



Nagar Yuwak Shikshan Sanstha's

# Yeshwantrao Chavan College of Engineering

(An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

Hingna Road, Wanadongri, Nagpur - 441 110

NAAC Accredited with 'A' Grade

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1.2.1: List of new courses introduced by the HEI for year 2020-21

Link of MoM of relevant Board of Studies & SoE & Syllabus of newly Introduced courses in 2020-21

Link :

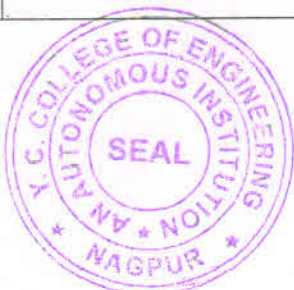



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**List of New Courses**  
**Introduced for year 2020-21**

1.2.1 Percentage of new courses introduced of the total number of courses across all programmes offered during 2020-21

Sr. No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
1	PE-I : Advance Surveying	CV2311	Total Station Surveying
2	PE-I : Advanced Concrete Technology	CV2319	Review of properties of cement, their physical and chemical properties, special purpose cements, Rheological behaviour of concrete, Permeability and Durability of concrete, Concrete mix design, Quality management in concrete construction, Special concrete
3	PE-I : Geographical Information Systems	CV2327	Introduction - concept of GIS ,data formats for GIS,Data acquisition process,Coordinate systems, Digitization- Methods of digitization, Digital elevation models, Extraction of topographic parameters: slope, aspect, delineation of watershed and drainage network - DEM applications. ,Operations in GIS ,Application of GIS to various natural resources mapping and monitoring and other civil engineering related problems
4	PE-I Hazardous Waste Management	CV 3979	Solidification/stabilization and innovation techniques. waste Inventorization procedures
5	PE-II : Energy Conversion and Environment	CV3983	Energy Conversion Methods: Thermal, hydro, nuclear, solar, wind, tidal etc. their principles and application, Introduction to Microbial Fuel cell, Gas generations and collection in landfills, Measurements, and Control.
6	PE-I : Computer Application In Civil Engineering	CV2313 -	Introduction : C-Fundamentals, Control Statements, Advance Topics, Fundamental of Numerical Methods, Computer program based on Transportation Engineering, Geotechnical Engineering, Hydraulic Engineering, Irrigation Engineering, Surveying, Estimating & costing, Use of excel in structural design, estimating & costing
7	PE-V : Structural Engineering Practices	CV2440 -	Structural behavior, Design basis, Design Intent, Standards, Manuals, Methods, material testing, Material Properties, Mix design, Quality Control, Different Tests & checks carried out at site, Preparation of the structural framing plan of the building, beam locations, column positions, column orientations, shear walls locations. Introduction of SP16, IS:1893, IS:13920, Importance, determination & calculation of different loads ,Three dimensional Modeling of the Structure, Static & Dynamic Analysis of structure, Design of structure, Understanding & Interpretation of the results, Deformation control, Foundations – Importance of soil exploration, Construction Methods, Reinforcement detailing of Structures as per SP24
8	EARTHMOVING EQUIPMENTS	ME 2435	Students will be able to: (I) To understand and apply fluid power laws and principles [1,6] (II) Students will be able to understand the basic fluid power hardware system components. [PO-1,2,3,6, PSO- 1,2] (III) Students will be able to interpret and draw hydraulics and electronic system circuits. [ PO-1, 11; PSO-1] (IV) Students will be able to design, analyze, use, maintain, carryout troubleshooting, and establish safety procedures of Earthmoving equipments. [PO-1,2,3,11; PSO-1]
9	EARTHMOVING EQUIPMENTS LAB	ME 2436	Students will be able to: (I) To understand and apply fluid power laws and principles [1,6] (II) Students will be able to understand the basic fluid power hardware system components. [PO-1,2,3,6, PSO- 1,2] (III) Students will be able to interpret and draw hydraulics and electronic system circuits. [ PO-1, 11; PSO-1] (IV) Students will be able to design, analyze, use, maintain, carryout troubleshooting, and establish safety procedures of Earthmoving equipments. [PO-1,2,3,11; PSO-1]
10	Lab: Substation Design	EL2355	Study of sub-station, its line diagram, panels and equipments
11	PE III: Electrical Energy Audit and Safety Analysis	EL2423	Study of Energy Monitoring, Targeting and Co-Generation system
12	PEIII: FACTS Devices	EL2422	Study of Static shunt and series compensators
13	PEIII: Advanced Control System	EL2424	Design of PID Controller and types of non-linearities
14	PEIII: Artificial Intelligence Based System	EL2425	Fuzzy control and Neural Network
15	PEIV: Advanced Electrical Drives	EL2431	Induction motor, synchronous motor and special motor drives
16	PEIV: Fundamentals of Smart Grid	EL2432	Smart Grid communication and design
17	PEIV: Computer Methods in Power System	EL2433	Short circuit and stability studies
18	PEIV: EHVAC-HVDC Transmission	EL2434	HVDC Power transmission, HVDC Converter, HVDC Circuit breakers
19	Mini Project	EL2409	Mini project is a group activity
20	PE III : Data Compression & Encryption	ET2412	DCT, JPEG, JPEG – LS, Differential Lossless Compression, DPCM, JPEG – 2000 Standards ,Email, PGP, S/MIME, Intrusion Detection System Web Security Considerations, SSL Architecture, SSL Message Formats, TLS, Secure Electronic Transactions Kerberos, X.509 Authentication Service, Public Key Infrastructure Security Goals, Cryptographic Attacks, Techniques Symmetric Key: Substitution Cipher, Transposition Cipher , Stream and Block Cipher DES, AES
21	PE III : Analog VLSI	ET2413	Basic concept, common source, common source stage with resistive load, CS stage with source degeneration, source follower, common gate, Performance parameters, one stage op amp, Gain boosting, Noise in op amp, the Oversampling ADC, The First-Order Sigma Delta Modulator , The Higher Order Sigma Delta Modulators




  
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1.2.1 Percentage of new courses introduced of the total number of courses across all programmes offered during 2020-21

Sr. No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
22	PE III : Error Correcting Codes	ET2414	Coding for reliable digital transmission and storage. Groups, Rings, Vector Spaces, Galois Fields, Polynomial rings The Digital Communication Channel, Introduction To Block Codes, Single Parity Check Codes, Product Codes, Repetition Codes, Hamming Codes, Minimum Distance Of Block Codes, Soft – Decision Decoding, Automatic Repeat Request Schemes ,Linear Algebra, Galois Field, Definition and Construction of Binary BCH Codes, Error Syndromes In Finite Fields, Decoding SEC and DEC, Reed- Solomen Codes, LDPC codes, Convolution, Encoding Convolutional Codes, Generator Matrices For Convolutional Codes, Generator Polynomials For Convolutional Codes, Graphical Representation Of Convolutional Codes, The Viterbi Decoder. Concept Of Interleaver And Puncture Coding, Applications of error control coding
23	PE IV : Switching Theory	ET2423	Threshold logic for nanotechnologies, threshold elements, synthesis of threshold networks: Unate function, Identification & Realization of threshold function, Synchronous sequential circuits and iterative networks, memory elements and their excitation functions, synthesis of synchronous sequential circuits, Moore and Mealy machines, finite state machine flow charts, tables, State-identification experiments and testing of sequential circuits, Experiments, Homing experiments, Distinguishing experiments, Machine identification, Checking experiments, Built-in self-test (BIST).
24	PE IV : Topics in Machine Learning	ET2424	Supervised and Unsupervised Learning, Regression, KNN, SVM, Decision tree, Naive Bayes Classifiers, Random Forest, building blocks of CNN,
25	PE V : Wireless Sensor Networks	ET2434	Network architecture-optimization goal and figure of merit-design principles for WSN, service interface of WSN, Gateway concept challenges of WSN, comparison with other network. WSN Applications - Home Control - Building Automation - Industrial Automation - Medical Applications - Reconfigurable Sensor Networks - Highway Monitoring - Military Applications - Civil and Environmental Engineering Applications - Wildfire Instrumentation - Habitat Monitoring - Nanoscopic Sensor Applications – Case Study: IEEE 802.15.4 LR-WPANs Standard - Target detection and tracking
26	PE VI : Digital Image Analysis for Remote Sensing	ET2442	Contrast enhancement – band rationing – principal component analysis – vegetation transforms – texture transforms, Spatial Transforms: convolution concept - low and high pass filtering – spatial transformations – Fourier transform – wavelet transforms, Maximum Likelihood and Bayesian classification, Non-parametric & parametric classification
27	PE VI : PLCs & SCADA	ET2446	I/O Installation, Wiring, and Precautions, PLC Start-Up and Checking Procedures, SCADA Programming Graphics Building & Simulation, Tag types & Management, Tools, Programming techniques, Alarms & Trends Configuration, Screen Navigation, Properties, Scripts, Security.
28	OE II : PLCs and SCADA	ET2325/ET240	Introduction, Processors, Processor Scan, The System Power Supply, Programming Devices, Memory Overview, Memory Types, Memory Structure and Capacity. Configuring the PLC Memory—I/O Addressing, Ladder Diagram Format, Ladder Relay Instructions, Ladder Relay Programming, IEC 1131-3 Programming Languages – FBD/ST/IL/SFC, Control Task, NO-NC & coil based instructions(Relay based Instructions), Timers, Counters, Compare, Mathematics, Jump and Subroutines, Scaling (Analog Instructions). Graphics Building & Simulation, Tag types & Management, Tools, Programming techniques, Alarms & Trends Configuration, Screen Navigation, Properties, Scripts, Security.
29	PE II : Internet of Things (IoT)	ET2381	Physical Design of IOT, Logical Design of IOT, IOT Enabling Technologies., Network Function Virtualization, Need for IOT Systems Management, Simple Network Management Protocol, Limitations of SNMP, Network Operator Requirements, NETCONF, YANG, IOT Systems management with NETCONF-YANG Python Modules, Packages, File Handling, Date/ Time Operations, Classes, Python Packages, Iot Device- Raspberry Pi, Programming Raspberry pi with Python, IoT physical servers and cloud offerings, Introduction to cloud storage models and communication APIs, Python web application frame work-Django, Amazon web service for IoT
30	PE II : Lab. Internet of Things (IoT)	ET2382	Expt based on Interfacing LED with Raspberry pi, Expt based on Interfacing DHT11 sensor with Raspberry pi., Expt based on Preparing complete IoT system using AWS server
31	Bioinformatics	CT2440	Skill Development: Introduction to Computational algorithms, Computational analysis of next ge
32	Introduction to Spanish Language	GE-2369	Employability Course
33	Introduction to French Language	GE-2370	Employability Course
34	Corrosion Engineering	GE-2368	New Course Open Elective



  
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