

**DR. A. P. J. ABDUL KALAM TECHNICAL UNIVERSITY
LUCKNOW, UTTAR PRADESH**



STUDY & EVALUATION SCHEME WITH SYLLABUS

FOR

B. TECH. 3rd YEAR

MECHANICAL ENGINEERING

[Effective from Session: 2020-21]

MECHANICAL ENGINEERING#

Syllabus Content of B. Tech Mechanical Engineering

S. No.	Code	Departmental Component	Subject Name	L T P	Credits	Page No.
1	Third Year Evaluation Scheme (V & VI Semester)					03
2	Departmental Electives from Fifth to Seventh Semester & Suggested MOOCs Courses					04
3	KME 501	Core	Heat and Mass Transfer	3 1 0	4	06
4	KME 502	Core	Strength of Material	3 1 0	4	08
5	KME 503	Core	Industrial Engineering	3 1 0	4	10
6	KME 551	Lab	Heat and Mass Transfer Lab	0 0 2	1	12
7	KME 552	Lab	Python Lab	0 0 2	1	13
8	KME 553	Lab	Internet of Things Lab	0 0 2	1	15
9	KME 051	Elective I	Computer Integrated Manufacturing	3 0 0	3	17
10	KME 052	Elective I	Mechatronics Systems	3 0 0	3	19
11	KME 053	Elective I	Finite Element Methods	3 0 0	3	21
12	KME 054	Elective I	I C Engine Fuel and Lubrication	3 0 0	3	22
13	KAU 051	Elective I	Automobile Engines & Combustion	3 0 0	3	24
14	KME 055	Elective II	Advance welding	3 0 0	3	26
15	KME 056	Elective II	Programming, Data Structures and Algorithms Using Python	3 0 0	3	28
16	KME 057	Elective II	Mechanical Vibrations	3 0 0	3	29
17	KME 058	Elective II	Fuels and Combustion	3 0 0	3	31
18	KAU 052	Elective II	Automotive chassis and suspension	3 0 0	3	33
19	KME 601	Core	Refrigeration and Air Conditioning	3 1 0	4	35
20	KME 602	Core	Machine Design	3 1 0	4	37
21	KME 603	Core	Theory of Machines	3 1 0	4	39
22	KME 651	Lab	Refrigeration and Air Conditioning Lab	0 0 2	1	41
23	KME 652	Lab	Machine Design Lab	0 0 2	1	42
24	KME 653	Lab	Theory of Machines Lab	0 0 2	1	43
25	KME 061	Elective III	Nondestructive Testing	3 0 0	3	44
26	KME 062	Elective III	Artificial Intelligence	3 0 0	3	46
27	KME 063	Elective III	Tribology	3 0 0	3	48
28	KME 064	Elective III	Gas Dynamics and Jet Propulsion	3 0 0	3	50
29	KAU 061	Elective III	Automotive Electrical and Electronics	3 0 0	3	51
30	Fourth Year Evaluation Scheme (VII & VIII Semester) Effective in session 2021-22					53
31	KME 071	Elective IV	Additive Manufacturing	3 0 0	3	54
32	KME 072	Elective IV	HVAC systems	3 0 0	3	56
33	KAU 072	Elective IV	Hybrid Vehicle Propulsion	3 0 0	3	58
34	KME 073	Elective V	Mathematical Modeling of Manufacturing Processes	3 0 0	3	60
35	KME 074	Elective V	Machine Learning	3 0 0	3	62
36	KME 075	Elective V	Computer Graphics and product modeling	3 0 0	3	64
37	KME 076	Elective V	Power Plant Engineering	3 0 0	3	66
38	KAU 073	Elective V	Vehicle Body Engineering & safety	3 0 0	3	68

MECHANICAL ENGINEERING#

B. Tech Mechanical Engineering Evaluation Scheme

SEMESTER- V													
Sl. No.	Code	Subject	Periods			Evaluation Scheme				End Semester		Total	Credits
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KME 501	Heat and Mass Transfer	3	1	0	30	20	50		100		150	4
2	KME 502	Strength of Material	3	1	0	30	20	50		100		150	4
3	KME 503	Industrial Engineering	3	1	0	30	20	50		100		150	4
4		Departmental Elective-I	3	0	0	30	20	50		100		150	3
5		Departmental Elective-II	3	0	0	30	20	50		100		150	3
6	KME 551	Heat Transfer LAB	0	0	2				25		25	50	1
7	KME 552	Python Lab	0	0	2				25		25	50	1
8	KME 553	Internet of Things Lab	0	0	2				25		25	50	1
9	KME 554	Mini Project or Internship Assessment*	0	0	2				50			50	1
10	NC ⁺	Constitution of India/ Essence of Indian Traditional Knowledge	2	0	0	15	10	25		50			
11	MOOCs (Essential for Hons. Degree)												
		Total	17	3	6							950	22

*The Mini Project or internship (4 - 5 weeks) conducted during summer break after IV semester and will be assessed during V semester.

SEMESTER- VI													
Sl. No.	Code	Subject	Periods			Evaluation Scheme				End Semester		Total	Credits
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KME 601	Refrigeration and Air Conditioning	3	1	0	30	20	50		100		150	4
2	KME 602	Machine Design	3	1	0	30	20	50		100		150	4
3	KME 603	Theory of Machine	3	1	0	30	20	50		100		150	4
4		Departmental Elective-III	3	0	0	30	20	50		100		150	3
5		Open Elective-I	3	0	0	30	20	50		100		150	3
6	KME 651	Refrigeration and Air Conditioning Lab	0	0	2				25		25	50	1
7	KME 652	Machine Design Lab	0	0	2				25		25	50	1
8	KME 653	Theory of Machine Lab	0	0	2				25		25	50	1
9	NC ⁺	Essence of Indian Traditional Knowledge/ Constitution of India	2	0	0	15	10	25		50			
10	MOOCs (Essential for Hons. Degree)												
		Total	17	3	6							900	21

MECHANICAL ENGINEERING#

It is suggested that the students should choose Departmental Electives Specializationwise that will support them to gain enough learning of the chosen Specialization.

Department Electives

	Specialization-1	Specialization-2	Specialization-3	Specialization-4	Specialization-5
Specialization	Manufacturing and Automation	Automation and Industry 4.0	Design and Analysis	Thermal Engineering	Automobile Engineering
Sem V Code	KME 051	KME 052	KME 053	KME 054	KAU 051
Departmental Elective-I	Computer Integrated Manufacturing	Mechatronics Systems	Finite Element Methods	I C Engine Fuel and Lubrication	Automobile Engines & Combustion
Sem V Code	KME 055	KME 056	KME 057	KME 058	KAU 052
Departmental Elective-II	Advance welding	Programming, Data Structures And Algorithms Using Python	Mechanical Vibrations	Fuels and Combustion	Automotive chassis and suspension
Sem VI Code	KME 061	KME 062	KME 063	KME 064	KAU 061
Departmental Elective-III	Non destructive Testing	Artificial Intelligence	Tribology	Gas Dynamics and Jet Propulsion	Automotive Electrical and Electronics
Sem VII Code	KME 071			KME 072	KAU 072
Departmental Elective-IV	Additive manufacturing (Common to all Three Specializations)			HVAC systems	Hybrid Vehicle Propulsion
Sem VII Code	KME 073	KME 074	KME 075	KME 076	KAU 073
Departmental Elective-V	Mathematical Modeling of Manufacturing Processes	Machine Learning	Computer Graphics and product modeling	Power Plant Engineering	Vehicle Body Engineering & safety

MECHANICAL ENGINEERING#

It is suggested that the students may also do the following MOOCs in addition to mandatory courses. This will enhance their learning in a particular Specialization. One MOOC per semester is recommended.

Suggested MOOCs Course

Specialization	Specialization -1	Specialization -2	Specialization -3	Specialization -4	Specialization -5
	Manufacturing and Automation	Automation and Industry 4.0	Design and Analysis	Thermal Engineering	Automobile Engineering
Sem V	Advance Machining Process https://swayam.gov.in/nd1_noc20_me76/preview By Prof. Manas Das, IIT Guwahati	Control Systems https://swayam.gov.in/nd1_noc20_ee90/preview By Prof. C. S. Shankar Ram, IIT Madras	Experimental Stress Analysis https://swayam.gov.in/nd1_noc20_me02/preview By Prof. K. Ramesh IIT Madras	Fluid dynamics and turbo machines https://swayam.gov.in/nd1_noc20_me75/preview By Prof. Dhiman Chatterjee, Prof. Shomit Bakshi, IIT Madras	Vehicle Dynamics https://nptel.ac.in/courses/107/106/107106080/ Prof P R Krishnakumar, IIT Madras
Sem VI	Introduction to robotics https://swayam.gov.in/nd1_noc20_de11/preview By Prof. Asokan T, Prof. Balaraman Ravindran, Prof. Krishna Vasudevan, IIT Madras	Introduction to robotics https://swayam.gov.in/nd1_noc20_de11/preview By Prof. Asokan T, Prof. Balaraman Ravindran, Prof. Krishna Vasudevan, IIT Madras	Introduction to CFD https://swayam.gov.in/nd1_noc20_ae11/preview By Prof. Arnab Roy, IIT Kharagpur	Introduction to CFD https://swayam.gov.in/nd1_noc20_ae11/preview By Prof. Arnab Roy, IIT Kharagpur	Control Systems https://swayam.gov.in/nd1_noc20_ee90/preview By Prof. C. S. Shankar Ram, IIT Madras
Sem VII	Automation in Manufacturing https://swayam.gov.in/nd1_noc20_me58/preview By Prof. Shrikrishna N. Joshi, IIT Guwahati	Introduction to Industry 4.0 and Industrial Internet of Things https://swayam.gov.in/nd1_noc20_cs69/preview By Prof. Sudip Misra, IIT Kharagpur	Introduction to Composites https://swayam.gov.in/nd1_noc20_me95/preview By Prof. Nachiketa Tiwari, IIT Kanpur	Fundamentals of Compressible Flow https://swayam.gov.in/explorer?searchText=Compressible%20Flow By Prof. Niranjan Sahoo, IIT Guwahati	Introduction to hybrid and Electric Vehicles MOOC: https://nptel.ac.in/courses/108/103/108103009/ Dr. Praveen Kumar, Prof. S. Majhi, IIT Guwahati
Sem VIII	Production and Operation Management https://swayam.gov.in/nd1_noc20_mg06/preview By Prof. Rajat Agrawal, IIT Roorkee	Supply Chain management https://swayam.gov.in/nd2_cec20_mg11/preview By Dr. P. Chitramani, Avinashilingam Institute for Home Science and Higher Education for Women	Material Characterization https://swayam.gov.in/nd1_noc20_mm14/preview By Prof. Sankaran. S, IIT Madras	Computational Fluid Dynamics for Incompressible Flows https://swayam.gov.in/nd1_noc20_me06/preview By Prof. Amaresh Dalal, IIT Guwahati	Fuel Cell Technology https://nptel.ac.in/courses/103/102/103102015/ By Dr. Anil Verma, IIT Guwahati & Prof. S. Basu, IIT Delhi