

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (AUTONOMOUS)

(AFFILIATED TO JNTUK, KAKINADA) (RECOGNISED BY ALL INDIA COUNCIL FOR TECH. EDN., NEW DELHI)

Accredited by NAAC with 'A' Grade Recognised as Scientific and Industrial Research Organisation

CHINNA AMIRAM (P.O):: BHIMAVARAM :: W.G.Dt., A.P., INDIA :: PIN: 534 204

Dr. M.Jagapathi Raju

M.Tech. (IIT,KGP), Ph.D.(A.U), FIE,MISTE,

PRINCIPAL



Phones: Off : 08816-223332 Ext.201

Direct: 08816-222748

Mobile No.9848381818

Emails: principal@srkrec.ac.in

principalsrkrec@gmail.com

Web Site : www.srkrec.ac.in

PROCEEDINGS OF THE PRINCIPAL

Ref. No: SRKREC/Committee/BoS/ME/4

Date: 23-11-2020

Sub: Appointment of BoS members for Mechanical Engineering (ME) department-Reg.

The following members are nominated as Board of Studies members for the Department of Mechanical Engineering. This order will come into force with immediate effect until further orders.

S. No	Name	Category	Associated with
1	Dr. K.Brahma Raju	Chairman	Professor & Head, Dept. of Mechanical Engineering, SRKRC
2	Prof. N.V.Subba Raju	Faculty of each specialization	Professor, SRKREC
3	Prof.K.Satya Narayana		Professor, SRKREC
4	Dr. A.Bala Krishna		Professor, SRKREC
5	Dr.V.DurgaPrasada Rao		Professor, SRKREC
6	Dr. P.Rama Murthy Raju		Professor, SRKREC
7	Dr. K.SureshBabu		Professor, SRKREC
8	Dr. K.V.M. Krishnam Raju		Professor, SRKREC
9	Sri P.V.Gopala Raju		Associate Professor, SRKREC
10	Sri Ch.Srinivas		Associate Professor, SRKREC
11	Sri V.K.Viswanadha Raju		Associate Professor, SRKREC
12	Sri C.V.S.R.K.Raju		Associate Professor, SRKREC
13	Sri Ch. Gopala Raju		Associate Professor, SRKREC
14	Sri P.V.R.S. Padma Raju		Associate Professor, SRKREC
15	Sri G. Chatrapathi Raju		Associate Professor, SRKREC
16	Dr. S.Rajesh		Associate Professor, SRKREC
17	Dr. K.Sita Rama Raju		Associate Professor, SRKREC
18	Prof. G. Ravi Kiran Sastry	Experts from other Universities	Professor, Dept. of Mechanical Engineering, National Institute of Technology Andhra Pradesh Tadepalligudem, Andhra Pradesh
	Prof. K. VenkataSubbaiah		Professor & Head, Dept. of Mechanical Engineering, College of Engineering (A), Andhra University.
19	Dr. A. Gopala Krishna	JNTUK Nominee	Professor of Mechanical Engineering, University College of Engineering Kakinada (UCEK), JNTU Kakinada
20	Dr. P.V.S.Ganesh Kumar	Expert from Professional Body	Associate Director Naval Science & Technological Laboratory (NSTL) Visakhapatnam, Andhra Pradesh.

c.c.to:

1. Principal's table

2. HOD Mech. Engg.

3. All above Members

4. Office

PRINCIPAL
S.R.K.R. Engg. College
BHIMAVARAM-534 204



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S.R.K.R. Engg. College
BHIMAVARAM-534 204

S.R.K.R. Engineering College- Department of Mechanical Engineering-Board of Studies Meeting-Reg.

1 message

Mechanical Department <hodmechsrkr@gmail.com>
To: dr.a.gopalakrishna@gmail.com

Sat, Sep 18, 2021 at 10:11 AM

Dear Sir,

Sub: S.R.K.R. Engineering College- Department of Mechanical Engineering-Board of Studies Meeting-Reg.

We take the privilege in inviting you for the Board of Studies Meeting of the Department of Mechanical Engineering, SRKR Engineering College as a University Nominee.

You are requested to attend the online meeting scheduled on 19.09.2021 (Sunday) at 11.00 AM. The online meeting link will be provided to you shortly.

Kindly accept our invitation and make it convenient to attend the Board of Studies meeting.

Thanking you,

Yours Sincerely,

Dr. K. BRAHMA RAJU

Professor & Head,

Department of Mechanical Engineering

S.R.K.R. Engineering College (A)

China Amiram, Bhimavaram,

West Godavari District

Andhra Pradesh-534204

Mobile No. : 9849503522


PRINCIPAL
S.R.K.R. Engg. College
BHIMAVARAM-534 204.

S.R.K.R. Engineering College- Department of Mechanical Engineering-Board of Studies Meeting-Reg.

1 message

Mechanical Department <hodmechsrkr@gmail.com>
To: ganeshkumar.pvs@nstl.drdo.in

Sat, Sep 18, 2021 at 10:17 AM

Dear Sir,

Sub: S.R.K.R. Engineering College- Department of Mechanical Engineering-Board of Studies Meeting-Reg.

We take the privilege in inviting you for the Board of Studies Meeting of the Department of Mechanical Engineering, SRKR Engineering College as a University Nominee.

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Thanking you,

Yours Sincerely,
Dr. K. BRAHMA RAJU
Professor & Head,
Department of Mechanical Engineering
S.R.K.R. Engineering College (A)
China Amiram, Bhimavaram,
West Godavari District
Andhra Pradesh-534204
Mobile No. : 9849503522


PRINCIPAL
S.R.K.R. Engg. College
BHIMAVARAM-534 204

S.R.K.R. Engineering College- Department of Mechanical Engineering-Board of Studies Meeting-Reg.

1 message

Mechanical Department <hodmechsrkr@gmail.com>
To: grksastry@nitandhra.ac.in

Sat, Sep 18, 2021 at 10:12 AM

Dear Sir,

Sub: S.R.K.R. Engineering College- Department of Mechanical Engineering-Board of Studies Meeting-Reg.

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Thanking you,

Yours Sincerely,
Dr. K. BRAHMA RAJU
Professor & Head,
Department of Mechanical Engineering
S.R.K.R. Engineering College (A)
China Amiram, Bhimavaram,
West Godavari District
Andhra Pradesh-534204
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S.R.K.R. Engg. College
BHIMAVARAM-534 204.

S.R.K.R. Engineering College- Department of Mechanical Engineering-Board of Studies Meeting-Reg.

1 message

Mechanical Department <hodmechsrrkr@gmail.com>
To: drkvsau@yahoo.co.in, kvsubbaiah.mech@auvsp.edu.in

Sat, Sep 18, 2021 at 10:14 AM

Dear Sir,

Sub: S.R.K.R. Engineering College- Department of Mechanical Engineering-Board of Studies Meeting-Reg.

We take the privilege in inviting you for the Board of Studies Meeting of the Department of Mechanical Engineering, SRKR Engineering College as a University Nominee.

You are requested to attend the online meeting scheduled on 19.09.2021 (Sunday) at 11.00 AM. The online meeting link will be provided to you shortly.

Kindly accept our invitation and make it convenient to attend the Board of Studies meeting.

Thanking you,

Yours Sincerely,
Dr. K. BRAHMA RAJU
Professor & Head,
Department of Mechanical Engineering
S.R.K.R. Engineering College (A)
China Amiram, Bhimavaram,
West Godavari District
Andhra Pradesh-534204
Mobile No. : 9849503522


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SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE(A)
CHINNA AMIRAM :: BHIMAVARAM-534204
DEPARTMENT OF MECHANICAL ENGINEERING

Dt: 18-09-2021

CIRCULAR

This is to inform you that the Department of Mechanical Engineering will hold a meeting on 19-09-2021 at 11.00 AM in Room No. M-109 (HOD Room) virtually (using zoom virtual meeting platform). In this connection, all the members of the Board of Studies are requested to attend the same.

Agenda:

1. To discuss and finalize course structure and syllabus for 3/4 - B.Tech Mechanical Engineering program under R-19 regulations.
2. To discuss and finalize course structure and syllabus for 2/4 – B.Tech Mechanical Engineering program , under R-20 regulations.
3. To discuss and finalize syllabus for Design Drawing and Visualization Course for 1/4 B.Tech Computer Science and Design program under R-20 regulations.

C.C to:

1. The Members of Board of studies
2. Office file




Head of the Department
Professor & Head
Dept. of Mechanical Engg.
S.R.K.R. Engineering College
CHINNA AMIRAM (P.O.)
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MINUTES OF THE MEETING 33

Ninth Board of studies meeting in virtual Mode (using Zoom platform) was held on 19-09-2021 in M109 (Head Room) of Mechanical Engineering Department at 11:00 AM in order to discuss the following items:

- (1) Discussion and Finalization of course structure and Syllabus of 3/4 B.Tech Mechanical Engineering program under R19 Regulations.
- (2) Discussion and Finalization of course structure and Syllabus of 2/4 B.Tech Mechanical Engineering program under R20 Regulations.
- (3) Discussion and Finalization of syllabus for Design Drawing and Visualization course for 1/4 B.Tech. Computer Science and Design program under R20 Regulations.

Jenini
Professor & Head
Dept. of Mechanical Engg.
S.P.P.R. Engineering College
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MINUTES OF THE MEETING RESOLUTIONS

- (1) Resol. Discussed about Feedbacks from students, Alumni, Employers and parents on curriculum while designing the course structure and syllabus for 3/4 B.Tech & 2/4 B.Tech Mechanical Engineering Program.
- (2) Resolved to offer Design Drawing and Visualization Course for 1/4 B.Tech Computer Science and Design program in the second semester under R20 Regulations. and also Discussed and Finalized the syllabus for the same Course.
- (3) One of the BOS Members DR. A. GOPALA KRISHNA, Professor Dept. of Mech. Engg. JNTUK, suggested to add a topic "Hydraulic circuits" in UNIT-2 of Fluid Mechanics & Hydraulic Machinery Course.

- (4) Resolved to offer the following Skill Oriented Courses for 2/4 B.Tech (R20) Mech. Engg. program

S.No.	Course Name	Credits	Semester
1.	Modelling Using 3D Experience	2	First
2.	Advanced Surface and Assembly modeling using CATIA	2	Second

- (5) Resolved to offer the following Courses in addition to Regular curriculum for 2/4 B.Tech (R20) Mech. Engg. program

S.No.	Course Name	Semester
1	Professional Ethics and Human values	First
2	English proficiency	Second

- (6) Finalized the course structure and syllabus for the 2/4 B.Tech (R20) Mechanical Engg. program.

- (7) One of the BOS Members DR. P.V.S. GANESH KUMAR, Senior Scientist, NSTL Visakhapatnam, suggested to add a topic "Applications of Gas Turbines" in UNIT-V of I.C. Engines and Gas Turbines Course.

- (8) One of the BOS Members DR. K. VENKATA SUBBIAH, Senior Professor, Dept. of Mech. Engg., A.V. College of Engineering (W), Andhra University, suggested to add a topic "Force Casting

Professor & Head
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Errors" in production planning and control course.

(9) one of the BOS Members Dr. G. RAVI KIRAN SASTRY, Professor, Dept. of Mech. Engg., NIT Andhra Pradesh, suggested to add a topic "Introduction to Natural Fibers" in UNIT-II of Composite Materials Course.

(10) Resolved to offer the following courses in addition to Regular Curriculum for 3/4 B.Tech (R19) Mech. Engg. Program.

S.NO.	Course Name	Semester
1	Employability Skills-I	First
2	Employability Skills-II	Second
3	Basic coding	Second.

(11) Resolved to offer 2 Program Electives [Program Elective-I and Program Elective-II] with 3 courses + 1 MOOCs in Each Program Elective for 3/4 B.Tech (R19) Mech. Engg. Program.

(12) Resolved to offer the following courses under the Open Elective - I Category (Offered to other programs) for 3/4 B.Tech-II semester Mech. Engg. Program under R19 Regulation

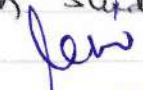
S.NO.	Open Elective Course Name
1	Operations Research.
2	Operations Management
3	Total Quality Management.

(B) Finalized the course structure and syllabus for the 3/4 B.Tech (R19) Mechanical Engg. Program.

[Signature]
 Professor & Head
 Dept. of Mechanical Engg.
 S.R.K.R. Engineering College
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MEMBERS PRESENT

S.NO	NAME OF THE MEMBER	DESIGNATION
01	Dr. P.V.S. GANESH KUMAR	Senior Scientist NSTL, VISAKHAPATNAM
02	Dr. K. VENKATA SUBBIAH.	Prof & Head, Dept. of Mech. Engg. AUCE, Andhra University VISAKHA PATNAM
03	Dr. A. GOPALA KRISHNA	Prof & Director R&D, UCE JNTUK, Kakinada.
04	Dr. G. RAVI KIRAN SASTRY	Professor in Dept. of M.E. NITAP, Tadepalligudem.
05	Dr. K. BRAHMA RAJU (Chairman)	Professor & Head, DME
06	Prof. N.V. SUBBA RAJU	Professor
07	Dr. A. BALA KRISHNA	Professor
08	Dr. V. DURGA PRASADA RAO	Professor
09	Dr. P. RAMA MURTY RAJU	Professor.
10	Dr. K. SURESH BABU	Professor
11	Dr. K.V. MURALI KRISHNAM RAJU	Professor
12	Sri CH. SRINIVAS	Associate professor
13	Sri. V.K. VISWANADHA RAJU	Associate professor
14	Sri. C.R.K. RAJU	Associate professor
15	Sri. CH. GOPALA RAJU	Associate professor
16	Sri. P.V.R.S. PADMA RAJU	Associate professor
17	Sri. G. CHATAPATHI RAJU	Associate professor
18	Dr. S. RAJESH	Associate professor
19	Dr. K. SITA RAMA RAJU	Associate professor
20	K. Bhaskara Rama Krishna	M.Tech Student
21	P. SURYA TEJA	B.Tech Student
		 Professor & Head Dept. of Mechanical Engg. S.R.K.R. Engineering College CHINAMIRAM (P.O.) BHIMAVARAM-534 204.

RESOLUTIONS FOR THE MEETING DATED 19-09-2021

- (1) Resol. Discussed about Feedbacks from students, Alumni, Employers and parents on curriculum while designing the course structure and syllabus for 3/4 B.Tech & 2/4 B.Tech Mechanical Engineering Program.

Feedback Analysis 2020-21

A feedback on the curriculum is obtained from students, employers, faculty and alumni. After study of the feedback form various stake holders some important points of the feedback are identified. Total 308 feedback forms have been obtained from various stake holders.

The following are the key points obtained from the study of the feedback:

1. Strong research groups needed to be formed within the department in time with the present industrial needs
2. Students should be trained to explore and understand emerging technologies
3. All round development of the interpersonal and communicational skills to be encouraged
4. Students are to be provided with academic flexibility to give a wide spectrum of multi-disciplinary exposure
5. The curriculum also needs to include subjects like moral ethics and responsibilities which are much needed for present generation
6. More hands-on experience to be provided to students to link theory with practice
7. According to the competence outside we can increase the depth of the syllabus. It may load the students but increases the standards
8. Better to decrease quantity and increase quality
9. Better to include a mini project in 3rd year
10. Give priority to sports
11. Can add python language in first year
12. Introduce software courses in every semester
13. Industrial tours are required
14. Put more programming courses as elective subjects
15. Include new technologies in the syllabus
16. Library stock should be increased
17. Mechanical engineering related excellency centres must be established

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Head of CHINA AMIRAM
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- (2) Resolved to offer Design Drawing and Visualization Course for 1/4 B.Tech Computer Science and Design Program in the Second Semester under R20 Regulations. and also Discussed and Finalized the Syllabus for the same Course.

Regulation: R20			I / IV - B.Tech. II - Semester						
COMPUTER SCIENCE AND DESIGN									
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2021-22 admitted batch onwards)									
Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 BS 1201	Mathematics-II	BS	3	3	0	0	30	70	100
B20 BS 1202	Applied Physics	BS	3	3	0	0	30	70	100
* B20 CD 1201	Python Programming	ES	3	2	0	0	30	70	100
				0	0	2	15	35	50
B20 ME 1205	Design Drawing & Visualization	ES	3	1	0	4	30	70	100
B20 CS 1203	Data Structures	ES	3	3	0	0	30	70	100
B20 CD 1203	Design Thinking and Innovation lab	ES	1.5	0	0	3	15	35	50
H20 BS 1207	Applied Physics Lab	BS	1.5	0	0	3	15	35	50
B20 CS 1206	Data Structures & Algorithms Lab	ES	1.5	0	0	3	15	35	50
B20 MC 1202	Professional Ethics & Human values	MC	0	2	0	0	--	--	--
B20 MC 1203	National Service Scheme (NSS)	MC	0	0	0	2	--	--	--
TOTAL			19.5	14	0	17	210	490	700

Note: *- Integrated course and its evaluation guide lines are mentioned in the Syllabus



SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (AUTONOMOUS)
China Amiram, Bhimavaram-534204 (AP)

ESTD: 1980

COMPUTER SCIENCE AND DESIGN
SYLLABUS: DESIGN DRAWING AND VISUALIZATION (B20ME1205)

UNIT-I: Introduction to Design Drawing: Geometrical Constructions, Polygons: Constructing regular polygons by general methods, inscribing and describing polygons on circles. Engineering Curves: Parabola, Ellipse and Hyperbola by using general method only, cycloids, involutes, tangents & normals for the curves.

UNIT-II: Orthographic Projections: Reference plane, importance of reference lines, projections of points in various quadrants, projections of lines, line parallel to both the planes, line parallel to one plane and perpendicular to other plane, line parallel to one plane and inclined to other plane. Projections of straight lines inclined to both the planes, determination of true lengths and angle of inclination.

UNIT-III: Projections of planes: Regular planes perpendicular to one reference plane and parallel to other, planes perpendicular to one reference plane and inclined to the other reference plane; planes inclined to both the reference planes.

Projections of Solids: - Prisms, Pyramids, Cones, and Cylinders with the axis inclined to one of the reference planes.

UNIT-IV: Isometric Projections: Introduction to Isometric projection and Isometric projection of simple Right and Regular Solids - Prism, Cylinder, Pyramid and Cone. Conversion of isometric views to orthographic views; Conversion of orthographic views to isometric views.

UNIT-V: Perspective Projections: Introduction to perspective projection and Perspective projections of points, lines, planes, and solids (using visual ray method), Perspective projection of solids using vanishing point method.

Visualization using AutoCAD: Computer Aided Drafting, Drawing practice using Auto CAD, Creating 2D&3D drawings of objects using Auto CAD (Only for Demonstration Purpose)

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(3) one of the BOS Members Dr. A. GOPALA KRISHNA, Professor
Dept. of Mech. Engg. JNTUK, suggested to add a topic
"Hydraulic circuits" in UNIT-V of Fluid Mechanics
Hydraulic Machinery course.

SYLLABUS: FLUID MECHANICS (BI9ME2204)

UNIT-I: Properties of fluids: Introduction-Viscosity- Pressure and its measurement, Absolute, Gauge, Atmospheric and Vacuum pressure - Manometers, Simple manometers, Differential manometers. Hydrostatic forces on surfaces- Total Pressure and Pressure Centre- Vertical, Horizontal, inclined and curved plane surfaces submerged in liquid- Buoyancy and Flotation

UNIT-II: Fluid Kinematics & Fluid Dynamics: Types of fluid flow- Continuity equation- Velocity potential function and Stream Function- Types of Motion, Linear Translation, Linear deformation, Angular deformation, Rotation, free and forced vortex flow - Euler's equation-Bernoulli's equation and its applications-Venturimeter, Orifice Meter, Pitot tube-Momentum Equation.

UNIT-III: Flow through pipes: Hagen Poiseuille equation- Reynolds experiment - Loss of head due to friction in pipes, Darcy Weisbach equation, Chezy's equation - Minor losses in pipes - pipes in series and pipes in parallel, total energy line-hydraulic gradient line. Flow through branched pipes.

Dimensional and Modeling Analysis: Fundamental and derived dimensions- Dimensionless groups- Rayleigh method- Buckingham's π -theorem- Model Analysis - Types of similarity- Geometric, Kinematic and Dynamic similarities- Dimensionless numbers- Model Laws.

UNIT-IV: Laminar Boundary Layer: Definition- Laminar Boundary Layer- Turbulent Boundary Layer - Laminar sub layer- Boundary layer thickness-Displacement thickness, Momentum thickness and Energy thickness-Momentum integral equation- Flow over a flat plate.

Turbulent Boundary Layer: Laminar, turbulent, transition- Momentum equations and Reynolds stresses- Fully developed turbulent flow through a pipe- Turbulent boundary layer on a flat plate- Laminar sub-layer- Boundary layer separation and control.

UNIT-V: Compressible Fluid Flow: Thermodynamic relations- Continuity, Momentum and Energy equations- Velocity of sound in a compressible fluid- Mach number and its significance- Limits of incompressibility- Pressure field due to a moving source of disturbance- Propagation of pressure waves in a compressible fluid-Stagnation properties- Stagnation pressure, Temperature and density- Area velocity relationship for compressible flow.

UNIT-I (10 Hrs) **Fluid Statics:** Properties of fluids, mass density, specific volume, specific gravity, viscosity, compressibility and surface tension, Newton law of viscosity. Pressure at a point, Measurement of pressure- Piezometer, U-tube and differential tube manometers, Buoyancy and floating, Meta-centre.

UNIT-II (10 Hrs) **Fluid Kinematics:** Introduction, methods of describing the fluid motion, Classification of flows, velocity and acceleration equations, Stream line, path line and streak lines and stream tube, continuity equation, Stream function, velocity potential function, introduction to free and forced vortex flows.

Fluid Dynamics: Surface and body forces - Euler's and Bernoulli's equation, Measurement of flow through Venturimeter, Orifice meter and Pitot tube.

UNIT-III (10 Hrs) **Flow Through Pipes:** Reynolds experiment - Darcy Weisbach equation - Minor losses in pipes - pipes in series and pipes in parallel -total energy line-hydraulic gradient line.

Boundary Layer Theory: Development of boundary layer along a thin flat plate, laminar boundary layer and turbulent boundary layer, Laminar sub layer, boundary layer separation and its control.

UNIT-IV (10 Hrs) **Impact of Jets:** Hydrodynamic force of jets on stationary and moving vanes, velocity diagrams, work done and efficiency. Flat, inclined and curved vanes - jet striking centrally and at tip, flow over radial vanes.

Hydraulic Turbines: Classification of turbines, impulse and reaction turbines, Pelton

wheel, Francis turbine and Kaplan turbine-working proportions, work done, efficiencies, draft tube theory, functions and efficiency. Performance of hydraulic turbines, geometric similarity, specific speed, unit quantities, characteristic curves.

UNIT-V (10 Hrs) **Hydraulic Pumps**
Centrifugal pumps: classification, working, work done, manometric head, losses and efficiency, Minimum starting speed, specific speed - pumps in series and parallel - performance characteristic curves, cavitation.

Reciprocating Pumps: Types, working principle, Power required by a Reciprocating pump, Coefficient of discharge, Slip and negative slip, Effect of acceleration of piston on velocity and pressure in suction and delivery pipes, Indicator diagram, Definition and purpose of air vessels.

(4) Resolved to offer the following Skill Oriented
Courses for 2/4 B.Tech (R20) Mech. Engg. program

S.NO.	Course Name	Credits	Semester
1.	Modelling Using 3D Experience	2	First
2.	Advanced Surface and Assembly modeling using CATIA	2	Second

Regulation: R20			II / IV - B.Tech. I - Semester						
MECHANICAL ENGINEERING									
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2020-21 admitted Batch onwards)									
Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20 BS 2102	Numerical Methods and Advanced Calculus	BS	3	3	0	0	30	70	100
B20 ME 2101	Engineering Thermodynamics and IC Engines	ES	3	3	0	0	30	70	100
B20 ME 2102	Manufacturing Processes	PC	3	3	0	0	30	70	100
B20 ME 2103	Strength of Materials	PC	3	3	0	0	30	70	100
B20 HS 2101	Managerial Economics and Financial Accountancy	HIS	3	3	0	0	30	70	100
B20 ME 2104	Machine Drawing	PC	1.5	0	0	3	30	70	100
B20 ME 2105	Strength of Materials Lab	PC	1.5	0	0	3	15	35	50
B20 ME 2106	Manufacturing Processes Lab	PC	1.5	0	0	3	15	35	50
B20 ME 2107	Modeling using 3D Experience	SOC	2	1	0	2	--	50	50
B20 MC 2102	Professional Ethics and Human Values	MC	0	2	0	0	--	--	--
TOTAL			21.5	18	0	11	210	540	750

Regulation: R20			II / IV - B.Tech. II - Semester						
MECHANICAL ENGINEERING									
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2020-21 admitted Batch onwards)									
Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20BS 2203	Operations Research	BS	3	3	0	0	30	70	100
B20ME 2201	Fluid Mechanics and Hydraulic Machines	PC	3	3	0	0	30	70	100
B20 ME 2202	Applied Thermodynamics	PC	3	3	0	0	30	70	100
B20ME 2203	Metal Cutting and Machine Tools	PC	3	3	0	0	30	70	100
B20ME 2204	Kinematics of Machinery	PC	3	3	0	0	30	70	100
B20ME 2205	Fluid Mechanics and Hydraulic Machines Lab	PC	1.5	0	0	3	15	35	50
B20ME 2206	Machine Tools Lab	PC	1.5	0	0	3	15	35	50
B20ME 2207	Mechanical Engineering Lab	PC	1.5	0	0	3	15	35	50
B20ME 2208	Advanced Surface and Assembly Modeling using CATIA	SOC	2	1	0	2	--	50	50
B20 MC 2201	English Proficiency	MC	0	2	0	0	--	--	--
TOTAL			21.5	18	0	11	195	505	700

Professor & Head
Dept. of Mechanical Engg.
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(5) Resolved to offer the following Courses in addition to Regular curriculum for 2/4 B.Tech (R20) Mech. Engg. program

S.No.	Course Name	Semester
1	Professional Ethics and Human values	First
2	English proficiency	Second

Regulation: R20			II / IV - B.Tech. I - Semester							
MECHANICAL ENGINEERING										
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2020-21 admitted Batch onwards)										
Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks	
B20 BS 2102	Numerical Methods and Advanced Calculus	BS	3	3	0	0	30	70	100	
B20 ME 2101	Engineering Thermodynamics and IC Engines	ES	3	3	0	0	30	70	100	
B20 ME 2102	Manufacturing Processes	PC	3	3	0	0	30	70	100	
B20 ME 2103	Strength of Materials	PC	3	3	0	0	30	70	100	
B20 HS 2101	Managerial Economics and Financial Accountancy	HS	3	3	0	0	30	70	100	
B20 ME 2104	Machine Drawing	PC	1.5	0	0	3	30	70	100	
B20 ME 2105	Strength of Materials Lab	PC	1.5	0	0	3	15	35	50	
B20 ME 2106	Manufacturing Processes Lab	PC	1.5	0	0	3	15	35	50	
B20 ME 2107	Modeling using 3D Experience	SOC	2	1	0	2	—	50	50	
B20 MC 2102	Professional Ethics and Human Values	MC	0	2	0	0	—	—	—	
TOTAL			21.5	18	0	11	210	540	750	

Regulation: R20			II / IV - B.Tech. II - Semester							
MECHANICAL ENGINEERING										
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2020-21 admitted Batch onwards)										
Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks	
B20BS 2203	Operations Research	BS	3	3	0	0	30	70	100	
B20ME 2201	Fluid Mechanics and Hydraulic Machines	PC	3	3	0	0	30	70	100	
B20 ME 2202	Applied Thermodynamics	PC	3	3	0	0	30	70	100	
B20ME 2203	Metal Cutting and Machine Tools	PC	3	3	0	0	30	70	100	
B20ME 2204	Kinematics of Machinery	PC	3	3	0	0	30	70	100	
B20ME 2205	Fluid Mechanics and Hydraulic Machines Lab	PC	1.5	0	0	3	15	35	50	
B20ME 2206	Machine Tools Lab	PC	1.5	0	0	3	15	35	50	
B20ME 2207	Mechanical Engineering Lab	PC	1.5	0	0	3	15	35	50	
B20ME 2208	Advanced Surface and Assembly Modeling using CATIA	SOC	2	1	0	2	--	50	50	
B20 MC 2201	English Proficiency	MC	0	2	0	0	--	--	--	
TOTAL			21.5	18	0	11	195	505	700	

(6) Finalized the course structure and syllabus for the 2/4 B.Tech (R20) Mechanical Engg. program.

Regulation: R20			II / IV - B.Tech. I - Semester							
MECHANICAL ENGINEERING										
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2020-21 admitted Batch onwards)										
Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks	
B20 BS 2102	Numerical Methods and Advanced Calculus	BS	3	3	0	0	30	70	100	
B20 ME 2101	Engineering Thermodynamics and IC Engines	ES	3	3	0	0	30	70	100	
B20 ME 2102	Manufacturing Processes	PC	3	3	0	0	30	70	100	
B20 ME 2103	Strength of Materials	PC	3	3	0	0	30	70	100	
B20 HS 2101	Managerial Economics and Financial Accountancy	HS	3	3	0	0	30	70	100	
B20 ME 2104	Machine Drawing	PC	1.5	0	0	3	30	70	100	
B20 ME 2105	Strength of Materials Lab	PC	1.5	0	0	3	15	35	50	
B20 ME 2106	Manufacturing Processes Lab	PC	1.5	0	0	3	15	35	50	
B20 ME 2107	Modeling using 3D Experience	SOC	2	1	0	2	--	50	50	
B20 MC 2102	Professional Ethics and Human Values	MC	0	2	0	0	--	--	--	
TOTAL			21.5	18	0	11	210	540	750	

Regulation: R20			II / IV - B.Tech. II - Semester							
MECHANICAL ENGINEERING										
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2020-21 admitted Batch onwards)										
Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks	
B20BS 2203	Operations Research	BS	3	3	0	0	30	70	100	
B20ME 2201	Fluid Mechanics and Hydraulic Machines	PC	3	3	0	0	30	70	100	
B20 ME 2202	Applied Thermodynamics	PC	3	3	0	0	30	70	100	
B20ME 2203	Metal Cutting and Machine Tools	PC	3	3	0	0	30	70	100	
B20ME 2204	Kinematics of Machinery	PC	3	3	0	0	30	70	100	
B20ME 2205	Fluid Mechanics and Hydraulic Machines Lab	PC	1.5	0	0	3	15	35	50	
B20ME 2206	Machine Tools Lab	PC	1.5	0	0	3	15	35	50	
B20ME 2207	Mechanical Engineering Lab	PC	1.5	0	0	3	15	35	50	
B20ME 2208	Advanced Surface and Assembly Modeling using CATIA	SOC	2	1	0	2	--	50	50	
B20 MC 2201	English Proficiency	MC	0	2	0	0	--	--	--	
TOTAL			21.5	18	0	11	195	505	700	

(7) One of the BOS Members DR. P.V.S. GANESH KUMAR, Senior Scientist, NSTL Visakhapatnam, suggested to add a topic "Applications of Gas Turbines" in UNIT-V of IC Engines and Gas Turbines course.

IC ENGINES & GAS TURBINES (For ME)

B19ME3101

UNIT-V
(10 Hrs)

Gas Turbines: Simple gas turbine plant- Ideal cycle, closed cycle and open cycle for gas turbines Efficiency, work ratio and optimum pressure ratio for simple gas turbine cycle- Parameters of performance- Actual cycle, regeneration, Inter-cooling and reheating, closed and semi-closed cycle Jet propulsion and Rockets, Applications of Gas Turbines.

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(8) One of the BOS Members Dr. K. VENKATA SUBBAIAH, Senior Professor, Dept. of Mech. Engg., A.V. College of Engineering, Andhra University, suggested to add a topic "Forc Casting Errors" in production planning and control course.

PRODUCTION PLANNING AND CONTROL

(Program Elective-I)

(For ME)

B19ME3206

SYLLABUS

UNIT-I (10Hrs)	Introduction: Definition – Objectives of production Planning and Control – Functions of production planning and control – Types of production – Organization of production planning and control department.
UNIT-II (10 Hrs)	Forecasting: Importance – Types of forecasting– Forecasting techniques – qualitative methods and quantitative methods, Forecasting errors
UNIT-III (10 Hrs)	Inventory management: Functions of inventories – relevant inventory costs – EOQ model – Inventory control systems: Fixer order quantity system and Periodic review system - ABC analysis -VED analysis- Material Requirement Planning, Bill of material, MRP II - Master Production Scheduling.
UNIT-IV (10 Hrs)	Aggregate planning: Chase planning, Expediting, controlling aspects. Routing: Definition – Routing procedure –Route sheets – Factors affecting routing, procedure – Difference with loading
UNIT-V (10 Hrs)	Scheduling: Policies – Types of scheduling - Forward and Backward Scheduling – Gantt Charts – Flow shop Scheduling – n jobs and 2 machines, n jobs and 3 machines – Job shop Scheduling – 2 jobs and n machines – Line of Balance. Dispatching: Activities of dispatcher – Dispatching procedure – follow up – priority rules for dispatching jobs - Applications of computer in production planning and control.

(9) one of the BOS Members "Dr. G. RAVI KIRAN SASIRY, Professor, Dept. of Mech. Engg., NIT Andhra Pradesh, suggested to add a topic "Introduction to Natural Fibers" in UNIT-II of Composite Materials Course.

COMPOSITE MATERIALS

(Program Elective-I)

(For ME)

B19ME3204

UNIT-I (10 Hrs)	INTRODUCTION: Definition, Classification of Composite materials based on structure and based on matrix. Advantages of composites, application of composites, functional requirements of reinforcement and matrix.
UNIT-II (10 Hrs)	FIBERS: Preparation, properties and applications of glass fibers, carbon fibers, Kevlar fibers and metal fibers, properties and applications of whiskers, particle reinforcements. Introduction to natural fibers.
UNIT-III (10 Hrs)	MANUFACTURING OF ADVANCED COMPOSITES: Polymer matrix composites: Preparation of Moulding compounds and pre-pegs, hand layup method, Autoclave method. Filament winding method, Compression moulding, Reaction injection moulding.
UNIT-IV (10 Hrs)	MANUFACTURING OF METAL MATRIX COMPOSITES: Casting, Solid State diffusion technique, Cladding - Hot isostatic pressing. Manufacturing of Ceramic Matrix Composites: Liquid Metal Infiltration, Liquid phase sintering. Manufacturing of Carbon – Carbon composites: Knitting, Braiding, Weaving.
UNIT-V (10 Hrs)	RESPONSE OF COMPOSITES TO STRESS: (a) Iso Strain condition (b) Iso Stress condition (c) Load friction shared by the fibers. MICRO MECHANICAL ANALYSIS OF A LAMINA: Introduction, Evaluation of the four elastic moduli by Rule of mixture, Numerical problems. Macro Mechanics of a Lamina: Hooke's law for different types of materials, Number of elastic constants, Two - dimensional relationship of compliance and stiffness matrix.

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(10) Resolved to offer the following courses in addition to Regular curriculum for 3/4 B.Tech (R19) Mech. Engg. Program.

S.No.	Course Name	Semester
1	Employability skills-I	First
2	Employability skills-II	Second
3	Basic coding	Second

SCHEME OF INSTRUCTION & EXAMINATION
(Regulation R19)
III/IV B.TECH
I-SEMESTER
(With effect from 2019-2020 Admitted Batch onwards)

Subject Code	Name of the Subject	Category	Cr.	L	T	P	Internal Marks	External Marks	Total Marks
B19 HS 3102	Operations Research	HS	3	3	--	--	25	75	100
B19 ME 3101	IC Engines & Gas Turbines	PC	3	3	--	--	25	75	100
B19 ME 3102	Kinematics of Machines	PC	3	3	--	--	25	75	100
B19 ME 3103	Design of Machine Elements	PC	3	3	--	--	25	75	100
B19 ME 3104	Fluid Machines & Systems	PC	3	3	--	--	25	75	100
B19 ME 3105	Mechanical Measurements & Metrology	PC	3	3	--	--	25	75	100
B19 ME 3106	IC Engines & Kinematics of Machines Lab	PC	1.5	--	--	3	20	30	50
B19 ME 3107	Metrology Lab	PC	1.5	--	--	3	20	30	50
B19 MC 3101	Employability Skills-I	MC	--	3	--	--	--	--	--
TOTAL			21	21	--	6	190	510	700

SCHEME OF INSTRUCTION & EXAMINATION
(Regulation R19)
III/IV B.TECH
II-SEMESTER
(With effect from 2019-2020 Admitted Batch onwards)

Subject Code	Name of the Subject	Category	Cr.	L	T	P	Internal Marks	External Marks	Total Marks
B19 ME 3201	Industrial Engineering & Management	PC	3	3	--	--	25	75	100
B19 ME 3202	Dynamics of Machines	PC	3	3	--	--	25	75	100
B19 ME 3203	Machine Design	PC	3	3	--	--	25	75	100
# PE-I	Program Elective-I	PE	3	3	--	--	25	75	100
# PE-II	Program Elective-II	PE	3	3	--	--	25	75	100
# OE-I	Open Elective-I	OE	3	3	--	--	25	75	100
B19 ME 3212	Industrial Engineering Lab	PC	1.5	--	--	3	20	30	50
B19 ME 3213	Fluid Mechanics and Machinery Lab	PC	1.5	--	--	3	20	30	50
B19 MC 3201	Employability Skills-II	MC	--	3	--	--	--	--	--
B19 MC 3202	Basic Coding	MC	--	3	--	--	--	--	--
TOTAL			21	21	--	9	190	510	700

	Course Code	Course
#PE-I	B19 ME 3204	Composite Materials
	B19 ME 3205	Finite Element Analysis
	B19 ME 3206	Production Planning and Control
	B19 ME 3207	MOOCs -I
#PE-II	B19 ME 3208	Automobile Engineering
	B19 ME 3209	Tool Design
	B19 ME 3210	Unconventional Machining Processes
	B19 ME 3211	MOOCs -II
#OE-I	Student has to study one Open Elective offered by CE or CSE or ECE or EEE or IT or EM&H from the list enclosed.	

(11) Resolved to offer 2 Program Electives [Program Elective-I and program Elective-II] with 3 courses + 1 MOOCs in each program Elective for 3/4 B.Tech (R19) Mech. Engg. Program.

	Course Code	Course
#PE-I	B19 ME 3204	Composite Materials
	B19 ME 3205	Finite Element Analysis
	B19 ME 3206	Production Planning and Control
	B19 ME 3207	MOOCs -I
#PE-II	B19 ME 3208	Automobile Engineering
	B19 ME 3209	Tool Design
	B19 ME 3210	Unconventional Machining Processes
	B19 ME 3211	MOOCs -II
#OE-I	Student has to study one Open Elective offered by CE or CSE or ECE or EEE or IT or EM&H from the list enclosed.	

(12) Resolved to offer the following courses under the Open Elective -I Category (Offered to other programs) for 3/4 B.Tech - II semester Mech. Engg. Program under R19 Regulation

S.No.	Open Elective Course Name
1	operations Research.
2	operations Management
3	Total Quality Management.

[Signature]
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(B) Finalized the course structure and syllabus for the 3/4 B.Tech (R19) Mechanical Engg. program.

Regulation: R20			II / IV - B.Tech. I - Semester							
MECHANICAL ENGINEERING										
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2020-21 admitted Batch onwards)										
Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks	
B20 BS 2102	Numerical Methods and Advanced Calculus	BS	3	3	0	0	30	70	100	
B20 ME 2101	Engineering Thermodynamics and IC Engines	ES	3	3	0	0	30	70	100	
B20 ME 2102	Manufacturing Processes	PC	3	3	0	0	30	70	100	
B20 ME 2103	Strength of Materials	PC	3	3	0	0	30	70	100	
B20 HS 2101	Managerial Economics and Financial Accountancy	HS	3	3	0	0	30	70	100	
B20 ME 2104	Machine Drawing	PC	1.5	0	0	3	30	70	100	
B20 ME 2105	Strength of Materials Lab	PC	1.5	0	0	3	15	35	50	
B20 ME 2106	Manufacturing Processes Lab	PC	1.5	0	0	3	15	35	50	
B20 ME 2107	Modeling using 3D Experience	SOC	2	1	0	2	--	50	50	
B20 MC 2102	Professional Ethics and Human Values	MC	0	2	0	0	--	--	--	
TOTAL			21.5	18	0	11	210	540	750	

Regulation: R20			II / IV - B.Tech. II - Semester							
MECHANICAL ENGINEERING										
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2020-21 admitted Batch onwards)										
Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks	
B20BS 2203	Operations Research	BS	3	3	0	0	30	70	100	
B20ME 2201	Fluid Mechanics and Hydraulic Machines	PC	3	3	0	0	30	70	100	
B20 ME 2202	Applied Thermodynamics	PC	3	3	0	0	30	70	100	
B20ME 2203	Metal Cutting and Machine Tools	PC	3	3	0	0	30	70	100	
B20ME 2204	Kinematics of Machinery	PC	3	3	0	0	30	70	100	
B20ME 2205	Fluid Mechanics and Hydraulic Machines Lab	PC	1.5	0	0	3	15	35	50	
B20ME 2206	Machine Tools Lab	PC	1.5	0	0	3	15	35	50	
B20ME 2207	Mechanical Engineering Lab	PC	1.5	0	0	3	15	35	50	
B20ME 2208	Advanced Surface and Assembly Modeling using CATIA	SOC	2	1	0	2	--	50	50	
B20 MC 2201	English Proficiency	MC	0	2	0	0	--	--	--	
TOTAL			21.5	18	0	11	195	505	700	

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