

Noorul Islam Centre for Higher Education

(Deemed to be University u/s 3 of the UGC Act 1956)

Kumaracoil, Thuckalay, Kanyakumari District - 629 180

Accredited by NAAC with 'A' Grade

CV22 BE CIVIL ENGINEERING



Student Performance and Learning Outcomes

CV22 BE CIVIL ENGINEERING

Programme Outcome - POs	
PO-A	Engineering Knowledge: Integrate mathematics, sciences, and civil and construction engineering knowledge from all sub-disciplines to the solution of complex civil and construction engineering problems.
PO-B	Problem Analysis: Identify, source information, formulate solutions, analyze options and solve complex civil and construction engineering problems.
PO-C	Design of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental factors.
PO-D	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis, and interpretation of data, and synthesis of the information to provide valid conclusions.
PO-E	Modern tool usage: Create, select, and apply appropriate techniques, resources, and advanced engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO-F	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO-G	Environment and sustainability: Understand the impact of professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and the need for sustainable development.
PO-H	Individual and team work: Function effectively as an individual, and as a member or leader in diverse groups, and multidisciplinary settings.
PO-I	Communication: 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-J	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO-K	Ethics: Demonstrate ethical practice in the context of civil and construction engineering problems.
PO-L	Usage of Cutting Edge Technology: Inspiring students and preparing them for successful professional careers using appropriate techniques, resources and modern attitudes and modeling to complex engineering activities and research.

PO-M	<p>Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.</p>
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ProgrammeSpecific Outcomes - PSOs	
PSO-1	Graduates shall have an ability of critical thinking based on in-depth knowledge in structural engineering to obtain optimal solutions to the complex engineering problems.
PSO-B	Graduates shall pursue research in collaborative multidisciplinary area using appropriate research methodologies and advanced tools.
PSO-C	Graduate shall have an ability to apply, design, develop and execute projects in the construction of various Civil Engineering disciplines.
P0-D	Graduate shall be aware of the emerging technologies, equip themselves with current techniques, tools and utilize the same to solve issues in the professional field.

Sl.No	Subject Code	Subject Name
SEMESTER II		
1.	EG2102	Technical English - II
2.	MA2102	Engineering Mathematics – II
3.	BS2103	Environmental Science
4.	ME2205	Engineering Mechanics
5.	CV2201	Basic Civil Engineering
6.	CV2202	Fundamentals of Surveying
7.	CV2271	Civil Engineering Practice
8.	CV2272	Survey Practical – I
SEMESTER IV		
9.	Cv2208	Strength of Materials II
10.	Cv2209	Structural Analysis I
11.	Cv2210	Hydraulics and Hydraulic Machines
12.	Cv2211	Transportation Engineering – II
13.	Cv2212	Soil Mechanics
14.	Cv2276	Hydraulics Lab
15.	Cv2278	Soil Engineering Lab
16.	Cv2277	Construction Technology Lab
SEMESTER VI		
17.	IT1212	Cyber security
18.	CV1215	Irrigation Engineering
19.	CV1216	Structural Concrete Design I
20.	CV1217	Structural Analysis II
21.	CV1218	Environmental Engineering
22.	CV12A1	Hydrology
23.	CV1279	Irrigation Engineering Design & Drawing
24.	CV1280	Environmental Engineering Laboratory
SEMESTER VII		
25.	CV12B6	Ground Water Engineering
26.	CV1222	Repair and Rehabilitation of Structures
27.	CV12C3	Traffic Engineering & Management
28.	CV12P5	Project Work

Course Outcomes	
ME 2205 Engineering Mechanics	
CO1	Explain the vectorial and scalar representation of forces and moments.
CO2	Apply static equilibrium of particles and rigid bodies both in two dimensions and in three dimensions
CO3	Contrast the effect of friction on equilibrium.
CO4	Illustrate the importance of properties of surfaces and solids.
CO5	Demonstrate the dynamic equilibrium equation

BS2103- ENVIRONMENTAL SCIENCE	
CO1	Know the importance of environmental studies and methods of conservation of natural resources
CO2	Describe the structure and function of an ecosystem
CO3	Ability to understand environmental pollution and its management
CO4	To know about the importance of environmental ethics and management
CO5	To understand the human population, health and its rights

CV 2202 Fundamentals of Surveying	
CO1	At the end of the course the student will be able to understand The use of various surveying instruments and mapping
CO2	Measuring Horizontal angle and vertical angle using different instruments
CO3	Methods of Leveling and setting Levels with different instruments
CO4	Concepts of astronomical surveying and methods to determine time, longitude, latitude and azimuth
CO5	Concept and principle of modern surveying.

CV2201 –Basic Civil Engineering	
CO1	Understand the energy sources and working principle of power plants
CO2	Understand the working principle of IC Engines.
CO3	Understand the function of refrigeration and air conditioning system
CO4	. An ability to identify , formulate and solve engineering problems
CO5	apply the knowledge of power plants to diagnose and solve the Engineering problem.

CV2272 Survey Practical – I	
CO1	Students completing this course would have acquired practical knowledge.
CO2	Total Station and GPS and have adequate knowledge to carry out Triangulation
CO3	Astronomical surveying including general field marking for various engineering projects and Location of site etc.
CO4	acquired practical knowledge of basic survey instruments including Theodolite, Tacheometry.
CO5	Conduct survey and collect Field data

CV2271–Civil Engineering Practices	
CO1	On successful completion of this course, the student will be able to fabricate carpentry components and pipe connections including plumbing works.
CO2	use welding equipments to join the structures.
CO3	Carry out the basic machining operations
CO4	Make the models using sheet metal works
CO5	Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings

CV 2208 Strength of Materials II	
CO1	Students will be able to Determine the strain energy and compute the deflection of determinate beams, frames and trusses using energy principles.
CO2	Analyze propped cantilever, fixed beams and continuous beams using theorem of three moment equation for external loadings and support settlements.
CO3	find the load carrying capacity of columns and stresses induced in columns and cylinder
CO4	Determine principal stresses and planes for an element in three dimensional state of stress and study various theories of failure.
CO5	Determine the stresses due to Unsymmetrical bending of beams, locate the shear center, and find the stresses in curved beams.

CV2210 HYDRAULICS AND HYDRAULICS MACHINES	
CO1	Ability to classify the channel, flow and understand velocity distribution and critical depth, critical velocity concepts.
CO2	Ability to understand uniform flow, roughness coefficient, design an most economical section and characteristics of various flow.
CO3	Ability to understand gradually varied flow, flow profile and hydraulic jump
CO4	Ability to classify the turbines and design of turbines such as Pelton, Francis, Kaplan turbine
CO5	Ability to know centrifugal pump, reciprocating pump and fluid machines.

CV 2211 Transportation Engineering – II	
CO1	Understand the methods of route alignment and design elements in Railway Planning and Constructions.
CO2	Understand the Construction techniques and Maintenance of Track laying and Railway stations.
CO3	Analyze and design the elements for tunneling
CO4	Gain an insight on the planning and site selection of Airport Planning and design
CO5	Understand the various features in Harbours and Ports, their construction, coastal protection works and coastal Regulations to be adopted.

CV 2212 Soil Mechanics	
CO1	classify the soil and assess the engineering properties, based on index properties.
CO2	Understand the stress concepts in soils
CO3	Understand and identify the settlement in soils.
CO4	Determine the shear strength of soil
CO5	Analyze both finite and infinite slopes.

CV2209 – STRUCTURAL ANALYSIS – I

CO1	Ability to analyze indeterminate trusses and frames obtain internal loading
CO2	Ability to obtain the influence lines for statically determinate and indeterminate structures.
CO3	Ability to analyze arch structures.
CO4	Ability to analyze Cable and stiffening girder.
CO5	Ability to analyze the strain energy and beams curved in plan.

CV2277 CONSTRUCTION TECHNOLOGY LAB

CO1	To know about the English bond in brick masonry
CO2	To know about the English bond and Flemish bond in brick masonry
CO3	To know about the reinforcement in beams and columns
CO4	To know about the building marking in ground
CO5	To know about the framed structure marking in ground

CV 2278 Soil Engineering Lab

CO1	To develop skills to test the soils for their index properties.
CO2	To develop skills to test the soils for their engineering properties and to characterize the soil based on their properties.
CO3	determination of insitu density and compaction characteristics
CO4	Determination Grain size distribution – Sieve analysis
CO5	Determination Shrinkage limit and Differential free swell tests

CV 2210 Hydraulics & Hydraulic Mechanics

CO1	The students will be able to measure flow in pipes and determine frictional losses.
CO2	The students will be able to develop characteristics of pumps
CO3	The students will be able to measure Centrifugal pumps
CO4	The students will be able to measure Venturimeter / Orificemeter
CO5	The students will be able to measure turbines

CV 1215 IRRIGATION ENGINEERING

CO1	Recognize the importance of irrigation, knowledge of consumptive use of water and irrigation efficiency.
CO2	Knowledge of the basic principles and design parameter of irrigation methods.
CO3	Select the appropriate method to design an irrigation network based on specific condition.
CO4	Apply techniques for economic optimization of the irrigation network.
CO5	Determine the required data, apply adequate method and find efficient solution in regard of crop water needs.

CV1216- STRUCTURAL CONCRETE DESIGN – I	
CO1	To recognize the design philosophies of reinforced concrete structures
CO2	To apply the principles, procedures and current code requirements to analysis and design of RC Beams
CO3	To identify the behavior of reinforced concrete members in bond, anchorage, shear and torsion
CO4	To analyse and design reinforced concrete compression members
CO5	To analyse the load on the structure and design the footings.

CV1217 – Structural Analysis II	
CO1	Draw influence lines for statically determinate structures and calculate critical stress resultants.
CO2	Understand Muller Breslau principle and draw the influence lines for statically indeterminate beams.
CO3	Analyse of three hinged, two hinged and fixed arches.
CO4	Analyse the suspension bridges with stiffening girders
CO5	Understand the concept of Plastic analysis and the method of analyzing beams and rigid frames.

CV 1280 - Environmental Engineering	
CO1	The students completing the course will have an insight into the structure of drinking water supply systems, including water transport, treatment and distribution
CO2	The understanding of water quality criteria and standards, and their relation to public health
CO3	An ability to estimate sewage generation and design sewer system including sewage pumping stations
CO4	The required understanding on the characteristics and composition of sewage, self-purification of streams
CO5	Understand the standard methods for disposal of sewage.

CV 1280 -Environmental Engineering Laboratory	
CO1	Quantify the pollutant concentration in water and wastewater
CO2	Suggest the type of treatment required and amount of dosage required for the treatment
CO3	Examine the conditions for the growth of micro-organisms
CO4	Understand the impact of water and waste water treatment on people
CO5	Statistically analyze and interpret laboratory result

CV1279 IRRIGATION ENGINEERING DESIGN AND DRAWING	
CO1	Understand and design tank irrigation structures
CO2	Design the impounding structures
CO3	Design the canal transmission structures
CO4	Design and draw the canal regulation structures
CO5	Understand about irrigation water management and draw the structures

CV12B6 Ground Water Engineering	
CO1	Understand the nature of groundwater and its role in the water cycle.
CO2	Understand the concepts of movement of ground water beneath the earth
CO3	Model regional groundwater flow and design water wells
CO4	Evaluate groundwater resources using geophysical methods
CO5	Estimate water quality parameters

CV 12C3 Traffic Engineering and Management	
CO1	Analyze traffic problems and plan for traffic systems various uses
CO2	Design Channels, Intersections, signals and parking arrangements
CO3	Develop Traffic management Systems
CO4	Design traffic signals system
CO5	Determine the capacity of Highways

CV1222 – REPAIR AND REHABILITATION OF STRUCTURES	
CO1	To gain the knowledge on quality of concrete, durability aspects, causes of deterioration.
CO2	To gain the knowledge on assessment of distressed structures.
CO3	Able to know about special concrete
CO4	To obtain more knowledge about corrosion protection methods
CO5	To gain the knowledge on repairing methodology of structures and demolition procedure.

CV12P5- PROJECT WORK	
CO1	Demonstrate a sound technical knowledge of their selected project topic.
CO2	Undertake problem identification, formulation and solution.
CO3	Design engineering solutions to complex problems utilising a systems approach.
CO4	Conduct an engineering project
CO5	Demonstrate the knowledge, skills and attitudes of a professional engineer.