

LEVEL -3 DIPLOMA IN ENGINEERING

BASED ON CREDIT SYSTEM

PROGRAMME OUTCOMES:

- I. Apply the Knowledge of Technical Science, Applied Mathematics, Fundamental and Principle to solve Engineering problems.
- II. Possess applied Knowledge of Design, Manufacture, Safety and Maintenance of Electrical Systems, Subsystem and Components.
- III. Identify, Formulate, Analyze and solve Engineering and Industrial complex problems using applied Engineering Mathematics, Science and Engineering Principles.
- IV. An ability to develop a component, Product and Process to encounter desired needs by considering various factor such as Health and Safety, Economic, and Sustainability.
- V. Understand the Impact and Safety Practices of Engineering Solutions in Societal, Environmental, Global and Economic contexts.
- VI. Apply the knowledge of Basic Principles, Tools and Techniques to Perform Repair, Maintenance and Service Operation in Electrical System.
- VII. Apply the appropriate IT skills, modern Engineering tools and Techniques for engineering practice.
- VIII. Effective communication by reading blueprint designs and drawing, resource and material requirement according to Electrical components manufacturing needs.
- IX. Engage themselves in life-long learning by recognizing the need and technological changes.
- X. Apply engineering and management principles to manage projects in multidisciplinary environments.

PROGRAMME GUIDELINES	
PROGRAMME TITLE	LEVEL – 3 DIPLOMA IN ENGINEERING
LEVEL	LEVEL – 3
TOTAL CREDITS	120
TOTAL LEARNING HOURS	1200 HOURS
GUIDED LEARNING HOURS	480 HOURS

Total Learning Hour - 1200 Hours

Guided Learning Hour – 480 Hours

1 Credit = 10 hours of effort (10 hours of learning time which includes everything a learner has to do to achieve the outcomes in a qualification including the teaching learning process, assessment procedures and practical's).

LIST OF UNITS

S. No.	Reference Number	Unit Title	Guided Learning Hours	Credits
1.	L/618/0435	Safety Principles in Engineering workplace	42	8
2.	H/618/0439	Technical Communication	43	10
3.	M/618/0427	Engineering Mathematics	42	10
4.	T/618/0428	Engineering Drawing	43	10
5.	H/618/0425	Principles of basic Electronics and Electricals	42	9
6.	R/618/0436	Mechanical Workshop Practice	43	10
7.	A/618/0432	Mechanical Engineering Principles	44	10
8.	A/618/0429	Principles of Electron Devices	43	11
9.	D/618/0438	CAD Analysis	50	12
10.	J/618/0434	Basic Civil Engineering	45	10
11.	D/618/0441	Engineering Project Management	43	20
TOTAL			480 HOURS	120 CREDITS

SEMESTERWISE UNITS

SEMESTER – I				
S. No.	Unit Code	Unit	Unit Type	Credit
1	L/618/0435	Safety Principles in Engineering workplace	Essential unit	8
2	H/618/0439	Technical Communication	Essential unit	10
3	M/618/0427	Engineering Mathematics	Essential unit	10
4	T/618/0428	Engineering Drawing	Essential unit	10
5	H/618/0425	Principles of basic Electronics and Electrical	Essential unit	9
TOTAL CREDITS [A]				47

SEMESTER – II				
S. No.	Unit Code	Unit	Unit Type	Credit
1	R/618/0436	Mechanical Workshop Practice	Essential unit	10
2	A/618/0432	Mechanical Engineering Principles	Essential unit	10
3	A/618/0429	Principles of Electron Devices	Essential unit	11
4	D/618/0438	CAD Analysis	Essential unit	12
5	J/618/0434	Basic Civil Engineering	Essential unit	10
6	D/618/0441	Engineering Project Management	Essential unit	20
TOTAL CREDITS [B]				73
GRAND TOTAL CREDITS [A+B]				120

UNIT CODE	L/618/0435
UNIT TITLE	Safety principles in Engineering workplace
CREDIT	8
GLH	42 Hours
UNIT TYPE	Essential Unit

UNIT DESCRIPTION

This unit will enable the students to apply safety principles and technology in the Engineering workplaces. To understand the key features of health and safety legislation and regulations and to ensure safe working conditions.

UNIT LEARNING OUTCOMES

ULO1 - Comprehend the important features of health and safety regulations.

ULO2 - Ability to identify hazards for a wide range of safety measures in a working environment.

ULO3 - Ability to handle a risk assessment and to identify a preventive measure.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1		M		M				M		M
ULO2		M		M	M					
ULO3		M		M				M	M	

UNIT CODE	H/618/0439
UNIT TITLE	Technical Communication
CREDIT	10
GLH	43 Hours
UNIT TYPE	Essential Unit

UNIT DESCRIPTION

This unit deals with the various communication techniques used in engineering. It encourages the greater use of information and communication technology in engineering. This unit develops underpinning skills for employment in a wide range of engineering disciplines.

UNIT LEARNING OUTCOMES

ULO1 - Understand various engineering diagrams to communicate technical information..

ULO2 - Know how to communicate in engineering settings using verbal and written communication.

ULO3 - Be able to explore the usage of information and communication technology.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1			M	M						M
ULO2	M				M			M		
ULO3			M			M		M	M	

UNIT CODE	M/618/0427
UNIT TITLE	Engineering Mathematics
CREDIT	10
GLH	42 Hours
UNIT TYPE	Essential Unit

UNIT DESCRIPTION

This unit will enable learners to solve mathematical, scientific and associated engineering problems. It introduces algebraic methods, use of indices and algebraic formula for solving quadratic equations.

UNIT LEARNING OUTCOMES

ULO1 - Be able to use appropriate algebraic methods to solve equations

ULO2 - Know how to determine areas, volumes for various shapes as well as using Trigonometric concepts.

ULO3 - Be able to use calculus techniques.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M		M			M				M
ULO2			M					M		
ULO3	M		M						M	

UNIT CODE	T/618/0428
UNIT TITLE	Engineering Drawing
CREDIT	10
GLH	43 Hours
UNIT TYPE	Essential Unit

UNIT DESCRIPTION

This unit helps to understand the “Universal language of Engineers” for effective communication through drafting exercises of geometrical solids. Also, it prepares the student for future engineering design.

UNIT LEARNING OUTCOMES

ULO1 – Be able to draw various engineering components.

ULO2 – Understand the standards of engineering drawing.

ULO3 - Know how to construct engineering drawings.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M				M					M
ULO2				M				M	M	
ULO3			M							

UNIT CODE	H/618/0425
UNIT TITLE	Principles of basic Electronics and Electricals
CREDIT	9
GLH	42 Hours
UNIT TYPE	Essential Unit

UNIT DESCRIPTION

This unit develops the understanding of basic electrical principles through the analysis of simple DC circuits and AC circuits. Also, it deals with the various properties and parameters of capacitors in DC circuits. It provides an investigative approach through practical measurements and testing of circuits.

UNIT LEARNING OUTCOMES

ULO1 - Know how to determine voltage, current and resistance in direct current circuits.

ULO2 – Understand the concepts of capacitance in relation to DC circuits.

ULO3 - Understand the theory of single-phase Alternating Current.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M		M						M	
ULO2	M		M				M	M		
ULO3	M	M				M				M

UNIT CODE	R/618/0436
UNIT TITLE	Mechanical Workshop Practice
CREDIT	10
GLH	43 Hours
UNIT TYPE	Essential unit

UNIT DESCRIPTION

This unit covers safety rules and regulations, machine tools, manufacturing equipment's process, operation and demonstration. Practice on welding, sheet metal and various fabrication processes

UNIT LEARNING OUTCOMES

ULO1 - Know how to manage the work area safely.

ULO2 – Know how to use appropriate workshop tools.

ULO3 – Be able to use mechanical measurement and quality control process.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1		M			M		M			
ULO2			M						M	M
ULO3	M	M						M		

UNIT CODE	A/618/0432
UNIT TITLE	Mechanical Engineering Principles
CREDIT	10
GLH	44 Hours
UNIT TYPE	Essential unit

UNIT DESCRIPTION

This unit deals with the design, manufacture and maintenance of a mechanical systems that are concern of engineers and technicians who must be able to apply practical and theoretical knowledge to ensure that systems work safely and efficiently.

UNIT LEARNING OUTCOMES

ULO1 - Understand the effects of loading in static engineering systems.

ULO2 – Understand the effects of dynamic engineering systems

ULO3 - Understand the parameters of fluid system.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M								M	
ULO2			M				M			
ULO3		M						M		M

UNIT CODE	A/618/0429
UNIT TITLE	Principles of Electron Devices
CREDIT	11
GLH	43 HOURS
UNIT TYPE	Essential unit

UNIT DESCRIPTION

This unit provides an introduction to basic electronic devices. It covers both analogue and digital electronic principles. It provides an opportunity to investigate diode and transistor the basic building blocks of electronic circuits. Also, it is extended to investigate the combinational and sequential circuits in Logic Gates.

UNIT LEARNING OUTCOMES

ULO1 – Understand the principle and operations of diodes, transistors and basic analogue circuits.

ULO2 – Understand build and test logic gates, combinational circuits and sequential circuits.

ULO3 – Be able to construct, build and test analogue and digital circuits in hardware and software-based simulation.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1										M
ULO2	M					M			M	
ULO3		M	M				M			

UNIT CODE	D/618/0438
UNIT TITLE	CAD Analysis
CREDIT	12
GLH	50 HOURS
UNIT TYPE	Essential unit

UNIT DESCRIPTION

This unit develops the understanding of Computer Aided Drafting techniques in an Engineering context. Further this 2D CAD drawing and 3D CAD drawings data can be shared with computer numerical control (CNC) machines using Computer Aided Manufacturing (CAM) software.

UNIT LEARNING OUTCOMES

UL01 – Know the advantages of different CAD software.

UL02 – Understand limits, fits and tolerance for the CAD model.

UL03 - Be able to create 2D sketch and 3D models in CAD software.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M								M	
ULO2				M		M				M
ULO3	M							M		

UNIT CODE	J/618/0434
UNIT TITLE	Basic Civil Engineering
CREDIT	10
GLH	45 HOURS
UNIT TYPE	Essential unit

UNIT DESCRIPTION

This unit gives learners knowledge of the fundamental techniques, processes and materials used in the construction of civil engineering works. Also, it enables the learners to develop skills in surveying.

UNIT LEARNING OUTCOMES

ULO1 - Understand the processes and materials used in the constructions.

ULO2 - Understand planning methods within civil construction.

ULO3 - Know how to perform linear and leveling surveys to produce drawings.

ULO4 - . Understand renewable energy sources

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M	M				M				
ULO2		M					M	M		M
ULO3				M			M		M	

UNIT CODE	D/618/0441
UNIT TITLE	Engineering Project Management
CREDIT	20
GLH	43 HOURS
UNIT TYPE	Essential unit

UNIT DESCRIPTION

This unit supports the students to identify, formulate, organize, develop and implement a successful project by applying the skills and knowledge that they acquired in various units.

UNIT LEARNING OUTCOMES

ULO1 - Be able to define and organize a project with agreed procedures.

ULO2 - Understand how to solve problems in an engineering setting.

ULO3 - Be able to implement a project.

MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M		M		M			M	M	
ULO2		M	M	M			M		M	
ULO3						M				M

ASSESSMENT METHODS AND TECHNIQUES FOR LEVEL -3 DIPLOMA IN ENGINEERING

Assessment technique	Type of Assessment	Description	Formative or Summative
Case studies	Oral/ Problem based/ Practical	Students are required to work through a case study to identify the problem(s) and to offer potential solutions; useful for assessing students' understanding and for encouraging students to see links between theory and practice. Case studies could be provided in advance of a time-constrained assessment.	Formative
Concept maps	Written/ Oral	Students map out their understanding of a particular concept. This is a useful (and potentially quick) exercise to provide feedback to staff on students' understanding.	Formative
'Doing it' exam	Written	An exam which requires students to do something, like read an article, analyze and interpret data etc.	Formative / Summative
Field report	Written/ Oral	Students are required to produce a written/ oral report relating to a field/ site visit.	Formative
Laboratory books / Reports	Practical/ Written	Students are required to write a report for all (or a designated sample) of practical's in a single lab book. A sample of lab books will be collected each week to mark any reports of labs done in previous weeks; this encourages students to keep their lab books up to date. Each student should be sampled the same number of times throughout the module with a designated number contributing to the assessment mark.	Summative
Multiple choice questions (MCQs)	Written	Can be useful for diagnostic, formative assessment, in addition to summative assessment. Well-designed questions can assess more than factual recall of information, but do take time to design.	Formative / Summative
Online discussion boards	Written	Students are assessed on the basis of their contributions to an online discussion for example, with their peers; this could be hosted on a virtual learning environment (VLE).	Formative
Open book exams	Written	Students have the opportunity to use any or specified resources to help them answer set questions under time constraints. This method removes the	Summative

		over-reliance on memory and recall and models the way that professionals manage information.	
Oral presentations	Oral / Written	Students are asked to give an oral presentation on a particular topic for a specified length of time and could also be asked to prepare associated handout(s). Can usefully be combined with self- and peer-assessment.	Summative
Problem sheets	Written	Students complete problem sheets, e.g. on a weekly basis. This can be a useful way of providing students with regular formative feedback on their work and/or involving elements of self- and peer assessment.	Formative
Research projects / Group projects	Written/ Practical/ Oral/ Performance/ Problem based/ Work placement	Potential for sampling wide range of practical, analytical and interpretative skills. Can assess wide application of knowledge, understanding and skills.	Formative / Summative
Short answer questions	Written	Useful to assess a wide range of knowledge/skills across a module.	Summative
Simulations	Practical/ Written/ Oral/ Problem-based	Text or virtual computer-based simulations are provided for students, who are then required to answer questions, resolve problems, perform tasks and take actions etc. according to changing circumstances within the simulation. Useful for assessing a wide range of skills, knowledge and competencies.	Formative
Viva voce	Oral	Often used for assessing 'borderline' degree classifications but also useful to explore students' understanding of a wide range of topics. Depending on class size however, they can be time consuming for staff.	Summative