Minutes of Board of Studies Meeting: Mechanical Engineering Department

School of Technology (SoT),

Pandit Deendayal Petroleum University

Gandhinagar, Gujarat-382007

Date: 09.06.2020
Time: 10.00 am to 01.00 am
Venue: Zoom

A. Members of Board of Studies

Name of BoS Member	Name of Organization and Designation	Present / Absent	Remarks
Mr. Anand Mishra	SVAP, Ford India, Ahmedabad Plant Quality & Launch Head	Present	
Mr. Anand Savalia	Kavyam Energy Pvt. Ltd, Rajkot Director	Present	
Prof. H.K.Raval	SVNIT-Surat Professor	Present	
Prof.D.S. Sharma	MS University, Baroda Professor & Head of the Department,	Present	
Prof. Sunil Khanna	PDPU, Director SoT	Present	
Prof. Vishvesh Badheka	PDPU, Professor & Head of the Department	Present	
Dr. Krunal Mehta	PDPU, Assistant Professor	Present	
Dr. Simran Singh	PDPU, Assistant Professor	Present	
Dr. Ravi Kant	PDPU, Assistant Professor	Present	
Dr. Jatin Patel	PDPU, Assistant Professor	Present	
Dr. Rajesh Patel	PDPU, Dean FoET	Present	

B. Agenda of Meeting:

1. B. Tech. Mechanical (2020-2024) course structure and syllabus revision.
2. B. Tech. Automobile (2020-2024) course structure and syllabus
3. M. Tech. Mechanical (Thermal Engineering) - (2020-2022) course structure and syllabus revision.
4. M. Tech. Mechanical (Design) - (2020-2022) course structure and syllabus revision.
5. M. Tech. Mechanical (Manufacturing) - (2020-2022) course structure and syllabus revision.

C. Minutes of BoS Meeting:

Agenda-I: B. Tech Mechanical Engineering Programme
Discussion and Resolution:

- The revised 2020 curriculum for B. Tech. Mechanical (2020-24) was presented in front of BoS members.
- The details of course content addition/deletion as per the suggestions received from BoS members is described in Annexure – I.

Agenda-II: B. Tech Automobile Engineering Programme
Discussion and Resolution:

- The revised 2020 curriculum for B. Tech. Automobile (2020-24) was presented in front of BoS members.
- The details of course content addition/deletion as per the suggestions received from BoS members is described in Annexure – II.

Agenda-III: M. Tech Thermal Engineering Programme
Discussion and Resolution:

- The revised 2020 curriculum for M. Tech. Thermal Engineering (2020-22) was presented in front of BoS members.
- The details of course content addition/deletion as per the suggestions received from BoS members is described in Annexure – III.

Agenda-IV: M. Tech Design Programme
Discussion and Resolution:

- The revised 2020 curriculum for M. Tech. Design (2020-22) was presented in front of BoS members.
- The details of course content addition/deletion as per the suggestions received from BoS members is described in Annexure – IV.

Agenda-V: M. Tech Manufacturing Programme
Discussion and Resolution:

- The revised 2020 curriculum for M. Tech. Manufacturing (2020-22) was presented in front of BoS members.
- The details of course content addition/deletion as per the suggestions received from BoS members is described in Annexure – V.

Name of BoS Member - I	Name of BoS Member - II	Name of BoS Member - III	Name of BoS Member - IV
Mr. Anand Mishra Sign	Mr. Anand Savalia Sign	Prof. H.K.Raval Sign	Prof.D.S. Sharma Sign

Note: Take signature of all the members present in BoS

Annexure – I: Course content addition/deletion as per the suggestions for B. Tech. Mechanical Engineering Program

Sr. No	Semester	New Course	Addition/Deletion of Subject/Topic	Justification
2020-21 onwards				
	I	Workshop Practices	No corrections recommended by BoS members	
	I	Engineering Graphics	No corrections recommended by BoS members	
	II	Elements of Mechanical Engineering	No corrections recommended by BoS members	
	II	Elements of Mechanical Engineering Lab.	No corrections recommended by BoS members	
	III	**Professional Core Course**		
		Thermodynamics	No corrections recommended by BoS members	
		Thermodynamics Lab	No corrections recommended by BoS members	
		Strength of Material	No corrections recommended by BoS members	
		Strength of Material Lab	No corrections recommended by BoS members	
		Mechanical Measurements and Metrology	No corrections recommended by BoS members	
		Mechanical Measurements and Metrology – Lab	Add Screw and Gear parameter measurement	Recommended by BoS members. Topic is in demand by industries.
	IV	**Professional Core Course**		
		Fluid Mechanics	No corrections recommended by BoS members	
		Fluid Mechanics - Lab	No corrections recommended by BoS members	
		Design and Kinematics of Machines	No corrections recommended by BoS members	
		Design and Kinematics of Machines – Lab	No corrections recommended by BoS members	

		Engineering Metallurgy	No corrections recommended by BoS members	
		Engineering Metallurgy – Lab	No corrections recommended by BoS members	
		Mechanical Drawing Laboratory	Add the reference book: CAD/CAM by P. N. Rao	Recommended by BoS members
	IV	**Professional Core Elective – I**		
		Control System Engineering	No corrections recommended by BoS members	
		Introduction to Composite Materials	No corrections recommended by BoS members	
		Mechanics of Materials	No corrections recommended by BoS members	
		Engineering Economics	No corrections recommended by BoS members	
	IV	**Open Elective – II**		
		Entrepreneurship & Business Plan Formulation UIE210,	No corrections recommended by BoS members	
		Renewable Energy,	No corrections recommended by BoS members	
		Rapid Prototyping	No corrections recommended by BoS members	
		Materials and Manufacturing 20MEXXXT	Reshuffle the teaching hours	Unit wise uniform distribution of teaching hours
	IV	Industry 4.0	No corrections recommended by BoS members	
	IV	Industry 4.0 Lab	No corrections recommended by BoS members	
	IV	Industrial Orientation (3 weeks-summer break)	No corrections recommended by BoS members	
	V	**Professional Core Course**		
		Heat transfer	No corrections recommended by BoS members	
		Heat transfer - Lab	No corrections recommended by BoS members	

		Dynamics of Machine	No corrections recommended by BoS members	
		Dynamics of Machine -Lab	No corrections recommended by BoS members	
		Manufacturing Process-I	Unit-I: add casting defects and prediction, more focus on investment casting Unit-II: Sheet metal operations to be increased, Add the design aspect of sheet metal work	Recommended by BoS members. Topic is in demand by industries.
		Manufacturing Process-I Lab	No of experiments are to be merged 10 to 12.	To map with the available weeks in a semester
	V	**Professional Core Elective – II**		
		Renewable and Sustainable Energy Technologies	Unit-II: add Biomass pallets and its applications Unit-III: add speed control devices for wind turbine	Based on the relevancy and recommendations from external experts
		Renewable and Sustainable Energy Technologies Lab	No corrections recommended by BoS members	
		IC Engines and Gas Turbines	No corrections recommended by BoS members	
		IC engine and Gas turbine LAB	No corrections recommended by BoS members	
		Fluid Machinery	Unit-III: add regenerative pumps and its application Unit-IV: add screw compressor and its application	Based on the relevancy and recommendations from external experts
		Fluid Machinery Lab	Improve the pump test bed to test more types of pump and add the experiments accordingly	Based on the relevancy and recommendations from external experts
		Computer Aided Design	No corrections recommended by BoS members	
		Computer Aided Design Lab	Add 3D scanner	Recommended by BoS members. Topic is in demand by industries.

		Design for Manufacturing	No corrections recommended by BoS members	
		Design for Manufacturing Lab	No corrections recommended by BoS members	
	V	**Open Elective - III**		
		Dynamics and Control of Unmanned Aerial Vehicle	No corrections recommended by BoS members	
		Work Design and Measurement	No corrections recommended by BoS members	
		Applied Data Analysis and Machine Learning	No corrections recommended by BoS members	
		Additive Manufacturing in Industry 4.0	No corrections recommended by BoS members	
	VI	**Professional Core Course**		
		Refrigeration and Air-conditioning	Add Heat pump design topic	Recommended by BoS members. Topic is in demand by industries.
		Refrigeration and Air-conditioning - Lab	Add practical on heat pump	Recommended by BoS members. Topic is in demand by industries.
		Machine Design – I 18ME313T		
		Machine Design – I Lab 18ME313P	Add the description of standard parts available in market for various assembly of machine	Recommended by BoS members.
		Manufacturing Process-II 18ME301T	No corrections recommended by BoS members	
		Manufacturing Process-II Lab 19ME 301P	No corrections recommended by BoS members	
	VI	**Professional Core Elective – III**		
		Power Plant Engineering	Add the topic: Dust collection before chimney	Based on the relevancy and recommendations from external experts
		Compressible Fluid Flow	No corrections recommended by BoS members	
		Industrial Fuel, Combustion and Pollution	No corrections recommended by BoS members	

		Design of Solar Thermal Systems for Industrial Applications	No corrections recommended by BoS members	
		Heat Exchanger Design	No corrections recommended by BoS members	
		Advanced Thermodynamics	No corrections recommended by BoS members	
		Rapid Product Development	No corrections recommended by BoS members	
		Mechanical Vibrations	No corrections recommended by BoS members	
		Additive Manufacturing	No corrections recommended by BoS members	
		Production and Operations Management	No corrections recommended by BoS members	
		Robotics	No corrections recommended by BoS members	
		Energy Storage Systems and Application	No corrections recommended by BoS members	
	VI	**Open Elective – IV**		
		Principles of Finance & costing	No corrections recommended by BoS members	
		Design & Management of MSMEs	No corrections recommended by BoS members	
		Engineering Optimization	No corrections recommended by BoS members	
	VI	Computational Engineering Laboratory	No corrections recommended by BoS members	
	VI	Industrial Training/ IEP (6 weeks-summer break) 20MEXXXT	No corrections recommended by BoS members	
	VII	**Professional Core Course**		
		Optimization Techniques	No corrections recommended by BoS members	

		Project Management 18ME410T	No corrections recommended by BoS members	
	VII	**Professional Core Elective – IV**		
		Renewable energy application for Food, Energy and Water (FEW) security	No corrections recommended by BoS members	
		Renewable energy application for Food, Energy and Water (FEW) security Lab	No corrections recommended by BoS members	
		Alternate Fuels and Applications	No corrections recommended by BoS members	
		Alternate Fuels and Applications Lab	No corrections recommended by BoS members	
		Computational Fluid Dynamics and Heat Transfer	No corrections recommended by BoS members	
		Computational Fluid Dynamics and Heat Transfer Lab	No corrections recommended by BoS members	
		Machine Learning Applications in Design and Manufacturing	No corrections recommended by BoS members	
		Machine Learning Applications in Design and Manufacturing Lab	No corrections recommended by BoS members	
		Numerical Modelling and Simulation of Manufacturing processes	No corrections recommended by BoS members	
		Numerical Modelling and Simulation of Manufacturing processes Lab	No corrections recommended by BoS members	
		Non-Destructive testing and failure analysis	No corrections recommended by BoS members	
		Non-Destructive testing and failure analysis Lab	No corrections recommended by BoS members	
		Computer Aided Manufacturing	No corrections recommended by BoS members	
		Computer Aided Manufacturing Lab	No corrections recommended by BoS members	

		Finite Element Analysis	No corrections recommended by BoS members	
		Finite Element Analysis Lab	No corrections recommended by BoS members	
		Welding for Metal Joining, Surfacing and Additive Manufacturing	No corrections recommended by BoS members	
		Welding for Metal Joining, Surfacing and Additive Manufacturing Lab	No corrections recommended by BoS members	
		Machine Design-II	No corrections recommended by BoS members	
		Machine Design-II Lab	No corrections recommended by BoS members	
		Thermal analysis and CFD of manufacturing processes	No corrections recommended by BoS members	
		Thermal analysis and CFD of manufacturing processes Lab	No corrections recommended by BoS members	
	VII	**Professional Core Elective – V & VI**		
		Two Phase Flow and Heat Transfer	No corrections recommended by BoS members	
		Advanced Heat Transfer	No corrections recommended by BoS members	
		Advances in Fluid Mechanics	No corrections recommended by BoS members	
		Cryogenics	No corrections recommended by BoS members	
		Heating, Ventilation and Air Conditioning	No corrections recommended by BoS members	
		Hybrid Power Generation Systems	No corrections recommended by BoS members	
		Phase Change Materials: Technologies and Application	No corrections recommended by BoS members	
		Thermal System Design	No corrections recommended by BoS members	

Annexure – II: Course content addition/deletion as per the suggestions for B. Tech. Automobile Engineering Program

		Waste Heat Recovery	No corrections recommended by BoS members	
		Exergy Analysis of Thermal Systems	No corrections recommended by BoS members	
		Solar Photovoltaic Fundamental: Technologies & Application	No corrections recommended by BoS members	
		Machinery Fault Diagnosis and Signal Processing	No corrections recommended by BoS members	
		Advanced Metaheuristics Optimization	No corrections recommended by BoS members	
		Micro and Nano Manufacturing	No corrections recommended by BoS members	
		Advanced Materials and Characterizations	No corrections recommended by BoS members	
		Lubrication	No corrections recommended by BoS members	
		Elements of Mechatronics System Design	No corrections recommended by BoS members	
		Automobile Engineering	No corrections recommended by BoS members	
		Advance Manufacturing Process	No corrections recommended by BoS members	
	VII	Seminar and Technical Writing	No corrections recommended by BoS members	
	VIII	Major Project	No corrections recommended by BoS members	
	VIII	Comprehensive Project	No corrections recommended by BoS members	

Following were the inputs received from the External BoS member (Mr. Anand Misra, SVAP, Ford India) relating to the proposed B.Tech (Automobile Engineering) program:

1. "Appreciate the initiative of rolling out the Automobile Engineering Program. With Gujarat & Western India emerging as one of Major Centers of Automobiles Industry, this step can very well suit to have the competent and educated young professionals to contribute to Industry & Country." <Quoted as it is>

2. The External BoS member also supported the proposal of having the First year of Curriculum for B.Tech (Automobile Engineering) same as that of B.Tech (Mechanical Engineering).

3. Following were the suggestions received for the proposed Course Structure for B.Tech (Automobile Engineering):
    a. Inclusion of Course on **Automotive Power Train Systems** which should Cover Fuel systems including, Gasoline, Diesel, Electric, Hybrid etc.
    b. Covering of **Automotive Fuels & Lubricants**
    c. Emissions Control Technologies
    d. Vehicle Dynamics
    e. Vehicle Testing & Automotive Standards
    f. Automotive Manufacturing & Marketing

Annexure – III: Course content addition/deletion as per the suggestions for M. Tech. Thermal Engineering Program

Sr No	Semester	**New Course**	Addition/Deletion of Subject/Topic	Justification
2020-21 onwards				
	I	Advanced Numerical Techniques and Computer Programming	Entire course is revised	recommended by BoS members in the present form
	I	Advanced Numerical Techniques and Computer Programming LAB	Entire course is revised	recommended by BoS members in the present form
	I	Advanced Fluid Mechanics	Entire course is revised	recommended by BoS members in the present form
	I	Advanced Engineering Thermodynamics	Entire course is revised	recommended by BoS members in the present form
	I	Thermal Lab-I	Entire course is revised	recommended by BoS members in the present form
	I	Elective I • Heating Ventilation and Air conditioning. • Advanced Gas Dynamics. • Introduction to Aircraft Flight and Aerodynamics.	Entire course is revised	recommended by BoS members in the present form
	I	Elective II • Cryogenic Systems. • Energy Management.	Entire course is revised	recommended by BoS members in the present form
	II	Experimental Methods in Thermal Engineering	Entire course is revised	recommended by BoS members in the present form

	II	Advance Heat Transfer	Entire course is revised	recommended by BoS members in the present form
	II	Computational Fluid Dynamics	Entire course is revised	recommended by BoS members in the present form
	II	Thermal Lab-II	Entire course is revised	recommended by BoS members in the present form
	II	Elective III • Heat Transfer Equipment Design. • Design and Optimization of Thermal Systems. • Convective Heat Transfer	Entire course is revised	recommended by BoS members in the present form
	II	Elective IV • Solar Thermal Systems. • Recent Applications of Cavitation Technology in Industry	Entire course is revised	recommended by BoS members in the present form
	II	Successful Research and Development Program	Entire course is revised	recommended by BoS members in the present form
	III	Seminar	Entire course is revised	recommended by BoS members in the present form
	III	Project	Entire course is revised	recommended by BoS members in the present form
	III	Industrial Training	Entire course is revised	recommended by BoS members in the present form

	IV	Seminar	Entire course is revised	recommended by BoS members in the present form
	IV	Project & Dissertation	Entire course is revised	recommended by BoS members in the present form

Annexure – IV: Course content addition/deletion as per the suggestions for M. Tech. Design Program

Sr No	Semester	**New Course**	Addition/Deletion of Subject/Topic	Justification
2020-21 onwards				
	I	Advanced Mechanics of Solids	Entire course is revised	recommended by BoS members in the present form
	I	Finite Element and Mesh Free Methods	Entire course is revised	recommended by BoS members in the present form
	I	Materials Design and Selection	Entire course is revised	recommended by BoS members in the present form
	I	Design Lab-I	Entire course is revised	recommended by BoS members in the present form
	II	Experimental Methods	Entire course is revised	recommended by BoS members in the present form
	II	Theory and Analysis of Vibration	Entire course is revised	recommended by BoS members in the present form
	II	Product Design and Development	Entire course is revised	recommended by BoS members in the present form
	II	Design Lab-II	Entire course is revised	recommended by BoS members in the present form
	III	Seminar	Entire course is revised	recommended by BoS members in the present form

	III	Project	Entire course is revised	recommended by BoS members in the present form
	IV	Seminar	Entire course is revised	recommended by BoS members in the present form
	IV	Project	Entire course is revised	recommended by BoS members in the present form
	I/II	MECHANICAL DESIGN OPTIMIZATION	Entire course is revised	recommended by BoS members in the present form
	I/II	Robotics	Entire course is revised	recommended by BoS members in the present form
	I/II	Automotive Design	Entire course is revised	recommended by BoS members in the present form
	I/II	Design of Material Handling Equipment	Entire course is revised	recommended by BoS members in the present form
	I/II	Design of Material Handling Equipment	Entire course is revised	recommended by BoS members in the present form
	I/II	Mechanics of Smart Materials	Entire course is revised	recommended by BoS members in the present form
	I/II	Rapid Product Development	Entire course is revised	recommended by BoS members in the present form

	I/II	Theory of Elasticity and Plasticity	Entire course is revised	recommended by BoS members in the present form
	I/II	Vehicle Dynamics	Entire course is revised	recommended by BoS members in the present form
	I/II	Machine Learning Applications in Design and Manufacturing	Entire course is revised	recommended by BoS members in the present form
	I/II	Theory of Plates and Shells	Entire course is revised	recommended by BoS members in the present form
	I/II	Design of Light Weight Structures	Entire course is revised	recommended by BoS members in the present form
	I/II	Industrial Tribology and Lubrication	Entire course is revised	recommended by BoS members in the present form
	I/II	Fracture Mechanics	Entire course is revised	recommended by BoS members in the present form
	I/II	BICYCLE DESIGN AND FRAME BUILDING	Entire course is revised	recommended by BoS members in the present form

Annexure – V: Course content addition/deletion as per the suggestions for M. Tech. Manufacturing Programme

Sr No	Semester	**New Course**	Addition/Deletion of Subject/Topic	Justification
2020-21 onwards				
	I	Advanced manufacturing Processes-I	Unit II – Include selection of electrodes, welding economics, welding design, welding defects Unit IV – Introduction to plasticity Give 12 Hrs to Unit 4 and total Hrs will become 40 Hrs CO1 – Needs to be reframe. For M.Tech students it should not be listing Reference Book Manufacturing Science – Ghosh and Mallik Include year and publication	
	I	Advanced Engineering Metallurgy	Unit1 – Add "Limiting Dome Height (LDH)". There should be some topic on testing anisotropic properties of the alloys Reference Book Mechanical Metallurgy – G. E. Dieter	
	I	Surface Engineering	If possible this subject can be moved to elective course	
	I	Advanced Manufacturing Lab-I	If possible add some experiments based on metal forming	
	I	Elective I		
	I	Elective II		
	II	Advanced Manufacturing Processes-II	Unit 1 – Include tool signature – tool in hand system, ORS, NRS. Thick and thin shear zone theory For Unit 1 number of hrs can be increased to 13 hrs and	

			correspondingly balance number of hrs in other units Reference Book The machining of metals - E. J. A. Armarego, R. H. Brown Manufacturing Science – Amitabha Ghosh, Asok Kumar Mallik	
	II	Additive Manufacturing	No comments	recommended by BoS members in the present form
	II	Non Destructive Testing and Failure Analysis	If possible add some experiments from this course to AMP II lab	
	II	Advanced Manufacturing Lab-II	Experiments 5, 6 and 7 can be removed as these are not relevant to Advanced Manufacturing processes	
	III	Seminar	No comments	recommended by BoS members in the present form
	II	Successful Research and Development Program	No comments	recommended by BoS members in the present form
	III	Seminar	No comments	recommended by BoS members in the present form
	III	Project	No comments	recommended by BoS members in the present form
	III	Industrial Training	No comments	recommended by BoS members in the present form
	IV	Seminar	No comments	recommended by BoS members in the present form

	IV	Project & Dissertation	No comments	recommended by BoS members in the present form
Electives – I & II				
		Manufacturing Automation	Check maximum hrs should be 40 Hrs	
		Micro and Nano Manufacturing	No comments	recommended by BoS members in the present form
		Advanced Welding Processes	Unit 4 – Cladding is repeated from surface engineering core course covered in semester 1	
		Numerical Modelling of manufacturing processes	No comments	recommended by BoS members in the present form
		Computer Integrated Manufacturing	Unit 2 – Include FMS scheduling and sequencing, FMS simulation	
		Design for Manufacturing	No comments	recommended by BoS members in the present form
		Simulation of Manufacturing Systems	No comments	recommended by BoS members in the present form
		Industry 4.0	No comments	recommended by BoS members in the present form

		Sheet Metal Engineering	No comments	recommended by BoS members in the present form
		Sustainable Manufacturing	No comments	recommended by BoS members in the present form
		Manufacturing codes and standards	No comments	recommended by BoS members in the present form
		Advanced Materials and Characterizations	No comments	recommended by BoS members in the present form
		Experimental Methods	No comments	recommended by BoS members in the present form
		Finite Element and Mesh Free Methods	No comments	recommended by BoS members in the present form