LEVEL 4 & 5 HIGHER INTERNATIONAL DIPLOMA IN

CIVIL ENGINEERING

EduExcel.org.uk

www.eduexcell.org.uk

PROGRAMME LEARNING OUTCOMES (PLO):

I. Apply the knowledge of Technical Science, Applied Mathematics and Civil Engineering in Structures, Construction Materials, Geotechnical, Environmental Engineering.

II. Recognize, Formulate and Solve Civil Engineering complex problems using Applied Engineering Mathematics, Science and Civil Engineering Principles.

III. Design and Develop solutions/processes in aspect of Structural Stability, Construction Safety and Durability for Construction Engineering problem such as Foundation, Sub and Super Structure.

IV. Synthesis of Building Information, CAD documents and Material Procurement for Construction project by create, select or apply appropriate IT/ Engineering Tools, Software and Techniques.

V. Use current techniques, knowledge of Environmental Impact on Construction Buildings, Construction Safety Awareness, Skills and Tools necessary for Construction practice.

VI. Use Research-orientated knowledge to develop society and apply research method includes Design of Experiments, Analysis and Interpretation of data; create Mathematical Modeling, use ofComputational Tools to solve complex Civil Engineering problems.

VII. Manage Construction Projects for Planning, Analyzing, Costing, Scheduling, Predicting and complete within the stipulated period and fund.

VIII. Effective communication by Reading Blueprint Designs and Drawing, Resource and Material requirement according to project needs.

IX. Apply suitable Material, Engineering Techniques based on Environment to Service, Maintenance, Repair and Rehabilitation of Civil Construction.

X. Understand the Impact, Role and Responsibility of a Professional Civil Engineer in Societal, Environment Health and Safety for Welfare of Society.

PROGRAMME GUIDELINES	
PROGRAMME TITLE	**Level 4 & 5 Higher International Diploma in Civil Engineering**
QUALIFICATION CODE	**701/3023/0**
LEVEL	**LEVEL – 4**
TOTAL CREDITS	**240**
TOTAL LEARNING HOURS	**2400 HOURS**
GUIDED LEARNING HOURS	**960 HOURS**

Total learning hour 2400 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 assessment procedures and practicals).

Guided Learning Hour for first year is 480 hours and second year is 480 hours.

Total Guided Learning Hours for Higher International Diploma in Civil Engineering is 960 hours.

HID IN CIVIL ENGINEERINGCOURSE STRUCTURE

YEAR	SCHEDULE	UNIT SPECIFICATION	NO. OF. UNITS	UNIT CREDIT	CREDIT/YEAR
I	SCHEDULE 1	Common unit	3	36	120
		Essential unit	2	24	
		Elective (or) Open unit	-	-	
	SCHEDULE 2	Common unit	-	-	
		Essential unit	3	36	
		Elective (or) Open unit	2	24	
II	SCHEDULE 3	Common unit	-	-	120
		Essential unit	2	30	
		Elective (or) Open unit	2	30	
	SCHEDULE 4	Common unit	-	-	
		Essential unit	1	15	
		Special Unit (Essential)*	1	30	
		Elective (or) Open unit	1	15	
				TOTAL	**240**

FIRST YEAR	Common unit carries	12 credit
	Essential unit carries	12 credit
	Elective unit carries	12 credit
SECOND YEAR	Essential unit carries	15 credit
	Elective unit carries	15 credit
	Special unit (Essential)* carries	30 credit

LIST OF UNITS

S. No.	Subject Code	UNIT	UNIT SPECIFICATION	CREDIT
1	CUP001	Technical drawings with Engineering Graphics	Common unit	12
2	CUP002	Workshop and General Safety	Common unit	12
3	CUP003	IT Application for Engineers	Common unit	12
4	CEP001	Construction Material, Method and Techniques	Essential unit	12
5	CEP002	Practical application of civil constructions	Essential unit	12
6	CEP003	Applied Mathematics for civil engineering	Essential unit	12
7	CEP004	Site survey and Practice	Essential unit	12
8	CEP005	Geotechnical and Foundation Engineering	Essential unit	12
9	CEP006	Civil structural Analysis & Design	Essential unit	15
10	CEP007	Hydraulics in civil engineering	Essential unit	15
11	CEP008	Civil Blueprint Reading and estimation	Essential unit	15
12	SU001	Project	Special unit (Essential)*	30
I YEAR ELECTIVE UNITS				
13	CEP009	Construction, Equipment and Methods	Elective Unit	12
14	CEP010	Civil 2D & 3D CAD Design	Elective Unit	12
15	CEP011	Environmental impact of construction	Elective Unit	12
16	CEP012	MEP for Civil Engineering	Elective Unit	12
17	CEP013	Electrical lighting and acoustic for building service engineering	Elective Unit	12
II YEAR ELECTIVE UNITS				
18	CEP014	Facades material, components	Elective Unit	15
19	CEP015	Repair and Rehabilitation of Buildings	Elective Unit	15
20	CEP016	Project Planning and scheduling in construction	Elective Unit	15
21	CEP017	Heat ventilation and air conditioning system for building	Elective Unit	15
22	CEP018	Design of light weight structures for construction and building environments	Elective Unit	15
23	CEP019	Construction productivity and cost management	Elective Unit	15
24	CEP020	BIM and Construction Management	Elective Unit	15
25	CEP021	Design of Steel and Masonry Structures	Elective Unit	15
26	GU003	Numerical Methods	Elective Unit	15

Schedule : I
Year : 1
Credit : 60

UNIT CODE	UNIT	UNIT SPECIFICATION	CREDIT
CUP001	Technical drawings with Engineering Graphics	Common unit-	12
CUP002	Workshop and General Safety	Common unit	12
CUP003	IT Application for Engineers	Common unit	12
CEP001	Construction Material, Method and Techniques	Essential unit	12
CEP002	Practical application of civil construction	Essential unit	12

Schedule : II
Year : 1
Credit : 60

UNIT CODE	UNIT	UNIT SPECIFICATION	CREDIT
CEP003	Applied Mathematics for civil engineering	Essential unit	12
CEP004	Site survey and Practice	Essential unit	12
CEP005	Geotechnical and Foundation Engineering	Essential unit	12
CEP009	Construction, Equipment and Methods	Elective Unit	12
CEP010	Civil 2D & 3D CAD Design	Elective Unit	12

Schedule : III
Year : 2
Credit : 60

UNIT CODE	UNIT	UNIT SPECIFICATION	CREDIT
CEP006	Civil structural Analysis & Design	Essential unit	15
CEP007	Hydraulics in civil engineering	Essential unit	15
GU003	Numerical Methods	Elective Unit	15
CEP015	Repair and Rehabilitation of buildings	Elective Unit	15

Schedule : IV
Year : 2
Credit : 60

UNIT CODE	UNIT	UNIT SPECIFICATION	CREDIT
CEP008	Civil Blueprint Reading and estimation	Essential unit	15
CEP016	Project Planning and scheduling in construction	Elective Unit	15
SU001	Project	Special unit(Essential)*	30

UNIT CODE : CUP001

UNIT TITLE : Technical drawings with Engineering Graphics

CREDIT : 12

SPECIFICATION : Common Unit

UNIT DESCRIPTION

This unit develops students to understand technical drawing and importance. This unit teaches the vitalrole of technical drawings in engineering documents and communication. This unit covers angle of projection, Multiview, section, detail drawing and symbol.

UNIT LEARNING OUTCOMES

ULO1 - Use appropriate tool to develop technical drawings ULO2 -

Ability to understand and interpret technical drawings.

ULO3 - Ability to provide required information in technical drawing according to process and operation.

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME MAPPING

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

UNIT CODE : CUP002

UNIT TITLE : Workshop and General Safety

CREDIT : 12

SPECIFICATION : Common Unit

UNIT DESCRIPTION

This unit help to know about tools used for diverse application in engineering workshop. This unit helps to learn skill-oriented experience in manufacturing process and production technology. This unit teaches safety procedure and workshop safety in various workshop practice.

UNIT LEARNING OUTCOME

ULO1 – Ability to select appropriate tool and process for required application ULO2 –

Ability to understand basic operation in manufacturing and production

ULO3 - Ability to maintain safety procedure and use safety tools and equipment in engineering practice.

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME MAPPING

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

UNIT CODE : CUP003

UNIT TITLE : IT Application for Engineers

CREDIT : 12

SPECIFICATION : Common Unit

UNIT DESCRIPTION

This unit covers foundation concept in Information technology and develop usage IT skills in engineering practices. This unit guide to simplify complex data work using IT software tools and helps in synthesis of information for engineering needs.

UNIT LEARNING OUTCOME

ULO1 - Ability to create, select or apply appropriate software tool to improve the performance.

ULO2 - Develop documents and report preparation skill for various engineering activity such as approval, quotation, design and estimation.

ULO3 - Ability to performance analytical calculation, synthesis and interpret the data.

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME MAPPING

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

UNIT CODE : CEP001

UNIT TITLE : Construction Material, Method and Techniques

CREDIT : 12

SPECIFICATION : Essential Unit

UNIT DESCRIPTION

This unit teaches investigation and evaluation of properties, uses, behavior and application of various material used in construction operation. This unit explain concrete, steel, composite structure and various construction techniques in used in foundation, sub structure and super structure construction.

UNIT LEARNING OUTCOME

ULO1 - Ability to understand type of behavior and properties of various construction materialULO2

- Ability to apply construction method based on application suitability.

ULO3 - Ability to apply construction techniques in various constructions includes excavations, foundation, framing and structures.

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME MAPPING

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

UNIT CODE : CEP002
UNIT TITLE : Practical application of civil construction
CREDIT : 12
SPECIFICATION : Essential Unit

UNIT DESCRIPTION

This unit provide practical learning of various construction operation includes masonry, reinforcement,steel and wood. The student will perform practical on handling civil survey and leveling equipment. Thestudent will also know about health and safety practices in construction workplace.

UNIT LEARNING OUTCOME

ULO1 - Ability to perform construction operation for appropriate construction process.

ULO2 - Ability to carry out field marking and leveling.

ULO3 - Ability to perform health and safety practice in construction site.

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME 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 : CEP003

UNIT TITLE : Applied Mathematics for civil engineering

CREDIT : 12

SPECIFICATION : Essential Unit

UNIT DESCRIPTION

This unit helps to upgrade analytical knowledge to solve construction engineering problems. The skill and knowledge acquired during this unit helpful in problem solving in other units. In this course student learn to solve practical problem in construction by applying analytical geometry and trigonometry mathematical skill. Also, it covers solution of Civil and Building Services Engineering problems.

UNIT LEARNING OUTCOME

ULO1 – Ability to solve algebraic manipulations and mathematical functions in the solution of engineering problems.

ULO2 - Ability to solve analytical geometry problem in construction

ULO3 - Ability to apply trigonometry methods and Use ordinary differential equations to model andsolve engineering problems

ULO4 - Apply mathematical software to the solution of engineering mathematics problems

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M	M	M			M	M			
ULO2	M	M	M			M	M			M
ULO3	M	M	M			M	M			
ULO4	M	M			M		M		M	

UNIT CODE : CEP004
UNIT TITLE : Site survey and Practice
CREDIT : 12
SPECIFICATION : Essential Unit

UNIT DESCRIPTION

This course aims to covers the principles land surveying and setting out: methods of obtaining orientation, the subsequent field measurements for the purpose of producing site drawings and hence the calculation of land areas and earthwork of volumes, setting out points using line-of-sight and satellite techniques. Also, it aims to understand the quality and compatibility of survey procedures and practice, guidelines and standards for plan preparation.

UNIT LEARNING OUTCOME

ULO1 - Ability to handle various site surveying and leveling equipment.

ULO2 - Ability to solve basic calculation in survey field.

ULO3 – Operate surveying instruments and Understand the role of the Land surveyor

ULO4 - Use standard computer software packages to post-process survey data and deliver appropriate spatially referenced information and Prepare land survey plots and contour maps for a selected project

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1			M						M	
ULO2	M	M				M				
ULO3		M	M		M	M				
ULO4				M		M		M		M

UNIT CODE : CEP005
UNIT TITLE : Geotechnical and Foundation Engineering
CREDIT : 12
SPECIFICATION : Essential Unit

UNIT DESCRIPTION

This unit covers physical and mechanical properties of engineering soils and their application, particularly in relation to short-term and long-term conditions in homogeneous isotropic ground. To study the effects of standing and flowing groundwater on the deformation and failure of engineering earth structures and other forms of construction.

UNIT LEARNING OUTCOME

ULO1 - Ability to Identify & describe the common rock types, their mode of formation and uses within construction

ULO2 - Ability to Identify the primary design parameters for soils

ULO3 - Ability to Relate the results from common soil tests to engineering design work

ULO4 – Ability to design foundation based on soil properties.

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M		M							M
ULO2			M	M	M			M		M
ULO3	M		M		M				M	
ULO4	M		M		M	M			M	

UNIT CODE : CEP006
UNIT TITLE : Civil structural Analysis & Design
CREDIT : 15
SPECIFICATION : Essential Unit

UNIT DESCRIPTION

This unit provides learners with an understanding of statically determinate and indeterminate structures. Learners will also gain skills to determine compound and complex forces in civil engineeringstructures.

UNIT LEARNING OUTCOME

ULO1 - Analyze equilibrium and compatibility in relation to structures

ULO2 - Analyze stresses and strains, loads and deformations in building structuresULO3

- Determine compound and complex forces in civil engineering structures ULO4 – Use

Computer/software applications in structural analysis and design

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M	M	M			M				
ULO2		M	M	M		M	M	M	M	
ULO3		M	M	M		M	M	M	M	
ULO4		M	M	M		M	M	M	M	

UNIT CODE : CEP007
UNIT TITLE : Hydraulics in civil engineering
CREDIT : 15
SPECIFICATION : Essential Unit

UNIT DESCRIPTION

This unit involves demonstration, study and practice on measurement of pressure, velocity, discharge, flow in fluid pipes. The demonstration on centrifugal pump, reciprocating pump and turbine components, function, selection and uses.

UNIT LEARNING OUTCOME

ULO1 - Ability to select and locate need of measurement in fluid flow.

ULO2 - Ability to measure pressure, velocity, discharge and flow of fluid in pipes.

ULO3 - Ability to perform pump selection and understand various component of pump. ULO4 –

Ability to perform turbine selection and understand various component of turbine.

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1			M		M	M			M	
ULO2	M	M	M		M	M			M	
ULO3			M	M	M			M	M	
ULO4				M	M			M	M	M

UNIT CODE : CEP008
UNIT TITLE : Civil Blueprint Reading and estimation
CREDIT : 15
SPECIFICATION : Essential Unit

UNIT DESCRIPTION

This unit involves hands on training in civil technical drawings and practice to synthesis building information from blueprint. The student will take practice on reading plan, elevation, section and details information of foundation and structures.

UNIT LEARNING OUTCOME

ULO1 - Ability to understand title block, scale, line, symbols and bill of quantity.

ULO2 - Ability to gather building information from blueprint.

ULO3 - Ability to read plan, elevation, section and details drawing in blueprint.

ULO4 – Ability to perform cost estimation of civil buildings

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M			M		M	M	M		
ULO2			M	M				M		
ULO3				M				M		
ULO4	M			M		M	M	M	M	

UNIT CODE : SU001
UNIT TITLE : Project
CREDIT : 30
SPECIFICATION : Special unit(Essential)*

UNIT DESCRIPTION

The module aims to enable you to complete a substantial piece of individual work and build on your expertise in a selected area of study. It aims to develop your research, time management, presentation and written communication skills.

UNIT LEARNING OUTCOME

ULO1 - Identify a research question, problem or hypothesis and establish aims and objectives to support the investigation.

ULO2 - Communicate the planned project work using standard methods and tools.

ULO3 - Develop a research and data collection strategy appropriate to the research question / problem posed.

ULO4 – Critically evaluate the research findings using reasoned and logical arguments within a structured written framework.

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1		M	M	M		M	M	M	M	M
ULO2	M	M	M	M	M	M				
ULO3				M		M	M		M	
ULO4				M				M		M

UNIT CODE : CEP009

UNIT TITLE : Construction, Equipment and Methods

CREDIT : 12

SPECIFICATION : Elective Unit

UNIT DESCRIPTION

This unit describe equipment, component and systems used in civil construction. Selection of equipment based on construction operations includes earth moving operation, foundation and pile driving, concreting, material handling and erection of structures, pumping and transporters. Safety considerationin working with equipment.

UNIT LEARNING OUTCOME

ULO1 - Ability to understand working of equipment, component and system.

ULO2 - Ability to select equipment based on construction needs.

ULO3 – Ability to handle material and perform erection process.

ULO4 - Ability to perform safety operation working with heavy equipment.

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME 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	
ULO4			M		M				M	M

UNIT CODE : CEP010

UNIT TITLE : Civil 2D & 3D CAD

DesignCREDIT : 12

SPECIFICATION : Elective Unit

UNIT DESCRIPTION

This course helps the student to develop detailed technical drawing and construction designs and drawings required for both construction and building information modeling using advanced CAD application. The student undergoes guided and hands on practice to develop drawing and model for various activities in civil engineering.

UNIT LEARNING OUTCOME

ULO1 - Ability to develop technical drawings with plan, elevation, section and joinery details.

ULO2 - Ability to develop 3D model for residential and commercial buildings.

ULO3 – Ability to create frame, truss and arch.

ULO4 - Ability to develop 2D drafting from 3D model.

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO-1			M	M				M		
ULO-2		M		M				M	M	
ULO-3			M	M				M	M	
ULO-4				M				M		M

UNIT CODE : CEP011

UNIT TITLE : Environmental impact of construction

CREDIT : 12

SPECIFICATION : Elective Unit

UNIT DESCRIPTION

This unit enables learners to develop an understanding of the hydrological cycle and the importance of hydrological influences for civil engineering projects. Learners will also cover water supply, water treatment, and wastewater and apply hydrological design to civil engineering projects.

UNIT LEARNING OUTCOME

ULO1 - Ability to Understand the importance of hydrological influences for civil engineering projectsULO2

- Ability to Identify quality control methods for water supply and discharge

ULO3 – Ability to Understand water & wastewater treatment processes

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO-1	M	M				M	M		M	M
ULO-2		M		M	M	M				M
ULO-3			M			M	M		M	M

UNIT CODE : CEP012

UNIT TITLE : MEP for Civil Engineering

CREDIT : 12

SPECIFICATION : Elective Unit

UNIT DESCRIPTION

This unit demonstrate, study and practice on mechanical, electrical and plumbing works in civil engineering. This units help to design the heat ventilation and air conditioning ductwork systems, pipework and electrical system for civil buildings. The students will be practice on hands on 3D parametric models to develop HVAC, electrical and piping/ plumping components and system.

UNIT LEARNING OUTCOME

ULO1 - Ability to understand need of mechanical, electrical and plumbing system in civil construction building.

ULO2 - Ability to develop HVAC, electrical and plumping system for civil building.

ULO3 – Ability to synthesis building information from the 3D model.

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO-1	M	M	M		M	M			M	
ULO-2				M		M		M		M
ULO-3				M			M	M		

UNIT CODE : CEP013

UNIT TITLE : Electrical lighting and acoustic for building service engineering

CREDIT : 12

SPECIFICATION : Elective Unit

UNIT DESCRIPTION

The course explains principle and concepts of electrical science, photometry and acoustics. The experimental practice on D.C circuit, A.C circuit, wiring, lighting design, acoustic design, service and maintenance of building.

UNIT LEARNING OUTCOME

ULO1 - Ability to understand basics electronic and electronic system, lighting and acoustics system.

ULO2 - Ability to develop lighting and acoustic design for civil building requirements.

ULO3 - Ability to perform electrical service and maintenance operation for civil building.

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO-1	M	M							M	
ULO-2		M	M	M	M	M			M	
ULO-3				M			M	M	M	M

UNIT CODE : CEP014

UNIT TITLE : Facades material, components

CREDIT : 15

SPECIFICATION : Elective Unit

UNIT DESCRIPTION

The intent of encasing a building structure with a facade is to control the internal environment of the building, providing comfort to the occupants and allowing maximum natural light and ventilation into the building. This course explain various types of facade such as masonry, concrete, and glazed curtain walls, and the design principles that underpin their performance; and the assessment of wind loads, and the structural design of glass, aluminum, and structural adhesives, together with their compatibility anddurability issues.

UNIT LEARNING OUTCOME

ULO1 - Ability to understand fundamental principles that underpin the performance of facades.

ULO2 - Ability to select materials and components for civil building interior environmentrequirements.

ULO3 - Ability to design and implement aluminum, glass and structural adhesives based on principle, compatibility and durability issues

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME MAPPING

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

UNIT CODE : CEP015

UNIT TITLE : Repair and Rehabilitation of buildings

CREDIT : 15

SPECIFICATION : Elective Unit

UNIT DESCRIPTION

This course develop knowledge concrete durability and quality. Practice on distressed assessment, deterioration causes, maintenance and repair strategies, strength and durability of concrete, special concretes, techniques, protection of structures, rehabilitation and retrofitting of structures.

UNIT LEARNING OUTCOME

ULO1 - Ability to develop assessment of distressed structure, maintenance and repair strategiesULO2 - Ability to select appropriate repair and protection techniques for civil construction ULO3 - Ability to perform repair and rehabilitation of structures

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME 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	M	

UNIT CODE : CEP016

UNIT TITLE : Project Planning and scheduling in construction

CREDIT : 15

SPECIFICATION : Elective Unit

UNIT DESCRIPTION

This unit provides learners with an opportunity to understand management principles and their application to the construction and built environment sector including an understanding of health, safety and welfare legislation and effective health and safety policies. Learners will develop the skills needed to undertake risk assessments.

UNIT LEARNING OUTCOME

ULO1 - Ability to Apply management techniques used in the construction and built environmentsector

ULO2 - Ability to Understand the construction and built environment sector in terms of structuresand activities

ULO3 - Ability to Produce a risk assessment in design and construction

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME MAPPING

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

UNIT CODE : CEP017

UNIT TITLE : Heat ventilation and air conditioning system for building

CREDIT : 15

SPECIFICATION : Elective Unit

UNIT DESCRIPTION

This course will prepare students to apply technical knowledge and skills to understand the principle, working and operation of heat ventilation and air conditioning, and refrigeration systems. The program includes instruction in load calculation, duct design, diagnostic techniques, and use of testing equipment and the principles of mechanics, electricity, and electronics as they relate to the repair of heating, air conditioning and refrigeration systems.

UNIT LEARNING OUTCOME

ULO1 - Ability to understand electrical and electronic connection in HVAC system.

ULO2 - Ability to understand working process and various components in HVAC system.

ULO3 - Ability to design and install HVAC system.

ULO4 - Ability to do load calculation analysis.

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M	M	M		M				M	
ULO2			M		M		M		M	
ULO3		M	M	M		M	M	M		M
ULO4	M	M	M	M		M				

UNIT CODE : CEP018

UNIT TITLE : Design of light weight structures for construction and building environments

CREDIT : 15

SPECIFICATION : Elective Unit

UNIT DESCRIPTION

This course covers the developments of light weight structures such as light weight concrete, Design of light gauge steel structures and cold -formed of light gauge section characteristics, design resistance and stability criteria, connecting design and technology. Design of Light weight roofing and cladding systems.

UNIT LEARNING OUTCOME

ULO1 – understand the need and application of light weigh structures in civil construction

ULO2 - Ability to design light gauge steel structures.

ULO3 - Ability to develop proper mix of light weight concrete ULO4

- Ability to design lightweight roofing and cladding system.

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1	M	M	M		M	M				M
ULO2		M	M	M		M			M	M
ULO3			M		M	M				
ULO4		M	M	M		M	M		M	M

UNIT CODE : CEP019

UNIT TITLE : Construction productivity and cost management

CREDIT : 15

SPECIFICATION : Elective Unit

UNIT DESCRIPTION

This course will prepare students to understand productivity – related characteristics of the construction and cost method techniques for productivity measurements. Cost management is achieved through improving construction methods and productivity. The construction productivity improved through motivation and productivity improvement programs.

UNIT LEARNING OUTCOME

ULO1 - Ability to understand productivity related characteristic.

ULO2 - Ability to measure productivity of construction project.

ULO3 - Ability to perform cost management to maximize the performance.

ULO4 - Ability to perform motivation and productivity improvement program to maximizeconstruction productivity.

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1		M	M		M		M			M
ULO2			M		M		M			M
ULO3		M	M	M			M			M
ULO4					M		M			M

UNIT CODE : CEP020

UNIT TITLE : BIM and Construction Management

CREDIT : 15

SPECIFICATION : Elective Unit

UNIT DESCRIPTION

Building information modeling is the standard approach to designing, construction modeling, planning, cost estimating. BIM can be used throughout the building life cycle. The student will be practice on construction modeling, simulation and planning of civil building. Based on building information data procurement process take place.

UNIT LEARNING OUTCOME

ULO1 - Ability to develop construction building model.

ULO2 - Ability to synthesis of building information for construction model.

ULO3 - Ability to perform cost estimation.

ULO4 – Ability to provide data for procurements.

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1		M	M	M		M		M		
ULO2				M			M	M		
ULO3	M			M			M	M		M
ULO4				M				M	M	

UNIT CODE : CEP021

UNIT TITLE : Design of Steel and Masonry Structures

CREDIT : 15

SPECIFICATION : Elective Unit

UNIT DESCRIPTION

This unit provides learners with an understanding of civil engineering structural design, beginning withsimple structural elements found in buildings and moving on to stable earthwork retaining walls.

UNIT LEARNING OUTCOME

ULO1 - Ability to Design simple building elements

ULO2 - Ability to Understand further theories for structures and Apply in civil engineering problemsULO3 - Ability to determine permissible stress and load carrying capacity.

ULO4 – Understand theories for earth retaining structure design & Design earth retaining structures

UNIT LEARNING OUTCOME AND PROGRAM OUTCOME MAPPING

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
ULO1		M	M		M	M			M	
ULO2				M		M		M		
ULO3	M	M	M	M		M				
ULO4			M	M	M	M			M	

UNIT CODE : GU003

UNIT TITLE : Numerical Methods

CREDIT : 15

SPECIFICATION : Elective (or) Open unit

UNIT DESCRIPTION

The aim of this unit is to solve numerical Differentiation and integration in various engineering discipline.

UNIT LEARNING OUTCOME

ULO1 – To introduce solutions of equations and Eigen values.

ULO2 – To acquaint knowledge of finite differences and interpolation

ULO3 – To introduce numerical differentiation and integration.

MAPPING

	PLO 1	PLO2	PLO 3	PLO4	PLO 5	PLO 6	PLO7	PLO8	PLO 9	PLO1 0
ULO 1					M	M				M
ULO 2			M						M	
ULO 3	M				M	M				M

ASSESSMENT METHODS AND TECHNIQUES FOR HID IN CIVIL 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 labsdone 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 adesignated 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 over-reliance on memory and recall and models the way that professionals manage information.	**Summative**

Oral presentations	Oral / Written	Students are asked to give an oral presentationon 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 / Groupprojects	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, understandingand 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**