Minutes of Board of Studies Meeting -Industrial and Mechanical Engineering

School of Technology (SoT),

Pandit Deendayal Petroleum University

Gandhinagar, Gujarat-382007

BOS meeting was held on 25th April 2019 at 3 PM in E-block, FF committee room,SoT, PDPU

Sr No	Name of BOS	Name of nominated members	Present
1	Mechanical Engineering and Industrial Engineering (SOT)	1. Dr.M.B.Kiran- Industrial Engineering (Chairman BOS)	**Present**
		2. Dr. Anurag Mudgal- Mechanical Engineering-Member BOS	**Absent**
		3. Prof. D.M.Parikh- Industrial Engineering,HoD & Dean	**Present**
		4. Dr.Rajesh Patel-Member BOS	**Present**
		5. Dr.Abhhishek Kumar-Member BOS	**Present**
		External Academic Members	
		1. Prof. Kaushik.M.Patel , Mech. Engg. Dept., Nirma University, Sarkhej-Gandhinagar Highway, Ahmedabad- 382 48	**Present**
		2. Dr. D. V. Bhatt, Mech. Engg. Dept., SVNIT, Mechanical Engineering Department, Sardar Vallabhbhai National Institute of Technology, Ichchanath, Surat, Gujarat –395007, INDIA	**Present**
		Professional members	
		1. Mr. Himanshu Trivedi (BOSCH) Near Village Iyava, Sanand Viramgam Highway, Taluka Sanand, Ahmedabad, Gujarat 382170	**Absent**
		2. Shrikant Mehta Global Quality Manager (PG I&C TRES) BU PGTR, ABBLimited,	**Absent**

		Maneja Works, Vadodara - 390 013 , India **Special Invitees** **1.** Prof. Vishvesh Badheka,HoD Mech.Engg. **2.** Dr.Vinay Vakaria **3.** Dr.JayKumar Vora **4.** Mr.R.D.Chauhan,NTPC	**All Invitees were present**

At the outset chairman BOS greeted all the members who were present & elaborated on the agenda of the metting. The following points of the agenda were taken up .

The following items were reviewed

1. 2016-17 Syllabus –B.Tech (Mechanical.Engg.) -7th and 8th Semesters
2. 2017-18 Syllabus –B.Tech (Mechanical.Engg.5th & 6th semesters
3. 2016-17 Syllabus –B.Tech (Industrial.Engg.)- 7th and 8th Semesters
4. 2018 Syllabus –M.Tech (Mech.Engg- Design.)-3rd & 4th semesters & framework
5. 2019 Syllabus –M.Tech (Mech.Engg- Manufacturing.)-1st & 2nd semesters & framework
6. **General Points:**

- For A.Y. 2019-20, the open elective shall be offered in the ODD semester (in 7th semester) so students who have not taken open elective can take it.
- Honour Degree: As per the University Scheme, The students can earn Honour Degree along with Major B. Tech. degree by earning 20 extra credits through courses from MOOCs. However Department shall prepare a basket of courses of NPTEL other open sources so that by taking extra credit from that basket students can earn minor degree.
- All the course outcomes or learning objective of the courses shall be prepared following Blooms Taxonomy. Blooms Taxonomy shall be used for writing the experiment titles.
- For any computer based laboratory experiments, avoid the use of name of any commercial software.
- Comprehensive project shall be for fulltime, so that students need not to come for two courses at University and hence they can take Comprehensive project anywhere in India.

While appreciating (very well developed, latest & industry norms compliant) the introduction of new syllabi, the above subjects were reviewed and following changes were suggested.

- Members elaborated on course objectives, outcomes along with the content of the syllabus and agreed in principle to adopt.
- Suggested to add Robotics in CAD/CAM syllabus- B.Tech (Industrial.Engg.) -2016-17 Batch-7th semester.

Points of discussions in BoS regarding
B. Tech. Industrial Engineering (Batch: 2016-17)

Table-1: Proposed Course Structure of B. Tech. Sem VII & VIII, Industrial Engineering, (w.e.f. Academic Year: 2016-17)

	Semester-VII							Semester-VIII						
Course Code	Course	L	T	P	Contact	Credit		Course Code.	Course	L	T	P	Contact	Credit
	CAD/CAM	3	1	0	4	4			Principles of Finance &Costing	3	0	0	3	3
	Supply chain management	3	1	0	4	4			Lean System	3	0	0	3	3
	Dept. Elective-III Optimization Techniques	3	1	0	4	4			Project Management	3	0	0	3	3
	SMS (Theory)	3	1	0	4	4			Dept. Elective – IV Data mining and Analytics	3	1	0	4	4
	Seminar	3	0	0	3	3			Generic, Open Elective (Other Discipline)	3	0	0	3	3
	Laboratory-I (CAD/CAM . Laboratory)	0	0	3	3	1.5			Major Project	0	0	0	0	6
	Laboratory-II (SMS . Laboratory)	0	0	3	3	1.5			OR					
									Comprehensive Project (CP)					16
									Subject-I	3	0	0	3	3
									Subject-II	3	0	0	3	3
	Total	**15**	**4**	**6**	**25**	**22**			**Total**	**15**	**1**	**0**	**16**	**22**

While appreciating (very well developed, latest & industry norms compliant) the introduction of new syllabi , the above subjects were reviewed and following changes were suggested.

Suggested to add Robotics in CAD/CAM syllabus- B.Tech (Industrial.Engg.) -2016-17 Batch-7th semester.

Points of discussions in BoS for
B. Tech. Mechanical Engineering (Batch: 2016-17)

Table-1: Proposed Course Structure of B. Tech. Sem VII & VIII, Mechanical Engineering, (w.e.f. Academic Year: 2016-17)

	Semester-VII							Semester-VIII						
Course Code	Course	**L**	**T**	**P**	Contact	Credit		Course Code.	Course	**L**	**T**	**P**	Contact	Credit
	Machine Design - II	4	0	0	4	4			CAM	3	1	0	4	4
	I C Engine	3	1	0	4	4			Thermal Engineering	3	0	0	3	3
	Dept. Elective-III	3	0	0	3	3			Project Management	3	0	0	3	3
	Dept. Elective -IV	3	0	0	3	3			Dept. Elective - V	3	0	0	3	3
	Discipline based/ Generic (*Optimization Techniques*)	3	0	0	3	3			Generic, Open Elective (Other Discipline)	3	0	0	0	3
	Laboratory-I (RAC and I C Engine Lab)	0	0	3	3	1.5			Major Project	0	0	0	0	6
	Laboratory-II (Machine Design Lab)	0	0	3	3	1.5			OR					
	Seminar	0	0	0	-	3			Comprehensive Project (CP)					16
									Subject-I	3	0	0	3	3
									Subject-II	3	0	0	3	3
	Total	**16**	**2**	**6**	**24**	**23**			**Total**	**15**	**1**	**0**	**16**	**22**

Department Elective – III & IV: ME 411- Experimental Stress Analysis, ME 412- Science and Technology of Welding, ME 414- Computation Fluid Dynamics and Heat Transfer, ME 426- Rapid Product Development, ME-431/IE-403- Planning of Facilities and Materials Handling Systems, ME 418- Vibration Engineering Design, ME-429- Design for Manufacturing, ME 415- Fuels Combustion and Pollution, Automotive Design, ME 413- Lubrication, ME 428- Micro- & Nano-Manufacturing, ME 421- Cryogenics

Department Elective – V: Machine Learning Applications in Design and Manufacturing, Heat Exchangers design, ME427- Automobile Engineering, ME 417- Solar Photovoltaic Fundamental: Technologies & Application, ME-432/IE-308- Procurement and Material management, ME 422- Flexible Manufacturing Systems, ME 416- Advances in Measurement Techniques

- Proposed courses for B. Tech. Sem-VII and VII as shown in Table-1 per new teaching scheme and course revision implemented in year 2016-17
- For B. Tech, Sem-VII, Instead of Machine Design I &II lab, the course should be named Machine Design Lab only.
- Discipline based/ Generic elective shall be named as Discipline based/ Generic course as the department has fixed a course Optimization Techniques
- For CAD Lab, MATLAB should be written in standard format. Software name should be removed and list of experiments should be in bullet form.
- Proposed new Elective-V: Machine Learning Applications in Design and Manufacturing
- Proposed open elective Applied optimization

Points of discussions in BoS for
B. Tech. Mechanical Engineering (Batch: 2017-18)

Table: 2 Course Structure of B.Tech. in Mechanical Engineering, w.e.f. Academic Year: 2017-18

	Semester-V							Semester-VI						
COURSE CODE	Course	**L**	**T**	**P**	Contact	Credit		**COURSE CODE**	Course	**L**	**T**	**P**	Contact	Credit
	Non-Conventional Energy Sources	3	1	0	4	4		18ME 313T	Machine Design - I	3	1	0	4	4
16ME301T	Manufacturing Process -II	3	1	0	4	4		16MI309T	Refrigeration and Air-Conditioning	3	1	0	4	4
16ME306T	Heat and Mass Transfer	3	1	0	4	4		18ME311T	Advance Manufacturing Process	3	1	0	4	4
16ME304T	Dynamics of Machine	3	1	0	4	4		18ME315T	Computer Aided Design (CAD)	3	1	0	4	4
	Dept. Elective - I	3	0	0	3	3			Dept. Elective - II	3	0	0	3	3
	Manufacturing Process - I Lab	0	0	2	2	1			Manufacturing Process - II Lab	0	0	2	2	1
	Dynamics of Machines Lab	0	0	2	2	1			Refrigeration and Air Conditioning Lab	0	0	2	2	1
	Heat Transfer and Nonconventional Energy Lab	0	0	2	2	1			CAD Lab	0	0	2	2	1
	Total	**15**	**4**	**6**	**25**	**22**			**Total**	**15**	**4**	**6**	**25**	**22**

Department Elective – I: 1) Production and Operation Management, 2) Rapid Product Development, 3) ME 424- Turbo Machinery
Department Elective-II: 1) Robotics, 2) Elements of Mechatronics System Design, 3) ME 419-Quality Engineering 4) Non-Destructive Testing

- The course structure and courses for B. Tech. Sem V & VI as per new teaching scheme implemented in year 2017-18 is shown in Table-II.
- Elective course Non-conventional energy sources is converted into a Compulsory course and Production Operation Management is offered as elective subject instead of Non-Conventional energy sources.
- In Dynamics of Machine subject, Lubrication and Tribology as a separate unit must be included. Unit-IV vibration can be omitted for inclusion of new content.
- Splitting of Lab-I (Manufacturing process and Production Technology Lab) and Lab-II (Kinematics and Dynamics of Machine Lab) each of teaching scheme (L-T-P: 0-0-3) into three laboratories of scheme (L-T-P: 0-0-2) namely 1) Manufacturing Process - I Lab, 2) Dynamics of Machines Lab and 3) Heat Transfer and Nonconventional Energy Lab.
- Advance Manufacturing Process is converted into the regular subject form elective-II and Robotics is offered as elective subject instead of regular course.
- Splitting of Lab-III (Heat-Mass Transfer and NCES Lab) and Lab-IV (CAD Lab) each of teaching scheme (L-T-P: 0-0-3) into three laboratories of scheme (L-T-P: 0-0-2) namely 1) Manufacturing Process - II, 2) Refrigeration and Air Conditioning Lab and 3) CAD Lab.
- Offered new elective course
- Offered new elective course: Elements of Mechatronics System Design (Elective-II)

Points of discussions in BoS for M. Tech. Design

- For M. Tech Design, specifically Semester III and IV only Project work credit should be included. There is no need of Seminar, Research pedagogy and other content.

Points of discussions in BoS for
Proposed Program M. Tech. in Manufacturing

PROPOSED COURSE STRUCTURE FOR M.TECH. MECHANICAL FIRST YEAR (Manufacturing Engineering) w.e.f. 2019-20

SEMESTER I			M.TECH										
Sr. No	Course Code	Course Name	Teaching Scheme					Exam Scheme					
			L	T	P	C	Hrs/wk	Theory			Practical		Total Marks
								MS	ES	IA	LW	LE/Viva	
1		Advanced Manufacturing Processes-I	3	1	0	4	4	25	50	25	--	--	100
2		Advanced Engineering Metallurgy	3	0	0	3	3	25	50	25	--	--	100
3		Surface Engineering	3	0	0	3	3	25	50	25	--	--	100
4		Manufacturing Lab-I/Minor Project-1	0	0	2	1	2	--	--	--	25	25	50
5		Elective I	3	0	0	3	3	25	50	25	--	--	100
6		Elective II	3	0	0	3	3	25	50	25	--	--	100
		Total	**15**	**1**	**2**	**17**	**18**						550

MS = Mid Semester, ES = End Semester; IA = Internal assessment (like quiz, assignments etc)
LW = Laboratory work; LE = Laboratory Exam

Elective-I: 1) Numerical Modeling of manufacturing processes 2) Finite Element and Mesh Free Methods 3) Simulation of Manufacturing systems 4) Design for Manufacturing

Elective-II: 1) Industry 4.0 2) Quality management systems 3) Advanced Materials and Characterizations 4) Sustainable Manufacturing

SEMESTER II			M.TECH.										
Sr. No	Course Code	Course Name	Teaching Scheme					Exam Scheme					
								Theory			Practical		Total
			L	T	P	C	Hrs/wk	MS	ES	IA	LW	LE/Viva	Marks
1		Non Destructive testing and failure analysis	3	0	0	3	3	25	50	25	--	--	100
2		Advanced Manufacturing Processes-II	3	0	0	3	3	25	50	25	--	--	100
3		Additive Manufacturing	3	0	0	3	3	25	50	25	--	--	100
4		Manufacturing Lab-I/Minor Project-1	0	0	2	1	2	--	--	--	25	25	50
5		Elective III	3	0	0	3	3	25	50	25	--	--	100
6		Elective IV	3	0	0	3	3	25	50	25	--	--	100
		Total	**15**	**0**	**2**	**16**	**17**						550

MS = Mid Semester, ES = End Semester; IA = Internal assessment (like quiz, assignments etc)
LW = Laboratory work; LE = Laboratory Exam

Elective-III: 1) Codes and Standards for manufacturing 2) Manufacturing Automation 3) Computer Integrated Manufacturing

Elective-IV: 1) Experimental Methods 2) Micro and Nano Manufacturing 3) Sheet metal engineering 4) Advanced welding processes

- It was observed that weightage of welding in the advanced Manufacturing courses (1&2) is very high and metal forming is given low weightage hence courses required revision of the content to balance the important topics like metal forming, CNC-CI (introductory) etc.
- In Non-Destructive Testing (Elective) course, thermal image flaw detection should be introduced.
- Food process manufacturing to be included in the syllabus of Sustainable Manufacturing.
- Introduce Simulation of Manufacturing Process as one of Elective
- Topic such as composite to be included in advanced metallurgy syllabus.
- Surface engineering subject shall be replaced Industry 4.0 which is missing it should be included.
- CIM shall be offered as a compulsory course.
- Fusion Welding (Elective) shall be replaced with other elective.
- Solid State Welding (Elective) shall be replaced with other elective.
- A new subject to be proposed in place mechanical behaviour of Materials.
- Lean manufacturing shall be included in the syllabus.
- Manufacturing automation subject to be proposed as an elective.
- Surface engineering subject to be shifted to elective.