

DR. K N MODI UNIVERSITY,

NEWAI, TONK, RAJASTHAN

DEPARTMENT OF MECHANICAL ENGINEERING



**SYLLABUS WITH STUDY & EVALUATION
SCHEME**

B.TECH. (MECHANICAL ENGINEERING)

W.E.F. SESSION 2017-2018

DEPARTMENT OF MECHANICAL ENGINEERING

DR K N MODI UNIVERSITY, NEWAI, TONK

Title: Minutes of the Board of Study (BOS) meeting of Mechanical Engineering Department for the session 2017-18 held at 2:00 PM on 27th May 2017 in the chamber of the HOD.

Members Present:

1. Dr, Manvijay Singh, Professor & Head
2. Mr. Pradeep Sharma, Coordinator M Tech Courses
3. Mr. Rajesh Gond ,Coordinator B.Tech. (ME)Courses
4. Mr. Shailendra Singh, Courdinator, (Diploma in ME)
5. Mr. Dheeraj Mishra, Coordinator B Tech AE Course
6. Prof.(Dr.) S L Soni , MNIT, Jaipur, **External Expert**
7. Mr. Mukesh Sharma , GM (HRD), Shri Krsna Urja Project Ltd, RIICO, Newai, Tonk


Member Absent: NIL

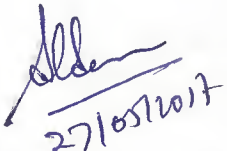
HOD chaired the meeting and welcome all the members of Board of Study (BOS) of Department of Mechanical Engineering.

He requested Mr. Pradeep Sharma, Coordinator M Tech Courses for presenting proposed syllabus and the changes in existing syllabus for M Tech courses w.e.f.2017-18 session the for the discussion.

Mr. Pradeep Sharma thanked the chair and presented the course details and contents of the M Tech courses w.e.f.2017-18 session. He informed the members that there is no change in the contents of M Tech courses and requested the members to approve the same. During the discussion it was suggested by members that at least one research paper in reputed journal should published for submission of Thesis for awarding M. Tech .degree.

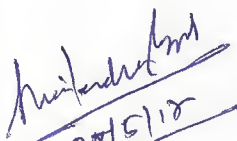
Chairman informed the members that the BOS is accepting the suggestion and approved the same with course content proposed by M Tech. coordinator.


(Dr. Manvijay Singh)
HOD, ME


(Prof. S. L. Soni)
MNIT Jaipur


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Chairman thanked Mr. Pradeep Sharma and requested Mr. Rajesh Gond , Coordinator B Tech (Mechanical Engineering) presenting the syllabus of B Tech (Mechanical Engineering) 2nd year to final year for the session 2017-18.

Mr. Rajesh Gond, thanked the chair and presented the course details and contents of B Tech (Mechanical Engineering) 2nd year to final year. He informed the members that there is no change in the contents of the syllabus of 2nd and 3rd year of Mechanical Engineering from previous session 2016-17. There is slight change in evolution scheme of 2nd & 3rd year Mechanical Engineering program. He proposed the changes in Final Year Mechanical Engineering Syllabus from the session 2017-18 for the discussion.

After the discussion BOS approved the cited request of changes in Final Year and evaluation scheme of 2nd and 3rd Year of Mechanical Engineering since it is as per norms and guidelines and agreed for continue with same course content in 2nd and 3rd year of Mechanical Engineering for the session 2017-18.

Chairman thanked Mr. Rajesh Gond and requested Mr. Dheeraj Mishra, coordinator B Tech (Automobile Engg .) Course presenting syllabus for the academic session 2017-18.



Mr. Dheeraj Mishra, thanked the chair and presented the course details and contents of B Tech (Automobile Engineering) 2nd year to final He informed the members that there is no change in the contents of the syllabus of 2nd and 3rd year of Automobile Engineering from previous academic session 2016-17. He proposed the changes in Final Year Automobile Engineering Syllabus from the session 2017-18 for the discussion.

After the discussion BOS approved the cited request of changes in Final Year of Automobile Engineering since it is as per norms and guidelines and agreed for continue with same course content in 2nd and 3rd year of Automobile Engineering for the academic session 2017-18.

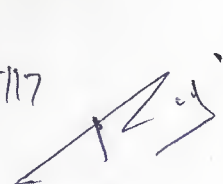
Chairman thanked Mr. Dheeraj Mishra and requested Mr. Shailendra Singh, coordinator Diploma (Mechanical Engineering) Course presenting syllabus for the academic session 2017-18.

Mr. Shailendra Singh, thanked the chair and presented the course details and contents of Diploma (Mechanical Engineering) 1st year to final year .He informed the members that there is no change in the contents of the syllabus of 1st Year to Final year of Diploma in Mechanical Engineering from previous academic session 2016-17. He proposed the changes in Final Year Diploma in Mechanical Engineering (Specialization in Automobile Engineering) Syllabus from the session 2017-18 for the discussion.

After the discussion BOS approved the cited request of changes in Final Year of Diploma in Mechanical Engineering (Specialization in Automobile Engineering) since it is as per norms and


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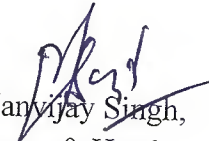
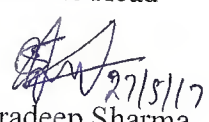
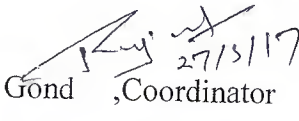
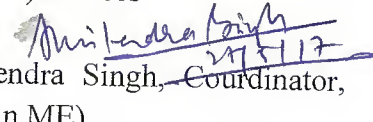
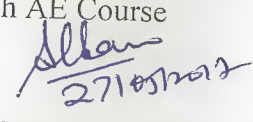
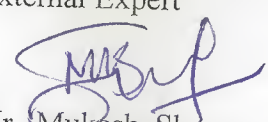
guidelines and agreed for continue with same course content in 2nd and 3rd year of Automobile Engineering for the academic session 2017-18.

Chairman thanked Mr. Shailendra Singh Coordinator Diploma (Mechanical Engineering) Course for presenting syllabus for the academic session 2017-18.

The following suggestions were also: discussed with the permission of Chair and approved by BOS .

- Any one Mid Term out of two may be conducted online
- Some value added and add on courses like CATIA, ANSYS, CREO, Solid Works , Practical Exposure on Plastic injection Molding , CNC machine , PDP classes ,

Since there were no further suggestions from the members ,chair thanked all members and experts for contributing their suggestion.

1. Dr, Manvijay Singh,
Professor & Head

2. Mr. Pradeep Sharma,
Coordinator M Tech Courses
 27/5/17
3. Mr. Rajesh Gond ,Coordinator
B.Tech (ME) Courses
 27/5/17
4. Mr. Shailendra Singh, Coordinator,
(Diploma in ME)
 27/5/17
5. Mr. Dheeraj Mishra, Coordinator B
Tech AE Course
 27/5/17
6. Prof.(Dr.) S L Soni , MNIT, Jaipur,
External Expert

7. Mr. Mukesh Sharma , GM (HRD),
Shri Krsna Urja Project Ltd, RIICO,
Newai, Tonk
Industry Representative

Ordinance (Evaluation System)

Continuous Assessment

All courses undertaken by students during a semester are evaluated based on both an internal system of continuous assessment and the performance in the End Semester Examinations. The students are evaluated on class /tutorial participation, assignment work, lab work, class tests, mid-term tests, quizzes and end semester examinations, which contribute to the final grade awarded for the subject. Students will be notified at the commencement of each course about the evaluation methods being used for the courses and weightages given to the different assignments and evaluated activities.

In order to make the evaluation system similar and transparent with any of the globally reputed educational institutions the University has adopted the grading practices. Here marks obtained in the continuous assessment and end semester examination are added together and a 10-point grading system will be used to award the student with an overall letter grade for the course (subject).

Distribution of Marks

(i) Courses without Practical Components

(a) Attendance Class participation, Class Tests, Quizzes, Projects, Seminar etc. -10 Marks	}	40 Marks
(b) Two Assignments of 5 marks each (for each subject) -10 Marks		
(c) Midterm Test I -10 Marks		
(d) Midterm Test II -10 Marks		
(e) End -Term Examination - 60 Marks		

Total : 100

(ii) Courses with Practical Components only

Internal Practical Examination and Continuous Progress 50

End -Term Examination (Practical) 50

Total : 100

Letter Grading System

Final evaluation of course is carried out on a TEN POINT grading system. Performance Grade and Grade Points are as shown below:

Table i

Marks	Grade Value	Grade	Description
91 to 100	10	AA	Out Standing
81 to 90	9	A+	Excellent
71 to 80	8	A	Very Good
61 to 70	7	B+	Good
51 to 60	6	B	Above Average
41 to 50	5	C	Satisfactory
Less than 41	0	F	Exposed
Absent in the University Final Examination	0	I	Incomplete

Note: In order to convert the SGPA and CGPA into percentile, multiply the same with the Conversion factor of 10.

(Dr. Manoj Singh)
22/5/17
HOD, ME

(Prof. S.L. Soni)
MNIT, Jaipur

(Dheeraj Mishra)
27/5/17

(Mr. Mahesh Sharma)
27/5/17
(Rajiv K. Gosh)
27/5/17

A student who earns a minimum of 5 grade Point (C grade) in a course (subject) is declared to have successfully completed the course, and is deemed to have earned the credits assigned to that course. A course successfully completed cannot be repeated.

A student should have appeared for the end semester examination of the prescribed course of study (mere appearance in the continuous assessment test is not sufficient) to be eligible for the award of the degree in the course.

If a student is eligible for but-fails to appear in the end semester examination, he/she will be awarded an 'I' grade (in complete) on the grade sheet. For all practical purposes an 'I' Grade is treated as an 'F'.

If a student is not eligible to appear in the end semester examination owing to his/her not fulfilling the minimum attendance requirements, he may be permitted to re-register for those courses in which he/she had attendance shortage, at the next available opportunity.

Grade Point Average (SGPA) & Cumulative Grade Point Average (CGPA)

Each course grade will be converted into a specific number of points associated with the grade as mentioned in Table 1. Here points are weighted with the number of credits assigned to a course. The Grade Point Average (GPA) is the weighted average of grade points awarded to a student. The Grade Point Average for each semester will be calculated only for those students who have passed all the courses of that semester. The weighted average of GPA's of all semester that the student has completed at any point of time is the Cumulative Grade Point Average (CGPA) at that point of time.

CGPA up to any semester will be calculated only for those students who have passed all the courses up to that semester.

Calculation of SGPA and CGPA

Example:

Table 2

Courses	Credits	Letter Grade	Grade Value	Credit Value	Grade Points
Mathematics	3	B+	7	3x7	21
Chemistry	3	A	8	3x8	24
Physics	3	A+	9	3x9	27
Language Lab	2	A	8	2x8	16
TOTAL	11	TOTAL	88		

In this case $GPA = \frac{\text{Total Grade Points}}{\text{Credits}} = \frac{88}{11} = 8.0$

Suppose the GPA's in two successive semesters are 7.0 and 8.0 with 26 and 24 course credits, then

$CGPA = \frac{7 \times 26 + 8 \times 24}{26 + 24} = \frac{374}{50} = 7.48$

After the results are declared, grade cards will be issued to each student which will contain the list of courses for that semester and the grades obtained by the student, as well as GPA of that semester. However, a conversion factor of "10" will be included, enabling students and future employers for transforming CGPA into percentage of marks on par with the existing practices followed elsewhere

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Minimum Eligibility Requirements for promotion to the next academic year of study

A First year Student satisfying the below mentioned requirements is eligible to study in the 3rd Semester of next academic year.

“Pass with Minimum C Grade in Four Theory Papers & Pass in Four Laboratory Papers in the I & II Semester (Combined)”

A Second year Student satisfying the below mentioned requirements is eligible to study in the V Semester of the next academic year.

“Pass with Minimum C Grade in Four Theory Papers & Pass in Four Laboratory Papers in the III & IV Semester (Combined)”

A Third year Student satisfying the below mentioned requirements is eligible to study in the VII Semester of the next academic year.

“Pass with Minimum C Grade in Four Theory Papers & Pass in Four Laboratory Papers in the V & VI Semester (Combined)”

“ For Diploma Course Pass with minimum C Grade in Three Theory papers in even ~~and~~ odd Semester”

Proficiency

Extra-curricular activities as listed below will be available to students of all programs. These activities will run in both semesters and are evaluated. Activities will be graded as Outstanding/Excellent/ Very Good/Good/ Above Average/ Satisfactory/Exposed/Incomplete.

The extracurricular activities are related to sports

Tennis	Athletics	Table Tennis
Badminton	Gymnastics	Chess
Throw Ball	Gardening	Organization & Management
Football	Electronics	Fine Arts & Paintings
Cricket	Social Service Club	Rovers & Rangers
Volleyball	Music and Dramatics	Model and Sculptures
Basketball	Debate	Equestrian Race
Kho - Kho	Robotics	Yoga & Meditation
Art & Photography Club	Cultural Club	Any other activity with prior approval

Guidelines for Submission of Assignment

Assignments (Theory)

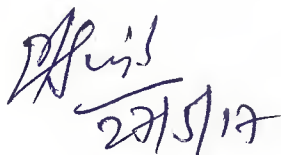
Assignment means a set of tasks and/or numerical problems given to the student, on the basis of topics covered in the class as homework to be solved and submitted, within the time frame given by the faculty. The Date of Submission (DOS) has to be duly announced on the date it is given to the students and these details are clearly reflected in the Academic Calendar.

In a multiple-section course, the preparation, duplication and distribution is the responsibility of the *Course Coordinator*.

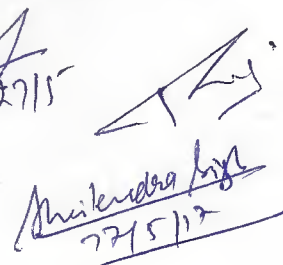
The Date of Submission (DOS) of an assignment should preferably be one *tutorial* hour of the subsequent week as far as applicable. Where tutorials are not scheduled, submission should be in the first lecture of the subsequent week.

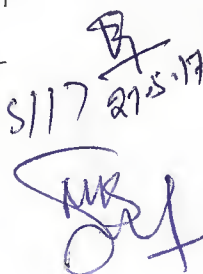
Assignments should be limited, as far as possible, numerical type able to give better comprehension of the course




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The effective teaching for semester is generally of 14 weeks. A minimum of two assignments to be given in a semester. No assignment should be given in the last week of the semester.

The evaluation of numerical assignment will be through a test based on the assignment. The test would comprise of one of the questions from the assignment to be solved in the class. The following process may be adopted for the purpose

- a) Students should bring their own stationery including writing sheets
- b) No two students either shall get the same problem or students having got same exercise shall not sit next to each other
- c) Make sure they have submitted the assignment before the start of the test and that they are not copying.

Marks to be awarded to these assignments only if the assignment is submitted in time.

For theory oriented assignments the test can have questions based on the assignment. Make sure that there are multiple sets of questions to prevent copying. The comments on the assignments are mandatory. The marks are to be allotted to submission and test *separately*.

The evaluated assignments/tests are to be shown to the student and are retained by the instructor. The evaluated assignments/test should have to be retained till the next assignment is evaluated. .

The assignment-based tests should be given on the Date of Submission (DOS). Only the students who have submitted the assignment on time should be allowed to take the test. otherwise, the student should be awarded ZERO marks for the same.

This procedure has to be announced and explained to the students in the very first class. The importance of timely submission of assignments should be explained.

B. Laboratory Assessments

In practical sessions, the student is taken to a laboratory and he/she shall perform a set of tasks on the given computer, equipment or on a setup comprising of devices or components. This includes on-the spot conduct of an activity to derive results and to report the findings.

A student will have to maintain a lab note book to record the experiments performed in the labs

The lab notebook should be maintained in the form of a lab manual, where (in general) the aim of the experiment, the observations, calculations, results and discussions are described. These should not have any description like 'method' etc, unless the method itself is the aim of the experiment.

Each lab work performed has to be verified by the respective teachers in the subsequent class.

A student will be evaluated on every experiment/lab performed. The components of practical assessment are to be defined, notified to the student and to be strictly adhered to.

The records of the students attendance in the lab is to be maintained. The lab file record is evaluated for 10 marks and the attendance weightage will be again 10 Marks.

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DR. K. N. MODI UNIVERSITY

Study and Evaluation Scheme (Year-II Semester- 3rd) B.Tech. (Mechanical Engineering) Effective from session 2017-18

S. NO	Sub Code	Subject Name	Period			Evaluation Scheme			Credit
						Continuous Assessment	Final Exam	Total	
			L	T	P				
1	02BT301	Mathematics-III	3	1	0	40	60	100	4
2	02BTME 308	Fluid Mechanics	3	1	0	40	60	100	4
3	02BT302	Material Science	4	0	0	40	60	100	4
4	02BTME309	Mechanics of Solids	3	1	0	40	60	100	4
5	03BT311	Industrial Psychology	2	0	0	20	30	50	2
6	02BTME310	Thermodynamics	3	1	0	40	60	100	4
7	02BTCS313	Cyber Security (CS308)	2	0	0	20	30	50	2
LAB									
1	02BPME308	Fluid Mechanics Lab	0	0	2	50	50	100	1
2	02BP311	Material Science & Testing Lab	0	0	2	50	50	100	1
3	02BPME314	Machine Drawing - I Lab	0	0	2	50	50	100	1
4	02BPME310	Thermodynamics Lab	0	0	2	50	50	100	1
5	02BP3010	Seamless Learning	0	0	2	100		100	1
6	02BP3011	Co-Curricular Activities	0	0	2	100		100	1
		Total	20	4	12			1200	30

all
(Prof. S. L. Soni)
MNIT, Jaipur
Dheeraj Mishra
(B.Tech.)
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Dr. Soni
27/5/17
(Dr. Mahvijay Singh)
HOD, ME

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Pratik Singh
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(Pratik Singh)

Rijesh Singh
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DR. K. N. MODI UNIVERSITY

Study and Evaluation Scheme (Year-II Semester- 4th)
B.Tech (Mechanical Engineering) Effective from session 2017-18

S. NO	Sub Code	Subject Name	Period			Evaluation Scheme			Credit
			L	T	P	Continuous Assessment	Final Exam	Total	
2	02BTEE415	Electrical Machines & Control	3	1	0	40	60	100	4
3	02BTME416	Applied Thermodynamics	3	1	0	40	60	100	4
4	02BTME417	Manufacturing Science & Technology - I	4	0	0	40	60	100	4
5	02BT401	Industrial Sociology	2	0	0	20	30	50	2
6	SOE005	Polymer Science & Technology	3	1	0	40	60	100	4
7	02BT402	Human Values & Professional Ethics	2	0	0	20	30	50	2

LAB

1	02BPME415	Measurement & Metrology Lab	0	0	2	50	50	100	1
2	02BPPE415	Electrical Machines & Control Lab	0	0	2	50	50	100	1
3	02BPME417	Manufacturing Technology Lab - I	0	0	2	50	50	100	1
4	02BPME416	Machine Drawing - II Lab - H	0	0	2	50	50	100	1
5	02BP4010	Seamless Learning	0	0	2	100		100	1
6	02BP4011	Co-Curricular Activities	0	0	2	100		100	1
		Total	21	3	12			1200	30

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DR. K. N. MODI UNIVERSITY

Study and Evaluation Scheme (Year-III, Semester- 5th) B.Tech. (Mechanical Engineering) Effective from session 2017-18

S. NO	Sub Code	Subject Name	Period			Evaluation Scheme			Credit
						Continuous Assessment	Final Exam	Total	
			L	T	P				
1	03BTME515	Machine Design-I	3	1	0	40	60	100	4
2	03BTME516	Kinematics of Machines	3	1	0	40	60	100	4
3	03BTME517	Manufacturing Science & Technology-II	4	0	0	40	60	100	4
4	03BTME518	Heat & Mass Transfer	3	1	0	40	60	100	4
5	03BTME519	I.C. Engines & Compressors	3	1	0	40	60	100	4
6	03BT501	Engineering Economics	3	0	0	40	60	100	3
LAB									
1	03BPME515	Machine Design-I Lab	0	0	2	50	50	100	1
2	03BPME516	Seminar	0	0	4	50	50	100	2
3	03BPME517	Manufacturing Technology-II Lab	0	0	2	50	50	100	1
4	03BPME518	Heat & Mass Transfer Lab	0	0	2	50	50	100	1
5	03BP5010	Seamless Learning	0	0	2	100		100	1
6	03BP5011	Co-Curricular Activities	0	0	2	100		100	1
		Total	19	4	14			1200	30

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DR. K. N. MODI UNIVERSITY

**Study and Evaluation Scheme (Year-III ,Semester- 6th)
B.Tech. (Mechanical Engineering) Effective from session 2017-18**

S. NO	Sub Code	Subject Name	Period			Evaluation Scheme			Credit
						Continuous Assessment	Final Exam	Total	
			L	T	P				
1	03BTME615	MACHINE DESIGN-II	3	1	0	40	60	100	4
2	03BTME616	DYNAMICS OF MACHINES	3	1	0	40	60	100	4
3	03BTME617	REFRIGERATION & AIR-CONDITIONING	3	1	0	40	60	100	4
4	03BTME618	MECHANICAL VIBRATION	3	1	0	40	60	100	4
5	03BTME619	FLUID MACHINERY	3	1	0	40	60	100	4
6	03BT601	INDUSTRIAL MANAGEMENT	3	0	0	40	60	100	3
LAB									
1	03BPME615	MACHINE DESIGN-II LAB	0	0	4	50	50	100	2
2	03BPME616	THEORY OF MACHINES LAB	0	0	2	50	50	100	1
3	03BPME617	REFRIGERATION & AIR CONDITIONING LAB	0	0	2	50	50	100	1
4	03BPME618	FLUID MACHINERY LAB	0	0	2	50	50	100	1
5	03BP6010	SEAMLESS LEARNING	0	0	2	100		100	1
6	03BP6011	CO-CURRICULAR ACTIVITIES	0	0	2	100		100	1
		Total	18	5	14			1200	30

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DR. K. N. MODI UNIVERSITY

Study and Evaluation Scheme (Year-IV, Semester- 7th) B.Tech. (Mechanical Engineering) Effective from session 2017-18

Open Electives – I

S. NO	Sub Code	Subject Name	Period			Evaluation Scheme			Credit
						Continuous Assessment	Final Exam	Total	
			L	T	P				
1	04BTME715	CAD	4	0	0	40	60	100	4
2	04BTME716	AUTOMOBILE ENGINEERING	4	0	0	40	60	100	4
3	04BTME717	OPEN ELECTIVE-1	4	0	0	40	60	100	4
4	04BTME718	DEPARTMENTAL ELECTIVE – III	3	1	0	40	60	100	4
5	04BTME719	DEPARTMENTAL ELECTIVE – IV	3	1	0	40	60	100	4
LAB									
1	04BPME715	CAD/CAM LAB	0	0	4	50	50	100	1
2	04BPME716	I. C. ENGINE AND AUTOMOBILE LAB.	0	0	2	50	50	100	1
3	04BPME717	INDUSTRIAL TRG.	0	0	4	50	50	100	2
4	04BPME718	PROJECT - I	0	0	6	100	100	200	4
5	04BP7010	SEAMLESS LEARNING	0	0	2	100		100	1
6	04BP7011	CO-CURRICULAR ACTIVITIES	0	0	2	100		100	1
		Total	18	2	20			1200	30

Open Elective -I

- 04BTME717.1 Entrepreneurship Development
- 04BTME717.2 Quality Management
- 04BTME717.3 Operations Research
- 04BTME717.4 Introduction to Biotechnology

Departmental Elective III

- 04BTME718.1 Computer Aided Manufacturing
- 04BTME718.2 Project Management
- 04BTME718.3 Computational Fluid Dynamics
- 04BTME718.4 Composite materials

Departmental Elective IV

- 04BTME719.1 Total Quality Management
- 04BTME719.2 Thermal Turbo Machines
- 04BTME719.3 Mechanical System Design
- 04BTME719.4 Automation and Robotics

Prailendra Singh
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DR. K. N. MODI UNIVERSITY

Study and Evaluation Scheme (Year-IV, Semester- 8th)
B.Tech. (Mechanical Engineering) Effective from session 2017-18

S. NO	Sub Code	Subject Name	Period			Evaluation Scheme			Credit
						Continuous Assessment	Final Exam	Total	
			L	T	P				
1	04BTME815	POWER PLANT ENGINEERING	3	1	0	40	60	100	4
2	04BTME816	OPEN ELECTIVE-II	4	0	0	40	60	100	4
3	04BTME817	DEPARTMENTAL ELECTIVE -V	3	1	0	40	60	100	4
4	04BTME818	DEPARTMENTAL ELECTIVE -VI	3	1	0	40	60	100	4
LAB									
1	04BPME815	SEMINAR	0	0	6	100	100	200	4
2	04BPME816	PROJECT - II	0	0	14	200	200	400	8
3	04BP8010	SEAMLESS LEARNING	0	0	2	100		100	1
4	04BP8011	CO-CURRICULAR ACTIVITIES	0	0	2	100		100	1
		Total	13	3	24			1200	30

Open Electives – II

- 04BTME816.1 Non Conventional Energy Resources
- 04BTME816.2 Nonlinear Dynamic Systems
- 04BTME816.3 Product Development
- 04BTME816.4 Automation and Robotics

Open Electives – V

- 04BTME817.1 Operations Research
- 04BTME817.2 Design of Thermal Systems
- 04BTME817.3 Advance Synthesis of machines
- 04BTME817.4 Industrial Automation
- 04BTME817.5 Advance Welding Technology

Departmental Elective VI

- 04BTME818.1 Experimental Stress Analysis
- 04BTME818.2 Plant Layout and Material Handling
- 04BTME818.3 Additive Manufacturing
- 04BTME818.4 Computer Aided Process Planning
- 04BTME818.5 Non Destructive Testing.

Science Base Open Electives (SBOE) 02BTCS313

- 1. Cyber Security
- 2. Soft Computing
- 3. Nano Science

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