

Intimation of Department of Mechanical Engineering Board of Studies Meeting on 22.04.2023 at 2 PM-Online Mode @ S.R.K.R. Engineering College (A)-Reg.

1 message

Mechanical Department <hodmechsrkr@gmail.com>

To: kmpalli12@gmail.com

Thu, Apr 20, 2023 at 3:24 PM

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 22-04-2023 (Saturday) at 2.00 PM. by using the following online ZOOM meeting link.

<https://us02web.zoom.us/j/82393018256?pwd=SFNmQUIVOTtRaHlDaVYrN3I5bzJVQT09>

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

Proposed Course Structure, Syllabus and Model Question Papers for 4/4 B.Tech. under R20 regulations are enclosed for your kind reference.

Thanking you,
Professor & Head
Dept. of Mechanical Engg.
S.R.K.R. Engineering College
CHINA AMIRAM (P.O.)
CHINAVARAM-534 204.

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

H. Nagarajulu
PRINCIPAL
S.R.K.R. Engineering College(A)
China Amiram, Bhimavaram - 534 204.
WG Dist Andhra Pradesh

2 attachments

Proposed-Mech-R20-4th-YEAR-Syllabus.pdf
1270K

Proposed-Mech-R20-4th-Year-MQPs.pdf
1521K

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1 message

Mechanical Department <hodmechsrkr@gmail.com>
To: "Prof.K.Venkatasubbaiah" <drkvsau@yahoo.co.in>

Thu, Apr 20, 2023 at 3:27 PM

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 Subject Expert other than Parent University.

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Dept of Mechanical Engg.
S.R.K.R. Engineering College
CHINA AMIRAM (P.O.)

Yours Sincerely,

Dr. K. BRAHMA RAJU/AVARAM-534 204,

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

H. Nagapalli
PRINCIPAL
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1 message

Mechanical Department <hodmechsrkr@gmail.com>

Thu, Apr 20, 2023 at 3:30 PM

To: "Prof. GRK" <grksastry@nitandhra.ac.in>

Dear Sir,

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

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1 message

Thu, Apr 20, 2023 at 3:31 PM

Mechanical Department <hodmechsrkr@gmail.com>

To: "ganeshkumar.pvs ganeshkumar.pvs" <ganeshkumar.pvs@nstl.drdo.in>

Dear Sir,

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

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Professor & Head
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China Amiram, Bhimavaram,
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Andhra Pradesh-534204
Mobile No. : 9849503522

Professor & Head
Dept. of Mechanical Engg.
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BHIMAVARAM-534 204.


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1 message

Mechanical Department <hodmechsrkr@gmail.com>
To: bhanuprasadgali@gmail.com

Thu, Apr 20, 2023 at 3:36 PM

Dear Sir,

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Thanking you,
[Signature]
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

[Signature]
PRINCIPAL
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1 message

Mechanical Department <hodmechsrkr@gmail.com>
To: plvrksateesh@gmail.com

Thu, Apr 20, 2023 at 3:37 PM

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 Professor & Head
Dept. of Mechanical Engg.
S.R.K.R. Engineering College
Yours Sincerely
Dr. K. BRAHMA RAJU (P.O.)
Professor & Head, ARAM-534 204.
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: 14-04-2023

CIRCULAR

This is to inform you that the Department of Mechanical Engineering has scheduled a 11th Board of Studies meeting on 22-04-2023 at 2:00 PM in blended mode (both offline and using zoom virtual meeting platform). In this connection all the Board of Studies members are requested to attend the same.

Agenda:

1. To discuss and finalize the course structure and syllabus for 4/4 B.Tech. Mechanical Engineering program under R20 Regulations.
2. To discuss and finalize the courses and syllabus for Honors and Open Elective courses (offered by Mech. Engg.) of 4/4 B.Tech. Mechanical Engineering program under R20 Regulations.
3. Any other item with the permission of the chair.


Head of the Department
Professor & Head
Dept. of Mechanical Engg.
S.R.K.R. Engineering College
CHINNA AMIRAM (P.O.)
BHIMAVARAM-534 204.


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WG Dist. Andhra Pradesh

MINUTES OF THE MEETING

41

Eleventh Board of studies meeting in blended Mode (Both offline & virtual using zoom platform) was held on 22-04-2023 (Saturday) in CAD-Hub-2 of Mechanical Engineering department at 2:00 PM in order to discuss the following Items:

- (1) Discussion and Finalization of Course structure and syllabus of 4/4 B.Tech. Mechanical Engineering program under R20 Regulations.
- (2) Discussion and Finalization of Courses and Syllabus for Honors and open Elective Courses (offered by Mech. Engg.) of 4/4 B.Tech. Mechanical Engineering program under R20 Regulations.

H. Nagabelli Reddy

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China Amiram, Bhimavaram - 534 204,
WG Dist - Andhra Pradesh

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MINUTES OF THE MEETING RESOLUTIONS

- (1) Feedbacks Collected from various stake holders like students, alumni, employers and parents has been discussed while designing the course structure and syllabus for 4/4 B.Tech. (R20) Mechanical Engineering program.
- (2) One of the BOS members DR. M. Kumara Swamy, Associate - professor, Dept. of Mech. Engg., JNTUK, Kakinada has suggested to add a topic related to Hydrogen Energy in Green-Energy systems Course (Open Elective-III Course).
- (3) one of the BOS members Dr. G. Ravi Kiran Sastri, professor, Dept. of Mech. Engg., NITAP, Tadepalligudem has suggested to add a topic related to Electric Vehicles (EVs) in Automobile Engineering Course (program Elective-V Course).
- (4) Resolved to offer the following program Elective Courses for 4/4 B.Tech. (R20) Mechanical Engineering program.

	Course Code	Course
#PE-III	B20ME4101	Finite Element Analysis
	B20ME4102	Production Planning and Control
	B20ME4103	Industrial Robotics
	B20ME4104	MOOCS-III
#PE-IV	B20ME4105	Quality Control & Assurance
	B20ME4106	Control Systems
	B20ME4107	Unconventional Machining Processes
	B20ME4108	MOOCS-IV
#PE-V	B20ME4109	Automobile Engineering
	B20ME4110	Additive Manufacturing
	B20ME4111	Power Plant Engineering
	B20ME4112	MOOCS-V

- (5) Resolved to offer the following Open Elective Courses Offered by Mech. Engg. Dept.) 4/4 B.Tech. under R20 Regulations -

H. Nagapalli

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Offered by	Course Code	Course Name	Offered to
MECHANICAL ENGINEERING (#OE-III)	B20MEOE07	Green Energy Systems	CE, CSE,
	B20MEOE08	Total Quality Management	ECE, EEE & IT
	B20MEOE09	Supply Chain Management	
MECHANICAL ENGINEERING (#OE-IV)	B20MEOE10	Project Management	CE, CSE,
	B20MEOE11	Nano Technology	ECE, EEE & IT
	B20MEOE12	Additive Manufacturing	

- (6) Finalized the Product Design and Development Course Syllabus (Honors Course) for 4/4 B.Tech. (R20) Mechanical Engineering Program.
- (7) Finalized the Course Structure and syllabus for 4/4 B.Tech. (R20) Mechanical Engineering Program.
- (8) Finalized the Computer Aided Design Syllabus for 3/4 B.Tech. (R20) Computer Science and Design Program.

H. Nagappa Reddy

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MEMBERS PRESENT

S.No.	Name of the Member	Designation	Signature
01	Dr. M. KUMARA SWAMY		
02	Dr. K. Basappa Raju	INTUK, VCE, Kakinada	
03	Dr. P. RAMA MURTY RAJU	Professor of Med	
04	Dr. V. DURGA PRASAD	Professor	
05	Dr. K.V.M.K. Raju	Professor	
06	Dr. Gopala Raju	Associate Prof	
07	Dr. Chakrapati Ram	Associate Prof	
08	Dr. Ch. Rama Bhadrige Raju	Associate prof.	
09	Dr. K. SITA RAMA RAJU	Professor	
10	Dr. K. Suresh Babu	Professor	
11	S. RAJESH	PROFESSOR	
12	Prof. G. R. V. S. S. S. S.	Professor, NISAP	

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Chinnamram, Bhimavaram - 534 204
W.G. Dist. Andhra Pradesh

RESOLUTIONS FOR THE MEETING DATED 22-04-2023

- (1) Feedbacks collected from various stakeholders like students, alumni, employers and parents has been discussed while designing the course structure and syllabus for 4th B.Tech. (R20) Mechanical Engineering Program.



S.R.K.R ENGINEERING COLLEGE
DEPARTMENT OF MECHANICAL ENGINEERING
CHINA AMIRAM - BHIMAVARAM - 534204

Feedback Analysis 2022-23

A feedback on the curriculum is obtained from students, employers, faculty and alumni. After study of the feedback form various stakeholders some important points of the feedback are identified. Total 157 feedback forms have been obtained from various stakeholders.

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

1. Students should be trained to explore and understand emerging technologies
2. All round development of the interpersonal and communication skills to be encouraged
3. Students need a course/Lab on MATLAB
4. More hands on experience to be provided to students to link theory with practice
5. According to the competence outside we can increase the depth of the syllabus. It may loads the students but increases the standards.
6. Need more focus on quality than quantity.
7. Need to include a mini project in the curriculum.
8. Provide time for sports.
9. Can add python language in first year
10. Introduce software courses in every semester
11. Include industrial tours in the curriculum.
12. Put more programming courses as elective subjects
13. Include new technologies in the syllabus
14. Library stock should be increased

[Signature]
Professor & Head
Dept. of Mechanical Engg.
S.R.K.R. Engineering College
CHINA AMIRAM (P.O.)
BHIMAVARAM-534 204.

- (2) One of the BOS members DR. M. Kumara Swamy, Associate - professor, Dept. of Mech. Engg., JNTUK, Kakinada has suggested to add a topic related to Hydrogen Energy in Green-Energy systems Course (Open Elective-III Course).

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[Signature]
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C code	Category	L	T	P	C	LM	EM	Exam
B2ME0107	OE	3	—	—	3	30	70	3 Hrs.
GREEN ENERGY SYSTEMS								
(Offered to AIDS, C.E., C.NRS, CSE, ECE & IT)								
Course Objectives:								
1. Significance of alternative sources of energy.								
2. Significance of green energy systems and processes and provides the theory and working principles of probable sources of renewable and green energy systems that are environmental friendly.								
Course Outcomes:								
S.No	Outcome							Knowledge Level
1	Explain the importance of solar energy and solar energy collection							K2
2	Apply the principles of solar energy storage systems and wind energy.							K3
3	Describe the concepts of biomass, geothermal and ocean energies & their potential future applications.							K3
4	Describe the principles of energy efficient systems like electrical and mechanical systems.							K2
5	Discuss the concepts of green manufacturing systems.							K2
SYLLABUS								
INTRODUCTION: Role and potential of new and renewable sources, the solar energy aspect, Environmental impact of solar power SOLAR RADIATION: the solar constant, extraterrestrial and terrestrial solar radiation, solar radiation on tilted surface, instruments for measuring solar radiation and sun shade, solar radiation data SOLAR ENERGY COLLECTION: Flat plate and concentrating collectors, classification of concentrating collectors, Photo voltaic energy conversion: types of PV cells.								
UNIT-I (10 Hrs)								
UNIT-II (10 Hrs)	SOLAR ENERGY STORAGE AND APPLICATIONS: sensible, latent heat and stratified storage; solar ponds; solar applications: solar heating/cooling technique; solar distillation and drying; central power tower concept. WIND ENERGY: Source and potentials, horizontal and vertical axis windmills.							
UNIT-III (10 Hrs)	BIO-MASS: Principles of bio-conversion, anaerobic/digestion, types of bio-gas digesters.							

Page 22 of 29

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Course Code	Category	L	T	P	C	LM	EM	Exam
B2ME4109	PE	3	—	—	3	30	70	3 Hrs.
AUTOMOBILE ENGINEERING								
(Professional Elective-V)								
(For ME)								
Course Objective:								
1.	To make students familiar with the constructional details of chassis and body.							
2.	To understand about various steering systems, steering linkage, Transmission system, steering gear boxes and power steering.							
3.	To introduce students to the rear axles and types of suspension systems.							
4.	To introduce students to braking systems, wheels and tyres and provides the information on various aspects of vehicle maintenance.							
5.	To understand upcoming technology of hybrid electric vehicles.							
Course Outcome: At the end of the course, students will be able to								
S.No	Outcome							Knowledge Level
1.	Illustrate the Automobile layout, types of IC engines and their subsystems.							K3
2.	Illustrate various types and working principles of clutch, gearbox, drive shaft and final drive systems.							K3
3.	Illustrate key elements of Steering geometry in automobile and can compare various types of steering mechanism, suspension systems, wheels, tires based on their construction.							K3
4.	Illustrate the concepts of brakes, electrical and electronic systems, pollution control methods and noise.							K3
5.	Identify technological updates in Hybrid Vehicles and the need of trouble shoot and maintenance in Automotive Vehicles.							K3
SYLLABUS								
UNIT-I (10Hrs)	Introduction to Automobile, Automobile Layout, Chassis and body, Power unit: types of automobile engines, engine parts, Classification: 'in-line' and 'V' type, Multi-Valve Engines, Super Charging/Turbo charging, Air filter. Fuel Systems: Petrol Engines: Carburetted and MPFI, Diesel Engines: Conventional, CRDI and Dual Fuel Engines, Engine Cooling and Lubrication.							
UNIT-II (10 Hrs)	Clutches: principle, Types: cone clutch, single plate clutch, diaphragm clutch, multi plate clutch, centrifugal clutches and Fluid coupling. Gearbox: Construction and Working Principle, Selector Mechanism, Types: Sliding mesh, Constant mesh, Synchronised, and Epicyclic, Overdrive, Automatic Gearbox-CVT, Torque converter. Drive shaft and Final Drive: Drive Shaft, Types of Propeller shafts, Final drive and Differential, Power transmission: Front, Rear and Four wheel drive.							

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	GEOTHERMAL ENERGY Features, types of water, methods of harvesting the energy
	OCEAN ENERGY EOT, Principles of ocean energy, cutting edge/IT/ITC plants
UNIT-IV (10 Hrs)	ENERGY EFFICIENT SYSTEMS, ELECTRICAL SYSTEMS Energy efficient circuits, controls for EEC, Thermal, ventilation and air conditioning MECHANICAL SYSTEMS Fluids, pneumatic, selection of fluids & working volumes types of fluid cells, For compressed fluids and Energy efficient compressors and Pumps
UNIT-5 (10 Hrs)	GREEN MANUFACTURING SYSTEMS Environmental impact of the current manufacturing processes and systems, benefits of green manufacturing systems, selection of recyclable and environment friendly materials in manufacturing, vegetable based cutting fluids, alternate coating and joining techniques, green waste manufacturing.
Text Books	
1. Non-Conventional Energy Sources - G. D. Rai, fifth edition, Khanna Publishers, 2015	
2. Non-Conventional Energy Resources - Khan B. H. Tay McGraw Hill New Delhi, 2006.	
3. Energy Efficiency Principles of Thermal Analysis and Storage Selection - K.P and J.K.Nayak-TMH	
4. Green Manufacturing Processes and Systems - J. Pacha Dorn Springer 2013	
Reference Books	
1. Alternative Building Materials and Technologies - K.S Jeyapandi, B.V Venkita Ramu Rathi and K.S Jeyapandi Res/ New Age International	
2. Non-Conventional Energy - Ashish V Deshpande, P. V. Kumar, Anand (P) Ltd	
3. Renewable Energy Technology - V. Ganesan - Narosa	
4. Principles of Solar Engineering - D. Yogan Ganesan, Frank Kreth & John J. Korber-Taylor & Francis	
5. Fluid Cells Technology -Hand Book / Greeng Houses / HSP Books Pvt Ltd	
e-Resources:	
1. https://nrel.gov/aia/aia-energy/1001191206	
2. https://www.researchgate.net/publication/312111116	

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UNIT-III (10 Hrs)	Suspension Systems: Leaf springs coil springs, torsion bar, shock absorber, Independent suspension system. Steering Systems: Steering geometry: camber, caster, Kingpin angle, Toe-in, and Toe-out, Steering Mechanism and its Elements: Steering gear box and its types, Steering gear types: Power-Steering Wheels: Disc and Drum type, Tyres: Tire Construction, Tube and Tubeless Tyres, Radial Tyres, Tire specification, Tire rotation and Tire Maintenance.
UNIT-IV (10 Hrs)	Braking Systems: Necessity, Parking and Power Brakes, Parts and Working Principle of Mechanical, Air and Hydraulic Brakes: Master and Wheel cylinder, Properties of Brake Fluids, Brake Diagnosis and Service: Brake Bleeding, Anti-lock Braking System. Exhaust Pollution and their control: EGR and Catalytic Converters, EURO-Batch Norms, Mufflers. Electrical and Electronic systems: Starting System, Ignition system, battery, ECU/ECM.
UNIT-V (10 Hrs)	Hybrid Vehicles: History and Introduction of Hybrid Vehicles, Classification in hybrid vehicles, Classification of hybrid technologies- Drivetrain structure, Degree of hybridization, Nature of the power source, Advantages and Disadvantages, Applications, Basic components of electric vehicles, Types of motors, types of batteries. Vehicle skidding and Vibration: Lateral, Angular and Vehicle Trouble: Diagnostic Information, Symptom descriptions and their Causes, Diagnosis, Maintenance - Periodic, Preventive and Break down.
Textbooks:	
1.	Automotive Mechanics (10 th) - William H. Crouse and Donald L. Asgals, Tata McGraw-Hill Publishing Company Limited, ISBN: 0-07-069054-0.
2.	Automobile Engineering – KK Jang RD Ansham, Tata McGraw-Hill Publishing Company Limited, ISBN: 0-07-044259-X.
3.	Internal Combustion Engines and Air Pollution: E.F. Obert, Harper & Row International Publishers Inc. ISBN: 0-06-355614-1.
4.	Electric and Hybrid Vehicles, Tom Denton, Taylor & Francis, 2018.
Reference Books:	
1.	Automotive Mechanics - S. Srinivasan, Tata McGraw-Hill Publishing company Limited, ISBN: 0-07-040941-6.
2.	Internal Combustion Engines – Heywood, John, B. McGraw-Hill Publications Limited.
3.	Automotive Engines- S Srinivasan, Tata McGraw-Hill Publishing Company Limited, ISBN: 0-07-040256-5.
4.	Hybrid Vehicles and the future of personal transportation, Allen Fols, CRC Press, 2011.
e-Resources:	
1.	http://www.ecu.com/ecu1001/101-101110903
2.	http://www.yrfd.com/vehicles/101/1011010000
3.	http://www.theengineerproject.com/vehicles/interior-vehicle-engine

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(C) Resolved to offer the following program Elective Courses for 4/4 B.Tech. (R20) Mechanical Engineering program.

	Course Code	Course
#PE-III	B20ME4101	Finite Element Analysis
	B20ME4102	Production Planning and Control
	B20ME4103	Industrial Robotics
	B20ME4104	MOOCS-III
#PE-IV	B20ME4105	Quality Control & Assurance
	B20ME4106	Control Systems
	B20ME4107	Unconventional Machining Processes
	B20ME4108	MOOCS-IV
#PE-V	B20ME4109	Automobile Engineering
	B20ME4110	Additive Manufacturing
	B20ME4111	Power Plant Engineering
	B20ME4112	MOOCS-V



SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JNTUK, Kakinada). (Recognized by AICTE, New Delhi)

UG Programmes: CE, SE, EE, EE, IT & ME are Accredited by NBA. Accredited by NAAC with A

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

Estd. 1980

Regulation: R20			IV / 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	
B20HS4101	Universal Human Values-2: Understanding Harmony	HS	3	3	0	0	30	70	100	
#PE-III	Professional Elective -III	PE	3	3	0	0	30	70	100	
#PE-IV	Professional Elective -IV	PE	3	3	0	0	30	70	100	
#PE-V	Professional Elective -V	PE	3	3	0	0	30	70	100	
#OE-III	Open Elective-III	OE	3	3	0	0	30	70	100	
#OE-IV	Open Elective-IV	OE	3	3	0	0	30	70	100	
B20ME4113	MATLAB (Skill Oriented Course)	SOC	2	1	0	2	—	50	50	
B20ME4114	Industrial/Research Internship 2 Months	PR	3	—	—	—	—	50	50	
TOTAL			23	19	0	2	180	520	700	

	Course Code	Course
#PE-III	B20ME4101	Finite Element Analysis
	B20ME4102	Production Planning and Control
	B20ME4103	Industrial Robotics
	B20ME4104	MOOCS-III
#PE-IV	B20ME4105	Quality Control and Assurance
	B20ME4106	Control Systems
	B20ME4107	Unconventional Machining Processes
	B20ME4108	MOOCS-IV
#PE-V	B20ME4109	Automobile Engineering
	B20ME4110	Additive Manufacturing
	B20ME4111	Power Plant Engineering
	B20ME4112	MOOCS-V
#OE-III & #OE-IV	Student has to study one Open Elective each from OE-III & IV offered by CE or CSE or ECE or EEE or IT or S&H from the list enclosed.	

H. S. R. K. R. Engineering College (A)
China Amiram, Bhimavaram - 534 204.
W.G. Dist. Andhra Pradesh

Principal
S. R. K. R. Engineering College
(P.O.)
CHINNA AMIRAM-534 204

(5) 'Resolved. to offer the following Open Elective Courses
(Offered by Mech. Engg. Dept.) 4/4 B.Tech. under R20
Regulations.

Offered by	Course Code	Course Name	Offered to
MECHANICAL ENGINEERING (#OE-III)	B20MEOE07	Green Energy Systems	CE, CSE,
	B20MEOE08	Total Quality Management	ECE, EEE & IT
	B20MEOE09	Supply Chain Management	
MECHANICAL ENGINEERING (#OE-IV)	B20MEOE10	Project Management	CE, CSE,
	B20MEOE11	Nano Technology	ECE, EEE & IT
	B20MEOE12	Additive Manufacturing	



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SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE - SAGI RAMA KRISHNAM RAJU, A.P., INDIA

Unit 1/20

**LIST OF OPEN ELECTIVES
OFFERED BY VARIOUS DEPARTMENTS TO OTHER DEPARTMENTS
IN IV YEAR I SEMESTER OE-III**

Offered by	Course Code	Course Name	Offered to
ARTIFICIAL INTELLIGENCE & DATA SCIENCE	B20A00E04	Machine Learning	CE, ECE, EEE & ME
CIVIL ENGINEERING	B20CE0E05	Alternative Energy Sources	AIDS, CSBS, CSE, ECE, & IT
COMPUTER SCIENCE & BUSINESS SYSTEMS	B20CB0E04	Human Resource Management	CE, ECE, EEE & ME
COMPUTER SCIENCE & ENGINEERING	B20CSOE07	Operating Systems	
	B20CSOE08	Machine Learning	CE, ECE, EEE & ME
	B20CSOE09	Data Science	
ELECTRONICS & COMMUNICATION ENGINEERING	B20ECE0E05	Digital Signal Processing	AIDS, CE, CSBS, CSE, EEE, IT & ME
	B20ECE0E06	Image Processing	
ELECTRICAL & ELECTRONICS ENGINEERING	B20EE0E02	Matlab programming for Engineering applications	AIDS, CE, CSBS, CSE, IT & ME
INFORMATION TECHNOLOGY	B20IT0E05	Cloud Computing	CE, ECE, EEE & ME
MECHANICAL ENGINEERING	B20MEOE07	Green Energy Systems	AIDS, CE, CSBS, CSE, ECE & IT
	B20MEOE08	Total Quality Management	AIDS, CE, CSBS, CSE, ECE, EEE & IT
	B20MEOE09	Supply Chain Management	
MATHEMATICS AND HUMANITIES	B20MB0E03	Mathematical Modeling for data science	CE, CSBS, CSE, ECE, EEE, IT & ME



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Unit 1/20

**LIST OF OPEN ELECTIVES
OFFERED BY VARIOUS DEPARTMENTS TO OTHER DEPARTMENTS
IN IV YEAR I SEMESTER OE-IV**

Offered by	Course Code	Course Name	Offered to
ARTIFICIAL INTELLIGENCE & DATA SCIENCE	B20A00E05	Embedded Systems	CE, EEE & ME
CIVIL ENGINEERING	B20CE0E06	Green Buildings	AIDS, CSBS, CSE, ECE, EEE, IT & ME
COMPUTER SCIENCE & BUSINESS SYSTEMS	B20CB0E05	Digital Analytics	CE, ECE, EEE & ME
COMPUTER SCIENCE & ENGINEERING	B20CSOE10	Big Data Analytics	CE, ECE, EEE & ME
	B20CSOE11	Deep Learning	
	B20CSOE12	Internet of Things	CE, EEE & ME
ELECTRONICS & COMMUNICATION ENGINEERING	B20ECE0E07	Introduction to VLSI Technology	AIDS, CE, CSBS, CSE, EEE, IT & ME
	B20ECE0E08	Embedded Systems & IoT Applications	CE, EEE & ME
ELECTRICAL & ELECTRONICS ENGINEERING	B20EE0E05	Introduction to sensors and transducers	AIDS, CE, CSBS, CSE, ECE, IT & ME
INFORMATION TECHNOLOGY	B20IT0E06	Mobile Computing	CE, ECE, EEE & ME
MECHANICAL ENGINEERING	B20MEOE10	Project Management	AIDS, CE, CSBS, CSE, ECE, EEE & IT
	B20MEOE11	Nano Technology	
	B20MEOE12	Additive manufacturing	
MATHEMATICS AND HUMANITIES	B20MB0E04	Fuzzy sets and fuzzy logic	AIDS, CE, CSBS, CSE, ECE, EEE, IT & ME

(6) Finalized the product Design and Development Course Syllabus
(Honors Course) for 4/4 B.Tech. (R20) Mechanical Engineering
Program.

Professor & Head
Dept. of Mechanical Engg.
S.R.K.R. Engineering College
CHINA AMIRAM (P.O.)
DHIMAVARAM-534 204.

C code	Category	I	T	P	C	EM	TM	Total
R20M11001	Honors	3	1	—	4	30	70	3 Hrs.

PRODUCT DESIGN AND DEVELOPMENT (Honors Course)		
Course Objectives:		
1. To impart the process of product design and Development		
2. To expose the various factors influencing product design.		
Course Outcomes		
S.No	Outcome	Knowledge Level
1	Identify and analyze the product design and development processes	K2
2	Explain product design and development concepts	K2
3	Interpret product specifications related to product	K2
4	Express new and efficient way of product development	K2
5	Discuss various technical and legal issues related to product development.	K2

SYLLABUS	
UNIT-I (10Hrs)	Introduction, Classification types, Functions of Products, Product life cycle, Product mix, Introduction to product design, Modern product development process, Innovative thinking
UNIT-II (10 Hrs)	Morphology of design: Conceptual Design (Generation, selection & embodiment of concept, Product architecture, Industrial design process, need, Robot Design development economics, quantitative and qualitative analysis
UNIT-III (10 Hrs)	Product planning: Identify opportunities, prioritize projects, allocate resources, project planning, Identify customer needs, product specifications, target specifications and final specifications, concept generation and selection
UNIT-IV (10 Hrs)	Creativity Techniques: Creative thinking, concept generation, clarify the problem, search external and internal explorer systematically, concept selection, concurrent engineering, rapid prototyping, concept testing
UNIT-V (10 Hrs)	Design for S/D/N/E: Design for Manufacturing (DFM) & Assembly (DFA), Design for Maintainability, Design for Environment, Product costing, Legal factors, Engineering ethics and issues of society related to design of products, Patents & IP Acts, Overview, Crimes and Discipline preparation

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(7) Finalized the Course structure and syllabus for 4/4 B.Tech. (R20) Mechanical Engineering program.



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CHINNA AMIRAM (P.O.): BHIMAVARAM - 534 204, A.P., INDIA :: PIN: 534 204

Established 1990

Regulation: R20			IV / IV - B.Tech. I - Semester							
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	B20ME4102	Production Planning and Control
	B20ME4103	Industrial Robotics
	B20ME4104	MOOCs - III
#PE-IV	B20ME4105	Quality Control and Assurance
	B20ME4106	Control Systems
	B20ME4107	Unconventional Machine Processes
	B20ME4108	MOOCs - IV
#PE-V	B20ME4109	Automobile Engineering
	B20ME4110	Additive Manufacturing
	B20ME4111	Power Plant Engineering
	B20ME4112	MOOCs - V
#OE-III & #OE-IV	Student has to study one Open Elective each from OE-III & IV offered by CE or CSE or ECE or EEE or IT or S&H from the list enclosed.	

(8) Finalised the Computer Aided Design Syllabus for 3/4 B.Tech.
(B20) Computer Science and Design Program.

Code	Category	L	T	P	C	LM	EM	Exam
B20C10101	PC	3	—	—	3	30	70	3 Hrs.
COMPUTER AIDED DESIGN (For CND)								
Course Objectives: The objective of the course is to enable students to								
1. Provide basic foundation in computer aided design								
2. Understand the fundamentals used to create and manipulate geometric models								
3. Get acquainted with the basic CAD softs are designed for geometric modelling								
Course Outcomes: At the end of the course students will be able to								
S. No	Outcome							Knowledge Level
1.	Apply the fundamentals of CAD and Computer Systems							K3
2.	Understand CAD system hardware and software							K2
3.	Apply geometric modelling techniques for complex part and shape design							K3
4.	Apply 2D & 3D transformations for part and shape alterations.							K3
5.	Apply the applications of Artificial Intelligence and Expert Systems in CAD							K3
SYLLABUS								
Fundamental of CAD Introduction. The CAD system, Reasons for implementing CAD, Design Process, Applications of Computers in Design, Benefits of Computer Aided Design Computer Systems Introduction, Hardware Components, Mass Storage Devices, Input/output Devices								
UNIT-I (10 Hrs)	CAD System Hardware Introduction, The Design Workstation, Graphics Terminal, Graphics Terminal for CAD, CAD System Configuration CAD System Software Introduction, Functions of a Graphics Package, Operating System, Graphics Standards, Standards for Graphics Programming, Standard for the Exchange of Product Model Data (STEP), Drawing Exchange Format (DXF)							
UNIT-II (10 Hrs)	Geometric Modelling Introduction, Importance of Geometric Modelling, Requirements of Geometric Modelling, Types of Models Wire Frame Modelling: Wire Frame Entities, Representation of Curves, Limitations, Surface Modelling: Introduction, Surface Entities, Surface Representations, Limitations, Solid Modelling: Introduction, Solid Entities, Solid Modelling Techniques, Boundary Representation, Constructive Solid Geometry							
UNIT-III (10 Hrs)								

UNIT-IV (10 Hrs)	Transformation Systems Introduction, Transformation Principles, Two-Dimensional Geometric Transformations: Scaling, Translation, Rotation, Three-Dimensional Geometric Transformations: Scaling, Translation, Rotation, Windowing and Clipping
UNIT-V (10 Hrs)	Artificial Intelligence and Expert System Introduction, Artificial Intelligence in CAD, Applications of AI in Design, Expert Systems, Structure of an Expert System, Development of an Expert System, Knowledge Representation, Inference Engine, Characteristics of an Expert System, Examples of Expert Systems, Benefits of Expert System
Textbooks:	
1. CAD/CAM: Computer Aided Design & Manufacturing, by M.D Gnoover & E.W. Zimmer.	
2. CAD / CAM Theory and Practice / Ibrahim Zaid / TMH	
Reference Books:	
1. CAD/CAM by P.N. Rao/TMH	
2. Computer Aided Design and Manufacturing by K. Lalit Narayan, K. Mallikarjuna Rao, M.M. Sancar	
3. CAD/CAM/CIM by Radhakrishna, New age international	
e-Resources	
1. https://pdfdrive.in/courses/112102101	
2. https://pdfdrive.in/courses/112102101	
3. https://pdfdrive.in/courses/112102101	

Handwritten signature
 Professor & Head
 Dept. of Mechanical Engg.
 S.R.A.R. Engineering College
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