



# RURAL ENGINEERING COLLEGE,

HULKOTI-582 205.

Ph No. 08372-289097 08372-289253 Fax: 08372-289427

Dist. Gadag

(Approved by A.I.C.T.E.(New Delhi) Affiliated to V. T. U. Belagasi) E-mail: principalrechkt@rediffmail.com (ESTD-1980)

State: Karnataka

## DEPARTMENT OF MECHANICAL ENGINEERING

### COURSE OUTCOMES

Branch : Mechanical Engineering Semester: 1 Scheme: 2017 Course: ENGINEERING MATHEMATICS-I(17MAT11) Year: 2017-18

CO1	Student will be able to apply the knowledge of calculus to solve problems related to polar curves and its applications in determining the bentness of a curve.
CO2	Student will be able to learn the notion of partial differentiation to calculate rates of change of multivariate functions and solve problems related to composite functions and jacobians.
CO3	Student will be able to apply the concept of change of order of integration and variables to evaluate multiple integrals and their usage in computing the area and volumes.
CO4	Student will be able to solve first order linear/nonlinear differential equation analytically using standard methods

Branch: Mechanical Engineering Semester: 1 Scheme: 2017 Course: ENGINEERING PHYSICS - THEORY(17PHY12) Year: 2017-18

CO1	Student will be able to learn and understand more about the basic principles and to develop problem solving skills and implementation in technology
COZ	Student will be able to gain knowledge about modern physics and quantum mechanics
CO3	Student will be able to study material properties and their application as it is the prime role to implement in engineering studies and applications and basic concepts of nano science and technology.
CO4	Student will be able to study lasers and optical fibers to assimilate knowledge and to develop skills on its applications in communication
CO5	Student will be able to understand crystal structure , shock wave concepts and application.

Branch: Mechanical Engineering Semester: 1 Scheme: 2017

Course: Elements of Civil Engineering And Mechanics(17CIV13) Year: 2017-18

	Student will be able to know basics of civil engineering, its scope of study, knowlwdge about Roads, Bridges and Dams
-	Student will be able to comprehend the action of forces, moments and other loads on systems of rigid bodies.
	external loads.
CO4	Student will be able to locate the centroid and compute the moment of inertia of regular cross sections.
CO5	Student will be able toexpress relationship between the motion of bodies

Course outcomes

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### DEPARTMENT OF MECHANICAL ENGINEERING

### COURSE OUTCOMES

Branch: Mechanical Engineering

Semester: 1 Scheme: 2017

Course: ELEMENTS OF MECHANICAL ENGIUNFERING(17FMF14) Year: 2017-18

CO1	Student will be able to learn the fundamental concepts of energy, its sources and conversion.
CO2	Student will be able to comprehend the basic concept of thermodynamics.
	Student will be able to understand the concepts of boilers, turbine, pumps, ic engines and refrigeration
CO4	Student will be able to distinguish different metal joining technique
	Student will be able to enumerate the knowledge of working with conventional machine tools and their specifications

Branch: Mechanical Engineering

Semester: 1 Scheme: 2017

Course: BASIC ELECTRICAL (17ELE15) Vear: 2017-18

Cour.	se. BASIC ELECTRICAC(17ELETS) Teat. 2017-10
CO1	Student will be able to predict the behaviour of electrical and magnetic circuits
CO2	Student will be able to select the type of generator/motor required for a particular application
CO3	Student will be able to realize the requirement of transformers in transmission and distribution of electric power and other applications
CO4	Student will be able to practice electrical safety rules and standards
CO5	Student will be able to to function on multi-disciplinary team.

Branch: Mechanical Engineering

Semester: 1 Scheme: 2017

Course: WORK SHOP PRACTICE(17WSL16) Year: 2017-18

CO1	Student will be able to demonstrate and produce different types of fitting models
CO2	Student will be able to knowledge of development of sheet models with an understanding of their application
CO3	Student will be able to perform soldering and welding of different sheet metal and welded joints.
CO4	Student will be able to understand the basics of workshop practice

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# DEPARTMENT OF MECHANICAL ENGINEERING

### COURSE OUTCOMES

Branch : Mechanical Engineering Semester : 1 Scheme : 2017
Course: ENGINEERING PHYSICS LAB(17PHYL17) Year: 2017-18

CO1	Student will be able to develop skills to impart practical knowledge in real-time solutions
CO2	Student will be able to understand principle concepts working and application of new technology and comparision of results with theorotical calculation
соз	Student will be able to design new instrument with practical knowledge
	the state of the s
CO5	Student will be able to understand and use new instrument in engg studies

Branch: Mechanical Engineering Semester: 2 Scheme: 2017
Course: ENGINEERING MATHEMATICS-II/(17MAT21) Year: 2017-18

Cours	se: ENGINEERING MATHEMATICS-II(17MAT21) Year: 2017-18
CO1	Student will be able to solve differential equations of electrical circuits, forced oscillation of mass spring and elementary heat transfer.
CO2	Student will be able to solve partial differential equations fluid mechanics, electromagnetic theory and heat transfer.
CO3	Student will be able to evaluate double and triple integrals to find area, volume, mass and moment of inertia of plane and solid region.
mose:	Student will be able to use curl and divergence of a vector valued functions in various applications of electricity, magnetism and fluid flows.
CO5	Student will be able to use laplace transforms to determine general or complete solutions to linear

Branch : Mechanical Engineering Semester : 2 Scheme : 2017

Course: Engineering Chemistry(17CHE22) Year: 2017-18

Cour	Course. Engineering creating	
CO1	Student will be able to understand the concept of different electrodes, and standard electrode and giving knowledge abc batteries and fuel cell	
CO2	Student will be able to apply the concept of corrosion and giving awareness and providing solution	

CO2 Student will be able to apply the concept of corrosion and giving awareness and providing solution for corrosion control.

CO3 Student will be able to utilize of non renewable energy and giving importance to solar energy source than non renewable energy source

CO4 Student will be able to give solution to environmental impurities like hardness of water, sewage treatment, identifying the problems in boiler and value of nano technology

CO5 Student will be able to study of various instruments used in analysis and application of

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# DEPARTMENT OF MECHANICAL ENGINEERING

# COURSE OUTCOMES

Semester: 2 Scheme: 2017 Branch: Mechanical Engineering

Course: Programming in C and Data Structures(17PCD23) Year: 2017-18

CO1	e: Programming in C and Data Structures(17PCD23) Year: 2017-16  Student will be able to apply knowledge of problem solving skills to solve various problems.
CO2	Student will be able to apply basic principles of programming in c language.
CO3	Student will be able to design and develop solutions to various problems using modular programming approach.
CO4	Student will be able to apply basic concepts of arrays, pointers, files, and data structures to solve various problems.
CO5	Student will be able to understand, analyse, and apply static and dynamic memory allocation techniques.

Semester: 2 Scheme: 2017 Branch: Mechanical Engineering

Courtes COMPLITED AIDED ENGINEEDING DRAWING/17CFD24\ Vear: 2017-18

	ourse: COMPUTER AIDED ENGINEERING DRAWING(17CED24) Year: 2017-18	
CO1	Student will be able to demosntrate the usage of cad software	
	Student will be able to visualize and draw orthographic projections, sections of solids and isometric views of solid	
CO3	Student will be able to evaluate their ability in applying various concepts to solve practical problems related to engineering drawing	

Semester: 2 Scheme: 2017 Branch: Mechanical Engineering

Course: BASIC ELECTRONICS(17ELN25) Year: 2017-18

CO1	Student will be able to understand how complex devices, diodes and transisitors modelled and how these models used in design and analysis of rectifiers, filters and baising circuits
CO2	Student will be able to design simple circuiyts like amplifiers, comparators, adders using opamps
CO3	Student will be able to understand the functioning of communication sysytem and different modulation techniques
CO4	Student will be able to understand basic principles of different types of transducers.
CO5	Student will be able to complie the different building blocks in digital electronics using logic gates and implement simple function using basic gates etc



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#### R.T.E. SOCIETY'S

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# DEPARTMENT OF MECHANICAL ENGINEERING

## COURSE OUTCOMES

Branch : Mechanical Engineering Semester : 2 Scheme : 2017 Course: COMPUTER PROGRAMMING LAB(17CPL26) Year: 2017-18

CO1	Student will be able to gain knowledge on various parts of a computer
CO2	Student will be able to draw flowcharts and write algorithms
CO3	Student will be able to design and development of c problem solving skills.
CO4	Student will be able to design and develop modular programming skills.
CO5	Student will be able to trace and debug a program

Branch : Mechanical Engineering Semester : 2 Scheme : 2017 Course: Engineering Chemistry Lab(17CHEL27) Year: 2017-18

	Student will be able to estimate, analyze and create awareness of water impurities by testing of water sample like hardness, alkalinity, cod, the technology involved in estimating and awareness fe in hematite ore, and cu in brass, lime in cement
CO2	

Branch : Mechanical Engineering Semester : 2 Scheme : 2017
Course: ENVIRONMENTAL STUDIES(17CIV28) Year: 2020-21

	se: ENVIRONMENTAL STUDIES(17CIV28) Year: 2020-21
8	Student will be able to understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale.
	Student will be able to develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.
	Student will be able to demonstrate ecology knowledge of a complex relationship between biotic and abiotic components.
CO4	Student will be able to apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.



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## DEPARTMENT OF MECHANICAL ENGINEERING

#### COURSE OUTCOMES

Branch: Mechanical Engineering Semester: 3 Scheme: 2017 Course: Engineering Mask

Cour	ourse: Engineering Mathematics – III(17MAT31) Year: 2018-19	
CO1	Student will be able to know the use of periodic signals and fourier series to analyze circuits and system communications.	
CO2	Student will be able to explain the general linear system theory for continuous-time signals and digital signal processing using the fourier transform and z-transform.	
CO3	Student will be able to employ appropriate numerical methods to solve algebraic and transcendental equations.	
CO4	Student will be able to apply green's theorem, divergence theorem and stokes' theorem in various applications in the field of electro-magnetic and gravitational fields and fluid flow problems.	
CO5	Student will be able to determine the extremals of functionals and solve the simple problems of the calculus of variations.	

Branch: Mechanical Engineering

Semester: 3 Scheme: 2017

Course: MATERIAL SCIENCE(17ME32) Year: 2018-19

CO1	Student will be able to describe the mechanical properties of metals, their alloys and various modes
CO2	Student will be able to understand the microstructures of ferrous and non-ferrous materials to mechanical properties.
CO3	Student will be able to explain the processes of heat treatment of various alloys.
	Student will be able to understand the properties and potentialities of various materials available and material selection procedures.
CO5	Student will be able to know about composite materials and their processing as well as applications,

Branch: Mechanical Engineering Semester: 3 Scheme: 2017 Course: BASIC THERMODYNAMICS(17ME33) Year: 2018-19

	Student will be able to explain thermodynamic systems, properties, zeroth law of thermodynamics, temperature scales & energy interactions
	using first & second law of thermodynamics
	Student will be able to interpret behaviour of pure substances and its applications to practical problems
	Student will be able to determine change in internal energy, change in enthalpy & change in entropy using t-d relations for ideal gases
905	student will be able to calculate thermodynamic properties of real gases at all ranges of

pressures, temperature using modified equation of state including vanderwaals equation redlick wong

dostindo and beatle bridgeman equation

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## DEPARTMENT OF MECHANICAL ENGINEERING

## COURSE OUTCOMES

Branch: Mechanical Engineering Semester: 3 Scheme: 2017

Course: Mechanics of materials(17me34) Year: 2018-19

CO1	Student will be able to understand simple, compound, thermal stresses and strains their relations and strain energy.
CO2	Student will be able to analyse structural members for stresses, strains and deformations.
CO3	Student will be able to analyse the structural members subjected to bending and shear loads.
CO4	Student will be able to analyse shafts subjected to twisting loads.
	Student will be able to analyse the short columns for stability

Branch: Mechanical Engineering Semester: 3 Scheme: 2017 Course: Metal Casting and Welding(17ME3SA) Year: 2018-19

CO1	Student will be able to provide detailed information about the moulding processes.
CO2	Student will be able to provide knowledge of various casting process in manufacturing.
соз	Student will be able to impart knowledge of various joining process used in manufacturing.
CO4	Student will be able to provide adequate knowledge of quality test methods conducted on welded and casted components, component drawings

Branch: Mechanical Engineering Semester: 3 Scheme: 2017

Course: COMPUTER AIDED MACHINE DRAWING(17MEA306) Year: 2018-19

CO1	Student will be able to identify the national and international standards pertaining to machine drawing.
	Student will be able to understand the importance of the linking functional and visualization aspects in the preparation of
	Student will be able to apply limits and tolerances to assemblies and choose appropriate fits for given assemblies.
	Student will be able to interpret the machining and surface finish symbols on the component drawings
CO5	Student will be able to preparation of the part or assembly drawings as per the conventions.



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# DEPARTMENT OF MECHANICAL ENGINEERING

# **COURSE OUTCOMES**

Branch : Mechanical Engineering Semester : 3 Scheme : 2017

Cours	ourse: MATERIALS TESTING LAB(17MEL37A) Year: 2018-19	
CO1	Student will be able to learn the concept of the preparation of samples to perform characterization.	
/A	Student will be able to understand mechanical behavior of various engineering materials by conducting standard tests.	
200000	Student will be able to learn material failure modes and the different loads causing failure.	
CO4	Student will be able to learn the concepts of improving the mechanical properties of materials by different methods like heat treatment, surface treatment etc.	

Branch: Mechanical Engineering Semester: 3 Scheme: 2017
Course: FOUNDRY AND FORGING LAB(17MEL38A) Year: 2018-19

Cours	Course: FOUNDRY AND FORGING LAB(17MEL38A) Year: 2018-19	
CO1	the an insight late different sand preparation and toundry equipment	
CO2	Student will be able to provide an insight into different forging tools and equipment.	
соз	Student will be able to provide training to students to enhance their practical skills.®	
350	Student will be able to practically demonstrate precautions to be taken during casting and hot working.	
COS	the state of the s	



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## DEPARTMENT OF MECHANICAL ENGINEERING

### COURSE OUTCOMES

Branch: Mechanical Engineering Semester: 4 Scheme: 2017 Course: Engineering Mathematics-4(17MAT41) Year: 2018-19

CO1	Student will be able to solve first and second order ordinary differential equation arising in flow problems using single step and multistep numerical methods.
CO2	Student will be able to illustrate problems of potential theory, quantum mechanics and heat conduction by employing notions and properties of bessel's functions and legendre's polynomials.
соз	Student will be able to explain the concepts of analytic functions, residues, poles of complex potentials and describe conformal and bilinear transformation arising in field theory and signal processing.
CO4	joint probability distribution occurring in digital signal processing, information theory and design engineering.
CO5	Student will be able to demonstrate testing of hypothesis of sampling distributions and illustrate examples of markov chains related to discrete parameter stochastic process

Branch: Mechanical Engineering Semester: 4 Scheme: 2017

Course: Kinematics of Machines(17me42) Year: 2018-19

CO1	Student will be able to understand about introduction, mechanisms
CO2	Student will be able to understand about velocity and accelerations (graphical), icm,kleins
CO3	Student will be able to understand about velocity and accelerations (analytical), freudensteins
COA	Student will be able to study about spur gear and gear trains

Branch: Mechanical Engineering Semester: 4 Scheme: 2017

Course: Applied Thermodynamics(17ME43) Year: 2018-19

	Student will be able to apply thermodynamic concepts to analyze the performance of vapour power cycles
	Student will be able to apply thermodynamic concepts to analyze the performance of vapour power
	cycles Student will be able to understand combustion of fuels and performance of i c engines.
CO3	Student will be able to dilderstand owners.

CO4 Student will be able to understand the principles and applications of refrigeration systems.

Student will be able to apply thermodynamic concepts to determine performance parameters of

efrigeration and airconditioning systems

RURAL ENGINEERING COLLEGE HULKOTI - 582 205

Course outcomes

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## DEPARTMENT OF MECHANICAL ENGINEERING

### COURSE OUTCOMES

Branch: Mechanical Engineering

Semester: 4 Scheme: 2017

Course: FLUID MECHANICS(17ME44) Year: 2018-19

CO1	Student will be able to identify and calculate the key fluid properties used in the analysis of fluid behavior.
CO2	Student will be able to understand and apply the principles of pressure, buoyancy and floatation
CO3	Student will be able to apply the knowledge of fluid statics, kinematics and dynamics while addressing problems of mechanical and chemical engineering.
CO4	Student will be able to understand and apply the principles of fluid kinematics and dynamics.
CO5	Student will be able to understand the concept of boundary layer in fluid flow and apply dimensional analysis to form dimensionless numbers in terms of input output variables

Branch: Mechanical Engineering

Semester: 4 Scheme: 2017

Course: Machine Tools and Operations(17ME458) Year: 2018-19

CO1	Student will be able to explain the construction & specification of various machine tools.
CO2	Student will be able to describe various machining processes pertaining to relative motions between tool & work piece.
CO3	Student will be able to discuss different cutting tool materials, tool nomenclature & surface finish.
	Student will be able to apply mechanics of machining process to evaluate machining time.
CO5	Student will be able to analyze tool wear mechanisms and equations to enhance tool life and



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# DEPARTMENT OF MECHANICAL ENGINEERING

## COURSE OUTCOMES

Branch: Mechanical Engineering Semester: 4 Scheme: 2017 COURSE MECHANICAL MEAST

cour	se: MECHANICAL MEASUREMENTS AND METROLOGY(17ME46B) Year: 2018-19
CO1	Student will be able to understand the objectives of metrology, methods of measurement, selection of measuring instruments, standards of measurement and calibration of end bars.
CO2	Student will be able to describe slip gauges, wringing of slip gauges and building of slip gauges, angle measurement using sine bar, sine center, angle gauges, optical instruments and straightness measurement using autocollimator.
CO3	Student will be able to explain tolerance, limits of size, fits, geometric and position tolerances, gauges and their design.
CO4	Student will be able to understand the principle of Johnson mikrokator, sigma comparator, dial indicator, lvdt, back pressure gauges, solex comparators and zeiss ultra optimeter.
CO5	Student will be able to describe measurement of major diameter, minor diameter, pitch, angle and effective diameter of screw threads by 2 – wire, 3 – wire methods, screw thread gauges and tool maker's microscope.

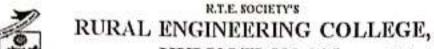
Branch: Mechanical Engineering Semester: 4 Scheme: 2017

Course: MECHANICAL MEASUREMENTS AND METROLOGY LAB(17MEL47B) Year: 2018-19

CO1	Student will be able to calibrate pressure gauge, thermocouple, lvdt, load cell, micrometer.
CO2	Student will be able to measure angle using sine center/ sine bar/ bevel protractor, alignment using autocollimator/ roller set.
CO3	Student will be able to demonstrate measurements using optical projector/tool maker microscope, optical flats.
CO4	Student will be able to measure cutting tool forces using lathe/drill tool dynamometer.
CO5	Student will be able to measure screw thread parameters using 2-wire or 3-wire method, gear tooth profile using gear tooth vernier/gear tooth micrometer.



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# DEPARTMENT OF MECHANICAL ENGINEERING

### COURSE OUTCOMES

Branch: Mechanical Engineering Semester: 4 Scheme: 2017

Course: MACHINE SHOP(17MEL48B) Year: 2018-19

CO1	Student will be able to perform turning , facing , knurling , thread cutting, tapering , eccentric turning and allied operations, keyways / slots , grooves etc using shaper
CO2	Student will be able to perform gear tooth cutting using milling machine
CO3	Student will be able to understand the formation of cutting tool parameters of single point cutting tool using bench grinder / tool and cutter grinder, surface milling/slot milling
CO4	Student will be able to demonstrate precautions and safety norms followed in machine shop
COS	Student will be able to exhibit interpersonal skills towards working in a team

Branch : Mechanical Engineering Semester : 5 Scheme : 2017

Course: MANAGEMENT AND ENGINEERING ECONOMICS(17MES1) Year: 2019-20

CO1	Student will be able to explain the development of management and the role it plays at different levels in an organization.
CO2	Student will be able to comprehend the process and role of effective planning, organizing and staffing for the development of an organization.
CO3	Student will be able to understand the necessity of good leadership, communication and coordination for establishing effective control in an organization.
CO4	Student will be able to understand engineering economics demand supply and its importance in economics decision making and problem solving.
CO5	Student will be able to calculate present worth, annual worth and irr for different alternatives in economic decision making.

Branch: Mechanical Engineering Semester: 5 Scheme: 2017 Course: DYNAMICS OF MACHINES(17ME52) Year: 2019-20

CO1	Student will be able to determine the forces and couples for static and dynamic conditions of four
	bar and slider crank mechanisms to keep the system in equilibrium.

- CO2 Student will be able to determine the forces and couples for static and dynamic conditions of four bar and slider crank mechanisms to keep the system in equilibrium.
- CO3 Student will be able to porter governor .hartnell governor and gyroscope
- CO4 Student will be able to determine gyroscopic couple and effects related to 2, 4 wheeler, plane disc, ship and aeroplanes

COS Student will be able to characterize the single degree freedom systems subjected to free and forced specific free and free and forced specific free and forced specific free and forced specific free and free

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# DEPARTMENT OF MECHANICAL ENGINEERING

# COURSE OUTCOMES

Semester: 5 Scheme: 2017 Branch: Mechanical Engineering

Course: TURRO MACHINES(17MES3) Year: 2019-20

e: TURBO MACHINES(17ME53) Year: 2019-20
Student will be able to give precise definition of turbomachinery
Student will be able to Identify various types of turbo machinery
Student will be able to Apply the Euler's equation for turbomachinery to analyse energy transfer in
Student will be able to Understand the principle of operation of pumps, rans, compressors and
Student will be able to Perform the preliminary design of turbomachines (pumps, rotary compressors and turbines)

Semester: 5 Scheme: 2017 Branch: Mechanical Engineering

Cours	Course: DESIGN OF MACHINE ELEMENTS-I(17ME54) Year: 2019-20	
CO1	Student will be able to describe the design process, choose materials, apply the codes and standards in design process, analyze the behavior of machine components under static loading	
ASSAST	Student will be able to analyze the behavior of machine components under impact, fatigue loading using failure theories	
CO3	Student will be able to design shafts, joints, couplings.	
COA	Student will be able to design riveted and welded joints.	
CO5	Student will be able to design threaded fasteners and power screws	

Semester: 5 Scheme: 2017 Branch: Mechanical Engineering Course: NON TRADITIONAL MACHINING(17ME554) Year: 2019-20

Cours	se: NON TRADITIONAL MACHINING(17ME554) Year: 2019-20
CO1	Student will be able to understand the compare traditional and non-traditional machining
CO2	Student will be able to understand the constructional features, performance parameters, process characteristics, applications, advantages and limitations of usm, ajm and wjm.
	Student will be able to identify the need of chemical and electro-chemical machining process along with the constructional features, process parameters, process characteristics, applications, advantages and limitations.
CO4	advantages and limitations.  Student will be able to understand the constructional feature of the equipment, process parameters, process characteristics, applications, advantages and limitations edm & pam.
605	Student will be able to understand the Ibm equipment, Ibm parameters, and characteristics, ebm.

equipment and mechanism of metal removal, applications, advantages and limitations Ibm & ebm.

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Semester: 5 Scheme: 2017

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# RURAL ENGINEERING COLLEGE,

# HULKOTI-582 205.

Ph No. 08372-289097 0B372-289253 Fax: 08372-289427

(Approved by A.I.C.T.E.(New Delhi) Affiliated to V. T. U. Belagavi)

E-mail: principalrechkt@rediffmail.com

State: Karnataka

Dist. Gadag

(ESTD-1980)

# DEPARTMENT OF MECHANICAL ENGINEERING

# COURSE OUTCOMES

Course: ENERGY AND ENVIRONMENT(17ME562) Year: 2019-20

<ul> <li>e: ENERGY AND ENVIRONMENT(17ME562) Year: 2019-20</li> <li>Student will be able to summarize the basic concepts of energy, its distribution and general scenario.</li> </ul>
Student will be able to explain different energy storage systems, energy management, audit and economic analysis.
Student will be able to summarize the environment eco system and its need for awareness.
Student will be able to identify the various types of environment pollution and their effects.
Student will be able to discuss the social issues of the environment with associated acts.

Branch: Mechanical Engineering

Semester: 5 Scheme: 2017

SELUID MECHANICS & MACHINERY LAB(17MELS7) Year: 2019-20

CO1	Student will be able to perform experiments to determine the coefficient of discharge of flow measuring devices.
CO2	Student will be able to conduct experiments on hydraulic turbines and pumps to draw
(Fatter)	Student will be able to test basic performance parameters of hydraulic turbines and pumps and
CO4	Student will be able to determine the energy flow pattern through the hydraulic turbines and pumps
CO5	Student will be able to exhibit his competency towards preventive maintenance of hydraulic machines

Branch: Mechanical Engineering

Semester: 5 Scheme: 2017

Course: ENERGY CONVERSION LAB(17MEL58) Year: 2019-20 CO1 Student will be able to perform experiments to determine the properties of fuels and oils.

Student will be able to conduct experiments on engines and draw characteristics CO2

Student will be able to test basic performance parameters of i.c. engine and implement the CO3 knowledge in industry.

Student will be able to identify exhaust emission, factors affecting them and report the remedies. CO4

Student will be able to determine the energy flow pattern through the i c engine CO5

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### DEPARTMENT OF MECHANICAL ENGINEERING

### COURSE OUTCOMES

Branch: Mechanical Engineering Semester: 6 Scheme: 2017
Course: FINITE FLEMENT ANALYSIS(17ME61) Year: 2019-20

COU!	se: FINTE ELEMENT ANALYSIS(1/MEb1) Year: 2019-20
CO1	Student will be able to understand the concepts behind formulation methods in fem.
CO2	Student will be able to identify the application and characteristics of fea elements such as bars, beams, plane and so-parametric elements.
CO3	Student will be able to develop element characteristic equation and generation of global equation.
CO4	Student will be able to able to apply suitable boundary conditions to a global equation for bars, trusses, beams, circular shafts, heat transfer, fluid flow, axi symmetric and dynamic problems and solve them displacements, stress and strains induced.
CO5	Student will be able to able to apply suitable boundary conditions to a global equation for heat transfer, fluid flow, axi symmetric and dynamic problems and solve them displacements, stress and strains induced.

Branch: Mechanical Engineering Semester: 6 Scheme: 2017

Course: Computer Integrated Manufacturing (17ME62) Year: 2019-20

CO1	Student will be able to define automation, cim, cad, cam and explain the differences between these concepts
CO2	Student will be able to solve simple problems of transformations of entities on computer screen.
CO3	Student will be able to explain the basics of automated manufacturing Industries through mathematical models and analyze different types of automated flow lines.
CO4	Student will be able to analyze the automated flow linesto reduce down time and enhance productivity.
CO5	Student will be able to explain the use of different computer applications in manufacturing, and able to prepare part programs for simple jobs on one machine tools and robot programming.



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# DEPARTMENT OF MECHANICAL ENGINEERING

### COURSE OUTCOMES

Branch: Mechanical Engineering

Semester: 6 Scheme: 2017

Course: HEAT TRANSFER(17MF63) Year: 2019-20

CO1	Student will be able to understand the basic modes of heat transfer
CO2	Student will be able to compute temperature distribution in steady state and unsteady state heat conduction.
соз	Student will be able to understand and interpret heat transfer through extended surfaces.
CO4	Student will be able to interpret and compute forced and free convection heat transfer.
COS	Student will be able to explain the principles of radiation heat transfer and understand the numerical formula for heat conduction problems.

Branch: Mechanical Engineering

Semester: 6 Scheme: 2017

Course: DESIGN OF MACHINE ELEMENTS-II(17ME64) Year: 2019-20

CO1	Student will be able to apply engineering design tools to product design.
CO2	Student will be able to design mechanical systems involving springs, belts and pulleys.
CO3	Student will be able to design different types of gears and simple gear boxes for different applications.
CO4	Student will be able to design brakes and clutches.
COS	Student will be able to design hydrodynamic bearings for different applications. select anti friction bearings for different applications using the manufacturers, catalogue.

Branch: Mechanical Engineering Course: AUTOMOBILE ENGINEERING(17ME655) Year: 2019-20

Semester: 6 Scheme: 2017

CO1	Student will be able to define automation, cim, cad, cam and explain the differences between these concepts
CO2	Student will be able to solve simple problems of transformations of entities on computer screen.
CO3	Student will be able to explain the basics of automated manufacturing industries through mathematical models and analyze different types of automated flow lines.
CO4	Student will be able to analyze the automated flow linesto reduce down time and enhance

productivity.

Student will be able to explain the use of different computer applications in manufacturing, and able to property part programs for simple jobs on one machine tools and robot programming

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#### DEPARTMENT OF MECHANICAL ENGINEERING

### COURSE OUTCOMES

Branch: Mechanical Engineering Semester: 6 Scheme: 2017 Course: TOTAL QUALITY MANAGEMENT(17ME664) Year: 2019-20

CO1	Student will be able to explain the various approaches of TQM
CO2	Student will be able to infer the customer perception of quality
CO3	Student will be able to analyze customer needs and perceptions to design feedback systems.
	Student will be able to apply statistical tools for continuous improvement of systems
	Student will be able to apply the tools and technique for effective implementation of TQM.

Branch: Mechanical Engineering Semester: 6 Scheme: 2017

Course: HEATTRANSFER LAB(17MEL67) Year: 2019-20

	Se. HEATTRANSPER DAD(T/INTELS/) Tear: 2019-20
CO1	Student will be able to perform experiments to determine the thermal conductivity of a metal rod
CO2	Student will be able to conduct experiments to determine convective heat transfer coefficient for free and forced convection and correlate with theoretical values.
CO3	Student will be able to estimate the effective thermal resistance in composite slabs and efficiency in pin-fin
CO4	Student will be able to estimate performance of a refrigerator and effectiveness of fincalculate temperature distribution of study and transient heat conduction through plane wall, cylinder and fin using numerical approach.

Branch: Mechanical Engineering Semester: 6 Scheme: 2017 Course: Modeling and Analysis Lab (FEA)(17MEL68) Year: 2019-20

CO1	Student will be able to demonstrate the basic features of an analysis package.
CO2	Student will be able to use the modern tools to formulate the problem, and able to create geometry, descritize, apply boundary condition to solve problems of bars, truss, beams, plate to find stress with different- loading conditions.
CO3	Student will be able to demonstrate the deflection of beams subjected to point, uniformly distributed and varying loads further to use the available results to draw shear force and bending
CO4	
CO5	CStudent will be able to carry out dynamic analysis and finding natural frequencies for various boundary conditions and also analyze with forcing function.



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# DEPARTMENT OF MECHANICAL ENGINEERING

# COURSE OUTCOMES

Semester: 7 Scheme: 2017 Branch: Mechanical Engineering

Course: ENERGY ENGINEERING(17ME71) Year: 2020-21

Cours	e: ENERGY ENGINEERING(17ME71) Year: 2020-21
COL	Student will be able to summarize the basic concepts of thermal energy systems
	section will be able to identify renewable energy sources and their utilization.
CO3	Student will be able to understand the basic concepts of solar radiation and analyze the working of
	Student will be able to understand principles of energy conversion from alternate sources including wind, geothermal, ocean, biomass, biogas
CO5	Student will be able to understand the concepts and applications of fuel cells, thermoelectric convertor and mhd generator.

Semester: 7 Scheme: 2017 Branch: Mechanical Engineering

Course: FLUID POWER SYSTEM(17ME72) Year: 2020-21

Cours	e: FLUID POWER SYSTEM(17ME/2) Year: 2020-21
	Student will be able to to provide an insight into the capabilities of hydraulic and pnumatic fluid power
CO2	Student will be able to to undestand concepts and relationships surrounding force, pressure, energy
CO3	Student will be able to to examin concepts cantering on sources of hydraunic power, rotally actuators, distribution system, hydraulic flow in pipes, and control components in fluid power
	system Student will be able to exposure to build and interprit hydraulic and pnumatic circuits reated to
	t this implications
CO5	Student will be able to to familiarize with logical controls and trouble shooting.

Semester: 7 Scheme: 2017 Branch: Mechanical Engineering

Course: CONTROL ENGINEERING(17ME73) Year: 2020-21

-	Student will be able to recognize control system and its types , control actions
COZ	Student will be able to determine the system governing equations to project
	thermal, mechanical, electromechanical)
	thermal, mechanical, electromechanical) Student will be able to calculate the gain of the system using block diagram and signal flow graph
	Student will be able to illustrate the response of 1st and 2nd order systems.
CO4	Student will be able to illustrate the response of transfer functions in complex domain and Student will be able to determine the stability of transfer functions in complex domain and
CO5	
CO5	Student will be able to determine the standard

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# DEPARTMENT OF MECHANICAL ENGINEERING

# COURSE OUTCOMES

Semester: 7 Scheme: 2017 Branch : Mechanical Engineering Course: SMART MATERIALS AND MEMS(17ME745) Year: 2020-21

Cours	Course: SMART MATERIALS AND MEMS(17ME745) Year: 2020-21	
	Student will be able to describe the methods of controlling vibration using smart systems and	
CO2	fabrication methods of mems  Student will be able to explain the principle concepts of smart materials, structures, fibre optics, er &	
CO3	mr fluids, biomimetics and mems with priciples of working Student will be able to analyse the properties of smart structures, mems, with the applications and	
	select suitable procedure for fabrication.  Student will be able to summarise the methods and uses of microfabrications, biomimetics, types of	
CO4	polymers used in mems, fibre optics, piezoelectric sensing and actuation	

Branch: Mechanical Engineering

Semester: 7 Scheme: 2017

Course: Mechatronics(17ME753) Year: 2020-21

COL	Student will be able to Illustrate various components of Mechatronics systems.
	les at a traille handle to assess various control systems used in automation.
COZ	Student will be able to develop mechanical, hydraulic, pneumatic and electrical control systems.
CO3	Student will be able to develop mechanical, ny

Branch: Mechanical Engineering

Semester: 7 Scheme: 2017

Course: DESIGN LAB(17MEL76) Year: 2020-21

Cours	e: DESIGN LAB(17MEL76) Year: 2020-21
CO1	Student will be able to to understand the natural frequency, logarithmic decrement, damping ratio
CO2	Student will be able to to understand the balancing of rotating masses.
CO3	Student will be able to to understand the concept of the critical speed of a rotating shaft.
CO4	Student will be able to to understand the concept of stress concentration using photo elasticity.
COS	Student will be able to to understand the equilibrium speed, sensitiveness, power and effort of governor.



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### DEPARTMENT OF MECHANICAL ENGINEERING

### COURSE OUTCOMES

Branch: Mechanical Engineering Semester: 7 Scheme: 2017

CO1	Student will be able to generate one mill part programming for point to point motions, line motions, circular interpolation, contour motion, pocket milling- circular, rectangular, mirror commands etc.
CO2	Student will be able to generate one lathe part program for turning, facing, chamfering, grooving, step turning, taper turning etc.
CO3	Student will be able to generate one lathe part program for drilling, peck drilling, boring, tapping, turning, facing, taper turning thread cutting etc.

Branch: Mechanical Engineering Semester: 7 Scheme: 2017 Course: PROJECT WORK PHASE-I(17MEP78) Year: 2020-21

CO1	Student will be able to identify an engineering problem, devise a means of solving and exhibit the ability to execute the solution
CO2	Student will be able to demonstrate knowledge of professional and ethical responsibilities.
CO3	Student will be able to show the understanding of impact of engineering solutions on the society and also will be aware of contemporary issues
CO4	Student will be able to communicate effectively in both verbal and written form
CO5	Student will be able to develop confidence for self-education and ability for lifelong learning

Branch: Mechanical Engineering Semester: 8 Scheme: 2017

Course: Operation Research(17ME81) Year: 2020-21

CO1	Student will be able to Understand the meaning, definitions, scope, need, phases and techniques of operations research.
CO2	Student will be able to Formulate as L.P.P and derive optimal solutions to linear programming problems by graphical method, Simplex method, Big-M method and Dual Simplex method.
CO3	Student will be able to formulate as Transportation and Assignment problems and derive optimum
CO4	Student will be able to construct network (cpm &pert ) and queing
COS	Student will be able to do sequencing and game theory



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## DEPARTMENT OF MECHANICAL ENGINEERING

#### COURSE OUTCOMES

Branch: Automobile Engineering Semester: 8 Scheme: 2017

Course: Additive Manufacturing(17ME82) Year: 2020-21

	Student will be able to understand the different process of additive manufacturing, using polymer, powder and nano materials manufacturing
CO2	Student will be able to analyse the different characterization techniques
	Student will be able to describe the various nc, one machine programing and automation techniques.

Branch: Mechanical Engineering Semester: 8 Scheme: 2017

Course: CRYOGENICS(17ME831) Year: 2020-21

CO1	Student will be able to to understand the cryogenic system
CO2	Student will be able to to have complete knowledge of cryogenic refrigeration system
CO3	Student will be able to to design gas separation and gas purification system
CO4	Student will be able to to solve the problem in insulation, storage of cryogenic fluids.
	Student will be able to to apply cryogenics in various areas and to be able to take up reasearch in cryogenics

Branch: Mechanical Engineering Semester: 8 Scheme: 2017

Course: INTERNSHIP AND PROFESSIONAL PRACTICE(17ME84) Year: 2020-21

CO1	Student will be able to to gain hands-on professional work experience prior to their graduation.
CO2	Student will be able to learn, understand and sharpen the real-time technical, managerial and life skills required at the job.
соз	Student will be able to contextualise the value of industry and professional networks and their importance to independent practice, lifelong learning and career progression
CO4	Student will be able to demonstrate employability skills and attributes, linking them to industry expectations.
CO5	Student will be able to expose students to the engineer's responsibilities and ethics.

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## DEPARTMENT OF MECHANICAL ENGINEERING

## COURSE OUTCOMES

Branch : Mechanical Engineering Semester : 8 Scheme : 2017

	e: PROJECT WORK PHASE-II(17MEP85) Year: 2020-21
CO1	Student will be able to identify an engineering problem, devise a means of solving and exhibit the
	ability to execute the solution
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CO2	Student will be able to demonstrate knowledge of professional and ethical responsibilities.
CO3	Student will be able to show the understanding of impact of engineering solutions on the society
	and also will be aware of contemporary issues
CO4	Student will be able to communicate effectively in both verbal and written form

Branch: Mechanical Engineering Semester: 8 Scheme: 2017

Course: SEMINAR(17MES86) Year: 2020-21

CO1	Student will be able to develop interest towards reseach oriented field with ability to search the literature and brief report preparation.(literature work & report)
CO2	Student will be able to develop the skills, competencies and points of view needed by professionals in the field most closely related to the course(topic coverage)
CO3	Student will be able to discuss and critical thinking about topics of current intellectual practice(topic selection)
CO4	Student will be able to improve the interpersonal and communication skills and awareness about the industrial environment(questionaire)
CO5	Student will be able to develop of presentation skills (body language and presentation skill)



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