PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Mechanical Engineering
SYLLABUS FOR 2nd Sem BTech PROGRAMME
Engineering Graphics (203109101)

Type of Course: BTech

Prerequisite: Zeal to learn the subject

Rationale: Engineering Graphics is the language of communication for Engineers. Engineering Graphics course provides tools and techniques of communication for various fields of Engineering.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		External		Internal			
				T	P	T	CE	P	
2	0	4	4	60	30	20	20	20	150

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**INTRODUCTION TO ENGINEERING GRAPHICS**: Scope of Engineering Drawing in all Branches of Engineering, Uses of Drawing Instruments and Accessories, Introduction to Drawing Standards BIS-SP-46, Representative Fraction, Types of Scales (Plain and Diagonal Scale), Dimensioning Terms and Notations, Types of Arrowheads, Lines, Lettering, Numbering and Dimensioning	5%	0
2	**ENGINEERING CURVES:**: Classification of Engineering Curves, Application of Engineering Curves, Constructions of Engineering Curves - Conics, Spirals, Involutes and Cycloids with Tangents and Normal.	10%	5
3	**PRINCIPLES OF PROJECTIONS**: Types of Projections - Oblique, Perspective, Orthographic and Isometric Projections; Introduction to Principal Planes of Projections, Projections of Points located in all four Quadrants; Projections of lines inclined to one of the Reference Plane and inclined to two Reference Planes.	10%	4
4	**PROJECTIONS OF PLANES**: Projections of various planes – Polygonal, Circular and Elliptical shape inclined to one of the Reference Plane and inclined to two Reference Planes; Concept of Auxiliary Plane of Projections.	10%	4

5	**PROJECTIONS OF SOLIDS AND SECTIONS OF SOLIDS**: Classifications of basic Solids, Projections of Solids - Right Regular Prism, Pyramid, Cone, Cylinder, Tetrahedron and Cube inclined to one of the Reference Plane and inclined to two Reference Planes; Frustum of Prism, Pyramid and Cone inclined to one of the Reference Plane; Types of Cutting Planes - Auxiliary Inclined Plane, Auxiliary Vertical Plane, Horizontal Cutting Plane, Profile Cutting Plane; Sections of Solids resting on H.P/V.P and Inclined to only one of the Reference Planes; Sectional Views, True Shape of the Sections.	20%	10
6	**DEVELOPMENT OF SURFACES**: Methods of Development of Lateral Surfaces of Right Regular Solids, Parallel Line Development and Radial Line Development, Applications of Development of Surfaces.	10%	5
7	**ORTHOGRAPHIC PROJECTIONS**: Projections on Principal Planes from Front, Top and Sides of the Pictorial view of an Object, First Angle Projection and Third Angle Projection method; Full Sectional Orthographic Views – Side and Front, Offset Cutting views.	15%	0
8	**ISOMETRIC VIEW/DRAWING AND ISOMETRIC PROJECTIONS**: Conversion of Orthographic Views into Isometric Projection, View or Drawing; Isometric Scale.	15%	0
9	**OVERVIEW OF COMPUTER AIDED DRAFTING TOOLS**: Introduction to Computer Aided Drafting Software; Preparation of Orthographic Projections and Isometric Views Using Drafting Software	5%	0

*Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Engineering Drawing
   N.D. Bhatt & V.M. Panchal; Charotar Publishing House
2. ENGINEERING GRAPHICS
   P. J. Shah; S. Chand & Co., New Delhi Publications.
3. Graphic Science and Design
   French, T.E. Vierck, C.J & Foster; Tata McGraw Hill Publications.
4. Fundamentals of Engineering Drawing
   Luzadder; W. J & Duff Prentice Hall Publications.
5. Engineering Drawing and Graphics
   Venugopal k; New Age International Private Limited Publishers.

Course Outcome:

After Learning the course the students shall be able to:

1. Demonstrate the use of Drawing Instruments.

2. Identify the Drawing Symbols, Conventions used in Engineering Drawing.

3. Interpret Engineering Drawings.

4. Construct the Different types of Engineering Curves.

5. Apply Descriptive Geometry Principles to Solve Engineering Problems Involving Points, Lines, Planes and Solids.

6. Recognize the need of Advanced Computer Aided Tools and Software.

List of Practical:

1.   **1. Introduction to Engineering Graphics: Types of lines, Letterings, Drawing Symbols, Numberings, Dimensioning Terms and Notations, Title Block, Geometric Constructions etc.**

2.   **Drawing Sheet on Engineering Curves.**

3.   **Drawing Sheet on Projections of Points and Lines.**

4.   **Drawing Sheet on Projections of Planes.**

5.   **Drawing Sheet on Projections of Solids and Sections of Solids.**

6.   **Drawing Sheet on Development of Surfaces**

7.   **Drawing Sheet on Orthographic Projections.**

8.   **Drawing Sheet on Isometric Projection/View or Drawing.**

9.   **Prepare 2D Drawings using AutoCAD.**

10. **Prepare Isometric Views using AutoCAD.**

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Computer Science & Engineering

SYLLABUS FOR 1st Sem BTech PROGRAMME

Computer Peripherals And Software Tools (203105339)

Type of Course: BTech

Prerequisite:

Rationale:

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		External		Internal			
				T	P	T	CE	P	
2	-	-	2	60	-	20	20	-	100

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Basics of hardware and OS**: **Hardware component**: Study of different PC hardware parts including input output peripheral devices. Basic troubleshooting, Active Directory and folder permissions based on Active Directory users, Security aspects **Networking:** Basics of wired and wireless networking. Troubleshoot some network related issues **Basic of OS**: Definition and Functions of OS - Types of OS: Single user, Multi-User, multi-task, RTOS, Single-user, Multi-tasking GUI: Definition, Standards	25%	6
2	**MS Word**: Opening & Saving files, editing text documents, All commands related to MS Word. Formatting page & setting Margins, converting files to different formats, Importing & Exporting documents All commands related to Font. Study of Paragraph settings all commands, Formatting Page, Columns, Header & footer. Inserting manual page break, Column break and line break, creating sections & frames, Setting Document styles, Table of Contents, Index, Creating Master Documents, Web page. Table settings, Borders, Inserting ClipArts, Pictures/Files etc., Spell Checks, Mail merge, Creating Letter/Faxes/Web Pages, Security, Digital Signature. Printing Documents	20%	6

3	**MS Excel**: Spread Sheet, Menus - main menu, Formula Editing, Formatting, Toolbars, setting Margins, converting files to different formats, Rows, Columns & Cells Entering data and its manipulations, Find, Search & replace Symbols, Data from external files, Frames, Clipart, Pictures, Files etc., Inserting Functions, Manual breaks, Mathematical operations, Labelling columns & rows, Hiding/ Locking Cells, Worksheet Row & Column Headers, Sheet background, Color etc., Sorting, Filtering, Validation, Consolidation, and Subtotal. Drawing, Error checking, Spell Checks, Formula Auditing, Creating & Using Templates, Pivot Tables, Tracking Changes, Security, Customization. Axis curves, Importing word file	20%	6
4	**MS Power Point**: Opening new presentation, Templates, setting backgrounds, layouts, style Adding style, Color, gradient fills, arranging objects, Header & Footer, Slide Background, Slide layout. Adding Graphics to the Presentation- Inserting pictures, movies, tables etc. into presentation, Drawing Pictures using Draw. Setting Animation & transition effect. Generating Standalone Presentation viewer.	20%	6
5	**Latex**: Installation of the software LaTeX Understanding Latex Compilation Basic Syntax, Writing equations, Matrix, Tables Page Layout – Titles, Abstract Chapters, Sections, References, citation. List making environments Table of contents, generating new commands, Figure handling numbering, List of figures, tables, Generating index. Packages: Geometry, Hyperref, amsmath, amssymb, algorithms, algorithmic graphic, color, tiles listing. Classes: article, book, report, beamer, slides. IEEtran. Applications to: Writing Resume Writing question paper Writing articles/ research papers Presentation using beamer. Theory, Practical and exercises based on the above concepts.	15%	6

*Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

List of Practical:

1. **Installation and Configuration of Computer Components.**

2. **Installation and Configuration of Windows Operating System**

3. **Configuration of BIOS/UFEI.**

4. **Installation and Configuration of Linux Operating System.**

5. **Installing, Configuring, and Troubleshooting Storage Devices and Firewall**

6.   **Working with wired and wireless network.**

7.   **Configuration of Remote Access.**

8.   **Installation and Troubleshooting MS Office.**

9.   **Formatting Practices with MS Word.**

10.   **Formatting Practices with MS Excel.**

11.   **Formatting Practices with MS Power Point.**

12.   **Formatting Practices with Latex.**

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Computer Science & Engineering
SYLLABUS FOR 1st Sem BTech PROGRAMME
Computer Peripherals And Software Tools Laboratory (203105340)

Type of Course: BTech

Prerequisite:

Rationale:

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
Lect Hrs/	Tut Hrs/	Lab Hrs/ Week		External		Internal			
				T	P	T	CE	P	
-	-	2	1	-	30	-	-	20	50

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

List of Practical:

1. **Installation and Configuration of Computer Components**

2. **Installation and Configuration of Windows Operating System.**

3. **Configuration of BIOS/UFEI**

4. **Installation and Configuration of Linux Operating System**

5. **Installing, Configuring, and Troubleshooting Storage Devices and Firewall**

6. **Working with wired and wireless network.**

7. **Configuration of Remote Access.**

8. **Installation and Troubleshooting MS Office.**

9. **Formatting Practices with MS Word.**

10. **Formatting Practices with MS Excel.**

11. **Formatting Practices with MS Power Point.**

12. **Formatting Practices with Latex**

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Applied Science & Humanities
SYLLABUS FOR 1st Sem BTech PROGRAMME
Mathematics-I (203191102)

Type of Course: BTech

Prerequisite: Knowledge of Mathematics up to 12th science level

Rationale: To acquire fundamental knowledge and apply in Engineering discipline

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		External		Internal			
				T	P	T	CE	P	
3	2	0	5	60	-	20	20	-	100

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Improper Integral & Application of Definite Integral::** Evaluation of definite and improper integrals, Beta and Gamma functions and their properties Area bounded by curves in Cartesian and Polar form, Area of a region bounded by function, Area of a region bounded by curves in Parametric form, Volume by slicing, Volume of solid by revolution.	8%	4
2	**First order Ordinary Differential equation::** Exact, linear and Bernoulli's equations, Euler's equations, Equations not of first degree: equations solvable for p, equations solvable for y, equations solvable for x and Clairaut's type, Applications	15%	7
3	**Matrices::** Matrices & Determinants with Properties, Linear Independence, Rank of Matrix, System of Linear Equations, Consistency of System, Solution of system of Linear Equations by Gauss Jordan and Gauss-Elimination Method, Eigen values, Eigenvectors, Symmetric, Skew-symmetric, and orthogonal Matrices, Eigen bases, Diagonalization, Cayley Hamilton Theorem and its Applications, Diagonalization, Orthogonal Transformation, Quadratic form.	25%	12
4	**Sequences and Series::** Basic of Sequences, Bounded and Monotonic Sequences, Series, Convergence of sequence and series, Geometric series, P- series, Cauchy's Integral Test, Comparison Test, Alternating Series, Absolute and Conditional convergence, Ratio test, Cauchy's Root Test, Power series, Taylor's and Maclaurin's series.	17%	8

5	**Fourier Series::** Fourier Series of 2π periodic functions, Dirichlet's conditions for representation by a Fourier series, Fourier Series of a function of period $2l$, Fourier Series of even and odd functions, Half range series.	10%	5
6	**Multivariable Calculus (Differentiation)::** Functions of Several Variables, Limit, Continuity, Partial Derivatives, Homogeneous function, Euler's Theorem for homogeneous function, Modified Euler's Theorem, Chain Rule, Implicit function, Jacobian, Tangent plane and Normal line, Maximum and Minimum Values, Lagrange's Multiplier, Taylor's and Maclaurin's Series for functions of two variables.	25%	12

*Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Calculus and Analytic Geometry (TextBook)
   G.B. Thomas and R.L. Finney; Addison Wesley
2. Calculus with early transcendental functions
   James Stewart; Cengage Learning
3. Higher Engineering Mathematics
   B. S. Grewal; Khanna Publications
4. Elementary Linear Algebra (TextBook)
   Howard Anton, Chris Rorres; Willy India Edition; 9th Edition
5. Advanced Engineering Mathematics (9th Edition), (TextBook)
   Erwin Kreyszig, Wiley India (13)
6. A text book of Engineering Mathematics
   N.P. Bali and Manish Goyal; Laxmi Publications

Course Outcome:

After Learning the course the students shall be able to:

After learning the course the students will be able to
1. Apply differential and integral calculus to improper integrals and to determine applications of definite integral. Apart from some other applications they will have a basic understanding of indeterminate forms, Beta and Gamma functions.
2. Apply effective mathematical tools for the solutions of first order ordinary differential equations.
3. Apply the various tests of convergence to sequence, series and the tool of power series and Fourier series for learning advanced engineering mathematics.
4. Compute maximum or minimum rate of change and optimum value of functions of several variables.
5. Perform matrix computation in a comprehensive manner.

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Civil Engineering
SYLLABUS FOR 2nd Sem BTech PROGRAMME
Environmental Science (203104182)

Type of Course: BTech

Prerequisite:

Rationale:

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		External		Internal			
				T	P	T	CE	P	
2	0	0	2	60	0	20	20	0	100

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**ENVIRONMENTAL HEALTH, ECOLOGY AND QUALITY OF LIFE**: Environmental education: Objective and scope, Impact of technology on the environment, Environmental disasters: Case studies, Global environmental awareness to mitigate stress on environment, Structure and function of an ecosystem, Ecological pyramids, Pyramid of number, Pyramid of energy and pyramid of biomass	25%	7
2	**POLLUTION PREVENTION**: Air & Noise pollution - Sources & their Effects, Case studies of Major Catastrophes, Structure and composition of atmosphere, Water, Soil, Marine, Thermal & Marine Pollution: The story of fluoride contamination, Eutrophication of lakes, control measures, Measuring water quality: Water quality index, Waste water treatment (general) primary, secondary and tertiary stages, Municipal Solid waste management: Sources and effects of municipal waste, Bio medical waste, Hazardous waste	20%	6
3	**POPULATION GROWTH, GLOBAL ENVIRONMENTAL CHALLENGES & LATEST DEVELOPMENTS**: Population Explosion - Causes, Effects and Control, International initiative in population related issues, Urbanization, Growth of the world's large cities, Water resources: Sources of water, Stress on water resources, Climate Change, Global Warming and Green House Effect, Acid Rain, Depletion of Ozone layer, Variation in concentrations of GHG gases in ambient air during last millennium, Role of Environmental Information System(ENVIS) in India and similar programs run by EPA(USA), Role of soft tools like Quantum GIS, Autodesk Building Information Modeling (BIM) and City Finance Approach to Climate-Stabilizing Targets (C- FACT), Life Cycle Assessment, Bioinformatics and Optimization tools for sustainable development.	25%	7

| 4 | **SMART CITIES**:

·   Introduction to smart cities - about smart cities, what is smart city, world urbanization, case studies of Songdo, Rio De Janeiro, what makes cities smart.

·   City as system of systems – Introduction, systems thinking, Milton Keynes Future Challenges, Rich picture as city challenges, Wicked problems, Development of smart city approach – core elements, open data, sustainability, privacy and ethics, development processes.

·   Smart Citizens – their role, engaging citizens, IES Cities, Energy systems, Approaches for Citizen Engagement, co creating smart cities, cities unlocked, living labs, city problems, crowd sourcing ideas, redesigning cities for citizens, all age friendly cities, mobility on demand, motion maps,

·   Infrastructure, Technology and Data – urban infrastructure and its technology, future of lighting, IOT, connected objects, sensing the city, NOx eating paints and air quality sensors, safest, smart citizen kit, sensing your city, Sensored City, Cyber security for data power, open, shared and closed data, satellite data, open data revolution, Smart City Project Data

·   Innovation – smart innovations, smart city ecosystem, data driven innovations for smart cities

·   Standards and Capacity Building – role of Standard, BSI smart city Standards, HyperCat, ITU Smart Sustainable cities, Smart City Readiness, Lessons Learnt from Amsterdam

Smart Measurements - metrics and indicators, city indicators, WCCD data portal, value proposition, integrated reporting, smart city learning and education, urban data school. | 30% | 10 |

*Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of CDC

SYLLABUS FOR 1st Sem BTech PROGRAMME

Communication Skills - 1 (203193101)

Type of Course: BTech

Prerequisite:

Rationale: Basic Communication Skills are essential for all Engineers.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/		T	P	T	CE	P	
0	2	0	2	0	-	-	100	-	100

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Crazy Scientist**: • The students will be taught the importance of invention and innovation using some examples that changed the world the way it worked.	5%	2
2	**Phonetics**: • IPA Introduction (listening tracks) • Phonic Sounds • Pronunciation Practice including transcription	5%	2
3	**Vocabulary Building & Word Formation Process**: • Compounding, clipping, blending, derivation, creative respelling, coining and borrowing • Prefixes & suffixes, synonyms & antonyms, standard abbreviations (related activities will be provided)	15%	4
4	**Speaking Activity : Role play**: • This activity topic gears towards making students do role play based on various scenarios. • It involves giving them a scenario and asking them to further develop the idea in a very interesting manner, then going on to enact it.	10%	2
5	**Picture Description**: • Enable students to use vocabulary and useful expression to describe the picture.	10%	2
6	**Mine Activity: Usage of Preposition**: • Students will learn to use proper propositions by active participation in the activity.	5%	2
7	**Worksheets on Identifying Common Errors in Writing:**: • Sentence structure • Punctuations • Subject-Verb Agreement • Noun-Pronoun Agreement	12%	2
8	**Reading Skills**: • The art of effective reading and its various strategies to be taught to the learners and practice excercises be given on reading comprehension.	10%	2

9	**Lifeboat**: • This is a modern-day spin on the classic activity named Shipwreck. It aims to improve students' convincing skills.	0%	2
10	**Picture Connector**: • In this class the students will be trained to form logical connections between a set of pictures which will be shared with them. • This geared towards building creativity and presentation skills.	8%	2
11	**Speech and spoken Exchanges; Extempore**: • Students will learn the correct usage of spoken language as different from the written form.It will help the students in extempore speech. • This will be done by making the students give variety of impromptu speeches in front of the class: 1 minute talk on simple topics. • To change the average speakers in the class to some of the best Orator.	10%	4
12	**Book Review**: • The learners will identify the central idea of the book, author's style and approach towards the book. • This will enable the learners to express their point of view and hone their creativity and writing skills.	10%	4

*Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Understanding and Using English Grammar
   Betty Azar & Stacy Hagen; Pearson Education
2. Business Correspondence and Report Writing
   SHARMA, R. AND MOHAN, K.
3. , Technical Communication : Principles And Practice
   Sangeetha Sharma, Meenakshi Raman; Oxford University Press
4. Communication Skills
   Kumar S and Lata P; New Delhi Oxford University Press
5. Practical English Usage
   MICHAEL SWAN
6. A Remedial English Grammar for Foreign Student
   F.T. WOOD
7. On Writing Well
   William Zinsser; Harper Paperbacks,2006; 30th anniversary edition
8. Oxford Practice Grammar,
   John Eastwood; Oxford University Press

Course Outcome:

After Learning the course the students shall be able to:

1. Comprehend basics of English grammar.
2. Display basic level of communication confidence

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Electrical Engineering
SYLLABUS FOR 1st Sem BTech PROGRAMME
Basic Electrical Engineering (203106101)

Type of Course: BTech

Prerequisite: Knowledge of Physics and Mathematics up to 12th Science level.

Rationale: The course provides introductory treatment of the field of Electrical Engineering to the students of various branches of engineering.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		External		Internal			
				T	P	T	CE	P	
4	0	2	5	60	30	20	20	20	150

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**DC Circuits**: Electrical circuit elements (R, L and C), voltage and current sources, Kirchoff current and voltage laws, analysis of simple circuits with dc excitation. Superposition, Thevenin and Norton Theorems. Time-domain analysis of first-order RL and RC circuits	20%	12
2	**AC Circuits**: Representation of sinusoidal waveforms, peak and rms values, phasor representation, real power, reactive power, apparent power, power factor. Analysis of single-phase ac circuits consisting of R, L, C, RL, RC, RLC combinations (series and parallel), resonance. Three- phase balanced circuits, voltage and current relations in star and delta connections.	20%	12
3	**Transformers**: Magnetic materials, BH characteristics, ideal and practical transformer, equivalent circuit, losses in transformers, regulation and efficiency. Auto-transformer and three-phase transformer connections.	14%	8
4	**Electrical Machines**: Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, Significance of torque-slip characteristic. Loss components and efficiency, starting and speed control of induction motor. Single-phase induction motor. Construction, working, torque-speed characteristic and speed control of separately excited dc motor. Construction and working of synchronous generators	21%	13
5	**Power Converters**: DC-DC buck and boost converters, duty ratio control. Single-phase and three-phase voltage source inverters; sinusoidal modulation	14%	8

6	**Electrical Installations**: Components of LT Switchgear: Switch Fuse Unit (SFU), MCB, ELCB, MCCB, Types of Wires and Cables, Earthing. Types of Batteries, Important Characteristics for Batteries. Elementary calculations for energy consumption, power factor improvement and battery backup	11%	7

*Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. A text book of Electrical Technology (TextBook)
   B.L.Theraja; S.Chand publication; 1, 2005
2. Basic Electrical Engineering
   D. P. Kothari and I. J. Nagrath,; Tata McGraw Hill; 3, 2010
3. Basic Electrical Engineering
   D. C. Kulshreshtha; McGraw Hill; 1, 2009
4. Fundamentals of Electrical Engineering
   Leonard S. Bobrow; Oxford University Press; 2, 1996
5. Electrical and Electronics Technology
   E. Hughes; Pearson; 10, 2010
6. Electrical Engineering Fundamentals
   Vincent Del Toro; PHI

Course Outcome:

After Learning the course the students shall be able to:

1. Recognize importance of electrical energy and its day to day applications.
2. Perform qualitative comparison between AC and DC system, single phase and three phase systems.
3. Understanding the basic concepts and working principles of transformers, DC machines and AC machines
4. Study the basic of converters.
5. To acquire knowledge about electrical installations and energy consumption.

List of Practical:

1. **To Study About Various Electrical and Electronics Symbols**

2. **To Perform and Solve Electrical Networks With Series and Parallel Combinations of Resistors Using Kirchhoff's Laws.**

3. **To Obtain Inductance, Capacitance, Power and Power Factor of the Series RL Circuit With AC Supply Using Phasor Diagram**

4. **To Obtain Inductance, Capacitance, Power and Power Factor of the Series RC Circuit With AC Supply Using Phasor Diagram**

5. **To Obtain Inductance, Capacitance, Power and Power Factor of the Series R-L-C Circuit With AC Supply Using Phasor Diagram.**

6. **Verification of principle of superposition with DC and AC sources.**

7. **Verification of Thevenin's and Maximum power transfer theorems in DC circuits.**

8. **Verification of Norton's theorems in DC circuits.**

9. **Verification of transient RL circuit and obtain time constant.**

10. **Verification of Current and Voltage Relations in Three Phase Balanced Star and Delta Connected Loads.**

11. **To study the cut-section of a DC machine, single phase induction machine and three phase induction machine.**

12. **Find out the Efficiency and Voltage Regulation of Single Phase Transformer by Direct Load Test**

13. **To Perform break test of DC shunt motor.**

14. **To verify the working of a 1 – Φ Full Bridge invertors.**

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Computer Science & Engineering
SYLLABUS FOR 1st Sem BTech PROGRAMME
Programming for Problem Solving (203105102)

Type of Course: BTech

Prerequisite:

Rationale:

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
Lect Hrs/ Week	Tut Hrs/	Lab Hrs/ Week		External		Internal			
				T	P	T	CE	P	
4	-	2	5	60	30	20	20	20	150

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Number System:**: Introduction and type of Number system, Conversion between number system, Arithmetic operations on number system, Signed and unsigned number system Software, Computer Languages and Computer Program	2%	4
2	**Introduction to 'C' Programming**: Features of C language, structure of C Program, Flow Charts and Algorithms Types of errors, debugging, tracing/stepwise execution of program, watching variables values in memory.	3%	4
3	**Constants, Variables and data Types**: Character Set, C tokens, Keywords and Identifiers, Constants, Variables, Data types, Declaration of Variables, Assigning values to variables, typedef, and Defining symbolic constants.	5%	4
4	**Operators and Expression:**: Introduction to Operators and its types, Evaluation of expressions, Precedence of arithmetic operators, Type conversions in expressions, Operator precedence and associatively	10%	4
5	**Management Input and Output Operators:**: Introduction, reading a character, writing a character, formatted input, formatted output.	5%	2

6	**Control structure in C**: Decision Making & branching: Decision making with If &If .. Else statements, If .. Else statements (Nested …. Ladder), The Switch &goto statements, The turnery (?:) Operator Looping: The while statement, The break statement & The Do.. While loop, The FOR loop, Jump within loops – Programs	15%	5
7	**Array:**: Introduction, One-dimensional arrays, Two-dimensional arrays, arrays, Concept of Multidimensional arrays	10%	5
8	**String:**: string , string storage , Built-in-string functions	10%	4
9	**User-Defined Functions**: Concepts of user defined functions, prototypes, definition of function, parameters, parameter passing, calling a function, recursive function, Macros, Pre-processing.	10%	7
10	**Structure and Unions:**: Introduction, Structure definition, declaring and initializing Structure variables, Accessing Structure members, Copying & Comparison of structures, Arrays of structures, Arrays within structures, Structures within Structures, Structures and functions, Unions	10%	6
11	**Pointers:**: Basics of pointers, pointer to pointer, pointer and array, Pointer to array, array of pointers , functions returning a pointer	10%	5
12	**Dynamic memory allocation**: Introduction to Dynamic memory allocation, malloc(), calloc(), free(), realloc()	5%	3
13	**File Management in C:**: Introduction to file management and its functions	5%	3

*Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1.   Programming in ANSI C (TextBook)
     E. Balaguruswamy; Tata McGraw-Hill
2.   C Programming: Test Your Skills
     Ashok Kamthane
3.   Computer Fundamentals
     P.K.Sinha and Priti Sinha; BPB Publications; 4th Edition
4.   Star C Programming
     ; STAR Certification; C Certification Exam
5.   Programming with C
     Byron Gottfried; Tata McGraw Hill Education
6.   C The Complete Reference
     Herbert Schildt
7.   Let Us C
     Yeshavant Kanetkar; BPB Publications

List of Practical:

1. 1. Write a program to print HELLO FRIENDS! 2. Write a program that reads two nos. from key board and gives their addition, subtraction, multiplication, division and modulo. 3. Write a program to convert days into months and days. 4. Write a program which calculates the summation of three digits from the given 3 digit number. 5. Write a program to calculate simple interest

2. 1. Write a program to find the largest of the three nos. using Nested-If-Else statement. 2. Write a C program to enter a character and to check whether it is a small letter or it is a capital letter or it is a digit or it is a special symbol. 3. Write a program to read marks of a student from keyboard whether the student id pass (if). 4. Write a program to find the sum of first N odd numbers. 5. Write a program using while loop construct which finds the factorial of a given integer n

3. 1. Write a program which sorts 10 numbers into ascending order. 2. Write a program to find maximum element from 1-D array. 3. Write a program to find number of odd and even elements from the 1-D array. 4. Write a program add two 2x2 matrices. 5. Write a program to count vowels from a entered String. 6. Write a program which finds whether a string is a palindrome or not.

4. 1. Write a program to find factorial of a number using recursion. 2. Write a program that used user defined function Swap ( ) and interchange the value of two variable. 3. Write a function to return 1 if the number is prime otherwise return 0.

5. 1. Define a structure type, personal that would contain person name, date of joining and salary. 2. Define a structure called cricket that will describe the following information: Player name Team name Batting average

6. 1. Write a program to add two numbers using pointers. 2. Write a program to swap two numbers using pointer.

7. 1. Write a program to illustrate reading files contents. 2. Write a program to illustrate the use of fgets( ).

8. 1. Write a C program using do…while and for loop constructs to reverse the digits of the number. 2. Write a program to demonstrate use of Switch- Break Statement. 3. Write a program to find out all the numbers divisible by 5 and 7 between 1 to 100. Check for Armstrong number. A number is Armstrong if sum of cube of every digit is same as the original number. E.g. 153=13+53+33=153 4. Write a program to print the output of bellow series. 1!+2!+3!+4!+ n! 5. Write a program to print th