



Karnatak Law Society's
Vishwanathrao Deshpande Institute of Technology

Approved by AICTE, New Delhi, Affiliated to VTU, Belagavi
Recognized under Section 2(f) of the UGC Act, 1956
Udyog Vidyanagar, Dandeli Road, HALIYAL - 581329 District- Uttara Kannada
Phone: 08284-220861, 220334, 221409; Fax: 08284-220813;
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DEPARTMENT OF CIVIL ENGINEERING

CO Statement 2016-20

CO's	CO Statement
15CV101	Engineering Maths-I
CO1	To apply the knowledge of calculus to solve problems related to polar curves and its applications in determining the bentness of a curve.
CO2	To use partial derivatives to calculate rates of change of multivariate functions.
CO3	To analyze position, velocity, and acceleration in two or three dimensions using the calculus of vector valued functions.
CO4	To recognize and solve first-order ordinary differential equations, Newton's law of cooling.
CO5	To use matrices techniques for solving systems of linear equations in the different areas of Linear Algebra
15CV102	Engineering Physics
CO1	Learn and understand intricacies of matter and energy which is essential to explore the role of subatomic particles in understanding properties of matter at macro, micro and nano level.
CO2	Exploring the inadequacies of classical theory and to apply the principles of quantum mechanics which suites real time applications.
CO3	Learn the niceties of technologically important material such as conductor, semiconductor and superconductor, their potential properties in understanding there use in engineering applications.
CO4	Understand the physics of lasers and optical fibers and to appreciate their role in modern instruments.
CO5	Understand the basics of crystal structures and apply to engineering field.
CO6	Recognize the significance of shock waves and its applications in aerodynamics and aerospace engineering.
15CV103	Elements of Civil Engg. & Mechanics
CO1	Know the basics of Civil Engineering, its scope of study, knowledge about roads,bridges and dams
CO2	Comprehend the action of Forces, Moments and other loads on systems of rigid bodies.
CO3	Compute the reactive forces and the effects that develop as a result of the external loads
CO4	Locate the Centroid and compute the Moment of Inertia of regular cross sections
CO5	Express the relationship between the motion of bodies
15CV104	Elements of Mechanical Engineering
CO1	students shall demonstrate knowledge associated with various energy sources, formation of steam
CO2	student shall demonstrate knowledge associated with prime movers such as turbines and IC engines
CO3	students shall demonstrate knowledge associated with various metal removing process and robotics automation
CO4	students shall understanding of application and usage of various engineering materials
CO5	students shall demonstrate knowledge associated with refrigeration and air conditioning systems
15CV105	Basic Electrical Engineering
CO1	Students will be able to comprehend the basic concept of AC and DC circuit
CO2	Explain the working principle and construction of AC and DC machines
CO3	Explain the working principle and construction of transformer
CO4	Understand the electrical wiring concepts, earthing, domestic protection devices and electric shock
15CV106	Workshop Practice
CO1	The Metal removal process by fitting practice and preparation of joints using appropriate fitting tools
CO2	Preparation of welded joints
CO3	Development of surfaces and forming models by soldering job.
15CV107	Engg. Physics Lab.
CO1	To recognize the importance of light by exploring its interaction with matter and in realizing its characteristic properties.
CO2	Understanding of mechanical properties of the material by the application of stress
CO3	Appreciating the significance of elementary electric circuits in the functioning of various electric /electronic devices and gaining understanding of physics of the materials.
CO4	Design and implementation of electronic circuits to gain better understanding of physics of semiconductor devices.
CO5	Appreciating the role of Quantum mechanics in exploring the electrical properties of the materials.


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15CV109	Engineering Maths-II
CO1	To solve differential equations of electrical circuits, forced oscillation of mass spring and elementary heat transfer
CO2	To solve partial differential equations fluid mechanics, electromagnetic theory and heat transfer
CO3	To evaluate double and triple integrals to find area, volume, mass and moment of inertia of plane and solid region.
CO4	To use curl and divergence of a vector valued functions in various applications of electricity, magnetism and fluid flows
CO5	To use Laplace transforms to determine general or complete solutions to linear ODE
15CV110	Engineering Chemistry
CO1	Knowledge on the types of electrodes, electrochemical and concentration cells, classical and modern batteries and fuel cells
CO2	Knowledge on the causes and effects of corrosion of metals and control of corrosion. Modification of the surface properties of metals to develop resistance to corrosion, wear, tear, impact, etc. by electroplating and electroless plating.
CO3	Knowledge on the importance of energy conservation in the context of energy crisis, fuel properties and propose some amicable alternatives for energy which are also sustainable.
CO4	Knowledge on the replacement of conventional materials by polymers for various applications
CO5	Knowledge on the boiler troubles, sewage treatment and desalination of sea water and overviewing of synthesis, properties and applications of nanomaterials.
15CV111	Programming in C & Data Structures
CO1	Achieve knowledge of design and development of problem solving skills.
CO2	Understand the basic principles of programming in C language.
CO3	Design and develop modular programming skills.
CO4	Effective utilization of memory using pointer technology,
CO5	Understand the basic concepts of preprocessor directives, data structures & file operations
15CV112	Computer Aided Engineering Drawing
CO1	Students will be able to demonstrate the usage of CAD software.
CO2	Students will be able to visualize and draw projection of points and lines
CO3	Students will be able to visualize and draw Orthographic projections, Sections of solids and Isometric views of solids
CO4	Students are evaluated for their ability in applying various concepts to solve practical problems related to engineering drawing
15CV113	Basic Electronics
CO1	Understand the characteristics of PN Junction diode
CO2	Understand the biasing and applications of BJT
CO3	Understand and apply the various digital Boolean Logic to build the combinational logics circuit
CO4	Understand the applications of flip flop and microcontroller
CO5	To study the various types of modulation schemes and transducer applications
15CV114	Computer Programming Lab.
CO1	Gaining knowledge of various parts of computers
CO2	Able to draw flowchart and write algorithms
CO3	Able design and development of C problem solving skills
CO4	Able design and develop module programming skills
CO5	Able to trace and debug the program
15CV115	Engineering Chemistry Lab.
CO1	Students will have the knowledge in handling different types of instruments for analysis of materials using small quantities of materials involved for quick and accurate results
CO2	Students will have the knowledge in carrying out different types of titrations for estimation of concerned in materials using comparatively more quantities of materials involved for good results




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15CV201 ENGINEERING MATHMATTICS III (15MAT31)

COURSE OUTCOMES	
CO1	Know the use of periodic signals and fourier series to analyse circuits and system communications.
CO2	Explain the general linear system theory for continuous-time signals and digital signal processing using the fourier transform and z-transform
CO3	Employ appropriate numerical methods to solve algebraic and transcendental equations
CO4	Determine the values of unknown by various numerical methods. evaluate the definite integrals by various numerical methods.
CO5	Apply green's theorem, divergence theorem and stokes' theorem in various applications in the field of electro-magnetic and gravitational fields and fluid flow problems & determine the extremals of functionals and solve the simple problems of the calculus of variations.

15CV202 STRENGTH OF MATERIALS (15CV32)

COURSE OUTCOMES	
CO1	To evaluate and understand the strength of various structural elements internal forces such as compression,
CO2	To evaluate the behavior and strength of structural elements under the action of compound stresses and thus understand failure concepts.
CO3	To understand the basic concept of analysis and design of structural elements such as columns and struts.

15CV203 Fluid Mechanics (15CV33)

COURSE OUTCOMES	
CO1	Possess a sound knowledge of fundamental properties of fluids and fluid continuum
CO2	Compute and solve problems on hydrostatics, including practical applications
CO3	Apply principles of mathematics to represent kinematic concepts related to fluid flow
CO4	Apply fundamental laws of fluid mechanics and the Bernoulli's principle for practical applications
CO5	Compute the discharge through pipes and over notches and weirs

15CV204 BASIC SURVEYING (15CV34)

COURSE OUTCOMES	
CO1	Posses a sound knowledge of fundamental principles Geodetics
CO2	Measurement of vertical and horizontal plane, linear and angular dimensions to arrive at solutions to basic surveying problems
CO3	Capture geodetic data to process and perform analysis for survey problems
CO4	Analyse the obtained spatial data and compute areas and volumes. Represent 3D data on plane figures as contours

15CV205 Engineering Geology (15CV35)

COURSE OUTCOMES	
CO1	Students will able to apply the knowledge of geology and its role in civil engineering.
CO2	Understanding and applying knowledge of civil engineering students will effectively utilize earth's material describe such as mineral, rocks and water in civil engineering practice calculate.
CO3	Explain analyzing the calculate natural disaster and mitigation and evaluate.
CO4	Understanding assess various structural features and applying geology tools in calculate ground water exploration.
CO5	Analyzing natural resource calculate estimation and solving evaluate civil engineering problems.

15CV206 Building Materials and construction(15CV36)

COURSE OUTCOMES	
CO1	Select suitable materials for buildings and adopt suitable construction techniques.
CO2	Adopt suitable repair and maintenance work to enhance durability of buildings.

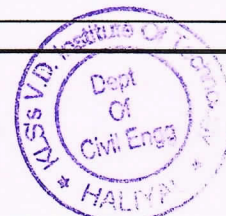
15CV207 MATERIALS TESTING LABORATORY (15CVL37)

COURSE OUTCOMES	
CO1	Reproduce the basic knowledge of mathematics and engineering in finding the strength in tension, compression, shear and torsion.
CO2	Identify, formulate and solve engineering problems of structural elements subjected to flexure
CO3	Evaluate the impact of engineering solutions on the society and also will be aware of contemporary issues regarding failure of structures due to unsuitable materials.

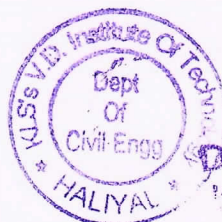
15CV208 BASIC SURVEYING PRACTICE (15CVL38)


COURSE OUTCOMES	
CO1	Apply the basic principles of engineering surveying and for linear and angular measurements.
CO2	Comprehend effectively field procedures required for a professional surveyor.
CO3	Use techniques, skills and conventional surveying instruments necessary for engineering practice.

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15CV209 ENGINEERING MATHEMATICS IV (15MAT41)	
	COURSE OUTCOMES
CO1	To solve higher order differential equation by various numerical techniques
CO2	To solve the ordinary and partial differential equation by using special functions.
CO3	To determine the analyticity, potential fields residues and poles of complex potentials in field theory
CO4	To determine the probability and distribution of the given statistical data
CO5	To understand statistical inference based on sampling distribution
15CV210 Analysis of Determinate Structures (15CV42)	
	COURSE OUTCOMES
CO1	Evaluate the forces in determinate trusses by method of joints and sections.
CO2	Evaluate the deflection of cantilever, simply supported and overhanging beams by different methods
CO3	Understand the energy principles and energy theorems and its applications to determine the deflections of trusses and bent frames.
CO4	Determine the stress resultants in arches and cables.
CO5	Understand the concept of influence lines and construct the ILD diagram for the moving loads.
15CV211 Applied Hydraulics (15CV43)	
	COURSE OUTCOMES
CO1	Apply dimensional analysis to develop mathematical modeling and compute the parametric values in prototype by analyzing the corresponding model parameters
CO2	Design the open channels of various cross sections including economical channel sections
CO3	Apply Energy concepts to flow in open channel sections, Calculate Energy dissipation, Compute water surface profiles at different conditions
CO4	Design turbines for the given data, and to know their operation characteristics under different operating conditions
15CV212 Concrete Technology (15CV44)	
	COURSE OUTCOMES
CO1	Relate material characteristics and their influence on microstructure of concrete
CO2	Distinguish concrete behaviour based on its fresh and hardened properties
CO3	Illustrate proportioning of different types of concrete mixes for required fresh and hardened properties using professional codes
15CV213 BASIC Geotechnical Engineering (15CV45)	
	COURSE OUTCOMES
CO1	Will acquire an understanding of the procedures to determine index properties of any type of soil, classify the soil based on its index properties
CO2	Will be able to determine compaction characteristics of soil and apply that knowledge to assess field compaction procedures
CO3	Will be able to determine permeability property of soils and acquires conceptual knowledge about stresses due to seepage and effective stress; Also acquire ability to estimate seepage losses across hydraulic structure
CO4	Will be able to estimate shear strength parameters of different types of soils using the data of different shear tests and comprehend Mohr-Coulomb failure theory.
CO5	Ability to solve practical problems related to estimation of consolidation settlement of soil deposits also time required for the same.
15CV214 ADVANCE SURVEYING (15CV46)	
	COURSE OUTCOMES
CO1	Apply geometric principles to arrive at solutions to surveying problems
CO2	Analyze spatial data using appropriate computational and analytical techniques.
CO3	Design proper types of curves for deviating type of alignments.
CO4	Use the concepts of advanced data capturing methods necessary for engineering practice
15CV215 FM and Hydraulics Lab (15CVL47)	
	COURSE OUTCOMES
CO1	Calibrate flow measuring devices
CO2	Determine the force exerted by jet of water on vanes
CO3	Measure discharge and head losses in pipes
CO4	Understand the fluid flow pattern
15CV216 Engineering Geology (15CVL48)	
	COURSE OUTCOMES
CO1	To identify the minerals and rocks based on their inherent properties and uses in civil engineering
CO2	To interpret the geological maps related to civil engineering projects.
CO3	To understand subsurface geological conditions through a geophysical techniques and watershed management.




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15CVPO Statement 2016-20

15CV301 Design Of RC Structural Elements (15CV51)

COURSE OUTCOMES	
CO1	To list and explain the design philosophy and principles
CO2	To describe and analyze engineering problems of rc elements subjected to flexure, shear and torsion
CO3	To explain and analyze rc structural elements such as slabs, columns and footings

15CV302 ANALYSIS OF INDETERMINATE STRUCTURES (15CV52)

COURSE OUTCOMES	
CO1	Calculate the moment in indeterminate beams and frames having variable moment of inertia and subsidence using slope deflection method
CO2	Calculate the moment in indeterminate beams and frames of no sway and sway using moment distribution method.
CO3	Derive the bending moment diagram for beams and frames by Kani's method.
CO4	Determine the bending moment diagram for beams and frames using flexibility & stiffness matrix method

15CV303 Applied Geotechnical Engineering (15CV53)

COURSE OUTCOMES	
CO1	Ability to plan and execute geotechnical site investigation program for different civil engineering projects
CO2	Understanding of stress distribution and resulting settlement beneath the loaded footings on sand and clayey soils
CO3	Ability to estimate factor of safety against failure of slopes and to compute lateral pressure distribution behind earth retaining structures
CO4	Ability to determine bearing capacity of soil and achieve proficiency in proportioning shallow isolated and combined footings for uniform bearing pressure
CO5	Capable of estimating load carrying capacity of single and group of piles

15CV304 CAD BPD (15CV54)

COURSE OUTCOMES	
CO1	To explain and gain broad understanding of planning and apply it in the designing a building
CO2	To plan and design a residential or public building as per the requirements
CO3	To prepare, read, interpret the building component drawings in a professional setup

15CV305 AIR POLLUTION AND ITS CONTROL (15CV551)

COURSE OUTCOMES	
CO1	Identify the major sources of air pollution and understand their effects on health and environment.
CO2	Evaluate the dispersion of air pollutants in the atmosphere and to develop air quality models.
CO3	Ascertain and evaluate sampling techniques for atmospheric and stack pollutants.
CO4	Choose and design control techniques for particulate and gaseous emissions.

15CV304 Remote Sensing and GIS (15CV563)

COURSE OUTCOMES	
CO1	Collect data and delineate various elements from the satellite imagery using their spectral signature.
CO2	Analyze different features of ground information to create raster or vector data.
CO3	Perform digital classification and create different thematic maps for solving specific problems
CO4	Make decision based on the gis analysis on thematic maps

15CV305 Geotechnical Engineering Lab (15CVL57)

COURSE OUTCOMES	
CO1	Physical and index properties of the soil
CO2	Classify based on index properties and field identification
CO3	To determine OMC and MDD, plan and assess field compaction program
CO4	Shear strength and consolidation parameters to assess strength and deformation characteristics

15CV306 CONCRETE AND HIGHWAY LAB (15CVL58)

COURSE OUTCOMES	
CO1	Conduct appropriate laboratory experiments and interpret the results
CO2	Determine the quality and suitability of Building Materials.
CO3	Design appropriate concrete mix



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15CV307 CONSTRUCTION MANAGEMENT (15CV61)	
	COURSE OUTCOMES
CO1	Express the meaning, scope, objectives, Characteristics, functional fields, and different levels of management.
CO2	To understand the concept of planning, scheduling, cost and quantity control, safety during construction, organization and use of project information necessary for construction project.
CO3	To use the guidelines given by project planning commission for the feasibility study of different business sector.
CO4	To develop entrepreneurial qualities and incorporate the same in his/her organization.
15CV308 DESIGN OF STEEL STRUCTURAL ELEMENTS (15CV62)	
	COURSE OUTCOMES
CO1	Possess a knowledge of Steel Structures Advantages and Disadvantages of Steel structures, steel code provisions and plastic behaviour of structural steel
CO2	Understand the Concept of Bolted and Welded connections.
CO3	Understand the Concept of Design of compression members, built-up columns and columns splices.
CO4	Understand the Concept of Design of tension members, simple slab base and gusseted base.
CO5	Understand the Concept of Design of laterally supported and un-supported steel beams.
15CV309 HIGHWAY ENGINEERING (15CV63)	
	COURSE OUTCOMES
CO1	Acquire the capability of proposing a new alignment or re-alignment of existing roads, conduct necessary field investigation for generation of required data.
CO2	Evaluate the engineering properties of the materials and suggest the suitability of the same for pavement construction.
CO3	Design road geometrics, structural components of pavement and drainage.
CO4	Evaluate the highway economics by few select methods and also will have a basic knowledge of various highway financing concepts."
15CV310 WATER SUPPLY AND TREATMENT (15CV64)	
	COURSE OUTCOMES
CO1	Analyse the variation of water demand and to estimate water requirement for a community.
CO2	evaluate the sources and conveyance systems for raw and treated water.
CO3	Study drinking water quality standards and to illustrate qualitative analysis of water.
CO4	Design physical, chemical and biological treatment methods to ensure safe and potable water supply.
15CV311 SOLID WASTE MANAGEMENT (15CV651)	
	COURSE OUTCOMES
CO1	Student will be able to understand the sources and classification of solid wastes along with functional elements of solid waste management.
CO2	Student will be able to understand the different collection systems like hcs and scs with their distinguishes.
CO3	Students will be able to describe about the transportation of solid wastes and the optimum routes for collection of solid wastes.
CO4	Students will be able to understand the various processing techniques and judging the method suitability depending on characteristics of solid wastes.
CO5	Students will be able to understand and describe about the collection , transportation , processing, treatment and disposal of construction wastes, e- wastes, biomedical wastes, and other hazardous wastes and recycling of wastes.
15CV312 MASONRY STRUCTURE (15CV653)	
	COURSE OUTCOMES
CO1	Solve the problems of Environmental issues concerned to building materials and cost effective building technologies
CO2	Suggest appropriate type of masonry unit and mortar for civil engineering constructions; also they are able to Design Structural Masonry Elements under Axial Compression.
CO3	Analyse different alternative building materials which will be suitable for specific climate and in an environmentally sustainable manner. Also capable of suggesting suitable agro and industrial wastes as a building material
CO4	Recommend various types of alternative building materials and technologies and design a energy efficient building by considering local climatic condition and building material. Program
15CV313 WATER RESOURCE MANAGEMENT (15CV661)	
	COURSE OUTCOMES
CO1	Assess the potential of groundwater and surface water resources
CO2	Address the issues related to planning and management of water resources.
CO3	Know how to implement iwrm in different regions.
CO4	Understand the legal issues of water policy.
15CV314 SOFTWARE APPLICATION LAB (15CVL67)	
	COURSE OUTCOMES
CO1	To Use and understand industry standard software in a professional set up.
CO2	To understand the elements of finite element modeling, specification of loads and boundary condition, performing analysis and interpretation of results for final design
CO3	Develop customized automation tools



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15CV401 ENVIRONMENT ENGINEERING (15CV71)

COURSE OUTCOMES

- CO1 Acquires capability to design sewer and sewerage treatment plant.
- CO2 Evaluate degree of treatment and type of treatment for disposal, reuse and recycle.
- CO3 Identify waste streams and design the industrial waste water treatment plant.
- CO4 Manage sewage and industrial effluent issues.

15CV402 Design of RCC and Steel Structures 15CV72

COURSE OUTCOMES

- CO1 Students will acquire the basic knowledge in design of RCC and Steel Structures
- CO2 Students will have the ability to follow design procedures as per codal provisions and skills to arrive at structurally safe of RCC structures
- CO3 Students will have the ability to follow design procedures as per codal provisions and skills to arrive at structurally safe of Steel members (trusses) and Girders

15CV403 Hydrology and Irrigation Engineering 15CV73

COURSE OUTCOMES

- CO1 Understand the importance of hydrology and its components.
- CO2 Measure precipitation and analyze the data and analyze the losses in precipitation.
- CO3 Estimate runoff and develop unit hydrographs.
- CO4 Find the quantity of irrigation water and frequency of irrigation for various crops.
- CO5 Find the canal capacity, design the canal and compute the reservoir capacity.

15CV404 Ground Water & Hydraulics 15CV742

COURSE OUTCOMES

- CO1 Find the characteristics of aquifers.
- CO2 Estimate the quantity of ground water by various methods.
- CO3 Locate the zones of ground water resources.
- CO4 Select particular type of well and augment the ground water storage.

15CV405 Urban Transportation and Planning 15CV751

COURSE OUTCOMES

- CO1 Design, conduct and administer surveys to provide the data required for transportation planning
- CO2 Supervise the process of data collection about travel behavior and analyze the data for use in transport planning.
- CO3 Develop and calibrate modal split, trip generation rates for specific types of land use developments
- CO4 Adopt the steps that are necessary to complete a long-term transportation plan.

15CV406 ENVIRONMENTAL ENGINEERING LAB(15CVL76)

COURSE OUTCOMES

- CO1 Acquire capability to conduct experiments and estimate the concentration of different parameters
- CO2 Compare the result with standards and discuss based on the purpose of analysis
- CO3 Determine type of treatment, degree of treatment for water and waste water.
- CO4 Identify the parameter to be analyzed for the student project work in environmental stream.

15CV407 DRAWING OF RCC AND STEEL STRUCTURES (15CVL77)

COURSE OUTCOMES

- CO1 students will be able to prepare detailed working drawings of RCC and Steel structures



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15CV408 QUANTITY SURVEYING & CONTRACTS MNGT (15CV81)	
	COURSE OUTCOMES
CO1	Prepare detailed and abstract estimates for roads and building.
CO2	Prepare valuation reports of buildings.
CO3	Interpret Contract documents of domestic and international construction works
15CV409 DESIGN OF PSC STRUCTURES (15CV82)	
	COURSE OUTCOMES
CO1	Students are able to understand the philosophy of prestressed concrete
CO2	Students are able to understand the Materials used in prestressed concrete
CO3	This course will enable students to learn Design of Pre Stressed Concrete Elements
15CV410 EARTHQUAKE RESISTANT STRUCTURES (15CV831)	
	COURSE OUTCOMES
CO1	Acquire basic knowledge of engineering seismology and to develop Response spectra for a given earthquake.
CO2	Analyze multi-storied structures modeled as shear frames and determine lateral force distribution due to earthquake input motion using IS-1893 procedures.
CO3	Comprehend planning and design requirements of earthquake resistant features of RCC and masonry structures through exposure to different IS- codes of practices.
15CV411 PAVEMENT DESIGN (15CV833)	
	COURSE OUTCOMES
CO1	Gain knowledge about the process of collecting data required for design, factors affecting pavement design, and maintenance of pavement
CO2	excel in the path of analysis of stress, strain and deflection in pavement
CO3	Understand design concepts of flexible pavement by various methods (CBR, IRC 37-2001, McLeod's, Kansas) and also the same of rigid pavement by IRC 58- 2002
CO4	Understand the various causes leading to failure of pavement and remedies for the same.
CO5	Develop skills to perform functional and structural evaluation of pavement by suitable methods.
15CV412 Internship/ Professional Practice (15CV84)	
	COURSE OUTCOMES
CO1	Enable students to get the field exposure and experience
15CV413 PROJECT WORK PHASE II (15CV85)	
	COURSE OUTCOMES
CO1	To develop interactive, communication, organization, time management, resource management and presentation skills and to inspire independent and team working and modern tool usage.
CO2	To adhere to punctuality, setting and meeting deadlines and to instill responsibilities to oneself and others.
CO3	To train students to present the topic of project work in a seminar without any fear, face audience confidently, enhance communication skill, involve in group discussion to present and exchange ideas.
15CV414 Seminar on current trends in Engineering and Technology (15CV86)	
	COURSE OUTCOMES
CO1	Conduct literature survey in the domain area to find appropriate topic. Prepare the synopsis report with own sentences in a standard format.
CO2	Communicate effectively to answer the queries and involve in debate/discussion.
CO3	The participants shall take part in discussion to foster friendly and stimulating environment in which the students are motivated to reach high standards and become self-confident.

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