for loop) | 10 |
| 5. | Working with the array in C (1-D array, and 2-D array) | 08 |
| 6. | Working with strings in C (input, output, different string inbuilt functions) | 08 |
| 7. | Working with user-defined functions in C (function with/without return type, function with/without argument, function and array) | 08 |
| 8. | Working with recursive function in C | 04 |

**Text Book(s):**

| Title | Author/s | Publication |
|---|---|---|
| Programming in ANSI C | E. Balagurusamy | Tata McGraw Hill |
| Introduction to Computer Science | ITL Education Solutions Limited | Pearson Education |

**Reference Book(s):**

| Title | Author/s | Publication |
|---|---|---|
| Programming in C | Ashok Kamthane | Pearson |
| Let Us C | Yashavant P. Kanetkar | Tata McGraw Hill |
| Introduction to C Programming | Reema Thareja | Oxford Higher Education |
| Programming with C | Byron Gottfried | Tata McGraw Hill |

**Web Material Link(s):**

- http://www.digimat.in/nptel/courses/video/106104128/L01.html
- https://www.youtube.com/watch?v=3QiItmIWmOM

**Course Evaluation:**

**Theory:**

- Continuous Evaluation consists of two tests, each of 30 marks and 1 hour of duration and average of the same will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination consists of 60 marks.

**Practical:**

- Continuous Evaluation consists of performance of practical which will be evaluated out of 10 marks for each practical and average of the same will be converted to 20 marks.
- Internal viva consists of 20 marks.
- Practical performance/quiz/drawing/test consists of 30 marks during End Semester Exam.
- Viva/ Oral performance consists of 30 marks during End Semester Exam.

**Course Outcome(s):**

After the completion of the course, the student will be able to

- learn the fundamentals of programming.
- develop efficient programs with their own logic & capabilities.
- understand the syntax and semantics of the C language.

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| **IDIT1010** | **INTRODUCTION TO COMPUTER PROGRAMMING** |
|---|---|
| CO 1 | Infer the basic concepts of data representation, algorithms and coding methods in computer system. |
| CO 2 | Interpret the knowledge about c programming syntax. |
| CO 3 | Apply basic principles of imperative and structural programming to solve complex problems. |
| CO 4 | Design, develop and debug programs of c programming language. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| **Module No** | **Content** | **RBT Level** |
|---|---|---|
| 1 | Introduction to Programming Language | 1, 2 |
| 2 | Introduction to C, Constants, Variables and Data Types: | 1, 2, 3 |
| 3 | Operators, Expressions, and Managing I/O Operations | 2,3,4,6 |
| 4 | Conditional Statements | 2,4,5 |
| 5 | Arrays | 2, 4,6 |
| 6 | Strings | 2, 4,6 |
| 7 | User-Defined Functions | 2,4,6 |

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Science & Humanities

Course Code: IDSH1060
Course Name: Electrical & Electronics Workshop
Prerequisite Course(s): Concept of Science up to 9th Standard

**Teaching & Examination Scheme**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 00 | 02 | 00 | 01 | 00 | 00 | 20 | 30 | 00 | 00 | 50 |

**Objective(s) of the course:**
To help learner to

- think in core concept of their engineering application by studying various topics involved in branch specific applications.
- identify basic fundamental electronic components in circuits.
- learn to use common electronic component on breadboard.
- understand components of instruments, terminology and applications.
- demonstrate the ability to collect and analyze data and to prepare coherent reports of his or her findings.

| Sr. No. | List of Practical | Hours |
|---|---|---|
| 1 | To Understand & Draw the symbols of various electronic devices. | 2 |
| 2 | To identify resistors, capacitors using Different codes. | 2 |
| 3 | Verification of Truth tables of Logic Gates (NAND, NOR, EX-OR, AND, OR, NOT). | 4 |
| 4 | To study cathode ray oscilloscope and perform measurements. | 4 |
| 5 | To study digital multi-meter and perform testing of various components. | 2 |
| 6 | To study soldering- de-soldering techniques. | 2 |
| 7 | To study wiring diagram of ceiling Fan. | 2 |
| 8 | How Fluorescent Lights Work. | 2 |
| 9 | To study about stair case wiring two-way switch. | 2 |
| 10 | Explaining the function of Refrigerator and Air conditioner. | 4 |
| 11 | Explaining the core concept of power transmission. | 4 |

**Evaluation:**

- Continuous Evaluation consists of performance of practical which will be evaluated out of 10

marks for each practical and average of the same will be converted to 20 marks.

- Internal viva consists of 30 marks.

**Course Outcome:**

After completion of the course, the student will be able to

- demonstrate the ability to think in core concept of their engineering application by studying various topics involved in branch specific applications.
- develop the ability to collect and analyze data and to prepare coherent reports of his or her findings.

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| IDSH1060 | ELECTRICAL & ELECTRONICS WORKSHOP |
|---|---|
| CO 1 | Identify the ability to design various electronic circuit on a bread board |
| CO 2 | Recognize the basic electronic devices and components in a circuit connection. |
| CO 3 | Identify the ability to design a pcb. |
| CO 4 | Define the practical side of basic physics laws. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| Module No | Content | RBT Level |
|---|---|---|
| 1 | Electronic Components | 1,2,3,4 |
| 2 | Electronic Devices | 1,2,3,4 |
| 3 | Understanding of Breadboard | 1,2,4,5,6 |
| 4 | Wiring of Breadboard | 1,2,4,5,6 |
| 5 | Ohm’s Law | 1,2,3,4 |
| 6 | Rectifiers | 1,2,3,5,6 |
| 7 | KCL & KVL | 1,2,3,4,6 |
| 8 | LDR | 1,2,3,6 |
| 9 | Electricity Lab | 1,2,3,4 |
| 10 | CRO | 1,2,4,5 |
| 11 | PCB | 1,2,6 |

# P P Savani University
## Centre for Language Studies

Course Code: CFLS1040
Course Name: Functional English-II
Prerequisite Course(s): -- CFLS1030 Functional English-I

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 02 | 00 | 00 | 02 | 40 | 60 | 00 | 00 | -- | -- | 100 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**
To help learners to:
- Understand difference between formal and functional English.
- Use English in daily life.
- Communicate thoughts.
- Be an efficient Listener.
- Be an efficient speaker.
- Sharpen reading skills.
- Improve writing skills.

**Course Content:**

| **Section I** | | | |
|---|---|---|---|
| Module No. | Content | Hours | Weightage in % |
| 1. | **Introduction to Functional English**<br>• Formal Vs. Functional English<br>• Functional English in daily life<br>• Importance of LSRW Skills | 03 | 10 |
| 2. | **Listening**<br>• Difference between Hearing and Listening<br>• Listening to get information<br>• Listening to understand<br>• Listening instructions to follow | 05 | 20 |
| 3. | **Speaking**<br>• Introducing Self<br>• Expressing likes and dislikes<br>• Talking about Family<br>• Describing Surrounding<br>• Narrating Memorable Incidents<br>• Inquiring, Requesting, Ordering, Questioning, Answering | 07 | 20 |
| **Section II** | | | |
| Module No. | Content | Hours | Weightage in % |

| | | | |
|---|---|---|---|
| 1. | **Reading**<br>• Reading to Comprehend<br>• Read to Scan<br>• Read to Skim<br>• Reading information from authentic material<br>• Reading Newspaper, Magazines, Books | 07 | 25 |
| 2. | **Writing**<br>• Importance of Punctuations<br>• Strategies to develop Paragraphs<br>• Paragraph writing by comprehending pictures, map, tables, and authentic material<br>• Expressing like, dislikes, experiences<br>• Narrating stories, incidents<br>• Writing short letters | 08 | 25 |

**Text Book (s):**

| Title | Author/s | Publication |
|---|---|---|
| Communication Skills | Parul Popat & Kaushal Kotadia | Pearson, 2015 |

**Reference Book (s):**

| Title | Author/s | Publication |
|---|---|---|
| Communication Skills, Second Edition | Sanjay Kumar, PushpLata | Oxford University Press,2015 |
| Communication Skills for Engineers | Sunita Mishra | Pearson, 2011 |

**Course Evaluation:**

**Theory:**

- Continuous Evaluation consists of two tests each of 25 marks. Test one can be based on Reading and Writing Skills whereas Test Two can be based on Listening and Reading Skills.
- End Semester Examination consists of 60 marks.

**Course Outcome(s):**

After completion of the course, the student will be able to

| CFLS1040 | FUNCTIONAL ENGLISH-II |
|---|---|
| CO 1 | Narrate incidents, events, experiences. |
| CO 2 | recognize the difference between formal and functional English. |
| CO 3 | Comprehend authentic material. |
| CO 4 | Define the need of Communication Skills in personal and professional life. |
| CO 5 | Introduce them and talk about family efficiently. |
| CO 6 | Identify their likes, dislikes, desires effectively. |
| CO 8 | Practice scanning and skimming. |
| CO 9 | Use punctuations accurately while writing. |
| CO 10 | Recall listening skills. |
| CO 11 | Draft paragraphs, and letters. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| Module No | Content | RBT Level |
|---|---|---|
| 1 | Introduction to Functional English | 2 |

| | | |
|---|---|---|
| 2 | Listening | 2,4,5 |
| 3 | Speaking | 3,6 |
| 4 | Reading | 2,4,5 |
| 5 | Writing | 3,6 |

# SECOND YEAR DIPLOMA IN COMPUTER ENGINEERING

| P P SAVANI UNIVERSITY | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCHOOL OF ENGINEERING | | | | | | | | | | | | | | | | |
| P P SAVANI INSTITUTE OF DIPLOMA STUDIES | | | | | | | | | | | | | | | | |
| TEACHING & EXAMINATION SCHEME FOR DIPLOMA IN COMPUTER ENGINEERING PROGRAMME AY:2024-25(BATCH:2024) | | | | | | | | | | | | | | | | |
| **Sem.** | **Course Code** | **Course Title** | **Offered By** | **Teaching Scheme** | | | | | **Examination Scheme** | | | | | | | |
| | | | | **Contact Hours** | | | | **Credit** | **Theory** | | **Practical** | | **Tutorial** | | **Total** |
| | | | | **Theory** | **Practical** | **Tutorial** | **Total** | | **CE** | **ESE** | **CE** | **ESE** | **CE** | **ESE** | |
| **3** | IDSH2010 | Discrete Mathematics | SH | 3 | 0 | 2 | 5 | 5 | 40 | 60 | 0 | 0 | 50 | 0 | 150 |
| | IDCE2011 | Data Structures | CE | 3 | 2 | 0 | 5 | 4 | 40 | 60 | 20 | 30 | 0 | 0 | 150 |
| | IDCE2020 | Database Management System | CE | 3 | 4 | 0 | 7 | 5 | 40 | 60 | 40 | 60 | 0 | 0 | 200 |
| | IDIT2010 | Object Oriented Concepts & Programming | IT | 3 | 4 | 0 | 7 | 5 | 40 | 60 | 40 | 60 | 0 | 0 | 200 |
| | IDIT2020 | Web Application Design | IT | 0 | 4 | 0 | 4 | 2 | 00 | 00 | 100 | 0 | 0 | 0 | 100 |
| | IDCE2500 | Seminar | CE | 2 | | | 2 | 2 | 00 | 00 | 50 | 0 | 0 | 0 | 50 |
| | | | | | | **Total** | **30** | **23** | | | | | | | **850** |
| **4** | IDCE2030 | Operating System | CE | 3 | 2 | 0 | 5 | 4 | 40 | 60 | 20 | 30 | 0 | 0 | 150 |
| | IDCE2040 | Network Essentials | CE | 3 | 2 | 0 | 5 | 4 | 40 | 60 | 20 | 30 | 0 | 0 | 150 |
| | IDIT2031 | Web Technology | IT | 0 | 4 | 0 | 4 | 2 | 0 | 0 | 100 | 0 | 0 | 0 | 100 |
| | IDIT2040 | Mobile Application Development | IT | 3 | 4 | 0 | 7 | 5 | 40 | 60 | 40 | 60 | 0 | 0 | 200 |
| | IDCE2050 | Computer Architecture | CE | 3 | 2 | 0 | 5 | 4 | 40 | 60 | 20 | 30 | 0 | 0 | 150 |
| | IDCE2910 | Project | CE | 4 | | | 4 | 4 | 00 | 00 | 100 | 0 | 0 | 0 | 100 |
| | | | | | | **Total** | **30** | **23** | | | | | | | **850** |

# SEMESTER 3

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

---

**Department of Applied Science and Humanities**

Course Code: IDSH2010
Course Name: Discrete Mathematics
Prerequisite Course (s): NIL

**Teaching & Examination Scheme**:

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 03 | 00 | 02 | 05 | 40 | 60 | 00 | 00 | 50 | 00 | 150 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**
To help learners to

- extend concepts of set theory by study of relation and lattice.
- illustrate mathematical logic with various techniques of program verification.
- apply knowledge of discrete mathematics for problem solving skills necessary to succeedin design and analysis of algorithms, database management, software engineering and computer networks.

**Course Content:**

| **Section I** | | | |
|---|---|---|---|
| Module No. | Content | Hours | Weightage in % |
| 1. | **Set, Relation and function**<br>Set, Basic operations on sets, Introduction of Relation, Type of Relation, Properties of Relation ,Equivalence Relation, Partial Ordering, Type of function, Composition of Function | 10 | 20 |
| 2. | **Introduction to Graphs**<br>Graphs and their basic properties – degree, path, cycle, semi Group, subgraph, isomorphism, Eulerian and Hamiltonian walk, trees. | 12 | 30 |
| **Section II** | | | |
| 1. | **Mathematical Logic and Proofs**<br>Properties, Logical operator, Algebra of Proposition, Predicates and Quantifiers, Rules of Inference, Proof Method, | 10 | 22 |
| 2. | **Tree and Group Theory**<br>Introduction to Tree, Rooted Tree, Properties of tree, Binary tree, Spanning trees, Minimum Spanning tree, Graph and Graph model, Type of Graph, Representing Graph and Isomorphism. | 13 | 28 |

**List of Tutorials:**

| Sr. No | Name of Tutorial | Hours |
|---|---|---|
| 1. | Set, Relation and function | 2 |
| 2. | Set, Relation and function | 2 |
| 3. | Set, Relation and function | 2 |
| 4. | Set, Relation and function | 2 |
| 5. | Introduction to Graphs | 2 |
| 6. | Introduction to Graphs | 2 |
| 7. | Introduction to Graphs | 2 |
| 8. | Introduction to Graphs | 2 |
| 9. | Mathematical Logic and Proofs | 1 |
| 10. | Mathematical Logic and Proofs | 2 |
| 11. | Mathematical Logic and Proofs | 2 |
| 12. | Mathematical Logic and Proofs | 2 |
| 13. | Tree and Group Theory | 2 |
| 14. | Tree and Group Theory | 2 |
| 15. | Tree and Group Theory | 2 |
| 16. | Tree and Group Theory | 1 |

**Text Book:**

| Title | Author/s | Publication |
|---|---|---|
| Discrete Mathematics and Its Applications | Kenneth Rosen | McGraw Hill, New York. |

**Reference Book(s):**

| Title | Author/s | Publication |
|---|---|---|
| A Textbook of Discrete Mathematics | Dr. Swapan Kumar Sarkar | S. Chand & Company Ltd., New Delhi. |
| Discrete Mathematical Structure with Applications to Computer Science | J.P. Trembly, R. Manohar | Tata McGraw-Hill Publishing Company Ltd. New Delhi. |
| Graph Theory with Applications to Engineering and Computer Science | Narsingh Deo | PHI Learning Pvt. Ltd. New Delhi. |

**Web Material Links:**

- **http://nptel.ac.in/courses/111107058/**
- **http://nptel.ac.in/courses/111106086/**
- **http://nptel.ac.in/courses/111104026/**

**Course Evaluation:**

**Theory:**

- Continuous evaluation consists of two tests each of 30 Marks and 1 Hour of duration.
- Submission of assignments which consists of 10 Questions to be answered under each module and it carried of 10 Marks of continuous evaluation.

- End Semester Examination will consist of 60 Marks.

**Tutorial:**

- Continuous evaluation consists of performance of tutorial which should be evaluated out of 10 Marks for each tutorial in the next turn and average of the same will be converted to 30 Marks.
- MCQ based examination of 10 Marks.
- Internal Viva of 10 Marks.

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| **IDSH2010** | **DISCRETE MATHEMATICS** |
|---|---|
| CO 1 | Understand the basic principles of sets, function and relations to solve its application problems. |
| CO 2 | Interpret different traversal methods for tree and graph and solve model problem in computer science using graphs and trees. |
| CO 3 | Develop logical argument using truth table and rules of inferences in predicate calculus. |
| CO 4 | Use the properties of different algebraic structures. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| **Module No** | **Content** | **RBT Level** |
|---|---|---|
| 1 | Set, Relation and function | 1,2,4,6 |
| 2 | Introduction to Graphs | 1,2,3,5,6 |
| 3 | Mathematical Logic and Proofs | 1,2,3,4,6 |
| 4 | Tree and Group Theory | 1,2,3,5,6 |

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Computer Engineering

Course Code: IDCE2011
Course Name: Data Structures
Prerequisite Course (s): --

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 03 | 02 | 00 | 04 | 40 | 60 | 20 | 30 | 00 | 00 | 150 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**
To help learners to

- understand linear and non-linear data structures and its applications.
- analyze various searching and sorting algorithms and its impacts on data structures.
- develop logic building and problem solving skills.

**Course Content:**

| **Section I** | | | |
|---|---|---|---|
| Module No. | Content | Hours | Weigh tage in % |
| 1. | **Introduction**<br>Introduction, Data types, Types of Data Structure,Primitive and non-primitive data structures. | 05 | 15 |
| 2. | **Array and Strings**<br>Row major arrays, column major arrays, overview ofvarious array operations, searching an element into an array, string representation, string operations | 07 | 15 |
| 3. | **Stack and Queue**<br>Linear and non-linear data structures, Stack: array representation of stack, PUSH POP operations on stack, Queue: Array representation of Queue, Operations on Queue, Applications of queue, Circular queue | 10 | 20 |
| **Section II** | | | |
| 1. | **Linked List**<br>Pointers Revision, Revision of Structure, Revision of structure using pointers, Dynamic Memory Allocation, Linked list Presentation, Types of Linked List, Basic operations on singly linked list , circular linked list, Applications of linked list | 08 | 18 |
| 2. | **Sorting and Hashing** | 07 | 18 |

| | | | |
|---|---|---|---|
| | Sorting Methods: Bubble Sort, Selection Sort, Quick Sort, Insertion Sort, Merge Sort, Radix Sort, Hashing Concepts, Hash functions: Division Method, Middle Square Method, and Folding Method. | | |
| 3. | **Trees**<br>Non-linear data structure, Tree definition, Representation of Tree, Binary Tree Traversals, Conversion from general to binary tree, Threaded Binary Tree, Heap, Binary Search Tree,2-3 Tree, AVL Tree, Applications of Trees | 08 | 14 |

**List of Practical:**

| Sr. No | Name of Practical | Hours |
|---|---|---|
| 1. | Array and String Programs | 02 |
| 2. | Programs to perform various operations on Stack | 04 |
| 3. | Programs to perform various operations on Queue | 04 |
| 4. | Programs to perform various operations on Linked List | 06 |
| 5. | Programs to perform various types of sorting algorithms. | 08 |
| 6. | Programs to perform various operations on Tree | 06 |

**Reference Book(s):**

| Title | Author/s | Publication |
|---|---|---|
| Data and File Structures using C, | Thareja, Reema | Oxford University Press |
| Data Structures using C | ISRD Group. | McGraw Hill |

**Web material link:**

- https://www.coursera.org/learn/data-structures
- https://nptel.ac.in/courses/106102064/
- https://nptel.ac.in/courses/106106127/

**Course Evaluation:**

**Theory:**

- Continuous Evaluation consists of two tests each of 30 marks and 1 hour of duration, which will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the course coordinator.
- End Semester Examination consists of 60 marks

**Practical:**

- Continuous Evaluation consists of performance of practical which will be evaluated out of 10 marks for each practical and average of the same will be converted to 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/drawing/test consists of 15 marks during End Semester Exam.
- Viva/ Oral performance consists of 15 marks during End Semester Exam.

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| IDCE2011 | DATA STRUCTURES |
|---|---|
| CO1 | Differentiate primitive and non primitive data structures. |

| | |
|---|---|
| CO2 | Design and apply appropriate data structures for solving computing problems. |
| CO3 | Compile the knowledge of different data structures to enhance the performance of a program. |
| CO4 | Apply sorting and searching algorithms to the small and large datasets. |
| CO5 | Analyze algorithms for specific problems. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| **Module No** | **Content** | **RBT Level** |
|---|---|---|
| 1 | Introduction | 2,4 |
| 2 | Array and Strings | 1,2,3 |
| 3 | Stack and Queue | 2,4,5 |
| 4 | Linked List | 2,4,5 |
| 5 | Sorting and Hashing | 2,4,6 |
| 6 | Trees | 2,5 |

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Computer Engineering

Course Code: IDCE2020
Course Name: Database Management System
Prerequisite Course (s): --

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 03 | 04 | 00 | 05 | 40 | 60 | 40 | 60 | 00 | 00 | 200 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**
To help learners to

- understand database concepts, applications, data models, schemas and instances.
- implement the relational database design and data modelling using entity-relationship (ER) model.
- use of SQL in querying the database
- demonstrate Normalization process.
- learn the new emerging Technologies and Applications in database.

**Course Content:**

| **SECTION-I** | | | |
|---|---|---|---|
| Module No. | Content | Hours | Weightage in % |
| 1. | **Introduction to Databases and Transactions**<br>What is database system, purpose of database system, view of data, relational databases, database architecture, transaction management | 07 | 15 |
| 2. | **Data Model**<br>The importance of data models, Basic building blocks, Business rules, The evolution of data models, Degrees ofdata abstraction. | 07 | 15 |
| 3. | **Database Design ,ER-Diagram and Unified Modeling Language**<br>Database design and ER Model: overview, ER-Model, Constraints, ER-Diagrams, ERD Issues, weak entity sets, Codd's rules, Relational Schemas, Introduction to UML **Relational database model**: Logical view of data, keys, and integrity rules. Relational Database design: features ofgood relational database design, atomic domain and Normalization (1NF, 2NF, 3NF, BCNF). | 09 | 20 |
| **SECTION - II** | | | |

| | | | |
|---|---|---|---|
| 1. | **Relational Algebra and Calculus**<br>Relational algebra: introduction, Selection and projection, set operations, renaming, Joins, Division, syntax, semantics. Operators, grouping and ungrouping, relational comparison. Calculus: Tuple relational calculus, Domain relational Calculus, calculus vs algebra, computational capabilities. | 08 | 20 |
| 2. | **Constraints, Views and SQL**<br>What is constraints, types of constrains, Integrity constraints, Views: Introduction to views, data independence, security, updates on views, comparison between tables and views<br>**SQL**: data definition, aggregate function, Null Values, nested sub queries, Joined relations. Triggers. | 08 | 15 |
| 3. | **Transaction management and Concurrency control**. Transaction processing, Transaction & System Concepts,Desirable properties of transaction, Basic concepts ofconcurrency control, Concepts of locks , Live Lock,<br>Deadlock | 06 | 15 |

**List of Practical:**

| Sr. No | Name of Practical | Hours |
|---|---|---|
| 1. | To study DDL-create and DML-insert commands | 10 |
| 2. | Create table and insert sample data in tables. | 04 |
| 3. | Apply the constraints like Primary Key, Foreign key, NOT NULL to the tables. | 04 |
| 4. | Perform queries involving predicates LIKE, BETWEEN, IN etc | 04 |
| 5. | To Perform various data manipulation commands, aggregate functions and sorting concept on all created tables. | 06 |
| 6. | To study Single-row functions | 04 |
| 7. | Displaying data from Multiple Tables (join) | 06 |
| 8. | To apply the concept of Aggregating Data using Group functions. | 04 |
| 9. | To solve queries using the concept of sub query. | 04 |
| 10. | To study Transaction control commands | 06 |
| 11. | Write Cursor | 04 |
| 12. | Write Trigger | 04 |

**Reference Book(s):**

| Title | Author/s | Publication |
|---|---|---|
| Database System Concepts | A. Silberschatz, S. Sudarshan& H. F. Korth | fifth Edition McGraw-Hill |
| SQL/ PL/SQL | Bayross, Ivan | BPB |

**Web material link:**

- http://swayam.gov.in

- https://www.w3schools.com/sql/
- https://in.udacity.com/
- https://www.codecademy.com/learn/learn-sql

**Course Evaluation:**

**Theory:**

- Continuous Evaluation consists of two tests each of 30 marks and 1 hour of duration, whichwill be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the coursecoordinator.
- End Semester Examination consists of 60 marks

**Practical:**

- Continuous Evaluation consists of performance of practical which will be evaluated out of 20 marksfor each practical and average of the same will be converted to 20 marks.
- Internal viva consists of 20 marks.
- Practical performance/quiz/drawing/test consists of 30 marks during End Semester Exam.
- Viva/ Oral performance consists of 30 marks during End Semester Exam.

**Course Outcome(s):**

After completion of the course, the student will be able to

- recognize the various elements of Database Management Systems
- recognize the purpose of query processing, optimization and demonstrate the SQL query evaluation

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| IDCE2020 | DATABASE MANAGEMENT SYSTEM |
|---|---|
| CO 1 | Describe DBMS architecture, physical and logical database designs, database modeling, relational, hierarchical and network models. |
| CO 2 | Classify physical data, conceptual data and its conversion into relational databases. |
| CO 3 | Demonstrate an understanding of normalization theory and apply such knowledge to be normalization of a database. |
| CO 4 | Learn and apply structure query language (sql) for database definition and database manipulation. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| Module No | Content | RBT Level |
|---|---|---|
| 1 | Introduction to Databases and Transactions | 1, 2 |
| 2 | Data Model | 1, 2, 6 |
| 3 | Database Design ,ER-Diagram and Unified Modeling Language | 2,4,6 |
| 4 | Relational Algebra and Calculus | 2,4 |
| 5 | Constraints, Views and SQL | 2,4 |
| 6 | Transaction management and Concurrency control | 2,4,5 |

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Information Technology

Course Code: IDIT2010
Course Name: Object Oriented Concepts & Programming
Prerequisite Course (s): --

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 03 | 04 | 00 | 05 | 40 | 60 | 40 | 60 | 00 | 00 | 200 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**
To help learners to
- understand the basic object oriented programming concepts and apply them in problem solving.
- illustrate inheritance concepts for reusing the program.

**Course Content:**

| **Section I** | | | |
|---|---|---|---|
| Module No. | Content | Hours | Weightage in % |
| 1. | **OOP Concepts and Java Programming**<br>Classes and objects, data abstraction, encapsulation, inheritance, benefits of inheritance, polymorphism, procedural and object oriented programming paradigm, Object-Oriented programming, Java data types, Type Casting and type conversion, Arrays. | 07 | 15 |
| 2. | **Operators and Control Statements**<br>Operators: Arithmetic, Bitwise, Relational, Boolean logical, Assignment, Ternary, Operator precedence, Control statements: if-else, if-else ladder, nested if-else and switch statements, Iteration statements: while, do-while, for;<br>Jump statements: break, continue. | 08 | 15 |
| 3. | **Introduction to Classes**<br>Classes and Objects, Access modifiers, Constructors, The garbage collector & finalizer, 'this' keyword, Class vs. instance members, 'static' keyword, Command line arguments, Wrapper classes. | 08 | 20 |
| **Section II** | | | |

| | | | |
|---|---|---|---|
| 1. | **String Handling**<br>String constructors, Concatenation and conversion of astring, Changing case of string, Character extraction, String comparison, Introduction to scanner class | 08 | 15 |
| 2. | **Inheritance, Packages and Interface:**<br>Inheritance, Super and sub class, Hiding methods, Abstract classes, Final methods and classes, Packages, Access protection, Interfaces. | 08 | 20 |
| 3. | **Introduction to Exception Handling:**<br>Fundamentals of exception – handling, Exception types, Tryand catch. | 06 | 15 |

**List of Practical:**

| Sr. No | Name of Practical | Hours |
|---|---|---|
| 1. | Write a program to print Hello World on console. | 02 |
| 2. | a) Write a program to find the area of square and triangle.<br>b) Write a program to print ASCII code for given character. | 04 |
| 3. | a) Write a program to display total numbers of months and days for given days. Example: if input is 62 days, output should be 2 months and 2 days.<br>b) Write a program to find maximum of three numbers. | 04 |
| 4. | a) Write a program to print first N numbers in ascending and descending order, where N is the user input.<br>b) Write a program to reverse the given digit. | 04 |
| 5. | Create a student class with student_id, subject_code and marks which takes input using method getdata() and display result using putdata() method. | 04 |
| 6. | Write a program for Box class which contains default constructor and parameterized constructor for width, height, depth and the method volume which finds the volume of Box. | 04 |
| 7. | Create a class Biodata having fields name, qualification and date of birth. Class Biodata inherits a class Address having fields city and pin. Write a program to display all details for 2 persons. | 04 |
| 8. | a) Write three classes for examination result: Student, Exam and Result. Student class has data members enrollment no, exam number and student name. Create the class Exam by inheriting student class. Exam class adds fields representing the marks scored in three subjects. Derive Result from the Exam class and it has its own fields such as total_marks and percentage.<br>b) Create a class Grandfather which has the attributes surname and nationality. Create another class called Father which inherits Grandfather and has the attributes name, surname and nationality. Create class called Son which inherits Grandfather and has the attributes name, surname and nationality. Write a program to display the specified details. | 10 |
| 9. | Create interface for Sports which will be inherited by Football class and Cricket class with getscore() method. | 04 |
| 10. | Describe abstract class called Shape which has three subclasses say Triangle, Rectangle, and Circle. Define one method area() in the abstract class and override this area() in these three subclasses to calculate for specific object i.e. area() of Triangle subclass should calculate area of triangle etc. Same for Rectangle and Circle. | 04 |
| 11. | Write a program that performs following string operations. String length, String copy, String concatenation, Character extraction, String comparison | 10 |

| | | |
|---|---|---|
| 12. | a) Write a program that handle arithmetic exception generated by division by zero error.<br>b) Write a program to handle the exception using try and multiple catch block | 06 |

**Reference Book(s):**

| Title | Author/s | Publication |
|---|---|---|
| The Complete Reference, Java 2 | Herbert Schildt | Fifth Edition TMH |
| Programming in Java | Sachin Malhotra & Saurabh Chaudhary | Oxford University Press. |
| Java Programming | D. S. Malik | Cengage Learning |

**Web material link:**

- http://java.sun.com/
- http://www.oracle.com/technetwork/java/index.html
- http://www.oracle.com/technetwork/java/javase/overview/index.html
- http://download.oracle.com/javase/7/docs/api/index.html

**Course Evaluation:**

**Theory:**

- Continuous Evaluation consists of two tests each of 30 marks and 1 hour of duration, which will beconverted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the course coordinator.
- End Semester Examination consists of 60 marks

**Practical:**

- Continuous Evaluation consists of performance of practical which will be evaluated out of 20 marks for each practical and average of the same will be converted to 20 marks.
- Internal viva consists of 20 marks.
- Practical performance/quiz/drawing/test consists of 30 marks during End Semester Exam.
- Viva/ Oral performance consists of 30 marks during End Semester Exam.

**Course Outcome(s):**

After completion of the course, the student will be able to

- describe object oriented concepts
- perform programs related to basic concepts of Java.
- apply methods of string class to manipulate string.

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| IDIT2010 | OBJECT ORIENTED CONCEPTS & PROGRAMMING |
|---|---|
| CO 1 | Interpret the basic concepts of object oriented programming and apply them in problem solving. |
| CO 2 | Recognize different data types, operators and functionalities of java programming. |
| CO 3 | Develop the application by applying the different java programming concepts. |
| CO 4 | Demonstrate programs on file handling, exception handling and multithreading. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| Module No | Content | RBT Level |
|---|---|---|
| 1 | OOP Concepts & Java Programming | 1, 2 |
| 2 | Operators and Control Statements | 1, 2, 3 |
| 3 | Introduction to Classes | 1, 2, 3 |
| 4 | String Handling | 2, 3, 4 |
| 5 | Inheritance, Packages and Interface | 2, 3, 4 |
| 6 | Introduction to Exception Handling | 2, 3, 4 |

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Information Technology

Course Code: IDIT2020
Course Name: Web Application Design
Prerequisite Course (s): --

**Teaching & Examination Scheme**:

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 00 | 04 | 00 | 02 | 00 | 00 | 100 | 00 | 00 | 00 | 100 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**
To help learners to

- understand working of Internet/ Websites, Client Server Model and Internet Tools.
- understand and develop HTML Web pages.
- control the Look and feel of web pages by using CSS

**List of Practical(s):**

| Sr. No | Name of Practical | Hours |
|---|---|---|
| 1. | **Introduction to Web Designing:** Internet, WWW, Browser, Search engine Client Server Model, URL, Web Pages, Website and Web Services, Types of Websites | 04 |
| 2. | HTML Tags and Attributes, Types of HTML Tags, Rules of nesting, Basic Tags (HTML Tag. Head Tag, Title Tag, Body Tags). | 04 |
| 3. | **Page Formatting:** Adding a new Paragraph, Adding a line break, Inserting a blank space, changing page background , Div and Span tags | 04 |
| 4. | **Text Formatting:** Html Headings, Formatting elements (<b> Bold text ,  Important text ,<i> Italic text ,  Emphasized text , <mark> Marked text, <small> Small text, <del> Deleted text, <ins> Inserted text, <sub> Subscript text, <sup> Superscript text), Comments, Horizontal Lines | 04 |
| 5. | **Creating Lists:** Ordered List, Unordered Lists, Definition Lists | 04 |
| 6. | Images, Text Links, Image Links, opening a page in New Window or Tab, Linking to an area of same page | 04 |
| 7. | Introduction to Table Tags | 04 |
| 8. | Frames & Iframe | 04 |
| 9. | HTML Forms , XHTML | 04 |
| 10. | Cascading Style Sheets Introduction, Benefits of CSS, CSS Syntax, CSS Implementation (inline, internal and external), CSS Selectors (ID Selectors, Class Selectors, Grouping Selectors, Universal Selectors, CSS Pseudo-classes), CSS properties (background-color, | 12 |

| | | |
|---|---|---|
| | background-image, border-style, height, width, color, text-align, font-family, font-style, font-size, font-weight), Box Model in CSS(margin, border, padding) | |
| 11. | Small Project using HTML and CSS | 12 |

**Reference Book(s):**

| Title | Author/s | Publication |
|---|---|---|
| Head First HTML and CSS: A Learner's Guide to Creating Standards-Based Web Pages | Elisabeth Robson Eric Freeman | O Reilly Publications |
| Web Technologies, Black Book | - | Kogent Learning SolutionsInc |

**Web material link:**

- https://www.w3schools.com/html/
- https://www.w3schools.com/css/
- https://www.w3schools.com/bootstrap/

**Course Evaluation:**

**Practical:**

- Continuous Evaluation consists of performance of practical which will be evaluated out of 10 marksfor each practical and average of the same will be converted to 30 marks.
- Practical performance/quiz/drawing/test consists of 30 marks.
- Small Project(Website) developed consists of 40 marks

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| IDIT2020 | WEB APPLICATION DESIGN |
|---|---|
| CO 1 | Describe the concepts of world wide web, and the requirements of effective web design. |
| CO 2 | Apply html, css and javascript concepts by completing hands on activities. |
| CO 3 | Memorize different tags responsible for web application development. |
| CO 4 | Design and produce a front end web pages for a specified client. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| Module No | Content | RBT Level |
|---|---|---|
| 1 | Introduction to Web Designing | 2,3 |
| 2 | HTML Tags and Attributes | 1,2,4 |
| 3 | Page Formatting | 2,3,4 |
| 4 | Text Formatting | 2,4 |
| 5 | Creating Lists | 2,4 |
| 6 | Images, Text Links, Image Links | 1,2,4 |
| 7 | Introduction to Table Tags | 2,3,6 |
| 8 | Frames & Iframe | 1,4 |
| 9 | HTML Forms | 4,6 |
| 10 | Cascading Style Sheets | 1,2,6 |
| 11 | Small Project using HTML and CSS | 6 |

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Computer Engineering

Course Code: IDCE2500
Course Name: Seminar
Prerequisite Course (s): --

**Teaching & Examination Scheme**:

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 00 | 02 | 00 | 02 | 00 | 00 | 50 | 00 | 00 | 00 | 50 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**
To help learners to

- present scientifically on some emerging technology related to Computer Engineering

**Course Content:**
There is no specific content in this course; however, teachers/students are supposed to follow following guidelines for seminar:

- Students will select topics on their own, the topics may be on any aspect of the any latest technology of Computer Engineering but normally beyond the curriculum.
- Student would organize preliminary presentations before faculty and other students, in which he/she would explain what is the topic or topics? Why they have chosen this? And what are they going to do in it? Based on this presentation guide would approve or help them in finalization of the topic and would give suggestions for further improvement. The presentation by one student/one group and discussion on this presentation would also be learning for other groups.
- Faculty should ensure that though topic is challenging to students, it should be feasible and within capabilities of the group of students.
- It is mandatory that each student will present individually a seminar on agreed topic. Student can make working/ demonstrative model and give presentation seminar on it.
- In a session of two hours per week, Students are expected to present the progress of seminar/ model to the concerned faculty and take help them if required.
- These two hours per week may also be used by faculty for arranging presentation by each student on a small topic (but different than their main topic) for 5 to 10 minute duration. This would give one more chance to each student for learning and presenting.
- During the final seminar sessions each student (In case of group, max. of 2) is expected to prepare and present a topic on engineering/ technology, for duration of not less than 15 minutes.
- The student has to submit a hard copy of the technical report, in the form of a title page, introduction, body chapters and a conclusion with references, running to not less than 20 pages; this will be evaluated by the faculty coordinator/guide. Original references are highly valued.

- At end of the semester students would have to submit the posters/charts/ model/presentations.
- Students are encouraged to use various teaching aids such as overhead projectors, power pointpresentation and demonstrative models.

**Course Evaluation:**

**Practical:**

- 20 marks would be allocated to monitor continuous progress throughout the semester.
- 15 marks would be allocated to report/model/charts.
- 15 marks would be allocated to final presentation.

**Course Outcome(s):**

After completion of the course, the student will be able to

- gain knowledge of fast and rapid changing IT technology by self-learning.
- prepare models/charts/reports based on collected information.
- prepare presentation and report in proper format.
- show communication, interpersonal and presenting skills

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| **IDCE2500** | **SEMINAR** |
|---|---|
| CO 1 | Adapt knowledge of fast and rapid changing it technology by self learning. |
| CO 2 | Prepare models/charts/reports based on collected information. |
| CO 3 | Prepare presentation and report in proper format. |
| CO 4 | Show communication, interpersonal and presenting skills. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| **Module No** | **Content** | **RBT Level** |
|---|---|---|
| 1 | Selection of Title | 1, 2 |
| 2 | Initial Presentation | 1, 2, 3 |
| 3 | Designing Model/Diagram | 1, 2, 3 |
| 4 | Preparation of report | 2,6 |
| 5 | Final Presentation | 6 |

# SEMESTER 4

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Computer Engineering

Course Code: IDCE2030
Course Name: Operating System
Prerequisite Course (s): --

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 03 | 02 | 00 | 04 | 40 | 60 | 50 | 00 | 00 | 00 | 150 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**
To help learners to
- understand the services of an operating system provides to its users and system itself.
- apply various CPU scheduling algorithms and recognize the classic synchronization problems.
- compare methods for handling deadlocks and apply various memory management techniques.
- describe file systems.

**Course Content:**

| **Section I** | | | |
|---|---|---|---|
| Module No. | Content | Hours | Weightage in % |
| 1. | **Introduction to Operating System**<br>What operating systems do? Computer System architecture, Operating System structure, Operating System operations, Process management, Memory management, Storage management, Protection and security, Distributed system, Special-purpose systems, Computing environments, Open-source Operating Systems | 06 | 15 |
| 2. | **Process Management**<br>Process concept, Process scheduling, Operations on processes, Inter-process communication, Process Scheduling: Basic concepts, Scheduling criteria, Scheduling algorithms. | 10 | 20 |
| 3. | **Synchronization & Deadlocks** | 06 | 15 |

| | | | |
|---|---|---|---|
| | Background, The critical section management and semaphores (Concepts only) , System model, Deadlock characterization, Methods for handling deadlocks, Deadlock prevention, Deadlock avoidance, Deadlock detection, Recovery from deadlock. | | |
| **Section II** | | | |
| 1. | **Memory Management Strategies**<br>Background, Swapping, Contiguous memory allocation, Paging, Structure of page table, Segmentation | 08 | 20 |
| 2. | **Virtual Memory Management**<br>Background, Demand paging, Copy-on-write, Page Replacement, Allocation of frames. | 07 | 15 |
| 3. | **File System**<br>File concept, Access methods, Directory and disk structure, File system mounting, File sharing, Protection | 08 | 15 |

**List of Practical(s):**

| Sr. No | Name of Practical | Hours |
|---|---|---|
| 1. | Install & test different types of Operating System & compare its features | 02 |
| 2. | Compare various process scheduling algorithm | 02 |
| 3. | Test and run basic unix commands. | 02 |
| 4. | Test commands related with File editing with Vi, Vim, gedit, gcc. | 02 |
| 5. | Test and run Advanced unix commands | 02 |
| 6. | Create a shell script to print ”Hello”. | 02 |
| 7. | Create a Shell script to read and display content of a file. | 02 |
| 8. | Create a Shell script to read from command line. | 02 |
| 9. | Create a Shell script to append content of one file to another | 02 |
| 10. | Create a Shell script to accept a string in lower case letters from a user, & convert to upper case letters. | 02 |
| 11. | Create a Shell script to find numbers of characters, words & lines of a given input file | 02 |
| 12. | Create a Script to reverse a string and display it. | 02 |
| 13. | Create a Script to check a string is palindrome. | 02 |
| 14. | Create a Shell script to add two numbers. | 02 |
| 15. | Create a shell script to reverse the digits of a given 5-digit number. (for eg. , if the no. is 57429 then answer is 92475). | 02 |

**Reference Book(s):**

| Title | Author/s | Publication |
|---|---|---|
| Operating System Principles(Chapters-1, 3, 5, 6, 7, 8, 9, 10 and 11) | Abraham Silberschatz, Peter Baer Galvin, Greg Gagne | 8th edition, Wiley-India. |
| Operating Systems, I | Chandra Mohan | PHI, 2013 |

**Web material link:**

- http://www.tutorialspoint.com/operating_system/https://nptel.ac.in/courses/106102064/

- http://courses.cs.vt.edu/~csonline/OS/Lessons/index.html
- http://www.nptel.ac.in/

**Course Evaluation:**

**Theory:**

- Continuous Evaluation consists of two tests each of 30 marks and 1 hour of duration, which willbe converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the course coordinator.
- End Semester Examination consists of 60 marks

**Practical:**

- Continuous Evaluation consists of performance of practical which will be evaluated out of 10 marks for each practical and average of the same will be converted to 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/drawing/test consists of 15 marks during End Semester Exam.
- Viva/ Oral performance consists of 15 marks during End Semester Exam.

**Course Outcome(s):**

After completion of the course, the student will be able to

- understanding advanced concepts in operating systems.
- understand security issues in operating systems.
- learn principles of Distributed and multiprocessor operating systems

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| IDCE2030 | OPERATING SYSTEM |
|---|---|
| CO 1 | Summarize the basic concepts in operating systems like kernel, shell, types and views of operating system. |
| CO 2 | Categorize the operating system's resource management and memory management techniques. |
| CO 3 | Differentiate between multiprocessing, multiprogramming and multitasking. |
| CO 4 | Describe the various cpu scheduling algorithms. |
| CO 5 | Apply Unix/Linux operating system commands and execute various shell scripts. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| Module No | Content | RBT Level |
|---|---|---|
| 1 | Introduction to Operating System | 1, 2 |
| 2 | Process Management | 2, 3, 4, 5 |
| 3 | Synchronization & Deadlocks | 2, 3, 4, 5, 6 |
| 4 | Memory Management Strategies | 2, 3, 4, 6 |
| 5 | Virtual Memory Management | 2, 3, 5 |
| 6 | File System | 1, 2, 3, 5, 6 |

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

**Department of Computer Engineering**

Course Code: IDCE2040
Course Name: Network Essentials
Prerequisite Course (s): --

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 03 | 02 | 00 | 04 | 40 | 60 | 20 | 30 | 00 | 00 | 150 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**
To help learners to

- understand networking topologies.
- understand LANs, WANs and the Internet.
- understand network protocols
- understand TCP/IP

**Course Content:**

| **Section I** | | | |
|---|---|---|---|
| Module No. | Content | Hours | Weightage in % |
| 1. | **Overview of Networking**<br>Introduction to networks and networking, LAN, VLAN, CAN, MAN, WAN, Internet and Intranet etc. Uses and benefits of Network, Server-client based network, peer to peer networks. | 07 | 14 |
| 2. | **Network Hardware and Components**<br>Concept of Server, client, node, segment, backbone, host etc. Analog and Digital transmission, Network Interface Card, Crimping tools and Color standards for Straight crimping and Cross crimping Functions of NIC, Repeaters, Hub, Switches, Routers, Bridges, Router etc. | 08 | 18 |
| 3. | **Transmission Media and Topologies**<br>Media types: STP cable, UTP cable, Coaxial cable, Fiber cable, Base band and Broadband transmission, Cables and Connectors, Physical and logical topologies, Bus, Star, Ring and Mesh topologies | 08 | 18 |
| **Section II** | | | |

| | | | |
|---|---|---|---|
| 1. | **Protocols and Services**<br>OSI and TCP/IP model, HTTP, FTP and other Different types of protocols, OSI Model, Media Access Method, DNS services, DHCP services, WINS services and RAS services, Web services, Proxy Services etc. | 08 | 15 |
| 2. | **TCP/IP and Sub-netting**<br>Introduction about TCP/IP and Sub-nettings, configuring IP address and sub nettings with different Routers and Network, TCP/IP Errors and Solutions | 08 | 20 |
| 3. | **Introduction to Wireless Networks.**<br>Introduction to wireless LAN IEEE 802.11, WiMax and Li-Fi, Introduction to Bluetooth - architecture, application, Comparison between Bluetooth and WiFi | 07 | 15 |

**List of Practical:**

| Sr. No | Name of Practical | Hours |
|---|---|---|
| 1. | Cable Crimping using Different Color Codes (Straight and Cross Cable ) | 04 |
| 2. | Installation and configuring Peer to Peer and Server-Client Network | 04 |
| 3. | Implementation on various Topologies in Cisco Packet Tracer | 08 |
| 4. | Installation and Configuring FTP, HTTP Services | 04 |
| 5. | Installation and Configuring DNS & DHCP Services | 04 |
| 6. | Network Troubleshooting | 06 |

**Reference Book(s):**

| Title | Author/s | Publication |
|---|---|---|
| Networking Complete | Thareja, Reema | BPB Publication |
| Computer Networking | Andrew S. Tanenbawan | By PHI |

**Web material link:**

- https://www.ibm.com/in-en/cloud/learn/networking-a-complete-guide
- https://www.cisco.com/c/dam/global/fi_fi/assets/docs/SMB_University_120307_Networking_Fundamentals.pdf

**Course Evaluation:**

**Theory:**

- Continuous Evaluation consists of two tests each of 30 marks and 1 hour of duration, which will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the course coordinator.
- End Semester Examination consists of 60 marks

**Practical:**

- Continuous Evaluation consists of performance of practical which will be evaluated out of 10 marksfor each practical and average of the same will be converted to 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/drawing/test consists of 15 marks during End Semester Exam.
- Viva/ Oral performance consists of 15 marks during End Semester Exam.

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| **IDCE2040** | **NETWORK ESSENTIALS** |
|---|---|
| CO 1 | Represent the architecture of a network and how the various components work together to achieve data communications. |
| CO 2 | Explain the role and function of the layers that form part of a specified protocol stack such as tcp/ip and how these layers work together to support applications such as the web etc. |
| CO 3 | Construct a simple simulated network using pcs, switches and routers and perform basic configuration, verification and troubleshooting. |
| CO 4 | Distinguish the different types of networks based on the topologies. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| **Module No** | **Content** | **RBT Level** |
|---|---|---|
| 1 | Overview of Networking | 1, 2 |
| 2 | Network Hardware and Components | 2, 3, 4, 5 |
| 3 | Transmission Media and Topologies | 2, 3, 4 |
| 4 | Protocols and Services | 2, 3, 4 |
| 5 | TCP/IP and Sub-netting | 2, 3, 5 |
| 6 | Introduction to Wireless Networks | 1, 2, 4 |

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

**Department of Information Technology**

Course Code: IDIT2031
Course Name: Web Technology
Prerequisite Course (s): --

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 00 | 04 | 00 | 02 | 00 | 00 | 100 | 00 | 00 | 00 | 100 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**
To help learners to

- develop interactive web based application using PHP and MySQL

**List of Practical(s):**

| Sr. No | Name of Practical | Hours |
|---|---|---|
| 1. | Introduction to PHP. Installation of WAMP/XAMPP Server. | 02 |
| 2. | Write a PHP script to display Welcome message. | 02 |
| 3. | Write a PHP script to demonstrate arithmetic operators, comparison operator, and logical operator. | 02 |
| 4. | Write PHP Script to print Fibonacci series. | 02 |
| 5. | Write PHP Script to generate result and display grade. | 02 |
| 6. | Write PHP Script to find maximum number out of three given numbers. | 02 |
| 7. | Write PHP Script for addition of two 2x2 matrices. | 02 |
| 8. | Write PHP script to demonstrate Variable function. | 02 |
| 9. | Write PHP script to obtain 5! Using function | 02 |
| 10. | Write PHP script to demonstrate string function. | 02 |
| 11. | Write PHP script to demonstrate Date functions | 02 |
| 12. | Write PHP script to demonstrate Math functions | 02 |
| 13. | Write PHP script to demonstrate Array functions. | 02 |
| 14. | Write PHP script to demonstrate File functions | 02 |
| 15. | Create student registration form using text box, check box, radio button, select, submit button. And display user inserted value in new PHP page. | 02 |
| 16. | Create Website Registration Form using text box, check box, radio button, select, submit button. And display user inserted value in new PHP page. | 02 |
| 17. | Write two different PHP script to demonstrate passing variables through a URL | 02 |
| 18. | Write two different PHP script to demonstrate passing variables with sessions. | 02 |
| 19. | Write PHP script to demonstrate passing variables with cookies | 02 |
| 20. | Write a program to keep track of how many times a visitor has loaded the page | 02 |

| | | |
|---|---|---|
| 21. | Write an example of Error-handling using exceptions | 02 |
| 22. | Write a PHP script to connect MySQL server from your website. | 02 |
| 23. | Write a program to read customer information like cust_no, cust_name, Item_purchase, and mob_no, from customer table and display all these information in table format on output screen | 02 |
| 24. | Write a program to edit name of customer to "Bob" with cust_no =1, and to delete record with cust_no=3. | 02 |
| 25. | Write a program to read employee information like emp_no, emp_name, designation and salary from EMP table and display all this information using table format. | 02 |
| 26. | Create a dynamic web site using PHP and MySQL | 10 |

**Reference Book(s):**

| Title | Author/s | Publication |
|---|---|---|
| Beginning PHP and MySQL, 4th Edition | W. Jason Gilmore | Apress, 2010 |
| PHP: The Complete Reference | Steven Holzner | McGraw-Hill, 2008 |

**Web material link:**

Software: WAMP server / XAMPP server, 'C' Panel, Text Editor

- http://www.codecademy.com/tracks/web
- http://www.codecademy.com/tracks/php
- http://www.w3schools.com/PHP
- http://www.tutorialpoint.com
- http://www.homeandlearn.co.uk

**Course Evaluation:**

**Practical:**

- Continuous Evaluation consists of performance of practical which will be evaluated out of 10 marks for each practical and average of the same will be converted to 30 marks.
- Practical performance/quiz/drawing/test consists of 30 marks.
- Small Project(Website) developed consists of 40 marks

**Course Outcome(s):**

After completion of the course, the student will be able to

- design and develop a Web site using form controls for presenting web based content.
- debug the Programmes by applying concepts and error handling techniques of PHP.

- create dynamic Website/ Web based Applications, using PHP, MySQL database

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| IDIT2031 | WEB TECHNOLOGY |
|---|---|
| CO 1 | Analyze given assignment to select sustainable web development and design methodology. |
| CO 2 | Design and develop the programs by applying concepts and error handling techniques of php. |
| CO 3 | Create dynamic website/ web based applications, using php, mysql database |
| CO 4 | Construct modern interactive web applications as per industry standards. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| Module No | Content | RBT Level |
|---|---|---|
| 1 | Introduction to PHP | 2 |
| 2 | PHP Syntax | 1, 2 |
| 3 | Operators in PHP | 1, 2, 4 |
| 4 | Arrays and Matrices in PHP | 1,2,4 |
| 5 | Functions in PHP | 1,2,3,5 |
| 6 | Cookies and Sessions | 2,5 |
| 7 | Database Connectivity | 2,6 |

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

**Department of Information Technology**

Course Code: IDIT2040
Course Name: Mobile Application Development
Prerequisite Course (s): --IDIT2010

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 03 | 04 | 00 | 05 | 40 | 60 | 40 | 60 | 00 | 00 | 200 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**
To help learners to

- understand life cycle of an application/activity.
- learn design of responsive mobile applications.
- develop mobile application using open source technologies.

**Course Content:**

| **Section I** | | | |
|---|---|---|---|
| Module No. | Content | Hours | Weightage in % |
| 1. | **Introduction of Android**<br>Android Operating System, History of Mobile Software Development, Open Handset Alliance (OHA), The Android Platform, Installation, Android SDK, Android Manifest file | 06 | 20 |
| 2. | **Exploring User Interface Screen Elements**<br>Introducing Android Views, Layouts, TextView, Buttons, Check Boxes, Radio Groups, Indicators, SeekBar, Context Menus, User Events, Styles and Themes, Dates and Times, Toolbar | 08 | 15 |
| 3. | **Designing User Interfaces with Layouts**<br>Creating User Interfaces in Android, View versus ViewGroup, Layout Classes such as Fame Layout, Linear Layout, Relative Layout, Table Layout, Multiple Layouts on a Screen, Data-Driven Containers, Organizing Screens with Tabs, Scrolling Support. | 08 | 15 |
| **Section II** | | | |

| | | | |
|---|---|---|---|
| 1. | **Drawing and Working with Animation**<br>Working with Canvases and Paints, Working with Text, Working with Bitmaps, Working with Shapes, Working with Animation. | 08 | 15 |
| 2. | **Android Storage APIs**<br>Working with Application Preferences such as Creating Private and Shared Preferences, Adding, Updating, and Deleting Preferences. Working with Files and Directories, Storing SQLite Database such as Creating an SQLite Database, Creating, Updating, and Deleting Database Records, Closing and Deleting a SQLite Database. | 08 | 20 |
| 3. | **Different APIs**<br>Telephony APIs, Google Speech APIs, Android Location APIs, Android Google Maps | 07 | 15 |

**List of Practical:**

| Sr.No | Name of Practical | Hours |
|---|---|---|
| 1. | Install the Android Studio and Setup the Development Environment | 04 |
| 2. | Create an Application to demonstrate activity (Application Life Cycle) | 04 |
| 3. | Create an Application to demonstrate different types of layouts | 04 |
| 4. | Create an Application to implement simple calculator using text view, edit view, option button and button | 04 |
| 5. | Create an Application to develop app having multiple activities and user should be able switch between the activities by using intents | 04 |
| 6. | Create an Application to demonstrate list view | 04 |
| 7. | Create an Application to demonstrate photo gallery | 04 |
| 8. | Create an Application to demonstrate Date picker and time picker | 04 |
| 9. | Develop an simple application with context menu and option menu | 04 |
| 10. | Create an Application to demonstrate the functionality of Shared Preferences. | 04 |
| 11. | Develop a sample Android application having navigation items similar to Gmail Application. | 04 |
| 12. | Create an Application to demonstrate a service | 04 |
| 13. | Create an Application to demonstrate the application of intent class | 04 |
| 14. | Create an Application to create a text file in a external memory | 04 |
| 15. | Create an Application to store and fetch data from SQLite database. | 04 |

**Reference Book(s):**

| Title | Author/s | Publication |
|---|---|---|
| Beginning Android 4 Application Development | Wei-Meng Lee | Wiley India |
| Head First Android Development: A Brain-Friendly Guide | David Griffiths and DawnGriffiths | O`Relilly |

**Web material link:**

- http://swayam.gov.in/
- http://spoken-tutorial.org/

- https://developer.android.com/

**Course Evaluation:**

**Theory:**

- Continuous Evaluation consists of two tests each of 30 marks and 1 hour of duration, whichwill be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the coursecoordinator.
- End Semester Examination consists of 60 marks

**Practical:**

- Continuous Evaluation consists of performance of practical which will be evaluated out of 20marks for each practical and average of the same will be converted to 20 marks.
- Internal viva consists of 20 marks.
- Practical performance/quiz/drawing/test consists of 30 marks during End Semester Exam.
- Viva/ Oral performance consists of 30 marks during End Semester Exam.

**Course Outcome(s):**

After completion of the course, the student will be able to

- describe object oriented concepts
- perform programs related to basic concepts of Java.
- apply methods of string class to manipulate string.

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| **IDIT2040** | **MOBILE APPLICATION DEVELOPMENT** |
|---|---|
| CO 1 | Describe the different mobile technologies and mobile development platform. |
| CO 2 | Identify how mobile application works, its lifecycle and resources. |
| CO 3 | Assess communication technologies into android applications. |
| CO 4 | Design and implement application with user interface, use of APIs for data storage. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| **Module No** | **Content** | **RBT Level** |
|---|---|---|
| 1 | Introduction of Android | 1, 2 |
| 2 | Exploring User Interface Screen Elements | 2, 3, 4, 5, 6 |
| 3 | Designing User Interfaces with Layouts | 2, 3, 4, 6 |
| 4 | Drawing and Working with Animation | 2, 3, 4, 6 |
| 5 | Android Storage APIs | 2, 3, 5, 6 |
| 6 | Different APIs | 3, 4, 5, 6 |

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Information Technology

Course Code: IDCE2050
Course Name: Computer Architecture
Prerequisite Course(s): Nil

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 03 | 02 | 00 | 04 | 40 | 60 | 20 | 30 | 00 | 00 | 150 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**
To help learners to
- impart basic concepts of computer architecture and organization.
- explain key skills of constructing cost-effective computer systems.
- help students in understanding various memory devices

**Course Content:**

| **Section I** | | | |
|---|---|---|---|
| Module No. | Content | Hours | Weigh tage in % |
| 1. | **Computer Data Representation**<br>Data Representation: decimal, binary, octal and hexadecimal numbers, conversion from one number system to another, fixed point representation, signed magnitude, 1's complement and 2's complement representation, addition and subtraction of binary numbers using different representation | 08 | 20 |
| 2. | **Computer Architecture & Register-Transfer and Micro-operations**<br>Overview of computers and basics of Digital Electronics-Flip Flops, Registers, Shift registers, Register - Transfer-Language, Register Transfer, Bus Transfer and Memory Transfer, Arithmetic Micro-Operations Addition, Subtraction, Complements, Negation, Increment and Decrement, Logic micro operations, Shift Micro operation. | 08 | 15 |
| 3. | **Basic Computer Organization**<br>Instruction codes, Computer registers, Computer instructions, Timing and Control, Instruction cycle, Memory-Reference Instructions, Input-output and interrupt | 07 | 15 |

| Section II | | | |
|---|---|---|---|
| 1. | **Memory Organization**<br>Memory Hierarchy, Associative Memory, Cache Memory, Virtual Memory | 08 | 20 |
| 2. | **Input-Output Organization**<br>Input-Output Interface, Asynchronous Data Transfer, Modes of Data Transfer, DMA Transfer | 07 | 15 |
| 3. | **Microprocessor and Parallel Processing**<br>Block diagram of 8086, Registers and applications of microprocessor, Parallel Processing – Flynn's classification, Pipelining. | 07 | 15 |

**List of Practical(s):**

| Sr. No | Name of Practical | Hours |
|---|---|---|
| 1. | Number System Programs. Conversion from decimal to binary and vice versa. | 08 |
| 2. | To design the circuit of half adder and full adder | 02 |
| 3. | To design the circuit of half subtractor and full subtractor | 02 |
| 4. | To design a 4*1 and 8*1 Multiplexer. | 04 |
| 5. | To design a 4 bit combinational shifter. | 02 |
| 6. | To design a BCD adder | 02 |
| 7. | To design 2:4 Decoder | 02 |
| 8. | To design an ALU. | 04 |
| 9. | To design a Control Unit. | 04 |

**Reference Book(s):**

| Title | Author/s | Publication |
|---|---|---|
| Computer System Architecture | M. Morris Mano | Pearson |
| Computer Architecture and Organization | Ghoshal, Subrata | Pearson |
| Computer Architecture & Organization | M. Murdocca & V. Heuring | WILEY |

**Web material link:**

- https://nptel.ac.in/courses/106/105/106105163/
- http://www.intel.com/pressroom/kits/quickreffam.htm
- web.stanford.edu/class/ee282/

**Course Evaluation:**

**Theory:**

- Continuous Evaluation consists of two tests each of 30 marks and 1 hour of duration, which willbe converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the course coordinator.
- End Semester Examination consists of 60 marks

**Practical:**

- Continuous Evaluation consists of performance of practical which will be evaluated out of 10 marks for each practical and average of the same will be converted to 10 marks.
- Internal viva consists of 10 marks.

- Practical performance/quiz/drawing/test consists of 15 marks during final submission.
- External viva consists of 15 marks.

**Course Outcome(s):**

After completion of the course, the student will be able to

- identify various components of computer and their interconnection.
- identify basic components and design of the CPU: the ALU and control unit.
- compare and select various Memory devices as per requirement.

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| IDCE2050 | COMPUTER ARCHITECTURE |
|---|---|
| CO 1 | Define different number systems, binary addition and subtraction, 2's complement representation and operations with this representation. |
| CO 2 | Demonstrate and understand the internal components and functions of a basic computer which include: i/o, memory, alu and control unit. |
| CO 3 | Compare and select various memory devices as per requirement. |
| CO 4 | Implement elementary assembly language programs. |
| CO 5 | Design, evaluate and create simple logic circuits using gates and Boolean algebra. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| Module No | Content | RBT Level |
|---|---|---|
| 1 | Computer Data Representation | 1, 2 |
| 2 | Computer Architecture & Register- Transfer and Micro-operations | 1, 2, 3 |
| 3 | Basic Computer Organization | 1, 2, 3 |
| 4 | Memory Organization | 2, 3, 4 |
| 5 | Input-Output Organization | 2, 3, 4 |
| 6 | Microprocessor and Parallel Processing | 2, 3, 4 |

**P P Savani University**

**School of Engineering**

**Institute of Diploma Studies**

---

**Department of Computer Engineering**

Course Code: IDCE2910
Course Name: Project
Prerequisite Course(s): Nil

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 04 | | | 04 | -- | -- | 100 | 00 | -- | -- | 100 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**

To help learners to

- identify, analyze and articulate projects with a comprehensive and systematic approach.
- develop creative thinking.
- perform in a team.

**Course Content:**

| Module No. | Content | Hours | Weightage in % |
|---|---|---|---|
| 1. | **Selection of Title**<br>Select a topic of interest to work upon which can be from any domain. After selecting the topic and proposing the title, get approval from the concerned faculty | 08 | 10 |
| 2. | **Literature Review**<br>Study in detail about the topic chosen. | 12 | 10 |
| 3. | **Project Proposal**<br>Prepare the proposal on the aspect of the selected area to work upon. | 12 | 20 |
| 4. | **Implementation**<br>Implementation of the proposal in any of the programming languages | 16 | 40 |
| 5. | **Report Writing**<br>The report must be prepared as per suggested guidelines consisting of Preamble, Objectives, Scope, Introduction, Conclusions, Recommendations and Annexure. | 10 | 10 |
| 6. | **Presentation & Question-Answer**<br>At the end of the semester, the student/group of students shall give a presentation of their work followed by a viva-voce examination. | 02 | 10 |

**Course Evaluation:**

| Sr. No | Evaluation Criteria | Marks |
|---|---|---|
| 1. | Selection of the topic (Within first 14 Days of commencement of semester) | 10 |
| 2. | Initial Presentation of the topic | 10 |
| 3. | An actual work carried out. | 10 |
| 4. | Report writing as per guidelines. | 10 |
| 5. | Project and report submission | 10 |
| 6. | Presentation & Question-Answer session. | 50 |
| | **Total** | **100** |

**Course Outcome(s):**

After completion of the course, the students will be able to

**IDIT2910 PROJECT**

| | |
|---|---|
| CO 1 | Support the theoretical learning with practice and integrate knowledge for engineering applications. |
| CO 2 | Adapt to real time industry exposure and experience. |
| CO 3 | Solve challenging projects for commercial, societal and environment benefit. |
| CO 4 | Explain the importance of planning, documentation, punctuality and work ethics. |
| CO 5 | Document the work which is carried out in proper format with industry standards. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| Module No | Content | RBT Level |
|---|---|---|
| 1 | Selection of Title | 2 |
| 2 | Literature Review | 1, 2 |
| 3 | Project Proposal | 2, 3, 4 |
| 4 | Implementation | 2, 3, 4 |
| 5 | Report Writing | 2, 3, 5, 6 |
| 6 | Presentation & Question-Answer | 1, 2, 3, 4, 5, 6 |

# THIRD YEAR
# DIPLOMA IN COMPUTER ENGINEERING

| P P SAVANI UNIVERSITY | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCHOOL OF ENGINEERING | | | | | | | | | | | | | | | | |
| INSTITUTE OF DIPLOMA STUDIES | | | | | | | | | | | | | | | | |
| TEACHING & EXAMINATION SCHEME FOR DIPLOMA ENGINEERING PROGRAMME AY:2024-25(BATCH:2024) | | | | | | | | | | | | | | | | |
| **Sem.** | **Course Code** | **Course Title** | **Offered By** | **Teaching Scheme** | | | | | **Examination Scheme** | | | | | | | |
| | | | | **Contact Hours** | | | | **Credit** | **Theory** | | **Practical** | | **Tutorial** | | **Total** |
| | | | | **Theory** | **Practical** | **Tutorial** | **Total** | | **CE** | **ESE** | **CE** | **ESE** | **CE** | **ESE** | |
| 5 | IDCE3010 | Software Engineering | CE | 3 | 2 | 0 | **5** | 4 | 40 | 60 | 20 | 30 | 0 | 0 | **150** |
| | IDCE3011 | Computer Networks | IT | 3 | 2 | 0 | **5** | 4 | 40 | 60 | 20 | 30 | 0 | 0 | **150** |
| | IDIT3020 | Programming with Python | IT | 3 | 4 | 0 | **7** | 5 | 40 | 60 | 40 | 60 | 0 | 0 | **200** |
| | IDCE3020 | Fundamentals of Linux | CE | 0 | 4 | 0 | **4** | 2 | 0 | 0 | 100 | 0 | 0 | 0 | **100** |
| | | Elective | | 2 | 2 | 0 | **4** | 3 | 40 | 60 | 20 | 30 | 0 | 0 | **150** |
| | IDCE3910 | Summer Training | CE | 4 | | | **0** | 4 | 0 | 0 | 100 | 0 | 0 | 0 | **100** |
| | | | | | | **Total** | **25** | **22** | | | | | | | **850** |
| 6 | IDIT3040 | System Administration and IT Infrastructure | IT | 2 | 4 | 0 | **6** | 4 | 40 | 60 | 40 | 60 | 0 | 0 | **200** |
| | IDCE3040 | Introduction to Computer Security | CE | 3 | 2 | 0 | **5** | 4 | 40 | 60 | 20 | 30 | 0 | 0 | **150** |
| | CFLS3041 | Employment Communication | CSPD | 2 | 0 | 0 | **2** | 2 | 100 | 0 | 0 | 0 | 0 | 0 | **100** |
| | IDCE3920 | Project/Training | CE | 10 | | | **10** | 10 | 0 | 0 | 200 | 300 | 0 | 0 | **500** |
| | | | | | | **Total** | **23** | **20** | | | | | | | **950** |

# SEMESTER 5

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Computer Engineering

Course Code: IDCE3010
Course Name: Software Engineering
Prerequisite Course(s): Nil

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 03 | 02 | 00 | 04 | 40 | 60 | 20 | 30 | 00 | 00 | 150 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the course:**
To help learners to

- study the pioneer of Software Development Life Cycle, Development models and Agile Software Development.
- study fundamental concepts in software testing, including software testing objectives, process, criteria, strategies, and methods.
- discuss various software testing issues and solutions in software unit test; integration, regression, and system testing.
- learn the process of improving the quality of software work products.
- gain the techniques and skills on how to use modern software testing tools to supportsoftware testing projects.
- expose Software Process Improvement and Reengineering.

**Course Content:**

| **SECTION-I** | | | |
|---|---|---|---|
| Module No. | Content | Hours | Weightage in % |
| 1. | **Introduction to Software Engineering**<br>System Concepts: Types of systems: (open, closed, static and dynamic systems). Introduction, Programmes v/s Software Products Emergence of Software Engineering- Early Computer Programming, High-level Language Programming, Control flow based Design, Data Structure Oriented Design, Object Oriented Design | 10 | 15 |
| 2. | **Software Life Cycle Models**<br>Requirement of Life Cycle Model, Classic Waterfall Model, Prototyping Model, Evolutionary Model, Spiral Model, Introduction to agile methodology, Comparison of different Life Cycle Models | 13 | 20 |
| 3. | **Software Planning** | 10 | 15 |

| | | | |
|---|---|---|---|
| | Responsibilities of Software Project Manager<br>- Metrics for Project Size Estimation- LOC(Lines of Code), Function Point Metric<br>- Project estimation Techniques- Using COCOMO Model. | | |
| **SECTION II** | | | |
| Module No. | Content | Hours | Weightage in % |
| 1. | **Requirement Analysis and Specification**<br>Requirement gathering and Analysis, Software Requirement Specifications(SRS), Characteristics of good SRS | 06 | 10 |
| 2. | **Software Design and Implementation**<br>Characteristics and features of good Software Design Cohesion and Coupling, Software design Approaches- Function Oriented Design (Data flow diagrams, Data dictionary, Decision Trees and tables), Object Oriented Design, Structured Coding Techniques, Coding Styles, and documentation | 10 | 25 |
| 3. | **Software Testing**<br>Concept of Testing, Testing type cycle (V-Model), Verification v/s Validations, Unit Testing, Black Box Testing, White Box Testing, Integration testing, System testing, Configuration management, Overview of test cases. | 06 | 15 |

**List of Tutorials:**

| Sr. No. | List of Tutorial | Hours |
|---|---|---|
| 1. | Develop a SRS on a given topic/project/problem. | 2 |
| 2. | Develop DFD Model (level 0 and level 1 DFD) of the problem. | 4 |
| 3. | Develop sequence diagram. | 4 |
| 4. | Develop class diagrams. | 4 |
| 5. | Use testing tools such as J-meter, Canoo Web Test. | 4 |
| 6. | Use a project management tool such as Microsoft project or Gantt project etc (Team week, Target process, Gantt project) | 4 |
| 7. | Write test cases for any known application. | 2 |
| 8. | Take any system and study its system specification and report the various bugs. | 6 |

**Text Book:**

| Title | Author(s) | Publication |
|---|---|---|
| Fundamentals of Software Engineering | Rajib Mall | PHI Learning |
| Software engineering: A Practitioner's Approach | Roger Pressman | McGraw Hill Education |

**Reference Book:**

| Title | Author(s) | Publication |
|---|---|---|
| Software Engineering – An Engineering Approach | James F.Peters & Witold Pedrycz | Wiley |
| Software Engineering – Principles and Practice | Waman Jawadekar | McGraw Hill Education |

**Web Material Link(s):**

- https://nptel.ac.in/courses/106101061/

**Course Evaluation:**

**Theory:**

- Continuous Evaluation consists of two tests, each of 30 marks and 1 hour of duration and average of the same will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination consists of 60 marks.

**Tutorial:**

- Continuous evaluation consists of performance of tutorial which will be evaluated out of 10 Marks for each tutorial and average of the same will be converted to 10 marks.
- Internal Viva consists of 10 marks.
- Practical performance/quiz/test consists of 15 marks during End Semester Exam.
- Viva/oral performance consists of 15 marks during End Semester Exam.

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| **IDCE3010** | **SOFTWARE ENGINEERING** |
|---|---|
| CO 1 | Understand fundamentals of software development process. |
| CO 2 | Ability to recognize user requirements and develop SRS (software requirement specification) for effective software design. |
| CO 3 | Analyze testing methods to ensure software quality as per different quality standards. |
| CO 4 | Learn to apply knowledge of modern tools for efficient software project management. |
| CO 5 | Identify various process models available for software engineering activities of software engineering like software requirements, software design, software construction, software management, and software quality etc. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| **Module No** | **Content** | **RBT Level** |
|---|---|---|
| 1 | Introduction to Software Engineering | 1, 2, 3 |
| 2 | Software Life Cycle Models | 1, 2, 3, 4 |
| 3 | Software Planning | 1, 2, 3, 4 |
| 4 | Requirement Analysis and Specification | 1, 2, 3 |
| 5 | Software Design and Implementation | 1, 2, 3, 4 |
| 6 | Software Testing | 1, 2, 3, 4 |

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Computer Engineering

Course Code: IDCE3011
Course Name: Computer Networks
Prerequisite Course(s): Nil

**Teaching & Examination Scheme**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 3 | 2 | 0 | 4 | 40 | 60 | 20 | 30 | 0 | 0 | 150 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the course:**

To help students to
- understand the concept of data communication.
- understand the concepts and layers of OSI and TCP-IP reference models.
- get familiar with different protocols and network components.

**Course Content:**

| Module No. | Content | Hours | Weightage in % |
|---|---|---|---|
| 1. | **Introduction:** Overview of network essentials, Revised TCP/IP, Protocols and Standards. | 4 | 10 |
| 2. | **Physical Layer** Data and transmission techniques, Multiplexing, Transmission media, Asynchronous Communication, Wirelesstransmission. | 7 | 15 |
| 3. | **Data Link Layer** Layer design issues, services provided to network layers, Framing, Error control, and Flow control, Data link control and protocols – Simplex protocol, Sliding window protocol. | 7 | 15 |
| 4. | **Medium Access Sub Layer** Channel Allocations, Multiple Access protocols- ALOHA, CSMA, CSMA/CD protocols, Collision-free protocols. | 5 | 10 |
| | **SECTION II** | | |
| Module No. | Content | Hours | Weightage in % |
| 1. | **Network Layer** A network Layer design issue, Routing algorithms, and protocols, Congestion Control Algorithms, Internetworking, Addressing, N/W Layer Protocols and recent developments | 8 | 20 |
| 2. | **Transport Layer** Transport services, Design issues, transport layer protocols, | 6 | 15 |

| | | | |
|---|---|---|---|
| | Congestion Control, QOS and its improvement. | | |
| 3. | **Application Layer**<br>Client-Server Model, DNS, SMTP, FTP, HTTP, WWW, andrecent development | 8 | 15 |

**List of Practical:**

| Sr. No. | List of Practical | Hours |
|---|---|---|
| 1. | Implement Packet Generation having information of packet number (2-dig), Total no of packets (2 dig), & data itself in the packet. | 08 |
| 2. | Implementation flow control algorithms, CRC, VRC, LRC | 06 |
| 3. | Implement CSMA/CD between two machines | 06 |
| 4. | Implement Token ring between 3 machines. | 06 |
| 5. | Study of switches, Hubs, Routers, and gateway. | 04 |

**Text Book:**

| Title | Author(s) | Publication |
|---|---|---|
| Data Communication and Networking | Behrouz A. Forouzan | Tata McGraw Hill |

**Reference Books:**

| Title | Author(s) | Publication |
|---|---|---|
| Computer Networks | Andrew S Tanenbaum | PHI Learning |
| Data and Computer Communications | William Stallings | Prentice Hall |
| TCP/IP Illustrated Volume-I | Kevin R. Fall, W.Richard Stevens | Addition Wesley |
| Internetworking with TCP/IP Volume-I | Douglas E. Comer | PHI |

**Web Material Link(s):**

- http://www.tutorialspoint.com/computer_fundamentals/computer_networking.html
- https://nptel.ac.in/courses/106105080/
- https://www.udemy.com/new-2016-networking-fundamentals-for-beginners/
- https://www.cisco.com/c/en_in/training-events/training-certifications/certifications.html

**Course Evaluation:**

**Theory:**

- Continuous Evaluation consists of two tests each of 30 marks and 1 Hour of duration, whichwill be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the course coordinator.
- End Semester Examination consists of 60 marks.

**Practical:**

- Continuous Evaluation consist of the performance of practical which will be evaluated out of10 marks for each practical and average of the same will be converted to 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/test consists of 15 marks during End Semester Exam.
- Viva/oral performance consists of 15 marks during End Semester Exam.

**Course Outcome(s):**

After the completion of the course, the student will be able to

| IDCE3011 | COMPUTER NETWORKS |
|---|---|
| CO 1 | Distinguish the working of network protocols, application and OSI reference model and TCP/IP reference model. |
| CO 2 | Explain various service provided by computer network and its uses. |
| CO 3 | Describe concept of network interface and performance issues in the networks. |
| CO 4 | Evaluate network tools for implementing network protocols. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| Module No | Content | RBT Level |
|---|---|---|
| 1 | Introduction | 2,4 |
| 2 | Physical Layer | 1,2,4 |
| 3 | Data Link Layer | 2,4 |
| 4 | Medium Access SubLayer | 1,2 |
| 5 | Network Layer | 2,3,6 |
| 6 | Transport Layer | 2,4 |
| 7 | Application Layer | 2,5 |

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Information Technology

Course Code: IDIT3020
Course Name: Programming with Python
Prerequisite Course(s): -

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 03 | 04 | 00 | 04 | 40 | 60 | 40 | 60 | 00 | 00 | 200 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**

To help learners to

- understand basics of object-oriented programming.
- identify appropriate approach to computational problems.
- develop logic building and problem-solving skills.

**Course Content:**

| **SECTION I** | | | |
|---|---|---|---|
| Module No. | Content | Hours | Weightage in % |
| 1. | **Introduction to Python**<br>Brief History of Python ,Python Versions ,Installing Python ,Environment Variables ,Executing Python from the Command Line ,IDLE ,Editing Python Files ,Python Documentation ,Getting Help ,Dynamic Types ,Python Reserved Words ,Naming Conventions | 03 | 6 |
| 2. | **Decision Structures in Python**<br>Conditional Blocks Using if, Else and Else If, Simple for Loops in Python, For Loop Using Ranges, String, List and Dictionaries Use of While Loops in Python, Loop Manipulation Using Pass, Continue, Break and Else. | 04 | 5 |
| 3. | **Array and Strings in Python**<br>Arrays, Basic Strings, Accessing Strings, BasicOperations, String Slicing, Testing, Searching and Manipulating Strings, Function and Methods | 03 | 8 |
| 4. | **Collections**<br>Introduction ,Lists, Tuples ,Sets ,Dictionaries ,Sorting Dictionaries ,Copying Collections ,Summary | 06 | 8 |
| 5. | **Functions, Modules and Packages in Python**<br>Introduction to Functions, Defining a Function, CallingFunction, | 07 | 13 |

| | | | |
|---|---|---|---|
| | Types of Functions, Function Arguments,Anonymous Functions, Global and Local Variables,Importing Module, Math Module, Random Module, Introduction to Packages: Numpy, Pandas, Matplotlib. | | |
| **SECTION II** | | | |
| Module No. | Content | Hours | Weightage in % |
| 1. | **Python Object Oriented Programming**<br>OOP Concept of Class, Object and Instances, Constructor, Class, Attributes, Methods, Using Properties to Control Attribute Access, and Destructors, Inheritance, Overlapping and Overloading Operators.<br>Objects in Python: Creating Python Classes, Modules and Packages, Inheritance in Python, Polymorphism in Python. | 08 | 19 |
| 2. | **Files in Python**<br>Introduction to File Input and Output, Writing Data to a File, Reading Data From a File, Additional File Methods,Using Loops to Process Files, Processing Records. | 07 | 15 |
| 3. | **Regular Expression in Python**<br>RE Module, Basic Patterns, Regular Expression Syntax, Regular Expression Object, Match Object, Search Object,Findall method, Split method, Sub Method | 03 | 07 |
| 4. | **Exception Handling in Python**<br>Handling IO Exceptions, Working with Directories, Metadata, Errors, Run Time Errors, The Exception Model, Exception Hierarchy, Handling Multiple Exceptions, Throwing Mechanism, Caching Mechanism | 04 | 09 |

**List of Practical:**

| Sr. No. | Details of Practical | Hours |
|---|---|---|
| 1. | Introduction to Python (Introduction to IDLE, different data types, Input Output in Python, Operators, Operator precedence). | 08 |
| 2. | Working with Strings. | 08 |
| 3. | Implementation of Dictionaries, Sets, Tuples and Lists and its variousmethods in Python. | 12 |
| 4. | Working with decision structures in Python | 08 |
| 5. | Working with functions and modules in Python | 04 |
| 6. | Working with Object-oriented paradigms in Python | 08 |
| 7. | Implementation of file handling in Python. | 04 |
| 8. | Working with RE module in Python. | 04 |
| 9. | Exception handling in Python. | 04 |

***# Use of different libraries will be covered in Practical Assignments.***

**Text Book(s):**

| Title | Author(s) | Publication |
|---|---|---|
| Python Programming: A modular Approach | Sheetal Taneja, Naveen Kumar | Pearson |

| | | |
|---|---|---|
| Think Python: How to Think Like a Computer Scientist | Allen Downey | Green Tea Press |

**Reference Book(s):**

| Title | Author(s) | Publication |
|---|---|---|
| Python Cookbook | David Ascher, Alex Martelli Oreilly | O Reilly Media |

**Web Material Link(s):**

- https://www.tutorialspoint.com/python/
- https://www.w3schools.com/python/

**Course Evaluation:**

**Theory:**

- Continuous Evaluation consists of two tests, each of 30 marks and 1 hour of duration and average of the same will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination consists of 60 marks.

**Practical:**

- Continuous Evaluation Consist of Performance of Practical which should be evaluated out of 10 for each practical in the next turn and average of the same will be converted to 20 Marks.
- Internal Viva component of 20 Marks.
- Practical performance/quiz/drawing/test of 30 Marks during End Semester Exam.
- Viva/Oral performance of 30 Marks during End Semester Exam.

**Course Outcome(s):**

After the completion of the course, the student will be able to

| IDIT3020 | PROGRAMMING WITH PYTHON |
|---|---|
| CO 1 | Interpret the fundamental python syntax, semantics and fluent in the use of python control flow statements. |
| CO 2 | Determine the methods to create and manipulate python programs by utilizing the data structures like lists, dictionaries, tuples and sets. |
| CO 3 | Articulate the object oriented programming concepts such as encapsulation, inheritance and polymorphism as used in python. |
| CO 4 | Identify the commonly used operations involving file systems and regular expressions. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| Module No | Content | RBT Level |
|---|---|---|
| 1 | Introduction to Python | 1, 2,4 |
| 2 | Decision Structures in Python | 1, 2, 3 |
| 3 | Array and Strings in Python | 1, 2, 3 |
| 4 | Collections | 2, 3, 4 |
| 5 | Functions, Modules and Packages in Python | 2, 3, 4 |
| 6 | Python Object Oriented Programming | 2, 3, 4 |

| | | |
|---|---|---|
| 7 | Files in Python | 2,3,4 |
| 8 | Regular Expression in Python | 3,4,5 |
| 9 | Exception Handling in Python | 2,3 |

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Computer Engineering

Course Code: IDCE3020
Course Name: Fundamentals of Linux
Prerequisite Course (s): --

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 00 | 04 | 00 | 05 | 00 | 00 | 100 | 00 | 00 | 00 | 100 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**
To help learners to

- understand basic commands of Linux operating system.
- provide basic knowledge of file operations and its security.
- learn about shell script editors.
- learn about conditional and looping statements in shell script.

**List of Practical(s):**

| Sr. No | List of Practical | Hours |
|---|---|---|
| 1. | a) Introduction to Linux Operating System.<br>b) Explain the following basic commands: man, echo, printf, who, who am i, wc, exit, pwd, history, ls, clear, cal, date. | 02 |
| 2. | a) Explain the following file management commands: cd, cd .., mkdir, rmdir, rm, cat, cp, mv.<br>b) Explain wild-card characters: *, ?. | 04 |
| 3. | Create the following directory hierarchy:<br>Parent directory: College,<br>Two sub directories of College: PPSU,SCET,CGPIT,<br>Two sub directories of PPSU: Automobile, Civil<br>Two sub directories of SCET: Computer, Electrical<br>Two sub directories of CGPIT: Electronics, Mechanical.<br>Now create file1 and file2 in Automobile directory, create file3 in Electrical directory and file4 in Mechanical directory.<br>Perform the following task: Copy file2 in Electronics directory using absolute and relative path. | 04 |
| 4. | Explain the following filters: grep, head, tail, cut, paste. | 04 |
| 5. | a) Explain the following process utility commands: ps, kill.<br>b) Explain basic disk utility commands: du, df. | 04 |
| 6. | a) Introduction to shell script. | 04 |
| 7. | b) Write a shell script to print Hello World. | 04 |
| 8. | Write a shell script to read a command line argument and print its value. | 04 |

| | | |
|---|---|---|
| 9. | Write a shell script to list all the directory files in a directory. | 04 |
| 10. | Write a shell script which copies the contents of file1 to file2 without using cp command. | 04 |
| 11. | Write a script that finds area of a triangle for a specified base and height. | 04 |
| 12. | Write a shell script that displays a list of menu to the user and the user selects a choice from the list and the shell executes accordingly.<br>Menu:<br>1.List all the files<br>2.Print today's date<br>3.Print the users of the system | 04 |
| 13. | Write a shell script to get total number of words and lines in given file. | 08 |
| 14. | • Write a C program that makes a copy a file using standard I/O and system calls.<br>• Write a client and server programs(using c)for interaction between server and client processes using Internet Domain sockets.<br>• Write a program to implement the shared memory.<br>• Write a client and server programs(using c)for interaction between server and client processes using Internet Domain sockets.<br>• Write a C program that illustrates two processes communicating using shared memory. | 08 |

**Reference Book(s):**

| Title | Author/s | Publication |
|---|---|---|
| Unix Concepts and Applications | Das S. | McGraw Hill |
| The Design of UNIX Operating System | Bach M. J. | PHI publication |
| Linux Kernel Programming | Beck M., Et. Al. | Pearson publication |

**Web Material Link(s):**

- https://ubuntu.com/tutorials/command-line-for-beginners#1-overview
- https://www.youtube.com/watch?v=NAfI0mi8ybg

**Course Evaluation:**

**Practical**

- Continuous Evaluation Consist of Performance of Practical which should be evaluated out of 10 for each practical in the next turn and average of the same will be converted to 40 Marks.
- Practical performance/quiz/test of 30 Marks during End Semester Exam.
- Viva/Oral performance of 30 Marks during End Semester Exam.

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| IDCE3020 | FUNDAMENTALS OF LINUX |
|---|---|
| CO 1 | Demonstrate the basic knowledge of Linux commands and file handling utilities by using Linux shell environment |
| CO 2 | Evaluate the concept of shell scripting programs by using an AWK and SED commands. |
| CO 3 | Create the directory, how to change and remove the directory |
| CO 4 | Analyze the process of how the parent and child relationships |
| CO 5 | Define IPC mechanism |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| **Module No** | **Content** | **RBT Level** |
|---|---|---|
| 1 | Linux OS | 1, 2, 3,4,5,6 |

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Computer Engineering

Course Code: IDCE3910
Course Name: Summer Training
Prerequisite Course(s): -

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 04 | | | 01 | 00 | 00 | 100 | 00 | 00 | 00 | 100 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**

To help learners to

- have first-hand experience the real time situations in industrial scenario.
- get familiar with engineering applications in industrial spectrum.
- learn to adapt themselves in professional scenario.

**Outline of the Course:**

| Sr. No | Content |
|---|---|
| 1. | Selection of Companies |
| 2. | Company Information collection |
| 3. | Report Writing |
| 4. | Presentation & Question-Answer |

**Course Evaluation:**

| Sr. No. | Evaluation criteria | Marks |
|---|---|---|
| 1 | Actual work carried & Report Submission | 50 |
| 2 | Final Presentation & Question-Answer session | 50 |
| | **Grand Total:** | **100** |

**Course Outcome(s):**

After completion of the course, the students will be able to

| IDCE3910 | SUMMER TRAINING |
|---|---|
| CO 1 | Study, analysis and describe about the surrounding industrial environment. |
| CO 2 | Describe use of advanced tools and techniques industry. |
| CO 3 | Interact with industrial personnel and follow engineering practices and discipline prescribed in industry. |
| CO 4 | Develop awareness about general workplace behavior and build interpersonal and team skills. |
| CO 5 | Prepare professional work reports and presentations. |

**Report Writing Guidelines**

**A. Report Format:**

1. Title Page (to be provided by the respective supervisor)

The title page of the project shall give the following information in the order listed:

- Full title of the project as approved by the Mentor;
- The full name of the student/Group of students with enrollment number;
- The qualification for which the project is submitted;
- The name of the institution to which the project is submitted;
- The month and year of submission.

2. Project Certification Form
   [The form should be duly filled signed by the supervisors.]
3. Acknowledgements
   [All persons (e.g. supervisor, technician, friends, and relatives) and organization/authorities who/which have helped in the preparation of the report shall be acknowledged.]
4. Table of Contents/Index with page numbering
5. List of Tables, Figures, Schemes
6. Summary/abstract of the report.
7. Introduction/Objectives of the identified problem
8. Data Analysis and Finding of Solution
9. Application of the identified solution
10. Future Scope of enhancement of the Project and Conclusion
11. "Learning during Project Work", i.e. "Experience of Journey during Project Duration"
12. References(must)
13. Bibliography
14. Annexures (if any)

**B. Guideline for Report Formatting:**

- Use A4 size page with 1" margin all sides
- Header should include Project title and footer should contain page number and enrollment numbers
- Chapter Name should be of Cambria font, 20 points, Bold
- Main Heading should be of Cambria font, 14 points, Bold
- Sub Heading should be of Cambria font, 12 points, Bold
- Sub Heading of sub heading should be of Cambria font, 12 points, Bold, Italic
- Paragraph should be of Cambria font, 12 points, no margin at the start of the paragraph
- Line spacing for all content – 1.15, before - 0, after - 0
- No chapter number for references
- Before chapter 1, give page numbers in roman letter

# SEMESTER 6

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Information Technology

Course Code: IDIT3040
Course Name: System Administration and IT Infrastructure
Prerequisite Course(s): Nil

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 2 | 4 | 0 | 4 | 40 | 60 | 40 | 60 | 00 | 00 | 200 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the course:**
To help learners to

- understand the roles and responsibilities of a System Administrator.
- know the most common IT infrastructure services you'll encounter when handling system administration tasks.
- understand how to setup and manage the IT infrastructure services to help a business stay productive, keep information secure, and deliver applications to its users.
- how to add users, passwords, and use group policies in Active Directory and OpenLDAP.
- know the tradeoffs between on-site and off-site backups, understand the value and importance of backup and recovery testing, know different options for data backup (as well as the risks) and understand the purpose and contents of a disaster recovery plan.

**Course Content:**

| **SECTION-I** | | | |
|---|---|---|---|
| Module No. | Content | Hours | Weightage in % |
| 1. | **Introduction to System Administration**<br>Basics of system administration, organizational policies, IT infrastructure services, user and hardware provisioning, routine maintenance, troubleshooting, and managing potential issues. | 5 | 15 |
| 2. | **Network and Infrastructure Services**<br>Role of IT infrastructure services in system administration, server operating systems, virtualization, network services, DNS for web services, and how to troubleshoot network services. | 5 | 20 |
| 3. | **Software and Platform Services**<br>Configure email services, security services, file services, print services, and platform services, and troubleshoot platform services and common issues to look out for. | 5 | 15 |
| **SECTION-II** | | | |
| Module No. | Content | Hours | Weightage in % |
| 1. | **Directory Services** | 12 | 25 |

| | | | |
|---|---|---|---|
| | Active Directory and OpenLDAP, concept of centralized management and how this can help SysAdmins maintain and support all the different parts of an IT infrastructure | | |
| 2. | **Data Recovery & Backups**<br>how to backup and recover data, designing a disaster recovery plan and writing post-mortem documentation | 13 | 25 |

**List of Practical:**

| Sr. No. | List of Practical | Hours |
|---|---|---|
| 1. | Systems Administration Tasks, What is System Administration? | 2 |
| 2. | Intro to IT Infrastructure Services | 2 |
| 3. | Physical Infrastructure Services | 2 |
| 4. | Network Services | 2 |
| 5. | Service Management in Linux | 2 |
| 6. | Service Management in Windows | 2 |
| 7. | Getting familiar with DNS and DHCP | 2 |
| 8. | File, Print, and Platform Services | 2 |
| 9. | Managing websites with Apache2 | 2 |
| 10. | Troubleshooting Platform Services | 2 |
| 11. | Software and Platform Services | 2 |
| 12. | Introduction to Directory Services | 2 |
| 13. | Using Active Directory Centralized Management and LDAP | 2 |
| 14. | Planning for Data Recovery | 2 |
| 15. | Disaster Recovery Plans | 2 |
| 16. | Post-Mortems`` | 2 |
| 17. | Data Recovery & Backups | 2 |
| 18. | Final Project - assess the IT infrastructure of three fictitious (but very real life based!) companies and provide recommendations and advice about how to support their IT infrastructure. | 26 |

**Text Book:**

| Title | Author(s) | Publication |
|---|---|---|
| Modern System Administration | O'Reily | O'Reily |

**Reference Book:**

| Title | Author(s) | Publication |
|---|---|---|
| The Practice of System and Network Administration | Thomas A. Limoncelli , Christina J. Hogan, Strata R. Chalup | Addison Wesley |

**Course Evaluation:**

**Theory:**

- Continuous Evaluation consists of two tests, each of 30 marks and 1 hour of duration and average of the same will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination consists of 60 marks.

**Practical:**

- Continuous evaluation consists of performance of practical which will be evaluated out of 10 Marks for each tutorial and average of the same will be converted to 30 marks.
- MCQ based examination consists of 30 marks.
- Project work consists of 40 marks.

**Course Outcome(s):**

| IDIT3040 | SYSTEM ADMINISTRATION AND IT INFRASTRUCTURE |
|---|---|
| CO 1 | Utilize best practices for choosing hardware, vendors, and services for your organization |
| CO 2 | Understand how the most common infrastructure services that keep an organization running work, and how to manage infrastructure servers |
| CO 3 | Manage an organization's computers and users using the directory services, Active Directory, and OpenLDAP |
| CO 4 | Choose and manage the tools that your organization will use |

**Level of Revised Bloom's Taxonomy in Assessment:**

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| Module No | Content | RBT Level |
|---|---|---|
| 1 | Introduction to System Administration | 1,2,4 |
| 2 | Network and Infrastructure Services | 2,3,4,6 |
| 3 | Software and Platform Services | 1,2,3,4 |
| 4 | Directory Services | 1,2,3 |
| 5 | Data Recovery & Backups | 2,4,5 |

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Computer Engineering

Course Code: IDCE3040
Course Name: Introduction to Computer Security
Prerequisite Course(s): -

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 03 | 02 | 00 | 04 | 40 | 60 | 20 | 30 | 00 | 00 | 150 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**

To help learners to

- identify and classify various cybercrimes with respect to organizational weaknesses in order to mitigate the security risk and estimate the impact on society and world.
- interpret and apply Indian IT laws in various legal issues.

**Course Content:**

| **SECTION I** | | | |
|---|---|---|---|
| Module No. | Content | Hours | Weightage in % |
| 1. | **Information Security Concepts**<br>Information security issues, goals, architecture, attacks, Security Services and Mechanisms. | 08 | 20 |
| 2. | **Introduction to Cryptography**: Network security model, Cryptographic systems, Cryptanalysis, Steganography.<br>**Types of Cryptography**: Symmetric key and Asymmetric Key Cryptography, Encryption and Decryption Techniques. | 07 | 15 |
| 3. | **Cryptographic Algorithms**: Cryptographic hash, Message Digest, Data Encryption Standard, Advanced Encryption Standard, RSA, ECC (Introductory concepts only) | 08 | 15 |
| **SECTION II** | | | |
| Module 0No. | Content | Hours | Weightage in % |
| 1. | **Security Threats and Vulnerabilities**<br>Overview of Security Threats and Vulnerability: Types of attacks on Confidentiality, Integrity and Availability. Vulnerability and Threats.<br>**Malware:** Viruses, Worms, Trojan horses<br>**Security Counter Measures**: Intrusion Detection Systems, Antivirus Software | 12 | 25 |
| 2. | **Ethical Issues in Information Security & Privacy** | 10 | 25 |

| | | | |
|---|---|---|---|
| | Information Security, Privacy and Ethics, Cyber Crime and Cyber Terrorism, Hacking: Ethical issues | | |

**List of Practical:**

| Sr. No. | Details of Practical | Hours |
|---|---|---|
| 1. | TCP scanning using NMAP | 2 |
| 2. | Port scanning using NMAP | 2 |
| 3. | TCP / UDP connectivity using Netcat | 2 |
| 4. | Network vulnerability using OpenVAS | 4 |
| 5. | Web application testing using DVWA | 2 |
| 6. | Manual SQL injection using DVWA | 4 |
| 7. | XSS using DVWA | 4 |
| 8. | Automated SQL injection with SqlMap | 4 |
| 9. | Design based Problems (DP)/Open Ended Problem: | 6 |

**Text Book(s):**

| Title | Author(s) | Publication |
|---|---|---|
| Cryptography and Network Security | Behrouz A. Forouzon | McGraw Hill |
| Cybersecurity for Beginners | Raef Meeuwisse | Cyber Simplicity Ltd |

**Reference Book(s):**

| Title | Author(s) | Publication |
|---|---|---|
| Cyber Security | Nina Godbole, SunitBelapure | Wiley India, New Delhi |
| Anti-Hacker Tool Kit,4th Edition | Mike Shema | McGrawHill Publication |
| The Indian Cyber Law | Suresh T. Vishwanathan; | Bharat Law House New Delhi |
| Handbook of Applied Cryptography | Menezes, van Oorschot and Vanstone | CRC Press |
| Computer Security, 3/e | Gollmann | Wiley |

**Web Material Link(s):**

- https://nptel.ac.in/courses/106105031/
- https://www.javatpoint.com/cyber-security-tutorial

**Course Evaluation:**

**Theory:**

- Continuous Evaluation consists of two tests, each of 30 marks and 1 hour of duration and average of the same will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination consists of 60 marks.

**Practical:**

- Continuous Evaluation consists of performance of practical which will be evaluated out of 10 marks for each practical and average of the same will be converted to 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/drawing/test consists of 15 marks during End Semester Exam.
- Viva/ Oral performance consists of 15 marks during End Semester Exam.

**Course Outcome(s):**

After the completion of the course, the student will be able to

| **IDCE3040** | **INTRODUCTION TO COMPUTER SECURITY** |
|---|---|
| CO 1 | Study different tools used in penetration testing. |
| CO 2 | Study and understand cyber laws. |
| CO 3 | Implement necessary approaches and techniques to build protection mechanisms in order to secure information and computer networks. |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| **Module No** | **Content** | **RBT Level** |
|---|---|---|
| 1 | Introduction to Cryptography | 1, 2,4 |
| 2 | Overview of Cyber Security | 1,2,5 |
| 3 | Cyber Security Vulnerabilities and Cyber Security Safeguards | 1, 2, 3 |
| 4 | Cyberspace and the Law | 1, 2, 3 |
| 5 | Cyber Forensics | 2, 3, 4 |
| 6 | Intrusion Detection and Prevention | 2, 3, 4 |

# P P Savani University
## Centre for Language Studies

Course Code: CFLS3041
Course Name: Employment Communication
Prerequisite Course/s:- CFLS1020 Global Communication Skills

**Teaching & Examination Scheme:**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 02 | 00 | 00 | 02 | 100 | 00 | 00 | 00 | 00 | 00 | 100 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objectives of the Course:**

To help learners to

- hone basic communication skills by exposing them to the key communication techniques.
- improvise comprehension and expressional skills which are required for employment and professional environment.
- sharpen communication skills with reference to organizational structure.
- show the importance of team work and give practice in group communication with reference to group dynamics.

**Course Content:**

| Module | Content | Hours | Weightage in % |
|---|---|---|---|
| 1 | **Introduction to Employment Communication**<br>• Communication and your Career<br>• Qualities of Effective On-the-Job Communication<br>• Usability and Persuasiveness<br>• Communicating Ethically<br>• Reader-Centered Strategies | 10 | 33 |
| 2 | **Reader-Centered Communication Process for Obtaining a Job**<br>• Central Principles of Reader-Centered Approach<br>• A Reader-Centered Approach to Writing your Resume<br>• Using Tables to Design a Resume<br>• Electronic Resumes: Special Considerations<br>• Writing in Employment for Other Countries | 06 | 20 |
| 3 | **Interviews**<br>• Types of Interviews<br>• Telephone and Computer-Assisted Interviews<br>• Group and Panel Interviews<br>• Counseling Interviews<br>• Non-verbal Communication during an Interview<br>• Do's and Don'ts<br>• Expected Questions<br>• Tricky Questions | 06 | 20 |

| | | | |
|---|---|---|---|
| | • Importance of Research | | |
| 4 | **Group Discussion for Interviews**<br>• Modes, Means and Purposes of GD<br>• Audience Analysis and Content Organization<br>• Visual aids and Nuances of Delivery | 08 | 27 |

**Text Book (s):**

| Title | Author/s | Publication |
|---|---|---|
| Technical Communication | Paul V. Anderson | Cengage Learning, 6th Edition |

**Reference Book (s):**

| Title | Author/s | Publication |
|---|---|---|
| Communication Skills | Parul Popat & Kaushal Kotadia | Pearson, 2015 |
| Communication Skills, Second Edition | Sanjay Kumar, PushpLata | Oxford University Press,2015 |
| Effective Interpersonal and Team Communication Skills for Engineers | Clifford Whitcomb, Leslie E. Whitcomb | John Wiley & Sons, 2012 |

**Course Evaluation:**

**Theory:**

Continuous Evaluation consists of 100 marks. This carries two tests/ presentations/group discussions each of 50 marks.

**Course Outcome(s):**

After completion of the course, the students will be able to

- follow the process of employment communication and its components in organizational context.
- enhance the teamwork and collaborative attitude.
- communicate effectively using suitable styles and techniques required for recruitment process.
- able to participate in the group discussions and other such recruitment activities.
- use language effectively with reference to communication in groups and group behavior.

**P P Savani University**
**School of Engineering**
**Institute of Diploma Studies**

## Department of Computer Engineering

Course Code: IDCE3920
Course Name: Project/TrainingPrerequisite
Course(s): --

**Teaching & Examination Scheme**

| Teaching Scheme (Hours/Week) | | | | Examination Scheme (Marks) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Theory | Practical | Tutorial | Credit | Theory | | Practical | | Tutorial | | Total |
| | | | | CE | ESE | CE | ESE | CE | ESE | |
| 10 | | | 10 | 00 | 00 | 00 | 00 | 200 | 300 | 500 |

CE: Continuous Evaluation, ESE: End Semester Exam

**Objective(s) of the Course:**
To help learners to

- identify, analyze and articulate projects with a comprehensive and systematic approach.
- develop creative thinking.
- develop Ability to solve problem
- learn working in a team.

**Guidelines(s):**

| Sr. No. | Content | Hours | Weightage in % |
|---|---|---|---|
| 1. | **Selection of Project Title**<br>After selecting the Project and proposed title, get approval from the Expert Panel | 10 | 10 |
| 2. | **Literature Review / Requirement Analysis**<br>Study in detail about the project definition chosen | 10 | 10 |
| 3. | **System Design**<br>Prepare the required documents in consultation with Mentor Introduction, Purpose, System Overview, System Design Constraints, Roles and Responsibilities, System Architecture, Database Design, System Security Controls, Project Reference | 10 | 20 |
| 4. | **Implementation**<br>Implementation of the project in any of the programming languages | 20 | 40 |
| 5. | **Report Writing**<br>The report must be prepared as per suggested guidelines consisting of Preamble, Objectives, Scope, Introduction, Conclusions, Recommendations and Annexure | 05 | 10 |
| 6. | **Presentation Preparation**<br>At the end of the semester, the student/group of students shall give a presentation of their work followed by a viva-voce examination | 05 | 10 |

**Course Evaluation:**

| Sr. No | Evaluation Criteria | Marks |
|---|---|---|
| 1. | Selection of the topic (Within first 30 Days of commencement of semester) | 10 |
| 2. | Initial Presentation of the topic (Within 31 to 45 Days of commencement of semester) | 10 |
| 3. | An actual work carried out. (Within 46 to 70 Days of commencement of semester) | 40 |
| 4. | Report writing as per guidelines. | 10 |
| 5. | Presentation & Question-Answer session. | 30 |

**Course Outcome(s):**

After the completion of the course, the following course outcomes will be able to:

| IDCE3920 | PROJECT/TRAINING |
|---|---|
| CO 1 | Identify a problem in the domain of information technology and communication which requires in-depth investigation. |
| CO 2 | Identify, discuss and justify the procedure, materials and technical aspects required for a project work. |
| CO 3 | Formulate and implement innovative ideas in a concerned field. |
| CO 4 | Work as an individual or in a team in development and execution of project |

Level of Bloom's Revised Bloom's Taxonomy in Assessment

| | | |
|---|---|---|
| 1: Remember | 2: Understand | 3: Apply |
| 4: Analyze | 5: Evaluate | 6: Create |

| Module No | Content | RBT Level |
|---|---|---|
| 1 | Selection of Project Title | 1, 2, 3 |
| 2 | Literature Review / Requirement Analysis | 1, 2, 3, 4 |
| 3 | System Design | 1, 2, 3, 4 |
| 4 | Implementation | 4, 5, 6 |
| 5 | Report Writing | 1, 2, 3, 4 |
| 6 | Presentation Preparation | 1, 2, 3, 4 |



**P P Savani School of Engineering**

P P Savani University Campus, NH 48, GETCO, Near Biltech,Village: Dhamdod, Kosamba, Dist.: Surat – 394125