

M.E Chemical Engineering

SEMESTER - I

CHCEPC11 MATHEMATICAL AND STATISTICAL METHODS IN CHEMICAL ENGINEERING

COURSE OUTCOMES:

At the end of the course, the student will be able:

1. To solve system of linear algebraic equations
2. To do numerical integrations of functions.
3. To fit relationship between two data sets using linear, non-linear regression.
4. To calculate maxima/minima and functions.
5. To apply able to methods for solving chemical engineers problems.

SEMESTER - I

CHCEPC12 ADVANCED SEPARATION PROCESSES

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. List situations where liquid–liquid extraction might be preferred to distillation, make a preliminary selection of a solvent using group–interaction rules, Size simple extraction equipment.
2. Differentiate between chemisorption and physical adsorption, List steps involved in adsorption of a solute, and which steps may control the rate of adsorption, Explain the concept of breakthrough in fixed-bed adsorption.
3. Explain how crystals grow, Explain the importance of supersaturation in crystallization. Describe effects of mixing on supersaturation, mass transfer, growth, and scale-up of crystallization.
4. Explain membrane processes in terms of the membrane, feed, sweep, retentate, permeate, and solute membrane interactions.
5. Distinguish among microfiltration, ultrafiltration, nanofiltration, virus filtration, sterile filtration, filter-aid filtration, and reverse osmosis in terms of average pore size. Explain common idealized flow patterns in membrane modules.

SEMESTER - I

CHCEMC15 RESEARCH METHODOLOGY AND IPR

COURSE OUTCOMES:

At the end of this course, students will be able to

1. Understand research problem formulation.
2. Analyze research related information
3. Follow research ethics
4. Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.
5. Understanding that when IPR would take such important place in growth of individuals & nation, it is needless to emphasis the need of information about Intellectual Property Right to be promoted among students in general & engineering in particular.

6. Understand that IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.

SEMESTER - I

CHCECP16 MODELING & SIMULATION LABORATORY

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Carry out thermodynamic property estimations using property estimation and property analysis in Aspen.
2. Simulate Mixer, splitter, heat exchangers, reactors, distillation columns.
3. Apply sensitivity, design specification and case study tools in Aspen.
4. Solve linear and non-linear programming problems.
5. Able to design and simulate the chemical engineering equipment's.

SEMESTER - I

CHCECP17 ADVANCED SEPARATION PROCESSES LABORATORY

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Gain Knowledge on mass transfer operations
2. Students should be able to know the synthesis of materials
3. Students will be able to provide applicable solutions to separation processes
4. Acquire Knowledge on mechanical operations.
5. Know the applications of materials in separation processes.

SEMESTER II

CHCEPC21 ADVANCED TRANSPORT PHENOMENA

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Understand the mechanism of momentum, heat and mass transport for steady and unsteady flow.
2. Perform momentum, energy and mass balances for a given system at macroscopic and microscopic scale.
3. Solve the governing equations to obtain velocity, temperature and concentration profiles.
4. Model the momentum, heat and mass transport under turbulent conditions.
5. Develop analogies among momentum, energy and mass transport.

SEMESTER II

CHCEPC22 ADVANCED REACTION ENGINEERING

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Evaluate heterogeneous reactor performance considering mass transfer limitations
2. Perform the energy balance and obtain concentration profiles in multiphase reactors.

3. Estimate the performance of multiphase reactors under non-isothermal conditions.
4. Understand modern reactor technologies for mitigation of global warming
5. Understand the kinetic Modeling of reactors.

SEMESTER II

CHCEPE25 ADVANCED CHEMICAL ENGINEERING LAB

COURSE OUTCOMES:

At the end of this course, students are able to understand:

1. Performance of dryer and heat exchangers
2. Membrane separation techniques
3. Control of level, pH in a chemical reactor
4. Fluidized bed and packed bed reactors
5. Packed bed distillation columns

SEMESTER II

CHCETS27 INDUSTRIAL TRAINING AND SEMINAR / MINI PROJECT

COURSE OUTCOME:

1. The student can face the challenges and practice with confidence
2. The student will be benefitted by the training with managing the situation arises during the execution of work related to chemical process industries.

SEMESTER IV

CHCEPV 41 PROJECT WORK VIVA VOCE PHASE – II

COURSE OUTCOMES:

Students will be able to

1. Study and execute new technical problems related to chemical engineering.
2. Know different methodologies, methods and forms of analysis to produce a suitable research design, and justify their design.
3. Present the findings of their technical solution in a written report.

PROGRAMME ELECTIVES

CHCEPECN PROCESS DESIGN AND SYNTHESIS

COURSE OUTCOMES:

At the end of the course, the student will be able to understand:

1. Fundamental concepts and principles of process synthesis
2. Flow sheet models, design software, process analysis
3. Reactor network, separator trains
4. Heat exchanger, network design
5. Residue curve maps for distillation column

CHCEPECN CHEMICAL REACTOR ANALYSIS

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Evaluate heterogeneous reactor performance considering mass transfer limitations
2. Perform the energy balance
3. Estimate the performance of multiphase reactors under non-isothermal conditions
4. Obtain concentration profiles in multiphase reactors.
5. Understand the effects temperature in the reactors.

CHCEPCN FLUIDIZATION ENGINEERING

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Performing and understanding the behavior fluidization in fluidized bed
2. Evaluate the characterization of particles and power consumption in fluidization regimes
3. Understanding the applicability of the fluidized beds in chemical industries
4. Evaluate the power consumption in fluidization regimes
5. Design the fluidized bed reactor

CHCEPE14 INDUSTRIAL POLLUTION CONTROL

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Know the principles of industrial pollution control
2. Recognize the causes and effects of environmental pollution
3. Analyze the mechanism of proliferation of pollution
4. Develop methods for pollution abatement and waste minimization
5. Design treatment methods for gas, liquid and solid wastes

CHCEPCN APPLICATION OF NANOTECHNOLOGY IN CHEMICAL ENGINEERING

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Understanding the different top down and bottom up approaches for nanoparticles
2. Get to know the different applications of nanoparticles in chemical engineering field.
3. Learning the characterization techniques for nanoparticles.
4. Acquire knowledge on polymer based nano composites
5. Understand the applications of nanoparticles to safety and the environment.

CHCEPCN CHEMO INFORMATICS

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Prepare for professional work in chemistry must learn how to retrieve specific information from the enormous and rapidly expanding chemical literature.
2. Provide a broad overview of the computer technology to chemistry in all of its manifestations.
3. Expose the student to current and relevant applications in QSAR
4. Expose the student to current and relevant applications in Drug Design.

5. Understand the concept of Chemoinformatics

CHCEPCN MODERN CONCEPTS IN CATALYSIS AND SURFACE PHENOMENON

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Understand the concepts of homogenous and heterogeneous catalysis, with specific examples.
2. Study reaction mechanisms and kinetics of homogenous and heterogeneous catalytic reactions.
3. Familiarize with the characterization of catalysts
4. Understand the mechanisms of several types of catalysts in chemical industry.
5. Understand the application of several types of catalysts in chemical industry.

CHCEPCN ADVANCED DOWNSTREAM PROCESSES

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Learn effective strategies of downstream processing in chemical industry.
2. Understand the role of downstream processing.
3. Analyze reactors, upstream and downstream processes in production
4. Gain knowledge on energy conservation in separation processes
5. Understand the design principles.

CHCEPCN COMPUTATIONAL FLUID DYNAMICS

COURSE OUTCOMES:

At the end of the course, the students will be able to:

1. Understand the basic principles of mathematics and numerical concepts of fluid dynamics.
2. Develop governing equations for a given fluid flow system.
3. Adapt finite difference techniques for fluid flow models.
4. Apply finite difference method for heat transfer problems.
5. Solve computational fluid flow problems using finite volume techniques.

CHCEPCN BIOPROCESS ENGINEERING

COURSE OUTCOMES:

At the end of the course, the students will be able to:

1. Understand the principles of biotechnology and bioprocess engineering.
2. Understand the different cells and their use in biochemical processes.
3. Understand the role of enzymes in kinetic analysis of biochemical reaction.
4. Analyze bioreactors, upstream and downstream processes in production of bio-products
5. Demonstrate the fermentation process and its products for the latest industrial revolution

CHCEPCN PROCESS INTENSIFICATION

COURSE OUTCOMES:

At the end of this course, students are able to:

1. Assess the values and limitations of process intensification, cleaner technologies and waste minimization options.
2. Measure and monitor the usage of raw materials and wastes generating from production and frame the strategies for reduction, reuse and recycle.
3. Obtain alternative solutions ensuring a more sustainable future based on environmental protection, economic viability and social acceptance.
4. Analyze data, observe trends and relate this to other variables.
5. Plan for research in new energy systems, materials and process intensification.

CHCEPCN PHASE TRANSITIONS IN PROCESS EQUIPMENT

COURSE OUTCOMES:

At the end of this course, students are able to:

1. Obtain considerable insight into various types of phase transitions, and how these can be described theoretically in different ways
2. Predict relationships between physical quantities using the laws and methods of thermodynamics.
3. Find probabilities and thermal quantities (free energy, entropy, etc) given the energy eigenvalues of a system.
4. Understand phase diagrams and transformations.
5. Solve the problems based on energy balance

CHCEPCN MICRO AND NANO FLUIDICS

COURSE OUTCOMES:

At the end of this course, students are able to:

1. Introduce students to the physical principles
2. Analyze fluid flow in micro and nano-size devices.
3. Unifies the thermal sciences with electrostatics, electrokinetics, colloid science; electrochemistry; and molecular biology.
4. Know the fabrication techniques for nano fluidic channels.
5. Acquire knowledge on bioMEMS

CHCEPCN PROCESS INTEGRATION

COURSE OUTCOMES:

At the end of this course, students are able to:

1. Understand the basics of process intensifications and integration
2. Maximum heat recovery for a given process (both new processes, and retrofit of existing processes) identify opportunities for integration of high-efficiency energy.
3. Energy-intensive thermal separation operations (distillation, evaporation) at an industrial process site.
4. Evaluate the process integration measures with respect to energy efficiency, greenhouse gas emissions and economic performance.
5. Acquire knowledge on heat exchanger analysis

CHCEPCN TRANSPORT IN POROUS MEDIA

COURSE OUTCOMES:

At the end of this course, students are able to:

1. Understand the mechanisms involved in transport processes in porous media
2. Work with the equations that govern the fate and transport of gas, water and solutes in porous media.
3. Find solutions for various problems
4. Gain knowledge on flow visualization, quantitative methods and inverse parameters estimation.
5. Gain knowledge on engineering applications

CHCEPCN MICRO FLOW CHEMISTRY AND PROCESS TECHNOLOGY

COURSE OUTCOMES:

At the end of this course, students are able to:

1. Understand the role of micro flow chemistry
2. Gain the knowledge on process technology in chemical engineering.
3. Obtain considerable insight into various types of micro reactors.
4. Gain knowledge on micro systems for gas phase reactions
5. Gain knowledge on micro systems for energy generations.

CHCEPCN PROCESS PLANT DESIGN & FLOW SHEETING

COURSE OUTCOMES:

At the end of this course, students are able to:

1. Analyze, synthesize and design processes for manufacturing products commercially
2. Integrate and apply techniques and knowledge acquired in other courses such as thermodynamics, heat and mass transfer, fluid mechanics, instrumentation and control to design heat exchangers, plate and packed columns and engineering flow diagrams
3. Use commercial flow sheeting software to simulate processes and design process equipment
4. Recognize economic, construction, safety, operability and other design constraints
5. Estimate fixed and working capitals and operating costs for process plants

CHCEPCN DESIGN OF EXPERIMENTS AND PARAMETER ESTIMATION

COURSE OUTCOMES:

At the end of this course, students are able to:

1. Plan experiments for a critical comparison of outputs
2. Include statistical approach to propose hypothesis from experimental data
3. Implement factorial and randomized sampling from experiments
4. Estimate parameters by multi-dimensional optimization
5. Identify optimal process conditions

CHCEPCN COMPUTER AIDED DESIGN

COURSE OUTCOMES:

At the end of the course, the student will be able to: 1. Get the knowledge about computer Aided Flow Sheet Synthesis

2. Computer aided equipment design of Evaporators; Distillation columns; Reactors, adsorption columns.

3. Understand the principles of Computer aided flow sheet synthesis

4. Understand the concept of dynamics simulation

5. Exposed to various design software.

CHCEPCN CLEANER PRODUCTION

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Explain the concept and principles of cleaner production.

2. Suggest different unit operations in industrial production process to minimize pollutions.

3. Plan good housekeeping practices for Industry/other places with concern of safety, hygiene and waste reduction.

4. Suggest basic methods and techniques of pollution prevention during production.

5. Suggest cleaner production methods for a given situation which will also lead to cost reduction in long run

OPEN ELECTIVES

CHCEOECN BUSINESS ANALYTICS

COURSE OUTCOMES:

At the end of this course, Students will

1. Demonstrate knowledge of data analytics.

2. Able to think critically in making decisions based on data and deep analytics.

3. Able to use technical skills in predicative and prescriptive modeling to support business decision-making.

4. Demonstrate the ability to translate data into clear, actionable insights.

5. Analyze and solve problems from different industries such as manufacturing, service, retail, software, banking and finance, sports, pharmaceutical, aerospace etc.

CHCEOECN INDUSTRIAL SAFETY

COURSE OUTCOMES:

By the end of the course the students will be able to

1. Analyze the effect of release of toxic substances

2. Understand the industrial laws, regulations and source models.

3. Apply the methods of prevention of fire and explosions.

4. Understand the relief and its sizing methods.

5. Understand the methods of preventive maintenance

CHCEOECN OPERATIONS RESEARCH

COURSE OUTCOMES:

At the end of the course, the student should be able to

1. Apply the dynamic programming to solve problems of discreet and continuous variables.

2. Apply the concept of non-linear programming
3. Carry out sensitivity analysis
4. Understand scheduling and sequencing
5. Model the real world problem and simulate it.

CHCEOECN COST MANAGEMENT OF ENGINEERING PROJECTS

COURSE OUTCOMES:

On completion of this course, the student will be able to:

1. Recognise the objectives of costing system and decision making
2. Understanding various stages of project execution and role of each member in project team
3. Analyse basic project cost and time information and produce simple estimates and plans
4. Identify and managing resources using PRT/CPM
5. Appraise project information and critique a project's likely success

CHCEOECN COMPOSITE MATERIALS

COURSE OUTCOMES:

On successful completion of this course, students should have the skills and knowledge to:

1. Identify, describe and evaluate the properties of fibre reinforcements, polymer matrix materials and commercial composites.
2. Develop competency in one or more common composite manufacturing techniques, and be able to select the appropriate technique for manufacture of fibre-reinforced composite products.
3. Analyse the elastic properties and simulate the mechanical performance of composite laminates; and understand and predict the failure behaviour of fibre-reinforced composites
4. Apply knowledge of composite mechanical performance and manufacturing methods to a composites design project
5. Critique and synthesise literature and apply the knowledge gained from the course in the design and application of fibre-reinforced composites.

CHCEOECN WASTE TO ENERGY

COURSE OUTCOMES:

On successful completion of this course the students will be able to:

1. Apply the knowledge about the operations of Waste to Energy Plants
2. Analyse the various aspects of Waste to Energy Management Systems
3. Carry out Techno-economic feasibility for Waste to Energy Plants
4. Apply the knowledge in planning and operations of Waste to Energy plants

M.Tech FPT

Semester – I

CHFTPC11 FOOD CHEMISTRY AND MICROBIOLOGY

COURSE OUTCOMES:

At the end of the course the learners will be able to

1. Know about the physiochemical properties and the nutritional values of carbohydrates, proteins, lipids and amino acids.
2. Understand the role of microorganisms on food materials.
3. Learn about food colorants.
4. Know food spoilage.
5. Know about food borne diseases.

Semester – I

CHFTPC12 FOOD PROCESSING TECHNOLOGY

COURSE OUTCOMES:

At the end of the course, the student will be able to

1. Understand about sterilization, pasteurization and blanching processes.
2. Know about CA and MA methods of preservation.
3. Understand the role of refrigeration and freezing techniques for the processing and preservation of food.
4. Know about various dryers.
5. Know about non-thermal preservation methods.

Semester – I

CHFTMC15 RESEARCH METHODOLOGY AND IPR

COURSE OUTCOMES:

At the end of this course, students will be able to

1. Analyze research related information
2. Follow research ethics
3. Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.
4. Understanding that when IPR would take such important place in growth of individuals & nation, it is needless to emphasize the need of information about Intellectual Property Right to be promoted among students in general & engineering in particular.
5. Understand that IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.

Semester – I

CHFTCP16 FOOD BIOCHEMISTRY LABORATORY

COURSE OUTCOMES:

1. Students would be able to assess the quality of the food
2. Students would be able to develop newer methods of food analysis
3. The students have gained knowledge of engineering properties of food material.
4. Students would be able to estimate the glucose, protein and free fatty acid contents of food.
5. Students can estimate the saponification value and acid value of oils.

Semester – I

CHFTCP17 FORMULATION AND TESTING OF FRUITS & VEGETABLES LABORATORY

COURSE OUTCOMES:

1. Students would be able to assess the quality of milk, milk products, fruits and vegetables.
2. Students would be able to develop newer methods for the production of food products.
3. The students have gained knowledge of engineering properties of food materials.
4. Students can able to prepare chocolates, jam and snack foods.
5. Students would able estimate the acidity and fruit content in fruit juices.

Semester II

CHFTPC21 FOOD ENGINEERING

COURSE OUTCOMES:

At the end of the course, the student will be able to

1. Understand the transport phenomena with respect to foods.
2. Know about canning, sterilization and aseptic processing, HTST, UHT. Understand about sterilization, pasteurization and blanching processes.
3. Understand the principles of mass and energy balance.
4. Understand the process of freezing and thawing.
5. Understand membrane filtration, pulsed electric and irradiation.

Semester II

CHFTPC22 DAIRY ENGINEERING AND TECHNOLOGY

COURSE OUTCOMES:

At the end of the course, the students will be able to know about

1. Milk constituents, sampling of milk, cream, condensed milk and analysis of butter and cheese.

2. Manufacturing processes of milk products like cream, butter, evaporated milk, condensed milk, cheese, fermented milk, whey, dried milk products.
3. The steps involved in the processing of milk.
4. Various dairy equipments used in dairy industry.
5. Dairy plant layout and design.

Semester II

CHFTCP26 FOOD ANALYSIS LAB

COURSE OUTCOMES:

1. Students would be able to assess the quality of wheat flour, meat and fish.
2. Students would be able to develop newer methods of food analysis.
3. The students have gained knowledge of engineering properties of food materials.
4. Students can able to know various analyses related to juices and beverages.
5. Student can know the production and analysis of milk products like butter, cheese.

Semester II CHFTTS27 INDUSTRIAL TRAINING AND SEMINAR / MINI PROJECT

COURSE OUTCOME:

1. The student can face the challenges and practice with confidence
2. The student will be benefitted by the training with managing the situation arises during the execution of work related to food process industries.

Semester IV

CHFTPV 41 PROJECT WORK VIVA VOCE PHASE – II

COURSE OUTCOMES:

Students will be able to

1. Study and execute new technical problems related to food processing technology.
2. Know different methodologies, methods and forms of analysis to produce a suitable research design, and justify their design.
3. Present the findings of their technical solution in a written report.
4. Gain knowledge to transform technology into commercials by scaling up.
5. Present the work in International/ National conference or reputed journals.

PROGRAMME ELECTIVES

CHFTPEXX CEREALS, LEGUMES AND OIL PROCESSING TECHNOLOGY

COURSE OUTCOMES:

At the end of the course, the student will be able to

1. Learn about the structure and composition of cereals, legumes and oilseeds.
2. Know about the processing of rice, wheat, barley, corn and oats.
3. Know about the equipments used for the processing of cereals.
4. Understand the production of edible oil, flour, protein concentrates and isolates.
5. Understand about the mechanism of oil extraction and oil refining.

CHFTPEXX BAKING TECHNOLOGY

COURSE OUTCOMES:

1. This course equips students to have knowledge about the functional properties of various essential ingredients such as flour, yeast, water, salt and other ingredients such as sugar, fat, milk, colour, flavor used for the making of bread.

2. The students will be able to know about the manufacturing processes of various breads.
3. The students will be able to know the making of biscuits.
4. The students will be able to know the making of cakes and cookies.
5. The students will be able to learn various baking products other than bread like pastries, wafers.

CHFTPEXX FRUITS AND VEGETABLES PRESERVATION TECHNOLOGY

COURSE OUTCOMES:

1. This course equips students to have knowledge about the processing of fruits and vegetables like handling, grading, cleaning and pretreatments.
2. The students will be able to learn various freezing methods of fruits and vegetables.
3. The students will be able to know about different drying methods like sun drying, cabinet drying, tray drying, spray and vacuum drying.
4. The students will be able to know pulp and juice processing.
5. At the end of the course students able to understand about fruit and Vegetable products and Standards.

CHFTPEXX MEAT, POULTRY AND FISH PROCESSING TECHNOLOGY

COURSE OUTCOMES:

At the end of the course, the students will be able to know about

1. Chilling, freezing, canning, cooking, drying and pickling of meat.
2. Slaughtering, dressing, handling, storage and preservation of poultry meat.
3. Post mortem changes in fish muscle, freezing of fish and shell fish.
4. Importance of marine products.
5. Handling, preservation and transportation of fish.

CHFTPEXX BEVERAGE TECHNOLOGY

COURSE OUTCOMES:

At the end of the course, the students will be able to

1. Understand various concepts, principles and procedures involved in processing of beverages.
2. Know the processing of coffee and cocoa beans.
3. Know the various unit operations involved in the food beverage manufacturing.
4. Know the manufacture of alcoholic beverages based on fruit juices, cereals and sugar cane.
5. List the quality control steps in beverage preparation

CHFTPEXX CHOCOLATES AND CONFECTIONERY TECHNOLOGY

COURSE OUTCOMES:

1. This course equips students to have knowledge about confectionery and chocolate products, sugar based confectionaries, ingredients, chocolate and cocoa products.
2. The students will be able to know the manufacturing practices of confectionery products.
3. The students can know the manufacture of sugar confectioneries like lollipops, gums and jellies.
4. The students can know the manufacture of caramels, toffee and fudge.
5. The students can understand the flour specification and ingredients used for flour confectioneries.

CHFTPCXX FOOD SAFETY AND QUALITY CONTROL

COURSE OUTCOMES:

At the end of the course, the students will be able to understand about

1. Concept of food safety.

2. Various food safety programs.
3. Hazard analysis and risk assessment.
4. Food hygiene programs.
5. Food safety regulations and management systems.

CHFTPCXX FOOD LAWS AND REGULATIONS

COURSE OUTCOMES:

1. This course equips students to have knowledge about food quality standards like BIS, Agmark, other optional standards and the difference between mandatory and optional standards.
2. The students will be able to know about food safety systems including quality standards, testing of ingredients, additives and standards of weight and measurements.
3. The students will be able to know various food laws and implementing agencies.
4. The students will be able to understand the international scenario in food regulation.
5. The students will be able to know the necessity of harmonized food standards for international trade.

CHFTPCXX FOOD PACKAGING TECHNOLOGY

COURSE OUTCOMES:

1. This course equips students to have knowledge about various functions of food packaging.
2. The students can able to know different packaging materials and their properties.
3. The students can understand various packaging systems and methods.
4. The students will know the packaging of fruits and vegetables.
5. The students will be able to know the packaging design and environmental issues in packaging.

CHFTPCXX NUTRACEUTICALS AND FUNCTIONAL FOODS

COURSE OUTCOMES:

At the end of the course, the students will be able to know about the

1. Significance and relevance of nutraceuticals and functional foods in the management of diseases and disorders.
2. Isolation of phytochemicals from plant materials.
3. Definition, types and relevance related to Prebiotics, probiotics and symbiotics.
4. Development of functional foods.
5. Concept of personalized medicine.

CHFTPCXX FOOD TOXICOLOGY

COURSE OUTCOMES:

The students will be able to understand the

1. Biotransformation and mechanisms of toxicity.
2. Natural toxins in food.
3. Food allergies and sensitivities.
4. Environmental contaminants and drug residues in food.
5. Food additives and toxicants added or formed during food processing.

CHFTPEXX WASTE RECYCLING AND RESOURCES RECOVERY SYSTEMS

COURSE OUTCOMES:

The students will be able to understand the

1. The importance of waste recycling and recovery system.

2. Treatment of plant wastes.
3. Various technologies available for the utilization by-products from fruits and vegetable processing industries.
4. Utilization of dairy by-products.
5. Biomethanation and biocomposting technology.

CHFTPEXX INDUSTRIAL ORGANISATION AND BUSINESS MANAGEMENT

COURSE OUTCOMES:

1. This course equips students to have knowledge about food plant management.
2. Students will be able to know about the structure and operation of food plants.
3. The students will understand about building of deterministic and probabilistic models.
4. The students will learn about network models, computer applications.
5. Students will be able to know about industrial cost accounting

CHFTPEXX AGROCHEMICALS AND RESIDUES IN FOODS

COURSE OUTCOMES:

The students will be able to understand about

1. Agrochemicals including growth regulators.
2. The agrochemical residues.
3. Various chemicals used in grains and spices.
4. Veterinary drugs.
5. The concept of organic farming.

CHFTPEXX FLAVOUR CHEMISTRY AND TECHNOLOGY

COURSE OUTCOMES:

The students will be able to know about

1. Various natural and processed flavours, their properties and sources.
2. The formulation of flavours.
3. Spices and spices based products as flavours.
4. Sensory evaluation of flavours.
5. The legal issues related to the addition of flavours.

OPEN ELECTIVES

CHFTOEXX CRYOGENIC ENGINEERING

COURSE OUTCOMES:

The students equips students

1. For selecting the proper cryogenic fluid for particular application like freezing of foods, medical application.
2. To know cryogenic liquefaction processes.
3. To learn thermophysical properties of cryogenic fluids.
4. About cold exchange in cryogenic fluids.
5. About the storage and transportation of cryogenic fluids.

CHFTOEXX JUICE PROCESSING TECHNOLOGY

COURSE OUTCOMES:

The students would know about

1. The recent advances in juice processing
2. Fruits and its processing.
3. Fruit beverages.
4. The manufacture of non alcoholic beverages.
5. Various equipments and tools used for the extraction of juices.

CHFTOEXX PROCESS INSTRUMENTATION AND CONTROL IN FOOD PROCESSING**COURSE OUTCOMES:**

1. This course equips students to have knowledge of field instrumentation.
2. The students will be able to know the application of control systems in various processes.
3. The students would know the measurements in food processing.
4. The student will be able to understand various controllers and indicators.
5. The students would understand computer based monitoring and control.

CHFTOEXX SNACK FOOD TECHNOLOGY**COURSE OUTCOMES:**

1. This course equips students to have knowledge on grain based snacks.
2. The students would know about flour based snacks.
3. The students will be able to understand the formulation and processing of extruded snack foods.
4. The students would know the colouring, flavouring and packaging of snack foods.
5. The students will be able to know the equipments used for frying, baking, roasting, and toasting.

M. Tech IBT**Semester 1****CHBTPC11 ENZYME TECHNOLOGY AND FERMENTATION TECHNOLOGY****COURSE OUTCOMES:**

At the end of this course, students will be able to

1. Acquire knowledge on enzyme and enzyme reactions that will be the key step in to proceed towards various concepts in biotechnology.
2. Understand the theoretical and practical aspects of kinetics will provide the importance and utility of enzyme kinetics towards research.
3. Know the process of immobilization in food, pharmaceutical and chemical industries and will provide simple and easy method of implementation.
4. Get ideas on Processing, Production and Purification of enzymes and metabolites at an industrial scale will be helpful to work technologically.
5. Acquire knowledge on applications of enzymes in food, pharma industries and effluent treatments.

CHBTPC12 BIOINFORMATICS AND APPLICATIONS

COURSE OUTCOMES

At the end of this course, students will be able to

1. Develop bioinformatics tools with programming skills.
2. Apply computational based solutions for biological perspectives.
3. Acquire knowledge on sequencing techniques
4. Gain knowledge in computer based tools in Bioinformatics
5. Develop skills on structural analysis of proteins and data analysis of gene

CHCEMC15 RESEARCH METHODOLOGY AND IPR

COURSE OUTCOMES

At the end of this course, students will be able to

1. Understand research problem formulation.
2. Analyze research related information
3. Follow research ethics
4. Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.
5. Understanding that when IPR would take such important place in growth of individuals & nation, it is needless to emphasis the need of information about Intellectual Property Right to be promoted among students in general & engineering in particular.
6. Understand that IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.

CHBTCP16 PREPARATIVE AND ANALYTICAL TECHNIQUES IN BIOTECHNOLOGY LABORATORY

COURSE OUTCOMES

At the end of this course, students will be able to

1. Quantify Bio molecules using spectroscopy methods
2. Purify enzymes and metabolites using Chromatography techniques
3. Solve problems related Enzyme involved reactions and kinetics
4. Design processes for the recovery and subsequent purification of target biological products.
5. Learn about the analytical techniques in estimation of bio molecules

CHBTCP17 IMMUNOTECHNOLOGY LABORATORY ADVANCED AND GENETIC ENGINEERING

COURSE OUTCOMES

At the end of this course, students will be able to

1. Know on immunological /clinical tests.
2. Understand the main principles, methods for preparation and cloning of DNA in various organisms.
3. Express clearly about the gene amplification and methods for analysis of DNA, such as hybridization, restriction analysis and gene expressions.
4. Know clearly about the gene amplification and methods for analysis of DNA, such as hybridization, restriction analysis and gene expressions.
5. Use genetic and biotechnological techniques to manipulate genetic materials and develops new and improved living organisms.

Semester 2

CHBTPC21 BIOPROCESS ENGINEERING

COURSE OUTCOMES

At the end of this course, students will be able to

1. Apply engineering principles to systems containing biological catalysts to meet the needs of the society.
2. Interpret the kinetics of living cells and to develop a strategy to solve the issues emerging during fermentation processes.
3. Gain knowledge on modeling of biological systems
4. Apply the knowledge of mass transfer in biological systems
5. Acquire knowledge about effective factor of immobilized biological systems

CHBTPC22 BIOSEPARATION TECHNOLOGY

COURSE OUTCOMES

At the end of this course, students will be able to

1. Acquire knowledge about bio products and purifications strategies.
2. Apply advanced downstream processing methods for product recovery.
3. Know about the components of downstream equipment and shall be used in the effective design of separation system for successful operations.
4. Enhance problem solving techniques required in multi-factorial manufacturing environment in a structured and logical fashion.
5. Gain knowledge about finishing operation and formulation of bioproducts

CHBCP25 BIOPROCESS AND DOWNSTREAM PROCESSING LABORATORY

COURSE OUTCOMES

At the end of this course, students will be able to

1. Gain ability to investigate, design and conduct experiments, analyze and interpret data, and apply the laboratory skills to solve complex bioprocess engineering problems.
2. Know about fermentation strategies in biochemical product production
3. Acquire knowledge for the separation of whole cells and other insoluble ingredients from the culture broth.
4. Learn the basic principles and techniques of chromatography to purify the biological products and formulate the products for different end uses.
5. Understand about the purification and polishing methods of biological products

CHBTTS27 INDUSTRIAL TRAINING AND SEMINAR/MINI PROJECT

COURSE OUTCOME

1. The student can face the challenges and practice with confidence
2. The student will be benefitted by the training with managing the situation arises during the execution of work related to biochemical process industries.

Semester 3 CHBTPV33 Project Work Viva Voce Phase – I

CHBTPV41 Project Work Viva Voce Phase – II

COURSE OUTCOME

At the end of the course students will be

1. Able to develop better knowledge about bioprocess engineering, fermentation techniques and genetic engineering from literatures.
2. Benefitted by the implementation of computational tools to solve the problems arising in bioprocesses.
3. Acquiring knowledge to represent bioprocesses with suitable kinetic models.
4. Gaining knowledge to transform technology to commercial products by scaling up
5. Developing technical reporting and project preparation for entrepreneurship

PROGRAM ELECTIVES

CHBTPEXX IMMUNOTECHNOLOGY

COURSE OUTCOMES

At the end of this course, students will be able to

1. Aware the immune system structure and functions, immunity to various pathogens
2. Know about concepts evolved in antibody and antigens
3. Acquire knowledge about vaccine development processes
4. Produce the therapeutic and diagnostic molecules
5. Aware of tumour, allergy and hypersensitivity reactions

CHBTPEXX METABOLIC PROCESS AND ENGINEERING

COURSE OUTCOMES

At the end of this course, students will be able to

1. Gain knowledge about various transport process in biological systems
2. Understand regulations related to enzymatic and microbial systems.
3. Familiar with metabolic flux analysis.
4. Acquire the concept of biochemistry regulations and culture media designing.
5. Know the various metabolic control analysis techniques and kinetic studies.

CHBTPEXX COMPUTER AIDED LEARNING OF STRUCTURE AND FUNCTIONS OF PROTEINS

COURSE OUTCOMES

At the end of this course, students will be able to

1. Gain knowledge about amino acids and its metabolism.
2. Analyze the various interactions in protein makeup.
3. Familiar with different levels of protein structure.
4. Acquire the concept of biosynthesis and degradation of proteins.
5. Know the role of functional proteins in various field of study.

CHBTPEXX ADVANCED GENETIC ENGINEERING

COURSE OUTCOMES

At the end of this course, students will be able to

1. Understand the basics of genes and its functionalities.
2. Know the clone methods of commercially important genes.
3. Produce the commercially important recombinant proteins.
4. Mutagenesis of gene and genome sequencing techniques.
5. Apply the skills of microarrays, Analysis of Gene expression and proteomics, techniques in genetic manipulation.

CHBTPEXX ANIMAL BIOTECHNOLOGY

COURSE OUTCOMES

At the end of this course, students will be able to

1. Understand the animal cell culture, animal diseases and its diagnosis.
2. Gain the knowledge for therapy of animal infections.
3. Know the concepts of micromanipulation technology and transgenic animal technology.
4. Acquire knowledge about the gene manipulation.
5. Use the knowledge gained in this section to apply in the field of clinical research.

CHBTPEXX PHYTOCHEMISTRY

COURSE OUTCOMES

At the end of this course, students will be able to

1. Understand the fundamentals of phytochemicals and its functions.
2. Use the knowledge for the development of therapeutic products.
3. Learn the separation techniques of herbal agromedicines and its analysis.
4. Gain the knowledge about the plant tissue culture based secondary metabolites.
5. Use of the gained knowledge for improvement in quality of products.

CHBTPEXX ADVANCED GENOMICS AND PROTEOMICS

COURSE OUTCOMES

At the end of this course, students will be able to

1. Aware of how to clone commercially important genes and recombinant proteins.
2. Aware of gene and genome sequencing techniques.
3. Apply the skills of aware of microarrays, Analysis of Gene expression and proteomics, techniques in gene mapping.
4. Analyze the various interactions in protein makeup and different levels of protein structure.
5. Practice the latest application of protein science in their research.

CHBTPEXX BIOREACTOR DESIGN AND ANALYSIS

COURSE OUTCOMES

At the end of this course, students will be able to

1. Select appropriate bioreactor configurations and operation modes based upon the nature of bio products and cell lines and other process criteria.
2. Understanding the modeling and simulation of various bioprocesses
3. Identify problems and seek practical solutions for implementation of large scale production of bioproducts.
4. To identify the ways and means to reduce costs and enhance the quality of products.
5. To acquire knowledge about instrumentation facilities in bioreactors to control bioprocesses.

CHBTPEXX NANOBIOTECHNOLOGY

COURSE OUTCOMES

At the end of this course, students will be able to

1. Familiarize about the science of nanomaterials
2. Demonstrate the preparation and characterization of nanomaterials
3. Understand the production of nanomaterials using biological molecules
4. Knowledge of nanomaterials in genetic engineering
5. Applications of nanomaterials in drug development.

CHBTPEXX BIOFUELS AND BIOREFINERY ENGINEERING

COURSE OUTCOMES

At the end of this course, students will be able to

1. Understand the fundamentals of biofuels.
2. Utilization of biomass as feedstock for sustainable and renewable energy generation.
3. Replace fossil fuel based products with Biodiesel derived from vegetable oils.
4. Know the concepts of production of third generation biofuels
5. Develop of biorefineries for economical production of biofuels

CHBTPEXX BIOPROCESS MODELING AND SIMULATION

COURSE OUTCOMES

At the end of this course, students will be able to

1. Understand the Knowledge about the fundamental models of bioprocesses.
2. Select appropriate bioreactor configurations and operation modes based upon the nature of bio products.
3. Apply modelling and simulation of bioprocesses to enhance the quality of products and systems.
4. Identify problems and seek practical solutions for large scale implementation of Biotechnology.
5. Acquire knowledge of various tools for modeling and simulation of bioprocesses

CHBTPEXX CANCER BIOLOGY

COURSE OUTCOMES

At the end of this course, students will be able to

1. Know about carcinogenic materials leading to cancer.
2. Value the role of immune system against cancer.
3. Understand the cancer microenvironment and its influence on immune cells.
4. Gain knowledge of key factors controlling cancer therapy.
5. Acquire Knowledge about the applications of biology for cancer treatment.

CHBTPEXX ANALYTICAL TECHNIQUES IN BIOTECHNOLOGY

COURSE OUTCOMES

At the end of this course, students will be able to

1. Gain knowledge about fundamentals of biological molecules.
2. Acquire knowledge about the advanced microscopic techniques.
3. Understand the fundamentals of various spectroscopic methods.
4. Apply the skills of microscopy and spectroscopy techniques for biological products purification and separation.
5. Apply principles of various unit operations used in downstream processing

CHBTPEXX BIOTHERMODYNAMICS

COURSE OUTCOMES

At the end of this course, students will be able to

1. Understand the fundamental thermodynamic properties of biological systems.
2. Acquire knowledge about the application of thermodynamics for energy conversion in biological systems.
3. Design, interpret and analyze the fundamental data for betterment of bioprocesses.
4. Understand the vapour liquid equilibrium for calculations of microbial growth and product formation.
5. Gain knowledge about various kinetic models using thermodynamic properties

CHBTPEXX PLANT BIOTECHNOLOGY

COURSE OUTCOMES

At the end of this course, students will be able to

1. Understand the fundamentals of plant cells, structure and functions
2. Learn the nitrogen fixation mechanism and significance of viral vectors
3. Gain knowledge about the plant tissue culture and transgenic plants
4. Acquire knowledge in development of high yielding plant varieties using genetic engineering
5. Gain knowledge for the development of therapeutic products

OPEN ELECTIVE

CHBTOEXX BIOTECHNOLOGY IN FOOD PROCESSING

COURSE OUTCOMES

At the end of this course, students will be able to

1. Understand the applications of heat transfer principles in food processing.
2. Gain knowledge of usage of microorganism in food processing.
3. Acquire knowledge of fermentation in food processing.
4. Understand the principles of different food preservations techniques.
5. Gain knowledge about quality control measures used in food processing industries.

CHBTOEXX COMPUTATIONAL FLUID DYNAMICS

COURSE OUTCOMES

At the end of this course, students will be able to

1. Gain knowledge about fundamentals of fluid flow.
2. Understand the application of numerical methods to solve fluid dynamic problems.
3. Acquire knowledge related to properties of fluid statics and dynamics.
4. Apply knowledge to study the models related to turbulent flow of fluids
5. Understand the concepts of finite element analysis methods and its applications in biological systems.

CHBTOEXX ENVIRONMENTAL BIOTECHNOLOGY

COURSE OUTCOMES

At the end of this course, students will be able to

1. Gain knowledge about the fundamentals of environmental Pollution and its problems.
2. Find the scientific solutions for the environmental protection.
3. Acquire knowledge about the applications of microbes in waste water treatment systems.
4. Design microbial based air pollution treatment facilities.
5. Understand the various methods for biological conversion of waste materials into useful products

CHBTOEXX TECHNOLOGY MANAGEMENT

COURSE OUTCOMES

At the end of this course, students will be able to

1. Gain knowledge on various issues related to Patents
2. Understand the innovative techniques to Quality enhancement
3. Develop new products from innovative ideas.
4. Acquire knowledge about various types of companies.
5. To know the importance of planning and evaluation.

M. Tech ISE

SEMESTER – I CHISPC11 SAFETY MANAGEMENT

COURSE OUTCOMES:

After completing the course, the students will be able to

1. Explain the modern concepts in safety
2. Techniques to identify the hazards and risks in the organization
3. Investigate accidents and identify the causes of the accidents and take necessary preventive measures
4. Calculate the performance indices of safety which helps improving safety
5. Organize safety seminar and training programmes in motivating the workers

SEMESTER – I

CHISPC12 OCCUPATIONAL HEALTH AND HYGIENE

COURSE OUTCOMES:

After completing the course, the students will be able to

1. Get a clear idea about occupational health and hygiene
2. Know about the hazards such as Physical hazards, chemical hazards, Biological and ergonomical hazards
3. Will be able to take control measures from occupational diseases
4. Understand the functions and activities of Occupational health services
5. Identifying noticeable occupational diseases arising out of occupation and suggestion for preventing methods

SEMESTER – I

CHCEMC15 RESEARCH METHODOLOGY AND IPR

COURSE OUTCOMES:

At the end of this course, students will be able to

1. Understand research problem formulation.
2. Analyze research related information
3. Follow research ethics

4. Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.
5. Understanding that when IPR would take such important place in growth of individuals & nation, it is needless to emphasize the need of information about Intellectual Property Right to be promoted among students in general & engineering in particular.
6. Understand that IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.

SEMESTER – I

CHISCP16 ENVIRONMENTAL HAZARD ANALYSIS LABORATORY

COURSE OUTCOMES:

After completing the course, the students will be able to

1. Carryout field investigations such as measurement of noise, illumination and humidity
2. Carry out field investigation on illumination level
3. Carry out field investigation on humidity level
4. Compare the measured level with standards
5. Suggestion measures for minimizing abnormalities

SEMESTER – I

CHISCP17 AIR POLLUTANTS ANALYSIS LABORATORY

COURSE OUTCOMES:

After learning the course, the students should be able to

1. Estimate the pollutants level in atmosphere
2. Test and instruct the mechanism of fire /smoke detectors
3. Use the software tool and calculate the level of concerns in the case of leakage of gases/fires/explosions
4. Take preventive measures during emergency situations such as toxic release, fire, etc.,
5. Compare the measured level with standards

SEMESTER – II

CHISPC21 COMPUTER AIDED RISK ANALYSIS

COURSE OUTCOMES:

After learning the course, the students will be able to

1. Understand the fundamentals of hazard analysis, concepts of hazards evaluation procedure.
2. Able to apply software's for hazard analysis procedure.
3. Understand the principles of risk analysis quantification methods.
4. Understand the use of various instruments and testing methods.
5. Understand the consequences of risks and hazards

SEMESTER – II

CHISPC22 FIRE ENGINEERING AND EXPLOSION CONTROL

COURSE OUTCOMES:

After learning the course, the students will be able to

1. Know the chemistry and mechanism of fire and explosion and the methods to prevent and control them.

2. Evaluate the fire safety of buildings and design the measures to ensure the safety of buildings.
3. Implement the rules and regulations of fire safety for specific sites
4. Know the different source of ignition and their prevention techniques
5. Understand the causes and prevention of explosion

SEMESTER – II

CHISCP26 FIRE CONTROL, PPE & QRA STUDIES LABORATORY

COURSE OUTCOMES:

After learning the course, the students will be able to

1. Test and instruct the mechanism of fire /smoke detectors
2. Use the software tool and calculate the level of concerns in the case of leakage of gases/fires/explosions
3. Take preventive measures during emergency situations such as toxic release, fire, etc.,
4. Test the air quality standards
5. Compare the environmental standards

SEMESTER – II

CHISTS27 INDUSTRIAL TRAINING AND SEMINAR / MINI PROJECT

COURSE OUTCOME:

1. The student can face the challenges and practice with confidence
2. The student will be benefitted by the training with managing the situation arises during the execution of work related to chemical process industries.

SEMESTER – III

CHCEPV 33 PROJECT WORK VIVAVOCE PHASE – I

SEMESTER – IV

CHCEPV 41 PROJECT WORK VIVA VOCE PHASE – II

COURSE OUTCOMES:

After learning the course, the students will be able to

1. Come across different literatures relevant to his study
2. Reflect on, evaluate, and critically assess one's own and others' scientific results
3. Apply the relevant knowledge and skills, which are acquired within the technical area, to solve a given problem
4. Present the findings of the technical solution in a written report
5. Publishing the novelty of the work in conferences of journals

PROGRAM ELECTIVE

CHISPEXX SAFETY IN CHEMICAL INDUSTRIES

COURSE OUTCOMES:

After learning the course, the students will be able to

1. Recommend safety parameters required for the design process of equipment
2. Develop safety precautions to be followed in the erection and commissioning of plants
3. Develop emergency preparedness plans for various industries at toxic release scenario
4. Able to prepare the emergency planning for chemical industry problem
5. Able to create safe storage system

CHISPEXX ENVIRONMENTAL POLLUTION CONTROL

COURSE OUTCOMES:

After learning the course, the students shall be able to

1. Advise pollution control methods to industries
2. Overcome the issues related to air and water pollution
3. Advise for zero discharge
4. Understand the standards that are published by the professional bodies
5. Explain the environmental health issues problem arises due to air and water pollution

CHISPEXX SAFETY IN ON AND OFFSHORE DRILLING**COURSE OUTCOMES:**

After learning the course, the students will be able to

1. Understand the fundamentals of drilling techniques
2. Develop safe operating procedures required for a oil field
3. Identify the hazards and take preventive measures in the oil field
4. Know the necessary personal protective equipments required for drilling operations
5. Understanding the need of safe storage and transportation of petroleum products

CHISPEXX SAFETY IN MATERIAL HANDLING**COURSE OUTCOMES:**

After learning the course, the students will be able to

1. Understand the Basic principles of safety in Material handling
2. Know the safe operation and maintenance of Trucks and cranes
3. Understanding the difficulties during the application of ergonomics in work environment
4. Identifying the proper equipment requirement for a specific process to avoid accidents
5. Know the effective material handling system

CHISPEXX SAFETY IN ENGINEERING INDUSTRY**COURSE OUTCOMES:**

After learning the course, the students will be able to

1. Understand the safety principles of machine guarding
2. Know about the working of wood, welding, gas cutting, cold forming and hot working of metals
3. Understand the safety rules standards in varies mechanical engineering process
4. Knowledge in testing and inspecting as per rules of boiler, heat treatment operation etc.
5. Clear about the preventive measures in health and wefare of workers aspects in industries.

CHISPEXX SAFETY IN MINES**COURSE OUTCOMES:**

After learning the course, the students will be able to

1. Know the hazards in the mines and control of those hazards
2. Learn how to overcome the issues such as ground collapse, atmospheric pollution, etc., occurs in the mines
3. Understand the mining activities of open case, underground and tunneling mining
4. Able to implement disaster management, emergency preparedness and risk assessment
5. Effectively employ the knowledge on prevention of accident

CHISPEXX REGULATIONS FOR HEALTH, SAFETY AND ENVIRONMENT**COURSE OUTCOMES:**

After learning the course, the students will be able to

1. Understand the fundamentals of Factories Act.
2. Knowledge about Health Regulations.
3. Know about Environment Legislations.
4. Knowledge about Employees Compensation
5. Understanding the benefits of following regulations for health safety and environment

CHISPEXX NUCLEAR ENGINEERING AND SAFETY

COURSE OUTCOMES:

After learning the course, the students will be able to

1. Understand the concepts of safety of Nuclear reactors.
2. Design the safety relief systems required for nuclear reactors
3. Manage emergency situations
4. Control radiation hazards and advise on disposal techniques, etc.,
5. Explain the safety design principles and regulation process

CHISPEXX DOCK SAFETY

COURSE OUTCOMES:

After learning the course, the students will be able to

1. The Students will know the statues relating to dock activities
2. Students can identify the various hazards in different dock activities and take measures to eradicate them.
3. Students shall be able to manage emergency situations in the dock due to fire/explosion.
4. Understand the operation of various types of material handling equipments
5. Students, recognize various problems associated with the use of lifting equipments in storage yard.

CHISPEXX SAFETY IN CONSTRUCTION

COURSE OUTCOMES:

After learning the course, the students will be able to

1. Able to understand the importance of contracts and agreements in the construction with respect to workers safety and health.
2. Identify the various hazards in different construction activities and take measures to eradicate them.
3. Knowledge on the critical factors that can cause damages in the dams, bridges, water tanks and retaining walls which would help them in the design to prevent accidents.
4. Identifying types and causes of accident and designing aids for safe construction
5. Understanding the safety procedures for work at height.

CHISPEXX ENVIRONMENTAL IMPACT ASSESSMENT

COURSE OUTCOMES:

After learning the course, the students will be able to

1. Carry out scoping and screening of developmental projects for environmental and social assessments
2. Explain different methodologies for environmental impact prediction and assessment
3. Plan environmental impact assessments and environmental management plans
4. Evaluate environmental impact assessment reports
5. Students able to documentation of environment impact assessment

CHISPEXX OCCUPATIONAL HEALTH SAFETY MANAGEMENT SYSTEM ISO 45001:2018

COURSE OUTCOMES:

After learning the course, the students will be able to

1. The Students will know the current standards of OH&S and implementing procedure
2. Students understand the guidelines of ISO 45001 and its necessity and the principles of occupational health audits
3. Students could be able to understand the updating of standards
4. Knowledge on various clauses and preparation of documentation
5. Provide the skill in analyzing the applicability on the nature of organization

CHISPEXX HUMAN FACTORS ENGINEERING**COURSE OUTCOMES:**

After learning the course, the students will be able to

1. The students will be able to understand the concept of man-machine system and thence design the various parameters which would be user friendly and hazard free.
2. Students will learn how the human factors are contributing for accidents and the various ways to overcome those factors. Students can understand the necessity of ergonomic design of work places and thus the musculo skeletal disorders can be prevented.
3. The students will learn the necessity of PPE in the work place and its types and standards
4. Students able to reduce the accident possibilities by creating the new device.
5. Able to incorporated PPE to reduce the human error.

CHISPEXX SAFETY IN TEXTILE INDUSTRY**COURSE OUTCOMES:**

After learning the course, the students shall be able to

1. Identify the hazards and risks and suggest safety procedures for textile industries
2. Develop health and safety measures.
3. Use Special precautions for specific hazardous work environments.
4. Advise statutory norms to be followed for a textile industry.
5. Students, can create the method of various design arrangements to avoid risk.

CHISPEXX AIR POLLUTION CONTROL**COURSE OUTCOMES:**

After learning the course, the students will be able to

1. Understand the effect of air pollution and fundamentals.
2. Understand the selection of control measures for air and particulate pollutions.
3. Understand the impact of air pollution on automobile emission, Odours and indoor emission
4. Understand the importance of control measures on industrial Pollutants
5. Able to understand recycling of air pollutants

OPEN ELECTIVE**CHISOEXX MAINTAINABILITY ENGINEERING****COURSE OUTCOMES:**

After learning the course, the students will be able to

1. Understand the various terms and terminologies about the maintenance concept.
2. Understand the various maintenance modes and logistics meant for the execution of various services.

3. Apply their knowledge in areas where the down time, over replacement are existing and could lead to improve the productivity and quality.

4. Understanding the effectiveness of a equipment

5. Students able to know about optimizing profit and replacing decisions

CHISOEXX ELECTRICAL SAFETY

COURSE OUTCOMES:

After the completion of the course, the Students will be able to

1. understand the types of electrical hazards

2. develop safe operating procedures to various electrical installations

3. classify the various hazardous zones as per the Standards

4. Understand the operation of various protection systems from electrical hazards

5. Students able to know about the interlock self diagnostic features

CHISOEXX WORK STUDY AND ERGONOMICS

COURSE OUTCOMES:

After learning the course, the students will be able to

1. Understand the fundamentals of ergonomics.

2. Know about workplace hazards.

3. Use personal protective equipments for specific hazardous work environments.

4. Able to incorporate human factors in design of PPE

5. Know the safe design of man-machine systems

CHISOEXX TRANSPORT SAFETY

COURSE OUTCOMES:

After learning the course, the students should be able to

1. Recognize various safety activities undertaken in transporting of hazardous goods

2. Understand the various symbols which are specific to the road safety and able to reduce the accidents occurred in the roads.

3. Apply for the safe transportation of hazardous goods, creating TREM card and safe loading and unloading procedure.

4. Able to know about the procedures on accident investing and reporting

5. Know the importance in design of tanker lorries, responsibility of driver, inspection and maintenance of vehicle.