



ESWAR COLLEGE OF ENGINEERING

(Approved by AICTE, & Affiliated to JNTUK, A.P.)

KESANUPALLI (V), NARASARAOPETA-522549, AP

www.eswarcollegeofengg.org, email:eswarcollegeofengg@gmail.com

DEPARTMENT OF AGRICULTURE ENGINEERING

Course Outcomes

Year/Sem: II B.Tech I SEM

A.Y:2022-2023

Course Name: Mathematics –III(Vector Calculus, Transforms and PDE)	
Course Code: AGR2101	
AGR2101.1	Determine the physical meaning of different operators such as gradient, curl and divergence
AGR2101.2	Estimate the work done against a field, circulation and flux using vector calculus
AGR2101.3	Apply the Laplace transform for solving differential equations
AGR2101.4	Compute the Fourier series of periodic signals
AGR2101.5	know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms
AGR2101.6	Identify solution methods for partial differential equations that model physical processes

Course Name: Surveying and levelling	
Course Code: AGR2102	
AGR2102.1	Understand the overview of plane surveying
AGR2102.2	Able to know the various methods in surveying and types
AGR2102.3	Classify the levelling methods
AGR2102.4	Differentiate the inaccessible points in the plane table surveying
AGR2102.5	Define the tachometric surveying and points in the plane
AGR2102.6	Analyse the distance and elevation points in the surveying

Course Name: Fluid Mechanics and Open Channel Hydraulics	
Course Code: AGR2103	
AGR2103.1	Understand the various properties of fluids and their influence on fluid motion and analyse a variety of problems in fluid statics and dynamics
AGR2103.2	Calculate the forces that act on submerged planes and curves
AGR2103.3	Ability to analyse various types of fluid flows
AGR2103.4	Apply the integral forms of the three fundamental laws of fluid mechanics to turbulent and laminar flow through pipes and ducts
AGR2103.5	Determination of order to predict relevant pressures, velocities and forces
AGR2103.6	Able Measure the quantities of fluid flowing in pipes, tanks and channels



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Course Name: Properties of Strength of materials	
Course Code: AGR2104	
AGR2104.1	Understand the basic materials behaviour under the influence of different external loading conditions and the support conditions
AGR2104.2	Able to draw the diagrams indicating the variation of the key performance features like bending moment and shear forces
AGR2104.3	Knowledge of bending concepts and calculation of section modulus
AGR2104.4	Determination of stresses developed in the beams and deflections due to various loading conditions
AGR2104.5	To classify cylinders based on their thickness and to derive equations for measurement of stresses across the cross section when subjected to external pressure
AGR2104.6	Analysis stresses across section of the thin and thick cylinders to arrive at optimum sections to withstand the internal pressure using Lamé's equation

Course Name: Farm Power and Tractor System	
Course Code: AGR2105	
AGR2105.1	Able to development on farm power sources classification I.C engine components & construction, operating systems
AGR2105.2	Understand the classification of fuels and lubricants in farm methods
AGR2105.3	Define the heir properties, governing systems of IC engines, power transmission, clutches & its applications
AGR2105.4	Differentiate the principles of fluid coupling & torque connector, brakes principles
AGR2105.5	Applying Tractor testing and its main components, CG estimation, Tractor chassis its mechanics
AGR2105.6	Classify the friction concepts of hydraulic system in factors.

Course Name: Surveying and Levelling Lab	
Course Code: AGR2106	
AGR2106.1	To understand the various types of surveying methods
AGR2106.2	Determination of the areas by applying the chain surveying
AGR2106.3	Analyse the area calculations by triangulations methods
AGR2106.4	Finding the area boundaries by plane table survey
AGR2106.5	Determination of distance between two inaccessible points by using compass
AGR2106.6	To understand the Height of the instrument method



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Course Name: Fluid Mechanics and Open Channel Hydraulics Lab	
Course Code: AGR2107	
AGR2107.1	Understand the practical skills on determination of metacentric height and Bernoulli's theorem
AGR2107.2	Analyse the measurement of discharge with venturimeter and pilot tubes
AGR2107.3	Determining discharge coefficient of rectangular, triangular and trapezoidal weir and orifices
AGR2107.4	Imposing practical skills on determination of head losses in pipes, roughness coefficient of open channels
AGR2107.5	Able to know the velocity and pressure in open channels, construction of flow net problems on flow nets
AGR2107.6	Determination of head losses in pipes

Course Name: Field Operation and Maintenance of Tractors Lab	
Course Code: AGR2108	
AGR2108.1	Able to know skills on air kind fuel filtration systems, lubrication system and Their maintenance in tractors
AGR2108.2	Analyse maintenance of transmission and radiators cooling systems in tractor
AGR2108.3	Practical skills development on maintenance of tractor ignition and hydraulic systems
AGR2108.4	knowledge on periodical maintenance of tractors, emission of smoke, clutch and brake system maintenance
AGR2108.5	Define precautions in handling diesel fuels in diesel engine
AGR2108.6	Understand the causes of ignition failure in battery system

Course Name: Agricultural Machinery Design using CAD/CAM	
Course Code: AGR2109	
AGR2109.1	Application of computers for designing and Overview of CAD window – explanation of various options on drawing screen
AGR2109.2	Understand dimension and dimensional editing tool bar and Practice on dimension toolbar
AGR2109.3	Study on layer command and modifying drafting
AGR2109.4	Practice on 3-D commands- Extrusion and loft commands
AGR2109.5	Define 2 D- orthographic projections using draw tool bar
AGR2109.6	Demonstration on CNC machine and simple problems



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Year/Sem: II B.Tech II SEM

Course Name: Heat and Mass Transfer	
Course Code: AGR2201	
AGR2201.1	Understand the principles of heat and mass transfer, steady state heat transfer & its analysis
AGR2201.22	Able to know the measurement of thermal conducting of pleasure & composite walls, tubes and spheres, multilayer tubes
AGR2201.3	Classify the conduction principles of different materials in parallel
AGR2201.4	Differentiate combined convection and conduction, concept of insulation
AGR2201.5	Analyse the conduction, convection and radiation analysis of heat and mass transfer, different laws on radiation theory
AGR2201.6	Define principles of heat exchanges, their analysis, frick's law of mass transfer coefficients, Reynolds analogy

Course Name: Ground Water Hydrology ,Wells and Pumps	
Course Code: AGR2202	
AGR2202.1	Able to know principles of ground water resources development, different acquaintance and their principles
AGR2202.2	Define the types of aquifers and their properties
AGR2202.3	Understand knowledge on theory of open well hydraulics and drilling methods
AGR2202.4	Imparting the artificial ground water recharge classification of indigenous pumps, solar pumps, wind mill pumps
AGR2202.5	Differentiate the types pumps and their properties
AGR2202.6	Apply High lift pumps, mixed flow pumps and vertical turbine pump sets

Course Name: Theory of Structures	
Course Code: AGR2203	
AGR2203.1	Able to understand the various design methods in RCC
AGR2203.2	Differentiate the over and under reinforced structures with loading
AGR2203.3	Analysis and design of flexural members and detailing
AGR2203.4	Classification of various types slabs in RCC
AGR2203.5	Design different type of compression members and footings
AGR2203.6	Understand different types of footings and design

Course Name: Soil mechanics	
Course Code: AGR2204	
AGR2204.1	Define principles of soil mechanics soil classification, stresses in soils
AGR2204.2	Understand Bousinesq's analysis for vertical pressure applications
AGR2204.3	Apply the westerguard's analysis for point load applications
AGR2204.4	knowledge on shear stress analysis, Mohr's stress circle, measurement of shear strength
AGR2204.5	Skill development on soil consolidations theory and principles
AGR2204.6	Classify the earth pressure and its effects on soil stability of slopes



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Course Name: Managerial Economics & Financial Analysis	
Course Code: AGR2205	
AGR2205.1	Able to know the knowledge of estimating the Demand and demand elasticity's for a product
AGR2205.2	The knowledge of understanding of the Input-Output-Cost relationships
AGR2205.3	Estimation of the least cost combination of inputs
AGR2205.4	Prepare Financial Statements and the usage of various Accounting tools for Analysis
AGR2205.5	evaluate various investment project proposals with the help of capital budgeting techniques for decision making
AGR2205.6	Understand the concept of Capital, Capital Budgeting and the techniques used to evaluate Capital Budgeting proposals

Course Name: Heat and Mass Transfer Lab	
Course Code: AGR2206	
AGR2206.1	Understand the COP of VCR System with Capillary and thermal expansion valve
AGR2206.2	Determination of heat transfer rate through a lagged pipe
AGR2206.3	Able to know the heat transfer rate through a concentric sphere
AGR2206.4	Estimate the heat transfer coefficient in natural and forced convection
AGR2206.5	Define the effectiveness of parallel and counter flow heat exchangers
AGR2206.6	Apply the Thermal conductivity of liquids and gases on samples

Course Name: Theory of Structures Lab	
Course Code: AGR2207	
AGR2207.1	Understand the moment area theorem regarding the slope and deflection of the beam
AGR2207.2	Different types of columns and find Euler's buckling load for each case
AGR2207.3	Analyse two hinged arch for the horizontal displacement of the roller end for a given system of loading
AGR2207.4	Define the value of flexural rigidity (EI) for a given beam and compare it with theoretical value
AGR2207.5	Estimate the Muller Breslau theorem by using Begg's deformatior set
AGR2207.6	Verify clerk Maxwell's reciprocal theorem

Course Name: Soil Mechanics Lab	
Course Code: AGR2208	
AGR2208.1	Able to Determination of water content of soil
AGR2208.2	Understand the field density of soil by core cutter method
AGR2208.3	Classify Grain size analysis by sieving (Dry sieve analysis)
AGR2208.4	Define the permeability by constant head method
AGR2208.5	Able to know the Determination of unconfined compressive strength of soil
AGR2208.6	Differentiate the consolidation properties of soils



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Course Name: Analysis/Simulation Using MAT Lab	
Course Code: AGR220	
AGR2209.1	Understand the Development of soil monitoring systems
AGR2209.2	Analysis of harvesting equipment design parameters and performance
AGR2209.3	Define the safety storage of harvested crops
AGR2209.4	Able to know the Tractor position tracking using MAT Lab
AGR2209.5	Development of real-time monitoring system of agricultural fields
AGR2209.6	Monitoring the critical factor as water quality to enhance the growth of crops is develop using sensors



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Year/Sem: III B.Tech I SEM

Course Name: Farm Machinery and Equipment - I	
Course Code: AGR3101	
AGR3101.1	To understand primary and secondary tillage implements
AGR3101.2	Differentiate earth moving machinery, seeding and plant protection equipment
AGR3101.3	Able to know get awareness on the mechanical area of the agricultural engineering
AGR3101.4	Understand Classification and types of tillage, Primary tillage implements
AGR3101.5	Analyse Problems on forces analysis, Draft measurement of tillage equipment
AGR3101.6	Apply the Different types of seed metering mechanism, different types of furrow openers

Course Name: Surface Water Hydrology	
Course Code: AGR3102	
AGR3102.1	Able to know to acquire knowledge and skills on hydrological cycle
AGR3102.2	Understand to measurements in watersheds, hydrological design of structure
AGR3102.3	Differentiate the prediction of volume and rates of runoff with tools like hydrographs and unit hydrograph
AGR3102.4	Define the reservoir planning with flood routing techniques
AGR3102.5	Application in natural resources management in watershed
AGR3102.6	Analyse Arithmetic mean, Thiessen polygon, Isohyetal methods, DAD relationships and curves

Course Name: Post Harvest engineering of Cereals, Pulses And Oilseeds	
Course Code: AGR3103	
AGR3103.1	To acquire knowledge and skills on Cleaning and grading
AGR3103.2	Define aspiration, scalping; size separators, screens, sieve analysis, capacity
AGR3103.3	Able to know Different methods of drying, batch-continuous
AGR3103.4	Apply mixing-non-mixing, sun, mechanical, conduction, convection, radiation, superheated steam, tempering during drying
AGR3103.5	Define Milling of rice, Milling of wheat, unit operations and equipment
AGR3103.6	Apply the CFTRI and Pantnagar methods

Course Name: Environmental Management	
Course Code: AGR3104	
AGR3104.1	Understand the Plan and design the water and wastewater systems
AGR3104.2	Analyse the he source of emissions and select proper control systems
AGR3104.3	Able to know the Design & estimation of water supply system for a city
AGR3104.4	knowledge about various environmental aspects
AGR3104.5	Apply the suitable treatment flow for raw water treatments
AGR3104.6	Differentiate the importance of Water and Wastewater Treatment Plant and supply system



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Course Name: Green House Technology	
Course Code: AGR3105	
AGR3105.1	Understand the Constructional and operational details of greenhouses
AGR3105.2	students to grow crops with profits
AGR3105.3	Able to know the greenhouses for offseason usage and also to manage them commercially
AGR3105.4	Classify Greenhouse types based on shape, utility, construction and covering material
AGR3105.5	Define Temperature requirement of horticultural crops, light requirement of crops and lighting control methods
AGR3105.6	Analyse Site selection and orientation, structural design

Course Name: Theory of Machines Lab	
Course Code: AGR3106	
AGR3106.1	Able to determine whirling speed of shaft theoretically and experimentally.
AGR3106.2	Understand position of sleeve against controlling force and speed of a Hartnell governor and to plot the characteristic curve of radius of rotation
AGR3106.3	Analyse the motion of a motorized gyroscope when the couple is applied along its spin axis
AGR3106.4	Study the static and dynamic balancing using rigid blocks
AGR3106.5	Plot slider displacement, velocity and acceleration against crank rotation for single slider crank mechanism/Four bar mechanism
AGR3106.6	Define simple and compound screw jack and determine the mechanical advantage , velocity ratio and efficiency

Course Name: Electrical Circuits Lab	
Course Code: AGR3107	
AGR3107.1	To verify and demonstrate various theorems and resonance
AGR3107.2	Able to draw the locus diagram of series circuits
AGR3107.3	Determine the various parameters of a two port networks
AGR3107.4	Define self and mutual inductance of a magnetic circuit, parameters of a given coil
AGR3107.5	Analyse to measure the power of three phase unbalanced circuit
AGR3107.6	Applying Kirchhoff's law to verify the circuit laws



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Year/Sem: III B.Tech II SEM

Course Name: Soil and Water Conservation Engineering	
Course Code: AGR3201	
AGR3201.1	Acquire knowledge on different soil laws estimation models, run off estimation by rational, curve number, cook's
AGR3201.2	Define Land use, capability classification, soil conservation measures like contour bunding, terracing, bench terraces
AGR3201.3	Classify the contour trenches and their types and complete design calculations
AGR3201.4	To enrich the students and familiarize the students in the design of various gully control structures
AGR3201.5	Able to know the estimation of Factors affecting runoff
AGR3201.6	Designs with a due importance to hydrologic, hydraulic and structural phases of design

Course Name: Farm Machinery and Equipment - II	
Course Code: AGR3202	
AGR3202.1	Understand the basic principles of cutting mechanisms and to know the various available harvesting machine
AGR3202.2	To know the working principle and functions of various machine parts of mowers, reapers
AGR3202.3	Define windrowers, forage harvesters, threshers, combine harvesters, cotton strippers, cotton pickers, groundnut and potato and sugarcane harvesters
AGR3202.4	Students can also understand the importance of testing and evaluation of agricultural machines
AGR3202.5	Different standard codes (BIS Codes) available in India for testing of machinery
AGR3202.6	Classify Crop harvesting machinery, history of development

Course Name: Agricultural Process Engineering	
Course Code: AGR3203	
AGR3203.1	Able to know the unit operations of agricultural process engineering
AGR3203.2	Classify the preliminary operations such as clearing, size reduction, mixing, separation, filtration and materials handling equipment
AGR3203.3	Define Principle, classification, operation, advantages, disadvantages
AGR3203.4	Analyse capacity and power requirement
AGR3203.5	Able to know the Scope and importance crop processing
AGR3203.6	Introduction, theory of solids mixing, criteria of mixer effectiveness and mixing index for granular solids



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Course Name: Water Shed Management	
Course Code: AGR3204	
AGR3204.1	Know the quality and quantity of water for various industries and Advanced water treatment methods
AGR3204.2	Learn the common methods of treatment of wastewaters and Biological treatment methods
AGR3204.3	Analyse methods to reduce impacts of disposal of wasters into environment and CETPs
AGR3204.4	Classify the treatment of wastewaters from specific industries like steel plants
AGR3204.5	Able to know methods of treatment of wastewaters from industries like Aqua, dairy, sugar plants, and distilleries that imply biological treatment methods
AGR3204.6	Applying the neutralization methods for water treatment

Course Name: Remote Sensing & GIS	
Course Code: AGR3205	
AGR3205.1	Understand Model the geometry of real-world structure Represent the physical model of structural element/structure
AGR3205.2	Analyse the Perform analysis of the frame
AGR3205.3	Able to Design and detailing of built up steel beam
AGR3205.4	Developing a design programme for foundation
AGR3205.5	Differentiate the Interpret from the Post processing results
AGR3205.6	Analysis & Design of Roof Trusses

Course Name: Soil and Water Conservation Engineering Lab	
Course Code: AGR3206	
AGR3206.1	Estimate the soil losses and sediment concentration
AGR3206.2	Describes the procedure for planning and construction of soil conservation measures
AGR3206.3	Design the soil conversion measures and structures
AGR3206.4	Underrated the procedure for estimation of soil loss
AGR3206.5	Define discharge, evaporation, sediment, accumulation, water movement through layers
AGR3206.6	Able to know Measurement of irrigation water with H-Flume



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Course Name: Farm Machinery and Equipment Lab	
Course Code: AGR3207	
AGR3207.1	student to get the practical knowledge on various operation in agricultural field for crop production
AGR3207.2	Study of various Farm Machinery and equipment
AGR3207.3	Determination of Field capacity and Field efficiency of primary tillage implements
AGR3207.4	Study of different types of plough bottoms and shares of M.B. Plough
AGR3207.5	Define Calibration of seed drill and problems
AGR3207.6	Analyse Construction and working of renovators and weeding equipment

Course Name: Agricultural Process Engineering Lab	
Course Code: AGR3208	
AGR3208.1	Understand students on how to conduct experiments and evaluate performance of various agricultural food process
AGR3208.2	Able to know the Preparation of flow charts and layout of a food processing plant
AGR3208.3	Determination of the efficiency of cyclone separator
AGR3208.4	Tutorial on extraction by McCabe and Thiele plot
AGR3208.5	Define Performance evaluation of hammer mill and attribution mill
AGR3208.6	Apply Transport Processes and separation Process Principle

Course Name: Structural Design with ANSYS Lab	
Course Code: AGR3209	
AGR3209.1	Understand the concepts of Loads and use of BIS Codes
AGR3209.2	Able to design of singly and doubly reinforced sections, Reinforced concrete Cantilever
AGR3209.3	Design of Eccentric Shear and Moment Resisting connections
AGR3209.4	Applying Method of IS code and Structural steel Framing
AGR3209.5	Able to know Design of Flanged Beams, Slabs, Columns, Foundations, Retaining walls and Silos
AGR3209.6	Differentiate Design of Shear Key-Design and Drawing