



**Hindustan College of Science and Technology
Farah-Mathura
(AICTE approved & affiliated to AKTU)**

NAAC CRITERIA-2

Metric No.- 2.6.1 (Q_iM)

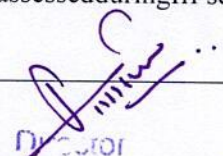
**Programme Outcomes (POs) and Course
Outcomes (COs) for Chemical Engineering
(2021-25)**

CHEMICAL ENGINEERING
B. TECH II YEAR
CURRICULUM STRUCTURE
B.TECH(CHEMICAL ENGINEERING)

SEMESTER- III

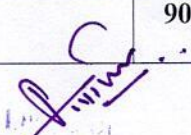
Sl. No.	Subject Codes	Subject	Periods			EvaluationScheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KOE031-38/ KAS302	Engineering Science Course/Maths IV	3	1	0	30	20	50		100		150	4
2	KAS301/ KVE301	Technical Communication/Universal Human values	2	1	0	30	20	50		100		150	3
			3	0	0								
3	KCH301	Material and Energy Balance	3	1	0	30	20	50		100		150	4
4	KCH302	Chemical Engineering Fluid Mechanics	3	1	0	30	20	50		100		150	4
5	KCH303	Heat Transfer Operations	3	0	0	30	20	50		100		150	3
6	KCH351	Chemical Engineering Fluid Mechanics Lab	0	0	2				25		25	50	1
7	KCH352	Heat Transfer Operations Lab	0	0	2				25		25	50	1
8	KCH353	Soft Computing Lab	0	0	2				25		25	50	1
9	KCH354	Mini Project or Internship Assessment*	0	0	2			50				50	1
10	KNC301/ KNC302	Computer System Security/Python Programming	2	0	0	15	10	25		50			0
11		MOOCs (Essential for Hons. Degree)											
		Total										950	22

*The Mini Project or internship (3-4 weeks) conducted during summer break after II semester and will be assessed during III semester.


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SEMESTER-IV

Sl. No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KAS402/ KOE041-48	Maths IV/Engineering Science Course	3	1	0	30	20	50		100		150	4
2	KVE401/ KAS401	Universal Human Values/ Technical Communication	3	0	0	30	20	50		100		150	3
			2	1	0								
3	KCH401	Mechanical Operations	3	0	0	30	20	50		100		150	3
4	KCH402	Chemical Reaction Engineering-I	3	1	0	30	20	50		100		150	4
5	KCH403	Chemical Engineering Thermodynamics	3	1	0	30	20	50		100		150	4
6	KCH451	Mechanical Operations Lab	0	0	2				25		25	50	1
7	KCH452	Chemical Reaction Engineering Lab	0	0	2				25		25	50	1
8	KCH453	Numerical Methods of Analysis Lab	0	0	2				25		25	50	1
9	KNC402/ KNC401	Python Programming/Computer System Security	2	0	0	15	10	25		50			0
10		MOOCs (Essential for Hons. Degree)											
		Total										900	21


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B.TECH III YEAR V SEMESTER CHEMICAL ENGINEERING

SEMESTER-V													SESSION 2020-21	
Sl. No	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total		
			L	T	P	CT	TA	Total	PS	TE	PE			
1	KCH501	Mass Transfer -I	3	1	0	30	20	50		100		150		
2	KCH502	Chemical Reaction Engineering - II	3	1	0	30	20	50		100		150		
3	KCH503	Process Dynamics and Control	3	1	0	30	20	50		100		150		
4	KCH051-054	Departmental Elective-I	3	0	0	30	20	50		100		150		
5	KCH055-058	Departmental Elective-II	3	0	0	30	20	50		100		150		
6	KCH551	Mass Transfer-I Lab	0	0	2				25		25	50		
7	KCH552	PDC Lab	0	0	2				25		25	50		
8	KCH553	Process Modelling and Simulation Lab	0	0	2				25		25	50		
9		Mini Projector Internship Assessment*	0	0	2				50			50		
10	NC	Constitution of India / Essence of Indian Traditional Knowledge	2	0	0	15	10	25		50				
11		MOOCs (Essential for Hons. Degree)												
Total			17	3	8							950		

*The Mini Project or internship (4weeks)conducted during summer break after IV semester and will be assessed during V semester.


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B.TECH III YEAR VI SEMESTER CHEMICAL ENGINEERING

SEMESTER-VI											SESSION2020-21		
Sl No	Subject Codes	Subject	Periods			EvaluationScheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KCH601	Mass Transfer-II	3	1	0	30	20	50		100		150	4
2	KCH602	Transport Phenomenon	3	1	0	30	20	50		100		150	4
3	KCH603	Chemical Technology	3	1	0	30	20	50		100		150	4
4	KCH061-064	Departmental Elective-III	3	0	0	30	20	50		100		150	3
5		Open Elective-I [Annexure-B(iv)]	3	0	0	30	20	50		100		150	3
6	KCH651	Chemical Technology Lab	0	0	2				25		25	50	1
7	KCH652	Mass Transfer-II Lab	0	0	2				25		25	50	1
8	KCH653	Technical Presentation	0	0	2				25		25	50	1
9	NC	Essence of Indian Traditional Knowledge/ Constitution of India	2	0	0	15	10	25		50			
10		MOOCs(Essential for Hons. Degree)											
		Total	0	3	6							900	21


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**CHEMICAL ENGINEERING
B. TECH IV YEAR
CURRICULUM STRUCTURE**

SEMESTER- VII													
Sl. No	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KHU701/ KHU702	HSMC -1 #/ HSMC-2 #	3	0	0	30	20	50		100		150	3
2	KCH 071-074	Departmental Elective-IV	3	0	0	30	20	50		100		150	3
3	KCH 075-078	Departmental Elective-V	3	0	0	30	20	50		100		150	3
4		Open Elective-II	3	0	0	30	20	50		100		150	3
5	KCH 751	LAB-1	0	0	2				25		25	50	1
6	KCH 752	Mini Project or Internship Assessment*	0	0	2				50			50	1
7	KCH 753	Project I	0	0	8				150			150	4
8		MOOCs (Essential for Hons. Degree)											
		Total										850	18

*The Mini Project or internship (4 weeks) conducted during summer break after VI semester and will be assessed during VII semester.

B.TECH IV YEAR VIII SEMESTER CHEMICAL ENGINEERING

SEMESTER- VIII													
Sl. No	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KHU801 KHU802	HSMC-1#/HSMC-2#	3	0	0	30	20	50		100		150	3
2		Open Elective-III	3	0	0	30	20	50		100		150	3
3		Open Elective-IV	3	0	0	30	20	50		100		150	3
4	KCH 851	Project	0	0	18				100		300	400	9
5		MOOCs (Essential for Hons. Degree)											
		Total										850	18

Sr. No	Subject Code	Subject Name
1	KHU 801	RURAL DEVELOPMENT: ADMINISTRATION & PLANNING
2	KOE 094	DIGITAL & SOCIAL MEDIA MARKETING (OE-IV)
3	KOE085	Quality Management
4	KCH851	PROJECT- II


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Program Outcomes (POs)

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development 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 considerations.
4. **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.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **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.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **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.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **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.

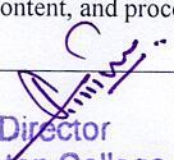
Program Specific Outcome (PSOs)

PSO 1: Ability to apply chemical engineering knowledge for solving engineering problems related to Chemical Engineering field.

PSO 2: Develop the attitude to solve global problems related to technology, environment and economics.

Engineering Science	KOE303	CO1	Understand the properties of polymers, types and mechanism of polymerization.
		CO2	Understand and apply the various processing and manufacturing techniques, high performance polymer and polymer composites.
		CO3	Understand the preparation, properties and technical applications of polymers.
		CO4	Understand the applications of different polymeric materials in current scenario of development.
		CO5	Understand the concept of polymer synthesis, Functionality, Crystallinity, Calculation of average molecular weight
Technical Communication	KAS301	CO1	Students will be able to UNDERSTAND the nature and objective of Technical Communication relevant for the work place as Engineers.
		CO2	Students will be able to DEVELOP an understanding of key concepts of writing, designing and speaking.
		CO3	Students will be able to UTILIZE the technical writing skills for the purposes of Technical Communication and its exposure in various dimensions.
		CO4	Students will be able BUILD UP interpersonal communication traits that will make the transition from institution to workplace smoother and help them to excel in their jobs.
		CO5	Students will be able to APPLY technical communication to build their personal brand and handle crisis communication.
Material and Energy Balance	KCH301	CO1	Understand conversions of units, equations, and various concentration measures
		CO2	Carry out combustion calculations, proximate and ultimate analysis.
		CO3	Apply steady-state and unsteady-state material and energy balance on a system.
		CO4	Analyze all the stoichiometric relations being applied to a system undergoing a chemical process and perform the enthalpy calculation.
		CO5	Design equipment with inlet and outlet; including recycle-bypass streams for a chemical process and calculate the quantities of utilities required.
Chemical Engineering Fluid Mechanics	KCH302	CO1	Understand the properties and flow of fluid.
		CO2	Explain the factors influencing velocity profiles for laminar and turbulent flow.
		CO3	Analyze the model and prototype.
		CO4	Understand and solve incompressible viscous flow problems.
		CO5	Design the pumps and compressors for optimum operation.
Heat Transfer Operations	KCH303	CO1	Acquire fundamental knowledge of the numerous modes of heat transfer and a thorough understanding of heat conduction.
		CO2	Understand the convection phenomenon and use them to solve problems.
		CO3	Determine radiation heat transfer involving various geometries by applying the applicable laws.

		CO4	Formulating the equations pertaining to boiling and condensation phenomena, subsequently employing them to solve relevant problems.
		CO5	Design heat exchangers and evaporators and evaluate their performance.
Chemical Engineering Fluid Mechanics Lab	KCH351	CO1	Calculate coefficient of discharge through v-notch, venture meter, and orifice meter
		CO2	Determine friction losses through different pipes and fittings.
		CO3	Calculate the efficiency of centrifugal pump.
		CO4	Study different types of flow and analyze Bernoulli's law.
Heat Transfer Operations Lab	KCH352	CO1	Determine the thermal conductivity of different materials.
		CO2	Determine the heat transfer coefficient for natural and forced convection and the rate of heat transfer.
		CO3	Acquire an understanding of the radiation heat transfer process
Soft Computing Lab	KCH453	CO1	Understand the importance and application of software.
		CO2	Solve basic chemical engineering problems using suitable software (MS-EXCEL, MATLAB, Aspen Plus, etc.).
Python Programming	BCC402	CO1	Interpret the fundamental Python syntax and semantics and be fluent in the use of Python control flow statements.
		CO2	Express proficiency in the handling of strings and functions
		CO3	Determine the methods to create and manipulate Python programs by utilizing the data structures like lists, dictionaries, tuples and sets.
		CO4	Identify the commonly used operations involving file systems and regular expressions.
		CO5	Articulate the Object-Oriented Programming concepts such as encapsulation, inheritance and polymorphism as used in Python
Math IV	KAS402	CO1	The idea of partial differential equation and its different types of solution.
		CO2	The concept of method of separation of variables and Fourier transform to solve partial differential equations.
		CO3	The basic ideas of statistics including measures of central tendency, correlation, regression and their properties.
		CO4	The idea of probability, random variables, discrete and continuous probability distributions and their properties.
		CO5	The statistical methods of studying data samples, hypothesis testing and statistical quality control.
Universal Human Value and Professional Ethics	KVE401	CO1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content, and process of value education



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		CO2	Distinguish between the Self and the Body, and understand the meaning of Harmony in the Self and the Co-existence of Self and Body.
		CO3	Understand the value of harmonious relationships based on trust, respect, and other naturally acceptable feelings in human
		CO4	Understand the harmony in nature and existence, and workout their mutually fulfilling participation in nature.
		CO5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work
Chemical Reaction Engineering-I	KCH402	CO1	Identify the reaction type and their kinetics.
		CO2	Design the reactor for the batch and continuous chemical process.
		CO3	Design of Multiple Reactors.
		CO4	Understand Non – isothermal Reactors.
		CO5	Understand the Ideal and Non–Ideal Reactors.
Chemical Engineering Thermodynamics	KCH403	CO1	Identify the thermodynamic property of the pure substance and mixture.
		CO2	Know the basic principles of refrigeration and liquefaction process.
		CO3	Understand the relation between thermodynamic and chemical reactions
Mechanical Operations	KCH401	CO1	Demonstrate knowledge of size reduction and size enlargement, and examine their performance using applicable legal principles.
		CO2	Analyze and implement the principles of particle size analysis, screening apparatus types, and sedimentation and elutriation techniques.
		CO3	Explain the concept of Particle Separation and various Particle Separation Approaches
		CO4	Analysis, fluidization, and filtration, and demonstrate the concept of their respective applications.
		CO5	Demonstrate knowledge of agitation, and mixing, in addition to the storage and conveying of solids.
Chemical Reaction Engineering Lab	KCH452	CO1	Analyze the reaction type and their kinetics.
		CO2	Design the reactor for the batch and continuous chemical processes.
		CO3	Study and operation of adiabatic reactor.
Mechanical Operations Lab	KCH451	CO1	Estimate the crushing efficiency and measure the particle size.
		CO2	Calculate the medium and filter resistance of filters.
		CO3	Explain the particle separation process.
Numerical Methods of Analysis Lab	KCH353	CO1	Compare the computational methods for advantages and drawbacks,
		CO2	Implement the computational methods using any of the existing programming languages, test such methods, and compare between them,

		CO3	Identify the suitable computational technique for a specific type of problem and develop the computational method that is suitable for the underlying problem.
Cyber Security	KNC301	CO1	Understand the basic concepts of cyber security and cybercrimes.
		CO2	Understand the security policies and cyber laws.
		CO3	Understand the tools and methods used in cyber crime
		CO4	Understand the concepts of cyber forensics
		CO5	Understand the cyber security policies and cyber laws
B.Tech V Semester			
Mass Transfer-I	KCH501	CO1	Demonstrate a clear understanding of the fundamental concepts of mass transfer, including diffusion, mass transfer coefficients
		CO2	Analyze and solve problems related to mass transfer operations like distillation
		CO3	Analyze the absorption phenomenon using both theoretical and empirical approaches
		CO4	Design and optimize simple equilibrium-staged separation processes, such as binary distillation and absorption columns, considering energy efficiency and cost
		CO5	Calculate mass transfer rates in various systems and determine mass transfer coefficients using appropriate correlations and experimental data
		CO6	Analyze the drying phenomenon
Chemical Reaction Engineering – II	KCH502	CO1	Understand the fundamentals of homogeneous and heterogeneous reactions, including catalyst selection and deactivation.
		CO2	Analyze adsorption mechanisms, catalytic reaction mechanisms, and their impact on chemical equilibrium.
		CO3	Explore solid-catalyzed reactions, focusing on pore diffusion resistance, surface kinetics, and reactor performance equations.
		CO4	Evaluate fluid-solid reactions using models like the shrinking core model and determine rate-controlling steps
		CO5	Study fluid-fluid reaction kinetics, mass transfer, and reactor design based on contactor types and patterns.
Process Dynamics & Control	KCH503	CO1	Demonstrate fundamental understanding of process control.
		CO2	Develop transfer function (input-output) and models for linear dynamic processes.
		CO3	Characterize the dynamics and stability of processes based on mathematical analysis.
		CO4	Develop the mathematical model of various chemical processes.


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		CO5	Understand different control modes and their application in controlling various processes and the working of different controllers and valves.
Mass Transfer-I Lab	KCH 551	CO1	Understand the principles of molecular diffusion and basic laws of mass transfer
		CO2	Utilize mass transfer concepts to design gas absorption systems.
		CO3	Understand the basics of all types of distillation process and its application
		CO4	Apply the concept and mechanism of drying operations
		CO5	Understand the concept of the crystallization process
PDC Lab	KCH 552	CO1	Demonstrate fundamental understanding of process control.
		CO2	Develop transfer function (input-output) and models for linear dynamic processes.
		CO3	Characterize the dynamics and stability of processes based on mathematical analysis.
		CO4	Develop the mathematical model of various chemical processes.
		CO5	Understand different control modes and their application in controlling various processes and the working of different controllers and valves.
Process Modeling & Simulation Lab	KCH 553	CO1	Understand the fundamentals of process modeling and simulation, including key concepts and techniques.
		CO2	Apply MATLAB to solve process modeling problems and simulate chemical processes.
		CO3	Gain proficiency in using Aspen Plus/CHEMCAD for simulating individual equipment and analyzing VLE data.
		CO4	Design and optimize distillation columns, evaporators, and heat exchangers using simulation tools.
		CO5	Simulate absorption, reaction, and diffusion processes in various reactors using a two-film model.
Numerical Methods for Chemical Engineer	KCH 053	CO1	Solve the equations with first order and first degree with linear coefficients.
		CO2	Understand and solve unsteady state problems.
		CO3	Provide the solution of various types of equations.
		CO4	Solve linear and non-linear algebraic equations using numerical method
		CO5	Apply the above-mentioned strategies solving Chemical engineering problems
Intellectual Property Rights & Standardization	KCH 058	CO1	Adequate knowledge on patent and copyright for their innovative research works
		CO2	During their research career, information in patent documents provide useful insight on novelty of their idea from state-of-the art search.
		CO3	Developing their idea or innovations
		CO4	Pave the way for the students to catchup Intellectual Property as a career-option
		CO5	Understand Bharat Stage emission and standards (BS)


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B.Tech VI Semester

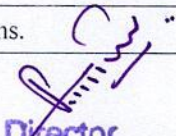
Mass Transfer-II	KCH601	CO1	To provide students with a comprehensive understanding of the principles and applications of liquid-liquid extraction and leaching processes in separating components from mixtures.
		CO2	To introduce students to the fundamentals of adsorption, including types of adsorbents, adsorption isotherms
		CO3	To impart knowledge on humidification, and types of various humidifiers and dehumidifiers
		CO4	To familiarize students with the concepts of crystallization, crystal growth, nucleation, and the design and operation of crystallizers for industrial applications.
		CO5	To teach students the design, analysis, and optimization of mass transfer equipment for liquid-liquid extraction, leaching, adsorption, humidification, and crystallization
Transport Phenomena	KCH602	CO1	Understand and apply the shell balance for fluid flow problems
		CO2	Apply the Navier-stokes equation for fluid flow problems
		CO3	Formulate problems of heat transfer in laminar flow
		CO4	Apply energy equation for various conditions
		CO5	Formulate the problems of mass transfer in laminar flow
Chemical Technology	KCH603	CO1	Understand the principles and symbols used in process flow diagrams and their application in various industrial processes
		CO2	Explain the production methods and applications of key chemicals and by-products in the chlor-alkali and sulphur industries.
		CO3	Describe the processes involved in the production of cement, fuel gases, and industrial gases, including producer gas, syn gas, and nitrogen.
		CO4	Analyze the manufacturing processes of phosphorus, phosphoric acid, and nitrogenous fertilizers, and evaluate their role in agriculture
		CO5	Discuss the chemical processes for producing bio-fertilizers, pesticides, and the technology behind soap, detergents, and other oil-based products.
Chemical Technology Lab	KCH 651	CO1	Understand the processes involved in the preparation of Turkey Red Oil and its applications in the leather industry
		CO2	Analyze the formulation and production techniques for dry/oil-bound distemper and cement paint
		CO3	Explore the manufacturing processes of liquid soap, transparent soaps, and detergent powder.
		CO4	Study the preparation of alkyd resin and its applications in coatings and paints.
		CO5	Gain insights into the processes of oil extraction, splitting, and margarine production


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Mass Transfer-II Lab	KCH 652	CO1	Analyze the data on Analyze vapor-liquid equilibrium and Boiling point diagram.
		CO2	Discuss the performance of the distillation column
		CO3	Explain the adsorption kinetics and isotherm at the Solid-Liquid interface.
		CO4	Understand the separation process by Liquid-Liquid Extraction and solid-liquid extraction.
		CO5	Discuss the crystallization process
Technical Presentation	KCH 653	CO1	Improve their communication skills.
		CO2	How to write refined reports of any technical topics
		CO3	To learn new challenging areas of their domain
		CO4	Knowledge of the application of Artificial Intelligence in Chemical Engineering.
		CO5	Knowledge of automation through ERP module training.
Sustainability of Environment	KCH 062	CO1	Understand the interaction between humans and the environment, including key ecological concepts, biodiversity, and pollution from chemical industries.
		CO2	Apply environmental laws, standards, and regulations for air, noise, and effluent management as set by control boards like CPCB and UPPCB.
		CO3	Implement resource conservation strategies using the 5R principles, alternative materials, and waste recovery methods for energy and water conservation
		CO4	Analyze air and water pollution sources, parameters, and control measures, including air pollution control equipment and wastewater treatment processes.
		CO5	Manage solid waste through effective practices for hazardous and non-hazardous waste, addressing plastic and e-waste challenges, and adhering to waste management laws.

B.Tech VII Semester

Industrial Pollution Abatement & Waste Managemen	KCH074	CO1	Develop an insight into the pollution from major industries including the sources and characteristics of pollutants
		CO2	To plan minimization of industrial wastes
		CO3	To design facilities for the processing and reclamation of industrial waste
FERTILIZER TECHNOLOGY	KCH075	CO1	Use reactions and unit operations steps in manufacturing of various fertilizers.
		CO2	Select the relevant manufacturing process for different fertilizers.
		CO3	Identify engineering problems in fertilizer manufacturing.
		CO4	Select appropriate fertilizer on the basis of properties.
ENERGY LAB	KCH751	CO1	Analyze the data on the properties of solid fuels.
		CO2	Analyze the data on the properties of liquid fuels.
		CO3	Write technical reports effectively with proper conclusions.


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VISION FOR HUMANE SOCIETY	KOE076	CO1	To help the students to understand the importance and types of relationship with expressions
		CO2	To develop the competence to think about the conceptual framework of undivided society as well as universal human order.
		CO3	To help the students to develop the exposure for transition from current state to the undivided society and universal human order.
Project Management and Entrepreneurship	KHU702	CO1	To learn basic economic concept, to understand and apply this concepts in the project works undertaken and to chemical engineering situation by solving problem
		CO2	Carry out the primary techno-economic feasibility of project.
		CO3	Select appropriate process for a project.
		CO4	Differentiate the equipment and able to prepare specification sheet
		CO5	Evaluate the project cost including capital investment, product cost, breakeven point, depreciation cost for equipment and the total project cost.

B.Tech VIII Semester

RURAL DEVELOPMENT: ADMINISTRATION AND PLANNING	KHU801	CO1	Students can understand the definitions, concepts and components of Rural Development
		CO2	Students will know the importance, structure, significance, resources of Indian rural economy
		CO3	Students will have a clear idea about the area development programmes and its impact.
		CO4	Students will be able to acquire knowledge about rural entrepreneurship.
		CO5	Students will be able to understand about the using of different methods for human resource planning
Digital and social media marketing	KOE094	CO1	Evaluate the impact of the new digital world on traditional marketing practices and develop marketing strategies for the digital world
		CO2	Plan and execute a social media marketing campaign on various platforms, including Facebook, Twitter, LinkedIn, YouTube, Instagram, and Pinterest, using channel advertising and campaigns
		CO3	Analyze and implement effective digital channels to acquire and engage users through content and branding, including search engine marketing, mobile marketing, video marketing, social-media marketing, and marketing gamification
		CO4	Develop an understanding of the ROI of digital strategies, evaluate cost-effectiveness, and design organizations for digital success, including digital transformation, leadership principles, and online PR and reputation management

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		CO5	Explore the latest digital trends and innovations, including digital transformation frameworks, security, and privacy issues with digital marketing, and understand trends in digital marketing in the Indian and global context, including online communities and co-creation
Project-II	KCH851	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	Do thermodynamic feasibility, material and energy balance of process block diagram
		CO5	Demonstrate the skills, knowledge, and attitudes of a professional engineer.


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