ORDINANCES, CURRICULA and **SYLLABI**

Approved in First Meeting of Board of Management held on 14-3-2014 and Academic Council on 11-6-2014



Master of Technology

for

Newly Admitted Students from Session 2014-2015

MADAN MOHAN MALAVIYA UNIVERSITY OF TECHNOLOGY GORAKHPUR-273010 (UP), INDIA

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Section A

ORDINANCES

MADAN MOHAN MALAVIYA UNIVERSITY OF TECHNOLOGY GORAKHPUR (UP) - INDIA

First Ordinances

In pursuance of the provisions of section 31 of The Uttar Pradesh Madan Mohan Malaviya University of Technology Act, 2013, these are the first Ordinances for Madan Mohan Malaviya University of Technology, Gorakhpur:

The Uttar Pradesh Madan Mohan Malaviya University of Technology

FIRST ORDINANCES, 2014

Short title, commencement and Definitions Sec. 31 (1)

- 1. These Ordinances may be called the Madan Mohan Malaviya University of Technology, Gorakhpur. First Ordinances, 2014
- **2.** They shall come into force at once.
- **3.** Anything contained in ordinances, regulations and rules made there under in violation to provisions of Act shall be void and the provisions of Act shall prevail.
- 4. In these Ordinances, unless the context otherwise requires
 - (a) 'Act' means the Uttar Pradesh Madan Mohan Malaviya University of Technology Act, 2013 as amended from time to time.
 - (b) 'Section' means a section of the Act.
 - (c) 'University' means the Madan Mohan Malaviya University of Technology, Gorakhpur.
- 5. Words and expression used herein but not defined and defined in the Act shall have the same meaning as assigned to them in the Act.

6. UNDER SECTION 31-1(a) - The Admission of students, the courses of Study and Fees therefore, the qualifications pertaining to the award of degrees, diploma, certificates and other academic distinctions, the conditions for the grant of fellowships and awards and the like

- (a) University may start the other Degree, Diploma, Certificate programmes and other academic distinctions as deemed necessary for fulfilling its objectives and the Ordinances for the same shall be as prescribed by Academic Council and Board of Management.
- (b) Courses of Study shall be as prescribed by the Academic Council and approved by Board of Management.
- (c) Fellowships and Awards shall be instituted as per the requirement with the approval of Vice Chancellor under intimation to the Academic Council and Board of Management
- (d) Ordinances for Bachelor of Technology (B.Tech.), Master of Technology (M.Tech.), Master of Business Administration (M.B.A.), Master of Computer Applications (M.C.A.) and Doctor of Philosophy (Ph.D.) Degree programmes running in the University at the time of its reconstitution from Madan Mohan Malaviya Engineering College, Gorakhpur are detailed ahead. Ordinances for other programmes as started from time to time shall be as prescribed by the Academic Council and Board of Management.

6.2 ORDINANCES FOR M.TECH. PROGRAMME FROM ACADEMIC SESSION 2014-15

6.2.1 ADMISSION

- **6.2.1.1** University offers full time M.Tech. Degree Programme in various disciplines of engineering and technology.
- **6.2.1.2** Admission to M.Tech. first year in semester I will be made as per the rules prescribed by the University from time to time.
- **6.2.1.3** The reservation shall be governed by U.P. State Government rules or as prescribed by the University.

- **6.2.1.4** Admission on migration of a candidate from any other University to Madan Mohan Malaviya University of Technology is not permitted.
- **6.2.1.5** If, at any time after admission, it is found that a candidate has not fulfilled all the requirements stipulated in the offer of admission or has committed some fraudulent act at any stage then the University reserves the right to revoke the admission of the candidate.

6.2.2 ELIGIBILITY FOR ADMISSION

- **6.2.2.1** Candidates who have passed the Bachelor's degree in Engineering/Technology or equivalent, or as prescribed by the University with first division are eligible for the admission to M.Tech. Programme following the admission process lay down by the University.
- **6.2.2.2** The exact eligibility criteria for admission to the various M.Tech. Programmes shall be as prescribed by the University from time to time and announced at the time of admission.
- **6.2.2.3** Academic Council of the University has the power to repeal and modify the eligibility criteria for admission.

6.2.3 CATEGORY OF STUDENTS

(a) **Regular**

A student in this category works full-time for his/her M.Tech. He/she will be eligible to receive assistantship/scholarship from the University or any other recognized funding agency as per the rules.

(b) Sponsored

A student in this category is sponsored by a recognized R&D organization, Academic Institution, Government Organization or Industry for doing M.Tech. in the University on a full-time basis. The University shall not provide any assistantship/scholarship to such student.

(c) Foreign Nationals

Applications received through the **Indian Council of Cultural Relations**, Government of India, are also eligible to apply under the self financing scheme, for which applications shall be invited through their embassies as per the provisions of University.

6.2.4 PROGRAMME DURATION

- (a) The duration of the M.Tech. Programme for the candidates admitted in semester I will be two academic years (four semesters).
- (b) The duration of each semester will generally be 90 working days or as prescribed by the University from time to time.
- (c) There are two regular semesters in a year. The semester that begins in July (July to November/December) is known as the Odd Semester and the semester that begins in December/January (December/January to May) is known as the Even Semester. Academic session may be scheduled in the summer season as well.
- (d) The maximum time allowed for completion of the regular programme for the candidates admitted shall be three years, beyond which the admission of the candidate shall be automatically cancelled.
- (e) The candidate will not be allowed to continue in the subsequent years of the programme, if the sufficient time period is not available for its completion in stipulated maximum duration.
- (f) The student may complete the programme at a slower pace by taking more time but not more than prescribed maximum duration subject to the provisions of **Clause 6.2.10**.

6.2.5. CURRICULUM STRUCTURE OF THE PROGRAMME

6.2.5.1 The University follows a specialized credit-based semester system. Every programme will have a specific curriculum for all semesters (semester I to semester IV) with a syllabi consisting of theory, practical, seminar, minor project, dissertation work etc., as given below and shall be in

accordance with the prescribed syllabus. The courses shall be covered through lectures, tutorials, laboratory classes, seminar, dissertation etc. as prescribed by the University.

Post Graduate Core Courses (PCC)

- (i) Maths (M)
- (ii) Programme Core (PC)
- (iii) Dissertation (D)
- (iv) Seminar (S)
- (v) Minor Project (MP)

Post Graduate Programme Electives (PPE)

Programme Electives (PE)

Audit Courses

Audit Course (AC)

Every department will prescribe Seminar as credit requirement for the M.Tech. Degree. Seminar is a course wherein under the guidance of a faculty member a student is expected to do an in-depth study in a specialized area by doing survey of published technical literature, understanding different aspects of the selected topic and arriving at a status report. While doing a seminar, the student is expected to critically analyze works of various authors/researchers, learn the investigation methodologies, study concepts, techniques and the results presented in these technical papers, and present a seminar report. It is mandatory to give a seminar presentation of stipulated duration before a panel constituted for the purpose by the department.

Each course is assigned a certain number of credits as follows. Few audit courses shall be offered as per demand and requirement of students.

- (a) 1 credit per lecture hour per week
- (b) 1 credit per tutorial hour per week
- (c) 1 credit per 2 hours laboratory/project/seminar/dissertation per week

The curriculum for M.Tech. Programme of study has been designed with total minimum credits of 66 and total minimum 6 credits of audit courses for those admitted in 1st year of M.Tech. Programme.

6.2.5.2 Overall Credit Structure

Credit Courses				
Postgraduate Core Courses (PCC) Postgraduate Programme Elect			es (PPE)	
Category	Min.	Category	Min.	
	Credits		Credits	
Maths (M)	4	Programme Electives (PE)	16	
Programme Core (PC)	22			
Dissertation (D)	18			
Seminar (S)	2			
Minor Project (MP)	4			
Total	50		16	
Grand Total	66 (minin	num)		
	Aud	it Courses		
Audit Course (AC)				
(Min. 3 credits audit subject from other department will be offered during				
semester I to II)				
Total 6 (minimum)				

Each student has to register for a set of courses as offered by their department in each semester by paying the stipulated fees, which include tuition fee, examination fee, enrolment fee, development fee, insurance fee, degree fee, alumni fee, internet charges, hostel fee, mess advance, miscellaneous user charges etc. as applicable from time to time.

6.2.5.3 Other Activities

The other general proficiency activities will include Games/Sports/Cultural/ Literary/ Practical/Field Activities/Extension Lectures etc. It will be carried out beyond class hours. The curriculum will also include other curricular, co-curricular activities and extra curricular activities as may be prescribed by the University from time to time. The general proficiency remark shall appear in the Grade Card of the student as per **Clause 6.2.6.2(g)** in each semester.

6.2.6 GRADING SYSTEM AND ASSESSMENT PROCEDURE

6.2.6.1 Grading System

The academic performance evaluation of a student will be according to a Letter Grading system based on class performance of students. The Letter Grades and the corresponding Grade Points are as follows. Grades falling between A(+) and D in different subjects are called pass grades, while the students securing F grade will be treated fail in the subject and shall have to appear in re-major examination or repeat the semester as per provision of **Clause 6.2.7 & 6.2.10** respectively.

Letter Grade	Grade Points	Description
A(+)	10	Outstanding
А	9	Excellent
B(+)	8	Very Good
В	7	Good
С	6	Average
D	5	Below Average
F	0	Fail
U	-	Short Attendance
W	-	Withdrawal
Ι	-	Incomplete
AP	-	Audit Pass
AF	-	Audit Fail
S		Satisfactory Completion
Z		Course Continuation

Grade	Award	System

Grade	Grade Points	Marks (in %)
A(+)	10	90-100
Α	9	80-89
B(+)	8	70-79
В	7	60-69
С	6	50-59
D	5	40-49
F	0	<40

6.2.6.2 Tests & Examinations

The theory and practical examinations shall comprise of continuous assessment throughout the semester in all subjects and Major examination conducted by University at the end of the semester (November/December or April/May). The assessment of a course will be done on absolute marks basis. However, for the purpose of reporting the performance of a candidate, letter grades, each carrying certain points, will be awarded as per the range of total marks (out of 100) obtained by the candidate, as detailed below. The rounding off shall be done on the higher side.

S. N.	Assessment	Assessment Basis		Marks
1.		Minor Test-I	1 Hour	15
2.	Continuous	Minor Test-II	1 Hour	15
3.	Evaluation	Minor test-III	1 Hour	15
4.		Tutorial/Home Assignment/Quiz/	-	15
		Attendance		
5.	Major Examination		3 Hours	40

(a) Distribution of Marks for Theory based Subject

(b) Distribution of Marks for Theory & Practical based Subject

S.N.	Assessment Basis		Duration	Marks
1.		Minor Test-I	1 Hour	10
2.	Continuous	Minor Test-II	1 Hour	10
3.	Evaluation	Minor test-III	1 Hour	10
4.		Tutorial/Attendance/Home	-	10
		Assignment/Quiz		
5.	Practical Work/Record/Viva Voce			20
6.	Major Examinatio	n	3 Hours	40

Note: The syllabus for Minor Test-I, Minor Test-II and Minor Test-III will be 25% each in a successive manner. However, the Major examination will be conducted from the entire syllabus of the subject.

Students, who are absent in Minor Test-I/Minor Test-II/Minor Test-III on genuine grounds such as admission to hospital or representing the University with prior permission and reporting to the Head of Department concerned within two days of rejoining, may be permitted for only one special test with the permission of the Head of Department concerned. The special test will be conducted after the Minor Test-III. The coverage for the special test shall be the combined syllabus of Minor Test-I/Minor Test-III/Minor Test-III of the subject.

(c) Distribution of Marks for Minor Project

S. N.	Assessment	Assessment Basis		Marks
1.	Continuous	Mid Term Presentation	-	25
2.	Evaluation	Evaluation Minor Project Work Report and		25
		Attendance		
3.	End Semeste	End Semester Presentation		50

Any student securing less than 40 marks ('F' grade) in minor project shall have to repeat the minor project in the next semester.

(d) Distribution of Marks for Seminar

S. N.	Assessment Basis	Marks
1.	Quality of Material	30
2.	Quality of Presentation	30
3.	Quality & Extent of Response of Questions Asked	20
4.	Participation in Other Seminars (Attendance)	20

Any student securing less than 40 marks ('F' grade) in seminar shall have to repeat the seminar in the same semester. This will be limited to only one chance.

(e) Distribution of Marks for Dissertation

The dissertation is divided in semester III and semester IV as Dissertation Part-I and Dissertation Part-II respectively. The dissertation may be related to a theoretical, modeling, simulation and analysis, experimental investigation, a proto-type design, product design and development, a new correlation and analysis of data, fabrication and setup of new equipment/experiment etc. preferably useful for the society/industry. A dissertation grade is awarded in both the semesters on the basis of the prescribed evaluation process.

In semester III	
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S. N.	Assessment Basis		Duration	Marks
1.		Mid Term Presentation	-	30
	Continuous	Literature Survey/Progress Review		
2.	Evaluation	Preliminary Dissertation Report, Effort	-	20
		and Regularity (awarded by supervisor)		
3.	End Semester Presentation		1 Hour	50
	(Methodology	adopted/Work Plan/Progress)		

The portion of dissertation work carried out in semester III shall be examined at the end of semester III. The dissertation work will be evaluated by a committee consisting of Head of Department, Dissertation Supervisor(s) and two senior faculty members of department. Any student securing less than 40 marks ('F' grade) shall have to repeat the Dissertation part-I in the next semester.

In semester IV

The major examination of Dissertation will be held only after the student has secured Pass Grades in all the program core/program electives, seminar, minor project and completed audit subject requirements satisfactorily.

S. N.		Assessment Basis	Duration	Marks
1.		Mid Term Presentation	-	10
		(Intermediate Results/Innovation in Work)		
2.	Continuous	Pre-Submission Presentation	-	20
	Evaluation	(Results Obtained/Dissertation Outcome)		
3.	Evaluation	Final Dissertation Report/Attendance	-	20
		(awarded by supervisor)		
4.		Publication of Research Paper(s)*		10
				(Max.)
5.		Supervisor on the basis of Dissertation		10
	Major	Work	1 Hour	
6.	Examination	External Examiner on the basis of	пош	10
		Dissertation Evaluation		
7.		Board of Examiners based on merit of	1	20
		dissertation and viva-voce performance		

Any student securing less than 40 marks ('F' grade) shall have to repeat the Dissertation Part-II in the next semester.

*Publication of Research Paper(s) jointly with supervisor in Refereed non-paid Journal/Conferences prescribed by the University from time to time. These marks are to be awarded by the Board of Examiners.

- (i) upto 10 marks for the paper(s) Published/Accepted for publication in Referred nonpaid Journal.
- (ii) upto 8 marks for the paper(s) to be considered for possible publication in Referred nonpaid Journal i.e. on production of acceptance with revision.
- (iii) upto 5 marks for the paper(s) communicated for possible publication in a Referred nonpaid Journal/Presented or accepted/communicated for possible presentation in a Conference of repute.

Note: In case a student is allowed to work in an Institute/industry other than MMMUT Gorakhpur, a certification from the co-guide of that Institute/ industry for the progress of work (satisfactory/unsatisfactory) is required.

Plagiarism checking is mandatory and will be carried out by the Examination cell for ensuring originality of submitted content of dissertation. After pre-submission presentation, a soft copy of dissertation in word format must be forwarded by supervisor and Head of Department to Examination Cell. The dissertation has to be checked by anti-plagiarism software before loose binding and sending it for evaluation. If any text strings/figures are found to be copied or dubious without proper acknowledgement of the source or the percentage of plagiarism exceeds the approved limit as prescribed by the University from time to time, the dissertation has to be thoroughly revised and resubmitted after presentation in the department.

The Examiners must be of not lower than the rank of Associate Professor of the concerned discipline. The examiners should be a faculty of IITs/NITs/ reputed engineering colleges or Universities/ industrial professionals from concerned discipline/scientists from central and regional labs.

Those who change the dissertation sub-area will be allowed to submit the thesis not before six month from the date of change of area. However, such change is not permissible in semester IV.

The students are encouraged to take the dissertation problem worth patenting.

(f) Audit Courses

S. N.	Audit Course Status	Marks Obtained
1.	Audit Pass (AP)	50% and Above
2.	Audit Fail (AF)	Below 50%, Candidate has to repeat the course

(g) Distribution of Marks for General Proficiency

General proficiency remark will be based on the cumulative percentages of marks scored by the student during each semester, through various components as detailed below. Detailed distribution for award of marks in each component and/or their weightage may be as prescribed by the University from time to time.

S. N.	Assessment Basis	Weightage
		of Marks
1.	Discipline/Behaviour of Students Inside/Outside University campus	40%
2.	Games/Sports/Cultural/Literary Events	40%
3.	Academic & Research/Special Lecture/Extra-curricular Events &	20%
	Industrial Visits	

S. N.	Marks Secured	Remark
1.	80-100%	Excellent
2.	60-79%	Very Good
3.	40-59%	Good
4.	20-39%	Satisfactory
5.	<20%	Average

6.2.7 RE-MAJOR EXAMINATION

Student with F grade in any subject will be required to appear in the re-major examination along with regular semester examinations in the forthcoming respective semester(s) in the same maximum marks as that of the previous major examination, provided she/he has scored at least 40% of the total marks allocated for continuous evaluation in the concerned subject. However, special re-major subject examination for the both odd & even semester subjects may be arranged during fourth semester for the students who have already appeared in regular semester major examinations as per availability but they could not improve F grade in respective subjects or who could not get chance to appear in re-major examination.

6.2.8 DISSERTATION SUPERVISOR

- (a) Dissertation supervisor (s) for a student will be appointed from amongst the faculty members of the University.
- (b) Departments will evolve modalities for appointing supervisors keeping in view of the students' aspirations and faculty interest.
- (c) Generally, no student will have more than one supervisor from the same department.
- (d) No change in thesis supervisor(s) will be allowed without the valid reasons and consent of Head of Department. However, Head of Department may change/add Supervisor due to administrative reasons any time.
- (e) Generally, no change/addition of Supervisor(s) is/are allowed after the thesis has been submitted for evaluation.
- (f) In case there has been change/addition in the Supervisor(s) due to unavoidable circumstances on the part of student, the dissertation will be submitted not earlier than three months from the date of such change/addition, however, it is not applicable to changes made under **Clause 6.2.8(d)**.
- (g) A student may be allowed to have a co-supervisor from outside the University, in exceptional cases with prior approval of Vice Chancellor.

6.2.9 EVALUATION OF PERFORMANCE

The performance of a student will be evaluated in terms of two indices, viz. the Semester Grade Point Average (SGPA) which is the Grade Point Average for a semester, and Cumulative Grade Point Average (CGPA) which is the Grade Point Average for all the completed semesters at any point in time considered cumulatively.

Points Secured in the Semester = \sum (Course Credits *x* Grade Point) for courses in which A(+) to D grade has been obtained

Total Credits registered in the Semester Excluding Audit Courses = \sum (Course credits) for courses in which A(+) to D grade has been obtained

 $SGPA = \frac{Points secured in the semester in all passed courses (A(+) to D Grade)}{Total Credits registered in the semester excluding audit courses}$

The CGPA is calculated on the basis of all pass grades, except audit courses and courses in which S or Z grade is awarded/secured in all completed semesters.

Cumulative Points secured in all passed courses = \sum (Course Credits *x* Grade Point) for courses in which A(+) to D grade is obtained

Cumulative Total Credits excluding Audit Courses = \sum (Course credits) for courses in which A(+) to D grade is obtained

 $CGPA = \frac{Cumulative Points secured in all passed courses (A(+) to D Grade)}{Cumulative Total credits excluding audits courses}$

An example of these calculations is given below.

ODD Semester

Course No.	Course	Grade	Total	Grade	Points
	Credits	Awarded	Credits	Point	Secured
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
XX101	5	В	5	7	35
XX102	4	С	4	6	24
XX103	4	A(+)	4	10	40
XX104	3	S	-	-	-
XX108 (AC)	3	AP	-	-	-
Total	16		13		99

Credits registered in the semester excluding audit courses (total of column 2)	= 16
Total credits in the semester excluding audit courses (total of column 4)	= 13
Points secured in this semester (total of column 6 for all passed courses)	= 99

SCDA -	Points secured in the semester in all passed courses $(A(+) \text{ to } D \text{ Grade})$	_ 99 _	- 7615
SurA –	Total Credits registered in the semester excluding audit courses	$-\frac{13}{13}$	- 7.015

CCDA - Cumulative P	Cumulative Points secured in all passed courses (A(+) to D Grade) $_{-7}$				
Curra – Cum	Cumulative total credits, excluding audits courses				
Semester performance:	Total credits (E.C.)	= 13	SGPA	= 7.615	

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Cumulative performance:	Total credits (E.C.)	= 13	CGPA = 7.615

EVEN Semester

Course No.	Course	Grade	Total	Grade	Points
	Credits	Awarded	Credits	Point	Secured
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
XX151	5	B(+)	5	8	40
XX152	4	А	4	9	36
XX153	4	F	-	0	0
XX154	3	В	3	7	21
XX158 (AC)	3	AF	-	-	-
Total	15		11		97

Credits registered in the semester excluding audit courses (total of column 2)	= 15
Total credits in the semester excluding audit courses (total of column 4)	= 11
Points secured in this semester (total of column 6 for all passed courses)	= 97
Cumulative Total points in all passed courses =99(past semesters)+97(this sem.)=196	
Cumulative Total credits = 13 (past semesters) + 11 (this sem.)	= 24

 $SGPA = \frac{Points secured in the semester in all passed courses (A(+) to D Grade)}{Total Credits registered in the semester excluding audit courses} = \frac{97}{11} = 8.818$

 $CGPA = \frac{Cumulative Points secured in all passed courses (A(+) to D Grade)}{Cumulative total credits, excluding audits courses} = \frac{99 + 97}{13 + 11} = 8.166$

Semester performance:Total credits (E.C.) = 13SGPA = 8.818Cumulative performance:Total credits (E.C.) = 24CGPA = 8.166

6.2.10 ACADEMIC CRITERIA FOR CONTINUATION

- **6.2.10.1** A minimum 5.0 CGPA is required in order to qualify for continuation of registration at any stage and award of the degree at the end of 4^{th} semester.
- **6.2.10.2** A student must register a minimum of 12 credits in a semester which shall essentially include the prerequisite subject(s). It allows the students to progress at an optimum pace suited to individual ability and convenience, subject to fulfilling minimum requirement for continuation in stipulated duration.
- 6.2.10.3 M.Tech. 1st Year Students must earn 75% of total Credits (i.e. min 24 credits) in odd and even semester of an academic session for promotion to 2nd Year failing which they have to reregister & repeat complete 1st Year.
- 6.2.10.4 A student is considered to pass in a particular subject if he/she secures A(+) to D grade in it and the marks obtained are 40% or more in continuous evaluation of the subject. In case of the marks in continuous evaluation of any subject of a semester being less than 40%, the student has to repeat the semester completely and continue as per the Clause 6.2.10.2 & 6.2.10.3.

6.2.11 AWARD OF DIVISION, RANK AND MEDALS

- **6.2.11.1** A candidate who satisfies the course requirements for all semesters and who passes all the examinations prescribed for all the four semesters within a maximum period of two years reckoned from the commencement of the first semester to which the candidate was admitted shall be declared to have qualified for the award of degree subject to the fulfillment of requirements of **Clause 6.2.10.1**. Award of the Division in the degree shall be governed by the provisions given below.
 - (a) A candidate who qualifies for the award of the degree securing D or above grades in all subjects pertaining to all semesters in his/her first attempt within four consecutive semesters (two academic years) and in addition secures a CGPA of 7.5 and above for the semesters I to IV shall be declared to have passed the examination in FIRST DIVISION WITH HONOURS.
 - (b) A candidate who qualifies for the award of the degree by securing D or above grades in all subjects of all the semesters within a maximum period of four semesters, after his/her commencement of study in the 1st semester and in addition secures CGPA not less than 6.5 shall be declared to have passed the examination in **FIRST DIVISION**.
 - (c) All other candidates who qualify for the award of degree by securing D or above grades in all subjects of all semesters within a maximum period of four semesters after his/her commencement of study in the 1st semester shall be declared to have passed the examination in SECOND DIVISION.
- **6.2.11.2** For the award of **Ranks** for each specialization of study, the CGPA secured in all semesters shall be considered and it is mandatory that such candidates should have passed all the

subjects by securing D or above grades in all the semesters in the first attempt in two year duration of programme as applicable. Rank certificates in the form of "Certificate of Merit" would be issued to top three students as 1^{st} , 2^{nd} & 3^{rd} rank in each specialization of study on the basis of CGPA in particular academic session.

6.2.11.3 Vice-Chancellor Gold Medal will be awarded to the passing out students from each specialization of study identified as prescribed in Clause 6.2.11.2, who secures the highest CGPA at the end of IV semester in first attempt i.e. 1st Rank holder for each specialization of the M.Tech. Programme.

6.2.12 ATTENDANCE

- **6.2.12.1** All students shall be required to sign in attendance register in the department every working day or the mechanism prescribed by the University from time to time. An unauthorized absence for more than one month shall lead to disciplinary action which could be upto termination of studentship.
- **6.2.12.2** However, every faculty member handling a course will also record attendance from the scheduled date of commencement of classes upto 3 calendar days before the last instructional day in the semester as per academic calendar. The cumulative percentages of attendance will be recorded in the office of the Dean handling academic affairs of such students of the University. The attendance remark in the grade card will be shown based on the cumulative percentages of attendance calculated for the period between the date of commencement of classes and the last date for recording the attendance in all the registered subjects (credits and audit courses) in the semester as per the following table. Cumulative attendance remark shall appear in the grade card in each semester

S. No.	Attendance	Remark
1.	90-100%	Very Good
2.	80-89%	Good
3.	75-79%	Satisfactory
4.	<75%	Poor

- **6.2.12.3** A student is expected to attend all classes, laboratory, seminar, dissertation, minor project and tutorial sessions that are formally scheduled and a formal attendance will be taken in each such session. It is recognized that due to illness and other emergent reasons there may be instances when a student is unable to join the scheduled academic activities; a leave application duly recommended and forwarded by student's the Head of Department should be submitted in such cases at the earliest to office of the Dean. Such absence can not be more than 25% of the total classes held in a subject which needs to be got condoned as prescribed in **Clause 6.2.12.4**.
- **6.2.12.4** For the students who have less than 100% but more than 75% attendance in a semester if their medical leave is considered for condonation of attendance then they are eligible for seeking the privilege of upgradation of the attendance remark.
- **6.2.12.5** A student, who has a cumulative attendance less than 75% in the semester whatever, may be the reason for the shortfall in attendance, will not be permitted to appear in the University Major Examinations. Such candidates will have to repeat their study in the same semester in coming academic session and his/her registration for that semester will be treated as cancelled, and she/he shall be awarded 'U' in that semester.

6.2.13 REGISTRATION AND ENROLMENT

- **6.2.13.1** The University follows a specialized credit based semester system, therefore registration at the beginning of each semester on the prescribed dates announced in the Academic Calendar, is mandatory for every student till she/he completes her/his programme. If a student does not register in a particular semester, her/his studentship is liable to be cancelled. Without registration, any academic activity (course/seminar/dissertation etc.) undergone by a student will not be counted towards the fulfillment of requirements of her/his degree.
- **6.2.13.2** Every student admitted shall have his/her unique registration number. The registration number shall have ten digits. First four digits shall indicate year of admission; next two digits shall indicate his/her department/centre of study, next one digit shall indicate his/her level (Undergraduate, Postgraduate and Ph.D.) and last three digits shall indicate his/her serial number/roll number or as prescribed from time to time. Every student shall be identified by this registration number through out his/her stay in the University.
 - **6.2.13.3** Registration should be carried out by the student himself/herself on stipulated date, but not later than the first week of each semester as late registration upon payment of prescribed late fees as decided from time to time. In any case, registration must be completed before the prescribed last date for registration, failing which he/she will not be registered in that particular session. Such students will have to register in coming next academic session if it is permissible under **Clause 6.2.4** else his/her studentship is liable to be cancelled.
 - **6.2.13.4** Students having any kind of outstanding dues to the University or hostel shall be permitted to register only after clearing the outstanding dues.
 - **6.2.13.5** If a student is unable to submit the dissertation by the end of fourth semester, he/she is to get registered in every semester till the submission of the dissertation. For every onward registration after two years, he/she has to pay the required fee as prescribed by the University.
 - **6.2.13.6** In-absentia registration may be allowed only in rare cases at the discretion of the Vice-Chancellor of the University in case of serious illness/natural calamities/ unavoidable circumstances upon the recommendation of Dean.

6.2.14 UNFAIR MEANS

Cases of unfair means shall be dealt as per the rules of the University.

6.2.15 GENERAL ELIGIBILITY FOR AWARD OF M. TECH. DEGREE

A student shall be declared to be eligible for award of the M.Tech. Degree if he/she has

- (a) registered and successfully passed/completed all the required core/elective/audit courses and dissertations and other requirements of programme as prescribed in this Ordinance or as prescribed by the University from time to time;
- (b) successfully acquired the minimum required credits/audits as specified in the curriculum corresponding to the specialization of his/her study within the stipulated time as prescribed in this Ordinance or as prescribed by the University from time to time;
- (c) earned the specified credits in all the categories of subjects;
- (d) has no dues to the University, Hostels, Libraries etc., and
- (e) no disciplinary action is pending against him/her.

6.2.16 POWER TO MODIFY

Notwithstanding all that has been stated above, the Academic Council has the right to modify partly or completely the provisions of above Ordinances with the approval of Board of Management. Under extreme exceptional circumstances arising out of certain inconsistency in the Ordinance or otherwise, the Vice-Chancellor can take suitable decision in deference to the laid down provisions provided standard of evaluation is not compromised and the same shall be reported to ensuing Academic Council/Board of Management with suitable justification. Such actions of Vice-Chancellor shall not be treated as precedence under any circumstances.

1.2.17 CURRICULUM FOR M.TECH. PROGRAMMES

The curriculum for M.Tech. Programmes of study has been designed with total minimum credits of 66 and total minimum 6 credits of audit courses for those admitted in 1st year of M.Tech. Programme. A student must register a minimum of 12 credits in each semester.

S.N.	Category	Paper Code	Subject Name	L	Т	Р	Credit
1.	М			3	1	0/2	4/5
2.	PC			3	1	2	5
3.	PC			3	1	0/2	4/5
4.	PC			3	1	0	4
5.	AC						
			Total	12	4	2/6	17/19

Junior Year, Semester I

Junior Year, Semester II

S.N.	Category	Paper	Subject Name	L	Т	Р	Credit
		Code					
1.	PC			3	1	2	5
2.	PC			3	1	0/2	4/5
3.	PE1			3	1	0/2	4/5
4.	PE2			3	1	0	4
5.	AC						
			Total	12	4	2/6	17/19

Senior Year, Semester III

S.N.	Category	Paper	Subject Name	L	Т	Р	Credit
		Code					
1.	PE3			3	1	0/2	4/5
2.	PE4			3	1	0	4
3.	MP		Minor Project	0	0	8	4
4.	D		Dissertation Part-I	0	0	8	4
			Total	6	2	16/18	16/17

Senior Year, Semester IV

S.N.	Category	Paper	Subject Name	L	Т	Р	Credit
		Code					
1.	S		Seminar	0	0	4	2
2.	D		Dissertation Part-II	0	0	28	14
			Total	0	0	32	16

Section **B**

CURRICULA

CIVIL ENGINEERING DEPARTMENT M. M. M. UNIVERSITY OF TECHNOLOGY GORAKHPUR

Credit Structure for M. Tech. (Hill Area Development Engineering)

Category	Semesters	I	П	III	IV	Total
Maths (M)		4	-	-	-	4
Programme Core	(PC)	13	9	-	-	22
Programme Elect	ives (PE)	-	8	8	-	16
Minor Project (M	P)	-	-	4	-	4
Dissertation (D)				4	14	18
Seminar (S)		-	-	-	2	2
Tot	al	17	17	16	16	66

(For newly admitted students from Session 2014-2015)

Curriculum for M. Tech. (Hill Area Development Engineering)

(For newly admitted students from Session 2014-2015)

Junior Year, Semester I

S. N.	Category	Paper Code	Subject Name		L	Т	Р	Credits
1.	М	MAS-112	Advanced Engineering Mathematics		3	1	0	4
2.	PC	MCE-101	Ecology and Eco-development		3	1	0	4
3.	PC	MCE-102	Water Resources Development		3	1	0	4
4.	PC	MCE-103	Hill Transportation		3	1	2	5
5.	AC		Audit Subject					-
				Total	12	4	2	17

Junior Year, Semester II

S. N.	Category	Paper Code	Subject Name		L	Т	Р	Credits
1.	PC	MCE-104	Land Resources Management		3	1	0	4
2.	PC	MCE-105	Hill Habitat, Water Supply and Sanitation		3	1	2	5
3.	PE1	MCE-***	Programme Elective-1		3	1	0	4
4.	PE2	MCE-***	Programme Elective-2		3	1	0	4
5.	AC		Audit Subject					-
				Total	12	4	2	17

Senior Year, Semester III

S. N.	Category	Paper Code	Subject Name	L	Т	Р	Credits
1.	PE3	MCE-***	Programme Elective-3	3	1	0	4
2.	PE4	MCE-***	Programme Elective-4	3	1	0	4
3.	MP	MCE-120	Minor Project	0	0	8	4
4.	D	MCE-130	Dissertation Part-I	0	0	8	4
			Total	6	2	16	16

Senior Year, Semester IV

S. N.	Category	Paper Code	Subject Name		L	Т	Р	Credits
1.	S	MCE-140	Seminar		0	0	4	2
2.	D	MCE-150	Dissertation Part-II		0	0	28	14
				Total	0	0	32	16

Programme Core for M. Tech. (Hill Area Development Engineering)

S. No.	Paper	Subject Name	Prerequisite Subjects	L	Т	Р	Credits
	Code						
1.	MCE-101	Ecology and Eco-development	-	3	1	0	4
2.	MCE-102	Water Resources Development	-	3	1	0	4
3.	MCE-103	Hill Transportation	-	3	1	2	5
4.	MCE-104	Land Resources Development	-	3	1	0	4
5.	MCE-105	Hill Habitat, Water Supply and	-	3	1	2	5
		Sanitation					
6.	MCE-120	Minor Project	-	0	0	8	4
7.	MCE-130	Dissertation Part-I	-	0	0	8	4
8.	MCE-140	Seminar	-	0	0	4	2
9.	MCE-150	Dissertation Part-II	Dissertation Part-I	0	0	28	14

Programme Electives (PEI)

S. N.	Paper Code	Subject Name	Prerequisite Subjects	L	Т	Р	Credits
1.	MCE-151	Environmental Quality Management	-	3	1	0	4
2.	MCE-152	Earth and Environment	-	3	1	0	4
3.	MCE-153	Principles of Remote Sensing	-	3	1	0	4
4.	MCE-154	Applied Geology	-	3	1	0	4

Programme Electives (PE2)

S. N.	Paper Code	Subject Name	Prerequisite Subjects	L	Т	Р	Credits
1.	MCE-156	Environmental Impact Assessment	-	3	1	0	4
		and Management					
2.	MCE-157	Systems Analysis and Management	-	3	1	0	4
3.	MCE-158	Solid Waste Management	-	3	1	0	4
4.	MCE-159	Groundwater Management	-	3	1	0	4

Programme Electives (PE3)

S. No.	Paper Code	Subject	Prerequisite Subjects	L	Т	Р	Credits
1.	MCE-161	Principles of Remote Sensing	-	3	1	0	4
2.	MCE-162	Non-conventional Sources of Energy	-	3	1	0	4
3.	MCE-163	Earthquake Resistant Design of	-	3	1	0	4
		Buildings					
4.	MCE-164	Geo-technique of Hill Area	-	3	1	0	4

Programme Electives (PE4)

S. N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MCE-166	Water Pollution	-	3	1	0	4
2.	MCE-167	Geographic Information System	-	3	1	0	4
		Techniques					
3.	MCE-168	Water Retaining Structures	-	3	1	0	4
4.	MCE-169	Disaster Management	-	3	1	0	4

Courses for other Departments

S. No.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MCE-191	Earth and Environment	-	3	1	2	5
2.	MCE-192	Environmental Impact Assessment	-	3	1	0	4
		and Management					

Audit Courses for M. Tech. (Hill Area Development Engineering)

S. No.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MAS-105	Applied Probability and Statistics	-	3	1	0	4
2.	MBA-109	Research Methodology	-	3	1	0	4
3.	MAS-109	Foreign Language-French	-	2	1	0	3
4.	MAS-110	Foreign Language-German	-	2	1	0	3
5.	BCS-68	Neural Network and Fuzzy System	-	3	1	0	4

CIVIL ENGINEERING DEPARTMENT M. M. UNIVERSITY OF TECHNOLOGY GORAKHPUR

Credit Structure for M. Tech. (Environmental Engineering)

(For newly admitted students from Session 2014-2015)

Category	Semesters	Ι	Π	III	IV	Total
Maths (M)		4	-	-	-	4
Programme Core (Po	C)	13	9	-	-	22
Programme Electives	(PE)	-	8	8	-	16
Minor Project (MP)		-	-	4	-	4
Dissertation (D)				4	14	18
Seminar (S)		-	-	-	2	2
Total		17	17	16	16	66

Curriculum for M. Tech. (Environmental Engineering)

(For newly admitted students from Session 2014-2015)

Junior Year, Semester I	Juni	ior Y	lear,	Semes	ter]	ſ
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S. N.	Category	Paper Code	Subject Name		L	Т	Р	Credits
1.	М	MAS-112	Advanced Engineering Mathematics		3	1	0	4
2.	PC	MCE-201	Environmental Chemistry and Microbiology		3	1	0	4
3.	PC	MCE-202	Water Treatment and Distribution		3	1	0	4
4.	PC	MCE-203	Wastewater Treatment		3	1	2	5
5.	AC		Audit Subject					-
				Total	12	4	2	17

Junior Year, Semester II

S. N.	Category	Paper Code	Subject Name		L	Т	Р	Credits
1.	PC	MCE-204	Air and Noise Pollution and Controls		3	1	2	5
2.	PC	MCE-205	Solid Waste Management		3	1	0	4
3.	PE1	MCE-***	Programme Elective-1		3	1	0	4
4.	PE2	MCE-***	Programme Elective-2		3	1	0	4
5.	AC		Audit Subject					-
				Total	12	4	2	17

Senior Year, Semester III

S. N.	Category	Paper Code	Subject Name	L	Т	Р	Credits
1.	PE3	MCE-***	Programme Elective-3	3	1	0	4
2.	PE4	MCE-***	Programme Elective-4	3	1	0	4
3.	MP	MCE-220	Minor Project	0	0	8	4
4.	D	MCE-230	Dissertation Part-I	0	0	8	4
			Total	6	2	16	16

Senior Year, Semester IV

S. N.	Category	Paper Code	Subject Name		L	Т	Р	Credits
1.	S	MCE-240	Seminar		0	0	4	2
2.	D	MCE-250	Dissertation Part-II		0	0	28	14
			7	Fotal	0	0	32	16

Programme Core for M. Tech. (Environmental Engineering)

S. N.	Paper Code	Subject	Prerequisite Subjects	L	Т	Р	Credits
1.	MCE-201	Environmental Chemistry and	-	3	1	2	5
		Microbiology					
2.	MCE-202	Water Treatment and Distribution	-	3	1	0	4
3.	MCE-203	Waste Water Treatment	-	3	1	2	5
4.	MCE-204	Air and Noise Pollution and Controls	-	3	1	2	5
5.	MCE-205	Solid Waste Management	-	3	1	0	4
6.	MCE-220	Minor Project	-	0	0	8	4
7.	MCE-230	Dissertation Part-I	-	0	0	8	4
8.	MCE-240	Seminar	-	0	0	4	2
9.	MCE-250	Dissertation Part-II	Dissertation Part-I	0	0	28	14

Programme Electives (PEI)

S. No.	Paper Code	Subject	Prerequisite Subjects	L	Т	Р	Credits
1.	MCE-151	Environmental Quality Management	-	3	1	2	5
2.	MCE-152	Earth and Environment	-	3	1	0	4
3.	MCE-153	Principles of Remote Sensing	-	3	1	2	4
4.	MCE-252	Systems Analysis and Management	-	3	1	2	4

Programme Electives (PE2)

S. N.	Paper Code	Subject	Prerequisite Subjects	L	Т	Р	Credits
1.	MCE-156	Environmental Impact Assessment	-	3	1	0	4
		and Management					
2.	MCE-256	Environmental Sanitation and	-	3	1	0	4
		Ecology					
3.	MCE-258	Environmental Geology	-	3	1	0	4
4.	MCE-259	Rural Environmental Technology	-	3	1	0	4

Programme Electives (PE3)

S. N.	Paper Code	Subject	Prerequisite Subjects	L	Т	Р	Credits
1.	MCE-162	Non-conventional Sources of Energy	-	3	1	0	4
2.	MCE-261	Ground Water Management	-	3	1	0	4
3.	MCE-262	Building Environmental and Services	-	3	1	0	4
4.	MCE-263	Geo-environmental Engineering	-	3	1	0	4

Programme Electives (PE4)

S. N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MCE-169	Disaster Management	-	3	1	0	4
2.	MCE-266	Plumbing Services	-	3	1	0	4
3.	MCE-267	Hazardous Waste Management	-	3	1	0	4
4.	MCE-268	Industrial Wastewater Treatment	-	3	1	0	4

S. No.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MAS-105	Applied Probability and Statistics	-	3	1	0	4
2.	MBA-109	Research Methodology	-	3	1	0	4
3.	MAS-109	Foreign Language-French	-	2	1	0	3
4.	MAS-110	Foreign Language-German	-	2	1	0	3
5.	BCS-68	Neural Network and Fuzzy System	-	3	1	0	4

Audit Courses for M. Tech. (Environmental Engineering)

CIVIL ENGINEERING DEPARTMENT M. M. UNIVERSITY OF TECHNOLOGY GORAKHPUR

Credit Structure for M. Tech. (Structural Engineering)

(For newly admitted students from Session 2014-2015)

Category	Semesters	Ι	II	III	IV	Total
Maths (M)		4	-	-	-	4
Programme Core ((PC)	14	9	-	-	23
Programme Electiv	ves (PE)	-	8	8	-	16
Minor Project (MP	')	-	-	4	-	4
Dissertation (D)				4	14	18
Seminar (S)		-	-	-	2	2
Tota		18	17	16	16	67

Curriculum for M. Tech. (Structural Engineering)

(For newly admitted students from Session 2014-2015)

Junior Year, Semester	Junio	r Year,	Semester	I
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S. N.	Category	Paper Code	Subject Name		L	Т	Р	Credits
1.	М	MAS-112	Advanced Engineering Mathematics		3	1	0	4
2.	PC	MCE-301	Advance Structural Analysis		3	1	2	5
3.	PC	MCE-302	Concrete Structures		3	1	2	5
4.	PC	MCE-303	Prestressed Concrete		3	1	0	4
5.	AC		Audit Subject					
				Total	12	4	2	18

Junior Year, Semester II

S. N.	Category	Paper Code	Subject Name		L	Т	Р	Credits
1.	PC	MCE-304	Analysis and Design of Dynamic Effects		3	1	2	5
2.	PC	MCE-305	Metal Structures		3	1	0	4
3.	PE1	MCE-***	Programme Elective-1		3	1	0	4
4.	PE2	MCE-***	Programme Elective-2		3	1	0	4
5.	AC		Audit Subject					-
			Tot	al	12	4	2	17

Senior Year, Semester III

S. N.	Category	Paper Code	Subject Name	L	Т	Р	Credits
1.	PE3	MCE-***	Programme Elective-3	3	1	0	4
2.	PE4	MCE-***	Programme Elective-4	3	1	0	4
3.	MP	MCE-320	Ainor Project		0	8	4
4.	D	MCE-330	Dissertation Part-I		0	8	4
			Total	6	2	16	16

Senior Year, Semester IV

S. N.	Category	Paper Code	Subject Name	L	Т	Р	Credits
1.	S	MCE-340	Seminar	0	0	4	2
2.	D	MCE-350	Dissertation Part-II	0	0	28	14
			Total	0	0	32	16

Programme Core for M. Tech. (Structural Engineering)

S. N.	Paper Code	Subject Name	Prerequisite Subjects	L	Т	Р	Credits
1.	MCE-301	Advance Structural Analysis	-	3	1	0	4
2.	MCE-302	Concrete Structures	-	3	1	2	5
3.	MCE-303	Prestressed Concrete	-	3	1	0	4
4.	MCE-304	Analysis and Design of Dynamic	-	3	1	2	5
		Effects					
5.	MCE-305	Metal Structures	-	3	1	0	4
6.	MCE-320	Minor Project	-	0	0	8	4
7.	MCE-330	Dissertation Part-I	-	0	0	8	4
8.	MCE-340	Seminar	-	0	0	4	2
9.	MCE-350	Dissertation Part-II	Dissertation Part-I	0	0	28	14

Programme Electives (PEI)

S. N.	Paper Code	Subject Name	Prerequisite Subjects	L	Т	Р	Credits
1.	MCE-351	Maintenance and Rehabilitation of	-	3	1	0	4
		Structures					
2.	MCE-352	Pre-cast and Composite Structures	-	3	1	0	4
3.	MCE-353	Rock Engineering	-	3	1	0	4
4.	MCE-354	Continuum Mechanics	-	3	1	0	4

Programme Electives (PE2)

S. N.	Paper Code	Subject Name	Prerequisite Subjects	L	Т	Р	Credits
1.	MCE-356	Retrofitting of Buildings	-	3	1	0	4
2.	MCE-357	Hydraulic Structures	-	3	1	0	4
3.	MCE-358	Machine Foundations	-	3	1	0	4
4.	MCE-359	Finite Element Method	-	3	1	0	4

Programme Electives (PE3)

S. N.	Paper Code	Subject Name	Prerequisite Subjects	L	Т	Р	Credits
1.	MCE-361	Nonlinear Analysis of Structures	-	3	1	0	4
2.	MCE-362	Earth & Rock fill Dam.	-	3	1	0	4
3.	MCE-363	Project Planning and Control	-	3	1	0	4
4.	MCE-364	Soil Structure interaction	-	3	1	0	4

Programme Electives (PE4)

S. N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MCE-366	Design of Plates and Shells	-	3	1	0	4
2.	MCE-367	Industrial Structures	-	3	1	0	4
3.	MCE-368	Bridge Engineering	-	3	1	0	4
4.	MCE-369	Ground Improvement Techniques	-	3	1	0	4

S. No.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MAS-105	Applied Probability and Statistics	-	3	1	0	4
2.	MBA-109	Research Methodology	-	3	1	0	4
3.	MAS-109	Foreign Language-French	-	2	1	0	3
4.	MAS-110	Foreign Language-German	-	2	1	0	3
5.	BCS-68	Neural Network and Fuzzy System	-	3	1	0	4

Audit Courses for M. Tech. (Structural Engineering)

CIVIL ENGINEERING DEPARTMENT M. M. UNIVERSITY OF TECHNOLOGY GORAKHPUR

Credit Structure for M. Tech. (Earthquake Engineering and Seismic Design)

Category	Semesters	Ι	Π	III	IV	Total
Maths (M)		4	-	-	-	4
Programme Core	(PC)	13	9	-	-	22
Programme Electiv	ves (PE)	-	8	8	-	16
Minor Project (MP	')	-	-	4	-	4
Dissertation (D)				4	14	18
Seminar (S)		-	-	-	2	2
Tota		17	17	16	16	66

(For newly admitted students from Session 2014-2015)

Curriculum for M. Tech. (Earthquake Engineering and Seismic Design)

Junior Year, Semester I

S. N.	Category	Paper Code	Subject Name		L	Т	Р	Credits
1.	М	MAS-112	Advanced Engineering Mathematics		3	1	0	4
2.	PC	MCE-301	Advance Structural Analysis		3	1	0	4
3.	PC	MCE-401	Seismology & Tectonics		3	1	0	4
4.	PC	MCE-402	Geotechnical Earthquake Engineering		3	1	2	5
5.	AC		Audit Subject					-
				Total	12	4	2	17

Junior Year, Semester II

S. N.	Category	Paper Code	Subject Name		L	Т	Р	Credits
1.	PC	MCE-403	Structural Dynamics		3	1	2	5
2.	PC	MCE-404	Earthquake Resistant Design of structures		3	1	0	4
3.	PE1	MCE-***	Programme Elective-1		3	1	0	4
4.	PE2	MCE-***	Programme Elective-2		3	1	0	4
5.	AC		Audit Subject					-
]	Fotal	12	4	2	17

Senior Year, Semester III

S. N.	Category	Paper Code	Subject Name		L	Т	Р	Credits
1.	PE3	MCE-***	Programme Elective-3		3	1	0	4
2.	PE4	MCE-***	Programme Elective-4		3	1	0	4
3.	MP	MCE-420	Minor Project		0	0	8	4
4.	D	MCE-430	Dissertation Part-I		0	0	8	4
				Total	6	2	16	16

Senior Year, Semester IV

S. N.	Category	Paper Code	Subject Name	L	Т	Р	Credits
1.	S	MCE-440	Seminar	0	0	4	2
2.	D	MCE-450	Dissertation Part-II	0	0	28	14
			Total	0	0	32	16

S. N.	Paper Code	Subject Name	Prerequisite Subjects	L	Т	Р	Credits
1.	MCE-301	Advanced Structural Analysis	-	3	1	2	5
2.	MCE-401	Seismology & Tectonics	-	3	1	0	4
3.	MCE-402	Geotechnical Earthquake Engineering	-	3	1	2	5
4.	MCE-403	Structural Dynamics	-	3	1	2	5
5.	MCE-404	Earthquake Resistant Design of	-	3	1	0	4
		structures					
6.	MCE-420	Minor Project	-	0	0	8	4
7.	MCE-430	Dissertation Part-I	-	0	0	8	4
8.	MCE-440	Seminar	-	0	0	4	2
9.	MCE-450	Dissertation Part-II	Dissertation Part-I	0	0	28	16

Programme Core for M. Tech. (Earthquake Engineering and Seismic Design)

Programme Electives (PE1)

S. N.	Paper Code	Subject Name	Prerequisite Subjects	L	Т	Р	Credits
1.	MCE-351	Maintenance and Rehabilitation of	-	3	1	0	4
		Structures					
2.	MCE-352	Pre-cast and Composite Structures	-	3	1	0	4
3.	MCE-353	Rock Engineering	-	3	1	0	4
4.	MCE-354	Continuum Mechanics	-	3	1	0	4

Programme Electives (PE2)

S. N.	Paper Code	Subject Name	Prerequisite Subjects	L	Т	Р	Credits
1.	MCE-356	Retrofitting of Buildings	-	3	1	0	4
2.	MCE-357	Hydraulic Structures	-	3	1	0	4
3.	MCE-358	Machine Foundations	-	3	1	0	4
4.	MCE-359	Finite Element Method	-	3	1	0	4

Programme Electives (PE3)

S. N.	Paper Code	Subject Name	Prerequisite Subjects	L	Т	Р	Credits
1.	MCE-361	Nonlinear Analysis of Structures	-	3	1	0	4
2.	MCE-363	Project Planning and Control	-	3	1	0	4
3.	MCE-364	Soil Structure Interaction	-	3	1	0	4
4.	MCE-461	Random Vibrations	-	3	1	0	4

Programme Electives (PE4)

S. N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MCE-366	Design of Plates and Shells	-	3	1	0	4
2.	MCE-367	Industrial Structures	-	3	1	0	4
3.	MCE-368	Bridge Engineering	-	3	1	0	4
4.	MCE-369	Ground Improvement Techniques	-	3	1	0	4

Audit Courses for M. Tech. (Earthquake Engineering and Seismic Design)

S. No.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MAS-105	Applied Probability and Statistics	-	3	1	0	4
2.	MBA-109	Research Methodology	-	3	1	0	4
3.	MAS-109	Foreign Language-French	-	2	1	0	3
4.	MAS-110	Foreign Language-German	-	2	1	0	3
5.	BCS-68	Neural Network and Fuzzy System	-	3	1	0	4

COMPUTER SCIENCE & ENGINEERING DEPARTMENT M. M. UNIVERSITY OF TECHNOLOGY GORAKHPUR

Credit Structure for M. Tech. (Computer Science & Engineering)

(For newly admitted students from Session 2014-2015)

Category	Semesters	Ι	II	III	IV	Total
Maths (M)		-	5	-	-	5
Programme Core (PC)		17	5	-	-	22
Programme Electives (PE)		-	8	8	-	16
Minor Project (MP)		-	-	4	-	4
Dissertation (D)				4	14	18
Seminar (S)		-	-	-	2	2
	Total	17	18	16	16	67

Curriculum M. Tech. (Computer Science & Engineering)

Junior Year, Semester-I

S.N.	Category	Paper Code	Subject Name	L	Т	Р	Credit
1.	PC	MCS-101	Advanced Computer Networks	3	1	0	4
2.	PC	MCS-102	Advanced Database Theory and Applications	3	1	2	5
3.	PC	MCS-103	High - Performance Computer Architectures	3	1	0	4
4.	PC	MCS-105	System Simulation & Modelling	3	1	0	4
5.	AC	MBA-IT6	Managing IT Enabled Services	3	1	0	-
			Tota	12	4	2	17

Junior Year, Semester-II

S.N.	Category	Paper Code	Subject Name		L	Т	Р	Credit
1.	PC	MCS-104	Advance Concepts in Operating Systems		3	1	2	5
2.	М	MAS-113	Probabilistic Modelling		3	1	2	5
3.	PE1	MCS-1**	Programme Elective-1		3	1	0	4
4.	PE2	MCS-1**	Programme Elective-2		3	1	0	4
5.	AC	MBA 109	Research Methodology		3	1	0	-
				Total	12	4	4	18

Senior Year, Semester-III

S.N.	Category	Paper Code	Subject Name		L	Т	Р	Credit
1.	PE3	MCS-1**	Programme Elective-3		3	1	0	4
2.	PE4	MCS-1**	Programme Elective-4		3	1	0	4
3.	MP	MCS-120	Minor Project		0	0	8	4
4.	D	MCS-130	Dissertation Part-I		0	0	8	4
				Total	6	2	16	16

Senior Year, Semester-IV

S.N.	Category	Paper Code	Subject Name		L	Т	Р	Credit
1.	S	MCS-140	Seminar		0	0	4	2
2.	D	MCS-150	Dissertation Part-II		0	0	28	14
				Total	0	0	32	16

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MAS-113	Probabilistic Modelling	-	3	1	2	5
2.	MCS-101	Advanced Computer Networks	-	3	1	0	4
3.	MCS-102	Advanced Database Theory and	-	3	1	2	5
		Applications					
4.	MCS-103	High - Performance Computer	-	3	1	0	4
		Architectures					
5.	MCS-104	Advance Concepts in Operating Systems	-	3	1	2	5
6.	MCS-105	System Simulation & Modelling	-	3	1	0	4
7.	MCS-120	Minor Project	-	0	0	8	4
8.	MCS-130	Dissertation Part-I	-	0	0	8	4
9.	MCS-140	Seminar	-	0	0	4	2
10.	MCS-150	Dissertation Part-II	Dissertation Part-I	0	0	28	14

Programme Electives for M. Tech (Computer Science & Engineering)

S.N.	Paper Code	Subject Name	Prerequisite Subject	L	Т	Р	Credit
		PE1 & PE2 (II Semester)					
1.	MCS-151	Foundation of Programming Languages	-	3	1	0	4
2.	MCS-152	Functional Programming	-	3	1	0	4
3.	MCS-153	Formal Aspects of Programming	-	3	1	0	4
		Languages and Methodology					
4.	MCS-154	Advanced Topics in Programming	-	3	1	0	4
		Languages					
5.	MCS-155	Advanced Digital Image Processing	-	3	1	0	4
6.	MCS-156	Real Time Systems	-	3	1	0	4
7.	MCS-157	Embedded Computing	-	3	1	0	4
8.	MCS-158	Mobile Database Systems	-	3	1	0	4
9.	MCS-159	Advanced Parallel Programming	-	3	1	0	4
10.	MCS-160	Cloud Computing	-	3	1	0	4
		PE3 & PE4 (III Semester)					
11.	MCS-161	Advanced Web Technology/ Advanced	-	3	1	0	4
		Internet Programming					
12.	MCS-162	Network Programming	-	3	1	0	4
13.	MCS-163	Natural Language Interface	-	3	1	0	4
14.	MCS-164	LINUX Networking and Security	-	3	1	0	4
15.	MCS-165	Internetworking Architectures and	-	3	1	0	4
		Protocols					
16.	MCS-166	Current Trends In Computer Graphics	-	3	1	0	4
		& Multimedia Technology					
17.	MCS-167	Computational Neuroscience	-	3	1	0	4
18.	MCS-168	Transaction Processing	-	3	1	0	4
19.	MCS-169	Machine Learning for Big Data	-	3	1	0	4
20.	MCS-170	Advanced Compiler Optimization	-	3	1	0	4

Subject for other Departments

S.N.	Paper Code	Subject Name	Prerequisite Subject	L	Т	Р	Credit
1.	MCS-176	Information System & data	-	3	1	0	4
		Management					
2.	MCS-177	Computer Application in Management	-	2	0	2	3

COMPUTER SCIENCE & ENGINEERING DEPARTMENT M. M. UNIVERSITY OF TECHNOLOGY GORAKHPUR

Credit Structure for M. Tech. (Information Technology)

(For newly admitted students from Session 2014-2015)

Category	Semesters	Ι	II	III	IV	Total
Maths (M)		-	5	-	-	5
Programme Core (PC)		18	4	-	-	22
Programme Electives (PE)		-	8	8	-	16
Minor Project (MP)		-	-	4	-	4
Dissertation (D)				4	14	18
Seminar (S)		-	-	-	2	2
	Total	18	17	16	16	67

Curriculum M. Tech. (Information Technology)

Junior Year, Semester-I

S.N.	Category	Paper Code	Subject Name	L	Т	Р	Credit
1.	PC	MCS-201	Fundamentals of Information Systems	3	1	2	5
2.	PC	MCS-202	Advanced Network Design and Administration	3	1	0	4
3.	PC	MCS-203	Information Security and Audit	3	1	0	4
4.	PC	MCS-204	Web Programming & Administration	3	1	2	5
5.	AC	MBA-IT5	Enterprise Resource Planning	3	1	0	-
			Total	12	4	4	18

Junior Year, Semester-II

S.N.	Category	Paper Code	Subject Name		L	Т	Р	Credit
1.	М	MAS-113	Probabilistic Modelling		3	1	2	5
2.	PC	MCS-205	Advanced Database Management Systems		3	1	0	4
3.	PE1	MCS-***	Programme Elective-1		3	1	0	4
4.	PE2	MCS-***	Programme Elective-2		3	1	0	4
5.	AC	MBA-123	Entrepreneurship Development & Project		3	1	0	-
			Management					
				Total	12	4	2	17

Senior Year, Semester-III

S.N.	Category	Paper Code	Subject Name		L	Т	Р	Credit
1.	PE3	MCS-1**	Programme Elective-3		3	1	0	4
2.	PE4	MCS-1**	Programme Elective-4		3	1	0	4
3.	MP	MCS-220	Minor Project		0	0	8	4
4.	D	MCS-230	Dissertation Part-I		0	0	8	4
				Total	6	2	16	16

Senior Year, Semester-IV

S.N.	Category	Paper Code	Subject Name]	L	Т	Р	Credit
1.	S	MCS-240	Seminar		0	0	4	2
2.	D	MCS-250	Dissertation Part-II		0	0	28	14
			Τα	tal	0	0	32	16

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MAS-113	Probabilistic Modelling	-	3	1	2	5
2.	MCS-201	Fundamentals of Information Systems	-	3	1	2	5
3.	MCS-202	Advanced Network Design and	Network Design and -				4
		Administration					
4.	MCS-203	Information Security and Audit	-	3	1	0	4
5.	MCS-204	Web Programming & Administration	-	3	1	2	5
6.	MCS-205	Advanced Database Management	-	3	1	0	4
		Systems					
7.	MCS-230	Dissertation Part-I	-	0	0	8	4
8.	MCS-220	Minor Project	-	0	0	8	4
9.	MCS-240	Seminar	-	0	0	4	2
10.	MCS-250	Dissertation Part-II	Dissertation Part-I	0	0	28	14

Programme Core for M.Tech. (Information Technology)

Programme Electives for M. Tech (Information Technology)

S.N.	Paper Code	Subject Name	Prerequisite Subject	L	Т	Р	Credits
		PE1 & PE2 (II Semester)					
1.	MCS-251	Data Communications & Advanced	-	3	1	0	4
		Internet Technologies					
2.	MCS-252	Network Security & Cyber Law	-	3	1	0	4
3.	MCS-253	Advance Topics on Computer Networks	-	3	1	0	4
4.	MCS-254	Wireless Networks Security and	-	3	1	0	4
		Administration					
5.	MCS-255	Advances in Natural Language Processing	-	3	1	0	4
6.	MCS-256	Bio-Informatics	-	3	1	0	4
7.	MCS-257	Neural Networks and Fuzzy Logics	-	3	1	0	4
8.	MCS-258	Pattern Recognition and Image Processing	-	3	1	0	4
		PE-3 & PE-4 (III Semester)					
9.	MCS-259	Parallel Processing: Architectures and	-	3	1	0	4
		Algorithms					
10.	MCS-260	Software Testing & Quality Management	-	3	1	0	4
11.	MCS-261	Transaction Mining and Fraud Detection	-	3	1	0	4
12.	MCS-262	Emerging Information Technologies &	-	3	1	0	4
		Issues					
13.	MCS-263	Project and Change Management	-	3	1	0	4
14.	MCS-264	Data Mining & Data Warehousing	-	3	1	0	4
15.	MCS-265	Human Computer Interaction	-	3	1	0	4
16.	MCS-266	Pervasive and Ubiquitous Computing	-	3	1	0	4
17.	MCS-267	Distributed Operating Systems: Concept &	-	3	1	0	4
		Design					

ELECTRICAL ENGINEERING DEPARTMENT M. M. UNIVERSITY OF TECHNOLOGY GORAKHPUR

Credit Structure for M.Tech. (Power Electronics & Drives)

(For newly admitted student	s from Session 2014-2015)
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Category	Semesters	Ι	Π	III	IV	Total Credits
Maths (M)		5	-	-	-	5
Programme Core	(PC)	14	9	-	-	23
Programme Elect	ives (PE)	-	8	8	-	16
Minor Project (M	P)	-	-	4	-	4
Dissertation (D)				4	14	18
Seminar (S)		-	-	-	2	2
	Total	19	17	16	16	68

Curriculum for M.Tech. (Power Electronics & Drives)

Junior Year, Semester-I

S.N.	Category	Paper Code	Subject Name	L	Т	Р	Credits
1	М	MAS-101	Numerical Methods & Engineering Optimization	3	1	2	5
2	PC	MEE-101	Advance Microprocessors & Applications	3	1	2	5
3	PC	MEE-102	Electric Drives & Traction	3	1	0	4
4	PC	MEE-103	Power Converter -I	3	1	2	5
5	AC		Audit Subject				-
			Total	12	4	6	19

Junior Year, Semester-II

S.N.	Category	Paper Code	Subject Name	L	Т	Р	Credits
1	PC	MEE-104	Modeling, Simulation & Evolutionary Techniques	3	1	2	5
2	PC	MEE-105	Power Converter -II	3	1	0	4
3	PE1	MEE-1**	Programme Electives-1	3	1	0	4
4	PE2	MEE-1**	Programme Electives-2	3	1	0	4
5	AC		Audit Subject				
			Total	12	4	2	17

Senior Year, Semester-III

S.N.	Category	Paper Code	Subject Name		L	Т	Р	Credits
1.	PE3	MEE-1**	Programme Electives-3		3	1	0	4
2.	PE4	MEE-1**	Programme Electives-4		3	1	0	4
3.	MP	MEE-120	Minor Project		0	0	8	4
4.	D	MEE-130	Dissertation Part-I		0	0	8	4
				Total	6	2	16	16

Senior Year, Semester-IV

S.N.	Category	Paper Code	Subject Name	L	Т	Р	Credits
1.	S	MEE-140	Seminar	0	0	4	2
2.	D	MEE-150	Dissertation Part-II	0	0	28	14
			Total	0	0	32	16

Programme Con	e (Power Elec	tronics & Drives)
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S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
11.	MAS-101	Numerical Methods & Engineering	-	3	1	0	4
		Optimization					
12.	MEE-101	Advance Microprocessors & Applications	-	3	1	2	5
13.	MEE-102	Electric Drives & Traction	Power Electronic	3	1	0	4
14.	MEE-103	Power Converter -I	-	3	1	2	5
15.	MEE-104	Modeling, Simulation & Evolutionary	-	3	1	2	5
		Techniques					
16.	MEE-105	Power Converter -II	Power Converter -I	3	1	0	4
17.	MEE-130	Dissertation Part-I	-	0	0	8	4
18.	MEE-120	Minor Project	-	0	0	8	4
19.	MEE-140	Seminar	-	0	0	4	2
20.	MEE-150	Dissertation Part-II	Dissertation Part-I	0	0	28	14

Programme Electives PE1 & PE2 (Power Electronics & Drives)

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MEE-151	Power system Planning & Optimization	-	3	1	0	4
2.	MEE-152	Power Semiconductor Controlled Drives	-	3	1	0	4
3.	MEE-153	System Reliability	-	3	1	0	4
4.	MEE-154	Operation Research	-	3	1	0	4
5.	MEE-155	Fuzzy, ANN and AI Systems	-	3	1	0	4
6.	MEE-156	Robotics & Automation	-	3	1	0	4
7.	MEE-157	FACTS Controllers & Devices	-	3	1	0	4
8.	MEE-158	Modeling and Simulation of Power Electronic Circuits	-	3	1	0	4

Programme Electives PE3 & PE4 (Power Electronics & Drives)

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MEE-159	New and Renewable Energy Resources	-	3	1	0	4
2.	MEE-160	Electric Power Quality	-	3	1	0	4
3.	MEE-161	Power System Instrumentation	-	3	1	0	4
4.	MEE-162	Digital Signal Processing	-	3	1	0	4
5.	MEE-163	HVDC Systems	-	3	1	0	4
6.	MEE-164	Energy Management	-	3	1	0	4
7.	MEE-165	Power System Dynamics & Control	-	3	1	0	4
8.	MEE-166	Special Electric Machine	-	3	1	0	4

Audit Courses for M.Tech. (Power Electronics & Drives)

S.N.	Paper	Subject	Prerequisite Subject	L	Т	Р	Credi
	Code						ts
		I Semester					
1.	MCS-176	Information Systems and Data Management	-	3	1	0	4
2.	MAS-105	Applied Probability and Statistics	-	3	1	0	4
3.	MME-155	Robust Design	-	3	1	0	4
4.	MBA-109	Research Methodology	-	3	1	0	4
5.	MAS-109	Foreign Language-French	-	2	1	0	3
6.	MAS-110	Foreign Language-German	-	2	1	0	3
7.	MAS-111	Foreign Language-Spanish	-	2	1	0	3
		II Semester					
8.	MBA-113	Management Information System	-	2	1	0	3
9.	BOE-17	Reliability & Maintenance Engineering	-	2	1	0	3

10.	BCS-68	Neural Network & Fuzzy Systems	-	3	1	0	4
11.	BCE-21	Environmental Impact Assessment &	-	3	1	0	4
		Management					
12.	BCS-15	Database Management System	-	3	1	2	5

ELECTRICAL ENGINEERING DEPARTMENT M. M. UNIVERSITY OF TECHNOLOGY GORAKHPUR

Credit Structure for M.Tech. (Control & Instrumentation)

(For newly admitted students from Session 2014-2015)

Category	Semesters	Ι	Π	Ш	IV	Total Credits
Maths (M)		5	-	-	-	5
Programme Core	e (PC)	14	9	-	-	23
Programme Elec	tives (PE)	-	8	8	-	16
Minor Project (N	4P)	-	-	4	-	4
Dissertation (D)				4	14	18
Seminar (S)		-	-	-	2	2
	Total	19	17	16	16	68

Curriculum for M.Tech. (Control & Instrumentation)

Junior Year, Semester-I

S.N.	Category	Paper Code	Subject Name	L	Т	Р	Credits
1.	М	MAS-101	Numerical Methods & Engineering Optimization	3	1	2	5
2.	PC	MEE-201	Advance Control Systems	3	1	2	5
3.	PC	MEE-202	Optimal Control	3	1	0	4
4.	PC	MEE-203	Advance Measurement & Instrumentation	3	1	2	5
			Technology				
5.	AC		Audit Subject				-
			Total	12	4	4	19

Junior Year, Semester-II

S.N.	Category	Paper Code	Subject Name	L	Т	Р	Credits
1.	PC	MEE-104	Modeling, Simulation & Evolutionary Techniques	3	1	2	5
2.	PC	MEE-204	Nonlinear Systems & Adaptive Control	3	1	0	4
3.	PE1	MEE-***	Programme Elective-1	3	1	0	4
4.	PE2	MEE-***	Programme Electives-2	3	1	0	4
5.	AC		Audit Subject				-
			Total	12	4	2	17

Senior Year, Semester-III

S.N.	Category	Paper Code	Subject Name		L	Т	Р	Credits
1.	PE3	MEE-***	Programme Elective-3		3	1	0	4
2.	PE4	MEE-***	Programme Elective-4		3	1	0	4
3.	MP	MEE-220	Minor Project		0	0	8	4
4.	D	MEE-230	Dissertation Part-I		0	0	8	4
				Total	6	2	16	16

Senior Year, Semester-IV

S.N.	Category	Paper Code	Subject Name	L	Т	Р	Credits
1	S	MEE-240	Seminar	0	0	4	2
2	D	MEE-250	Dissertation Part-II	0	0	28	14
			Tota	1 0	0	32	16

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MAS-101	Numerical Methods & Engineering	-	3	1	0	4
		Optimization					
2.	MEE-201	Advance Control System	-	3	1	2	5
3.	MEE-202	Optimal Control	-	3	1	0	4
4.	MEE-203	Advance Measurement &	-	3	1	2	5
		Instrumentation Technology					
5.	MEE-104	Modeling, Simulation & Evolutionary	-	3	1	2	5
		Techniques					
6.	MEE-204	Nonlinear Systems & Adaptive Control	-	3	1	0	4
7.	MEE-230	Dissertation Part-I	-	0	0	8	4
8.	MEE-210	Minor Project	-	0	0	8	4
9.	MEE-240	Seminar	-	0	0	4	2
10.	MEE-250	Dissertation Part-II	Dissertation Part-I	0	0	28	14

Programme Core for M.Tech. (Control & Instrumentation)

Programme Electives PE1 & PE2

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MEE-151	Power System Planning &	-	3	1	0	4
		Optimization					
2.	MEE-251	Biomedical Engineering	-	3	1	0	4
3.	MEE-252	Digital Control Systems	-	3	1	0	4
4.	MEE-153	System Reliability	-	3	1	0	4
5.	MEE-154	Operation Research	-	3	1	0	4
6.	MEE-155	Fuzzy, ANN and AI Systems	-	3	1	0	4
7.	MEE-156	Robotics & Automation	-	3	1	0	4
8.	MEE-157	FACTS Controllers & Devices	-	3	1	0	4

Programme Electives PE3 & PE4

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MEE-159	New and Renewable Energy Resources	-	3	1	0	4
2.	MEE-160	Electric Power Quality	-	3	1	0	4
3.	MEE-253	Bio-Medical Signal Processing	-	3	1	0	4
4.	MEE-161	Power System Instrumentation	-	3	1	0	4
5.	MEE-162	Digital Signal Processing	-	3	1	0	4
6.	MEE-164	Energy Management	-	3	1	0	4
7.	MEE-165	Power System Dynamics & Control	-	3	1	0	4
8.	MEE-254	Digital Image Processing	-	3	1	0	4

Audit Courses for M. Tech. (Control & Instrumentation)

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
		I Semester					
1.	MCS-176	Information Systems and Data	-	3	1	0	4
		Management					
2.	MAS-105	Applied Probability and Statistics	-	3	1	0	4
3.	MME-155	Robust Design	-	3	1	0	4
4.	MBA-109	Research Methodology	-	3	1	0	4
5.	MAS-109	Foreign Language-French	-	2	1	0	3
6.	MAS-110	Foreign Language-German	-	2	1	0	3
7.	MAS-111	Foreign Language-Spanish	-	2	1	0	3
		II Semester					

1.	MBA-113	Management Information System	-	2	1	0	3
2.	BOE-17	Reliability & Maintenance Engineering	-	2	1	0	3
3.	BCS-68	Neural Network & Fuzzy Systems	-	3	1	0	4
4.	BCE-21	Environmental Impact Assessment &	-	3	1	0	4
		Management					
5.	BCS-15	Database Management System	-	3	1	2	5

ELECTRONICS AND COMMUNICATION ENGINEERING DEPARTMENT M.M.M. UNIVERSITY OF TECHNOLOGY GORAKHPUR (UP)

Credit Structure for M. Tech. (Digital Systems)

(For newly admitted students from Session 2014-2015)

Category	Semesters	Ι	Π	III	IV	Total
Maths (M)		4	-	-	-	4
Programme Core	(PC)	13	9	-	-	22
Programme Elect	ives (PE)	-	8	8	-	16
Minor Project (M	P)	-	-	4	-	4
Dissertation (D)				4	14	18
Seminar (S)		-	-	-	2	2
Total		17	17	16	16	66

Curriculum for M.Tech (Digital Systems)

Junior year, Semester-I

S.N.	Category	Paper Code	Subject Name		L	Т	Р	Credits
1.	М	MAS-112	Advanced Engg. Mathematics		3	1	0	4
2.	PC	MEC-101	DSP Processor & Application		3	1	0	4
3.	PC	MEC-102	Microprocessor & Microcontroller		3	1	2	5
4.	PC	MEC-103	VLSI Technology & Design		3	1	0	4
5.	AC		Audit Subject					-
				Total	12	4	2	17

Junior Year, Semester-II

S.N.	Category	Paper Code	Subject Name		L	Т	Р	Credits
1.	PC	MEC-104	Embedded Systems Design		3	1	2	5
2.	PC	MEC-105	Digital Systems Design		3	1	0	4
3.	PE1	MEC-***	Program Elective-1		3	1	0	4
4.	PE2	MEC-***	Program Elective-2		3	1	0	4
5.	AC		Audit Subject					-
				Total	12	4	2	17

Senior Year, Semester-III

S.N.	Category	Paper Code	Subject Name		L	Т	Р	Credits
1.	PE3	MEC-***	Program Elective-3		3	1	0	4
2.	PE4	MEC-***	Program Elective-4		3	1	0	4
3.	MP	MEC-120	Minor Project		0	0	8	4
4.	D	MEC-130	Dissertation Part-I		0	0	8	4
				Total	6	2	16	16

Senior Year, Semester-IV

S.N.	Category	Paper Code	Subject Name		L	Т	Р	Credits
1	S	MEC-140	Seminar		0	0	4	2
2	D	MEC-150	Dissertation Part-II		0	0	28	14
				Total	0	0	32	16

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MAS-112	Advanced Engg. Mathematics	-	3	1	0	4
2.	MEC-101	DSP Processor & Application	-	3	1	0	4
3.	MEC-102	Microprocessor & Microcontroller	-	3	1	2	5
4.	MEC-103	VLSI Technology & Design	-	3	1	0	4
5.	MEC-104	Embedded Systems Design	-	3	1	2	5
6.	MEC-105	Digital Systems Design	-	3	1	0	4
7.	MEC-130	Dissertation Part-I	-	0	0	8	4
8.	MEC-110	Minor Project	-	0	0	8	4
9.	MEC-140	Seminar	-	0	0	4	2
10.	MEC-150	Dissertation Part-II	Dissertation Part-I	0	0	28	14

Programme Core for M.Tech. (Digital Systems)

Programme Electives PE1 & PE2

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MEC-151	Digital Signal Processing	-	3	1	0	4
2.	MEC-152	Digital Control Systems	-	3	1	0	4
3.	MEC-153	ASICs	VLSI Technology &	3	1	0	4
			Design				
4.	MEC-154	Computer Aided Design of Electronics	VLSI Technology &	3	1	0	4
		Circuits	Design				
5.	MEC-155	Data and Computer Communication	-	3	1	0	4
		Networks					
6.	MEC-156	Digital Integrated Circuits	VLSI Technology &	3	1	0	4
			Design				

Programme Electives PE3 & PE4

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MEC-161	VLSI Testing	VLSI Technology &	3	1	0	4
			Design				
2.	MEC-162	Artificial Intelligence	-	3	1	0	4
3.	MEC-163	Neural Networks	-	3	1	0	4
4.	MEC-164	Virtual Instrumentation	-	3	1	0	4
5.	MEC-165	Digital Mobile Communication	-	3	1	0	4
		Systems					
6.	MEC-166	Optoelectronics Devices & Circuits	-	3	1	0	4

Audit Courses for M.Tech. (Digital Systems)

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	BCS-01	Introduction to Computer	-	2	1	2	4
		Programming					
2.	BEE-20	Simulation Techniques	-	0	0	4	2
3.	MBA-109	Research Methodology	-	3	0	1	4
4.	MCS-164	LINUX Networking & Security	-	3	1	0	4

ELECTRONICS AND COMMUNICATION ENGINEERING DEPARTMENT M.M.M. UNIVERSITY OF TECHNOLOGY GORAKHPUR (UP)

Credit Structure for M. Tech. (Communication Engineering)

(For newly admitted students from Session 2014-2015)

Category	Semesters	Ι	Π	III	IV	Total
Maths (M)		4	-	-	-	4
Programme Core	(PC)	13	9	-	-	22
Programme Elect	tives (PE)	-	8	8	-	16
Minor Project (M	IP)	-	-	4	-	4
Dissertation (D)				4	14	18
Seminar (S)		-	-	-	2	2
Total		17	17	16	16	66

Curriculum for M.Tech (Communication Engineering)

Junior year, Semester-I

S.N.	Category	Paper Code	Subject Name		L	Т	Р	Credits
1.	М	MAS-112	Advanced Engineering Mathematics		3	1	0	4
2.	PC	MEC-201	Advanced Digital Communication		3	1	2	5
3.	PC	MEC-202	Advanced Digital Signal Processing		3	1	0	4
4.	PC	MEC-203	Computer Communication Networks		3	1	0	4
5.	AC		Audit Subject					-
				Total	12	4	2	17

Junior Year, Semester-II

S.N.	Category	Paper Code	Subject Name		L	Т	Р	Credits
1.	PC	MEC-204	Optical Communication System		3	1	2	5
2.	PC	MEC-205	Mobile Communication Systems		3	1	0	4
3.	PE1	MEC-***	Program Elective-1		3	1	0	4
4.	PE2	MEC-***	Program Electives-2		3	1	0	4
5.	AC		Audit Subject					-
				Total	12	4	2	17

Senior Year, Semester-III

S.N.	Category	Paper Code	Subject Name		L	Т	Р	Credits
1.	PE3	MEC-***	Program Elective-3		3	1	0	4
2.	PE4	MEC-***	Program Elective-4		3	1	0	4
3.	MP	MEC-220	Minor Project		0	0	8	4
4.	D	MEC-230	Dissertation Part-I		0	0	8	4
				Total	6	2	16	16

Senior Year, Semester-IV

S.N.	Category	Paper Code	Subject Name		L	Т	Р	Credits
1	S	MEC-240	Seminar		0	0	4	2
2	D	MEC-250	Dissertation Part-II		0	0	28	14
				Total	0	0	32	16

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MAS-112	Advanced Engineering Mathematics	-	3	1	0	4
2.	MEC-201	Advanced Digital Comm.	-	3	1	2	5
3.	MEC-202	Advanced Digital Signal Processing	-	3	1	0	4
4.	MEC-204	Optical Communication System	-	3	1	2	5
5.	MEC-205	Mobile Communication Systems	-	3	1	0	4
6.	MEC-105	Digital Systems Design	-	3	1	0	4
7.	MEC-230	Dissertation Part-I	-	0	0	8	4
8.	MEC-210	Minor Project	-	0	0	8	4
9.	MEC-240	Seminar	-	0	0	4	2
10.	MEC-250	Dissertation Part-II	Dissertation Part-I	0	0	28	14

Programme Core for M.Tech. (Communication Engineering)

Programme Electives PE1 & PE2

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MEC-251	ISDN and Broadband Networks	-	3	1	0	4
2.	MEC-252	Microwave Devices & Ckts	-	3	1	0	4
3.	MEC-253	Optoelectronics Integrated Circuits	-	3	1	0	4
4.	MEC-254	Digital Image Processing	-	3	1	0	4
5.	MEC-256	Advanced Coding Theory	-	3	1	0	4
6.	MEC-257	Embedded Systems	-	3	1	0	4

Programme Electives PE3 & PE4

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MEC-163	Neural Networks	-	3	1	0	4
2.	MEC-261	Antenna Design and MIMO Systems	Antenna and Wave	3	1	0	4
			Propagation				
3.	MEC-262	Satellite Comm.	-	3	1	0	4
4.	MEC-263	Inter & Intra-net	-	3	1	0	4
5.	MEC-264	Body Area Networks	-	3	1	0	4
6.	MEC-265	IC Design	VLSI Technology &	3	1	0	4
			Design				

Audit Courses for M.Tech. (Communication Engineering)

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	BCS-01	Introduction to Computer	-	2	1	2	4
		Programming					
2.	BEE-20	Simulation Techniques	-	0	0	4	2
3.	MBA-109	Research Methodology	-	3	0	1	4
4.	MCS-164	LINUX Networking & Security	-	3	1	0	4

MECHANICAL ENGINEERING DEPARTMENT M. M. UNIVERSITY OF TECHNOLOGY GORAKHPUR

Credit Structure M. Tech. (Computer integrated Manufacturing)

(For Newly Admitted Students from Session 2014-15)

Category	Semesters		Ι	П	III	IV	Total
Maths (M)			5	-	-	-	5
Programme Cor	e (PC)		13	9	-	-	22
Program Electiv	res (PE)		-	8	8	-	16
Minor Project (1	MP)		-	-	4	-	4
Dissertation (D)	1				4	14	18
Seminar (S)			-	-	-	2	2
		Total	18	17	16	16	67

Curriculum of M.Tech. (Computer Integrated Manufacturing)

Junior Year, Semester-I

S.N.	Category	Paper Code	Subject Name	L	Т	Р	Credit
1.	М	MAS-101	Numerical Methods & Engineering Optimization	3	1	2	5
2.	PC	MME-101	Advanced Computer Aided Design	3	1	2	5
3.	PC	MME-102	Simulation, Modelling and Analysis	3	1	0	4
4.	PC	MME-103	Machining Science	3	1	0	4
5.	AC		Audit subject				-
			Total	12	4	4	18

Junior Year, Semester-II

S.N.	Category	Paper Code	Subject Name		L	Т	Р	Credit
1.	PC	MME-104	Advanced Computer Aided Manufacturing		3	1	2	5
2.	PC	MME-105	Advance Machining Processes		3	1	0	4
3.	PE1	MME-***	Program Elective-1		3	1	0	4
4.	PE2	MME-***	Program Elective-2		3	1	0	4
5.	AC		Audit subject					-
				Total	12	4	2	17

Senior Year, Semester-III

S.N.	Category	Paper Code	Subject Name		L	Т	Р	Credit
1.	PE3	MME-***	Program Electives PE3		3	1	0	4
2.	PE4	MME-***	Program Electives PE4		3	1	0	4
3.	MP	MME-120	Minor Project		0	0	8	4
4.	D	MME-130	Dissertation Part-I		0	0	8	4
				Total	6	2	16	16

Senior Year, Semester-IV

S.N.	Category	Paper Code	Subject Name	L	Т	Р	Credits
1.	S	MME-140	Seminar	0	0	4	2
2.	D	MME-150	Dissertation Part-II	0	0	28	14
			Total	0	0	32	16

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MAS-101	Numerical Methods & Engineering	-	3	1	2	5
		Optimization					
2.	MME-101	Advanced Computer Aided Design	Computer Aided Design	3	1	2	5
3.	MME-102	Simulation, Modelling and Analysis	-	3	1	0	4
4.	MME-103	Machining Science	Manufacturing Science	3	1	0	4
5.	MME-104	Advanced Computer Aided	Basic Machining Science	3	1	2	5
		Manufacturing					
6.	MME-105	Advance Machining Processes	Machining Science	3	1	0	4
7.	MME-120	Minor Project	-	0	0	8	4
8.	MME-130	Dissertation Part-I	-	0	0	8	4
9.	MME-140	Seminar	-	0	0	4	2
10.	MME-150	Dissertation Part-II	Dissertation Part-I	0	0	28	14

Program Core (Computer Integrated Manufacturing)

Program Electives (Computer Integrated Manufacturing)

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
		PE1 & PE2 (Semester-II)					
1.	MME-151	Machine Tool Design	Manufacturing Science	3	1	2	5
2.	MME-152	Computer Aided Process Planning	-	3	1	0	4
3.	MME-153	Design for Manufacture	-	3	1	0	4
4.	MME-154	Robotic Engineering	-	3	1	0	4
5.	MME-155	Robust design	-	3	1	0	4
6.	MME-156	Micro-Machining and Precision	Manufacturing Science	3	1	0	4
		Engineering	-				
7.	MME-157	Production and Operations	-	3	1	0	4
		Management					
8.	MME-158	Rapid Prototyping and Tooling	Manufacturing Science	3	1	0	4
		PE3 & PE4 (Semester-III)					
9.	MME-161	Finite Element Method	-	3	1	0	4
10.	MME-162	Industrial Automation & Robotics	-	3	1	0	4
11.	MME-163	Advanced Materials Technology	Material Science &	3	1	0	4
			Engineering				
12.	MME-164	Flexible Manufacturing System	Manufacturing Science	3	1	2	5
13.	MME-165	Concurrent Engineering & Product	-	3	1	0	4
		Lifecycle Management					
14.	MME-166	Quality Assurance	-	3	1	0	4
15.	MME-167	Materials Management	-	3	1	0	4
16.	MME-168	Work Science	-	3	1	0	4

Audit Courses for M.Tech. (Computer Integrated Manufacturing)

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
		Semester-I					
1.	MAS-105	Applied Probability and Statistics	-	3	1	0	4
2.	BOE-04	Principles of Remote Sensing		2	1	0	3
3.	BOE-07	Introduction to Data and File Structures	-	2	1	2	4
4.	MBA-109	Research Methodology	-	3	1	0	4
		Semester-II					
5.	BAS-27	Discrete Mathematics	-	3	1	0	4
6.	BCE-21	Environmental Impact Assessment &	-	3	1	0	4
		Management					
7.	BCS-68	Neural Network & Fuzzy Systems	-	3	1	0	4
8.	BEE-15	Introduction to Microprocessors	-	3	1	2	5
9.	MBA-106	Human Resource Management	-	3	1	0	4

MECHANICAL ENGINEERING DEPARTMENT M. M. UNIVERSITY OF TECHNOLOGY GORAKHPUR

Credit Structure M. Tech. (Energy Technology and Management) (For Newly Admitted Students from Session 2014-15)

Category	Semesters	Ι	II	III	IV	Total Credits
Maths (M)		5	-	-	-	5
Programme Core (PC)	13	9	-	-	22
Programme Electiv	es (PE)	-	8	8	-	16
Minor Project (MP))	-	-	4	-	4
Dissertation (D)				4	14	18
Seminar (S)		-	-	-	2	2
	Total	18	17	16	16	67

Curriculum for M.Tech. (Energy Technology and Management)

Junior Year, Semester-I

S.N.	Category	Paper Code	Subject Name	L	Т	Р	Credit
1.	М	MAS-101	Numerical Methods & Engineering Optimization	3	1	2	5
2.	PC	MME-201	Energy Conversion Systems	3	1	2	5
3.	PC	MME-202	Renewable Energy Systems	3	1	0	4
4.	PC	MME-203	Energy Scenario and Policy	3	1	0	4
5.	AC		Audit subject				
			Total	12	4	4	18

Junior Year, Semester-II

S.N.	Category	Paper Code	Subject Name		L	Т	Р	Credit
1.	PC	MME-204	Advanced Heat Transfer		3	1	2	5
2.	PC	MME-205	Energy Management and Audit		3	1	0	4
3.	PE1	MME-***	Program Electives PE1		3	1	0	4
4.	PE2	MME-***	Program Electives PE2		3	1	0	4
5.			Audit subject					
				Total	12	4	2	17

Senior Year, Semester-III

S.N.	Category	Paper Code	Subject Name		L	Т	Р	Credit
1.	PE3	MME-***	Program Electives PE3		3	1	0	4
2.	PE4	MME-***	Program Electives PE4		3	1	0	4
3.	MP	MME-220	Minor Project		0	0	8	4
4.	D	MME-230	Dissertation Part-I		0	0	8	4
				Total	6	2	16	16

Senior Year, Semester-IV

S.N.	Category	Paper Code	Subject Name	L	Т	Р	Credit
1.	S	MME-240	Seminar	0	0	4	2
2.	D	MME-250	Dissertation Part-II	0	0	28	14
			Total	0	0	32	16

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MAS-101	Numerical Methods & Engineering	-	3	1	2	5
		Optimization					
2.	MME-201	Energy Conversion Systems	Applied	3	1	2	5
			Thermodynamics				
3.	MME-202	Renewable Energy Systems	NCER	3	1	0	4
4.	MME-203	Energy Scenario and Policy	Alternate Energy	3	1	0	4
5.	MME-204	Advanced Heat Transfer	Heat Transfer	3	1	2	5
6.	MME-205	Energy Management and Audit	-	3	1	0	4
7.	MME-220	Minor Project	-	0	0	8	4
8.	MME-230	Dissertation Part-I	-	0	0	8	4
9.	MME-240	Seminar	-	0	0	4	2
10.	MME-250	Dissertation Part-II	Dissertation Part-I	0	0	28	14

Program Core (Energy Technology and Management)

Program Electives PE1 & PE2 (Energy Technology and Management)

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MME-251	Economics and Planning of Energy	-	3	1	0	4
		Systems					
2.	MME-252	Power Plant Engineering	Applied	3	1	0	4
			Thermodynamics				
3.	MME-253	Computer Aided Design of Thermal	Computer Aided Design	3	1	0	4
		Systems					
4.	MME-254	Combustion Engineering	Applied	3	1	0	4
			Thermodynamics				
5.	MME-255	Wind Energy and Hydro Power	NCER	3	1	0	4
		Systems					
6.	MME-256	Energy Storage Systems	NCER	3	1	0	4
7.	MME-257	Hydrogen Energy	NCER	3	1	0	4

Program Electives PE3 & PE4 (Energy Technology and Management)

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
1.	MME-261	Finite Element Method	-	3	1	0	4
2.	MME-262	Energy Modeling and Project	-	3	1	0	4
		Management					
3.	MME-263	Advanced Materials Technology	Material Science	3	1	0	4
4.	MME-264	Alternative Fuels for Transportation	I.C. Engines	3	1	0	4
5.	MME-265	Nuclear Science and Engineering	-	3	1	0	4
6.	MME-266	Gas Turbines and Compressors	Applied	3	1	0	4
			Thermodynamics				
7.	MME-267	Environmental Impact of Energy	-	3	1	0	4
		Systems					

Audit Courses (Energy Technology and Management)

S.N.	Paper Code	Subject	Prerequisite Subject	L	Т	Р	Credits
		Semester-I					
1.	MAS-105	Applied Probability and Statistics	-	3	1	0	4
2.	BOE-04	Principles of Remote Sensing	-	2	1	0	3
3.	BOE-07	Introduction to Data and File Structures	-	2	1	2	4
4.	MBA-109	Research Methodology	-	3	1	0	4
		Semester-II					
5.	BAS-27	Discrete Mathematics	-	3	1	0	4

6.	BCE-21	Environmental Impact Assessment &	-	3	1	0	4
		Management					
7.	BCS-68	Neural Network & Fuzzy Systems	-	3	1	0	4
8.	BEE-15	Introduction to Microprocessors	-	3	1	2	5
9.	MBA-106	Human Resource Management	-	3	1	0	4