

M.M. Engineering College
B.Sc. Biotechnology (Hons. /Research) July 2022 onwards
Four-year Undergraduate Programme

1st Semester (1st Year)

Sr.No.	Course Description			Teaching Scheme			Credit
	Type of subject	Course Code	Course Title	Contact Hrs/WK			
				L	T	P	
1	Core	BBIOT-101	Cell Biology	3	-	-	3
2	AEC	BHUM-013/ BHUM-117	Hindi/Essence of Indian Traditional Knowledge	3	-	-	3
3	General	MAN-001	Indian Constitutions	3	-	-	3
4	General	HSMC-051	Human Values & Ethics	3	-	-	3
5	General	BBIOT-102	Elementary Biology	3	-	-	3
6	Core	BBIOT-103	Animal Biotechnology	3	-	-	3
7	Core	BBIOT-104	Cell Biology Lab	-	-	4	2
8	General	BBIOT-105	Elementary Biology Lab	-	-	2	1
9	Core	BBIOT-106	Animal Biotechnology Lab	-	-	2	1
				18	00	08	22

Note: Student can replace two subjects in a semester from the MOOC courses (SWAYAM) with the same credits and course category of the replaced subject.


2nd Semester (1st Year)

Sr.No.	Course Description			Teaching Scheme			Credit
	Type of subject	Course Code	Course Title	Contact Hrs/WK			
				L	T	P	
1	Core	BBIOT-201	Genetics	3	-	-	3
2	Activity	HLY-001/ SPO-001	Health & Yoga/ Sports	-	-	4	2
3	AEC	BHUM-011	English	3	-	-	3
4	Core	BBIOT-202	Plant Biotechnology	3	-	-	3
5	General	BBIOT-203	Biofertilizer and Vermicomposting	2	-	-	2
6	General	BBIOT-204	Chemistry	3	1	-	4
7	Core	BBIOT-205	Genetics Lab	-	-	4	2
8	Core	BBIOT-206	Plant Biotechnology Lab	-	-	2	1
9	General	BBIOT-207	Chemistry Lab	-	-	4	2
				14	01	14	22

Note: Student can replace two subjects in a semester from the MOOC courses (SWAYAM) with the same credits and course category of the replaced subject.

Exit option: If the student wants to exit after 1st year, he/she will be eligible to get the certificate after completing the mandatory summer training of 6 weeks of 6 credits.

*Exit with Certificate in Biotechnology @ 44 Credits + 6 Credits (summer internship/ industrial training)


 Professor & Head
 Deptt. of Bio-Technology
 M.M.E.C. Mullane (Ambur)

3rd Semester (2nd Year)

Sr.No.	Course Description			Teaching Scheme			
	Type of subject	Course Code	Course Title	Contact Hrs/WK			Credit
				L	T	P	
1	Core	BBIOT-301	General Microbiology	3	-	-	3
2	Core	BBIOT-302	Bioethics and Biosafety	2	-	-	2
3	General	BBIOT-303	Bioinformatics and Computer Application	3	-	-	3
4	General	BBIOT-304	Agricultural Biotechnology	3	1	-	4
5	General	BBIOT-305	Biochemistry	3	1	-	4
6	General	BBIOT-306	Bioinformatics and Computer Application Lab	-	-	2	1
7	General	BBIOT-307	Agricultural Biotechnology Lab	-	-	4	2
8	General	BBIOT-308	Biochemistry Lab	-	-	4	2
9	AEC	BHUM-022	English Communication Lab	-	-	2	1
				14	02	12	22

Note: Student can replace two subjects in a semester from the MOOC courses (SWAYAM) with the same credits and course category of the replaced subject.

4th Semester (2nd Year)

Sr.No.	Course Description			Teaching Scheme			
	Type of subject	CourseCode	Course Title	Contact Hrs/WK			Credit
				L	T	P	
1	Core	BBIOT-401	Molecular Biology	3	-	-	3
2	Core	BBIOT-402	Immunology	3	-	-	3
3	Core	BBIOT-403	Developmental Biology and Stem Cell Technology	3	1	-	4
4	DSE	BBIOT-EL-	Elective - I	3	-	-	3
5	Core	BBIOT-404	Molecular Biology and Immunology Lab	-	-	4	2
6	Core	BBIOT-405	Developmental Biology and Stem Cell Technology Lab	-	-	4	2
7	AEC	ES-101	Environment Studies	3	-	-	3
8	Activity	NSS-001/NCC-001/BBIOT-702	NSS/ NCC/Seminar	-	-	4	2
				15	01	12	22

Note: 1. Student can replace two subjects in a semester from the MOOC courses (SWAYAM) with the same credits and course category of the replaced subject.

2. Students have to undergo a mandatory summer training of 6 weeks after the examinations of 4th semester of 6 credits. If the student wants to exit after 2nd year, the viva-voce examination of the training will be held after completion of training otherwise the same will be held during BSc (Hons.) Biotechnology 5th semester.

****Exit with Diploma in Biotechnology @ 88 Credits + 6 Credits (summer internship/ industrial training)**

5th Semester (3rd Year)

Sr.No.	Course Description			Teaching Scheme			Credit
	Type of subject	Course Code	Course Title	Contact Hrs/WK			
				L	T	P	
1	Core	BBIOT-501	Industrial Fermentation	3	1	-	4
2	Core	BBIOT-502	Biostatistics	3	1	-	4
3	Core	BBIOT-503	Environmental Biotechnology	3	1	-	4
4	SEC	BHUM-003	Entrepreneurship & Management	3	1	-	4
5	Elective	BBIOT-EL-	Elective II	3	1	-	4
6	Core	BBIOT-504	Industrial Fermentation Lab	-	-	4	2
7	Core	BBIOT-505	Environmental Biotechnology Lab	-	-	4	2
8	DSE	BBIOT-506	Internship/ Industrial training (6 weeks)*	-	-	12	6
				15	05	08	30

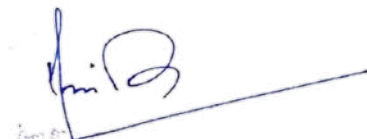
Note: Student can replace two subjects in a semester from the MOOC courses (SWAYAM) with the same credits and course category of the replaced subject.

6th Semester (3rd Year)

Sr.No.	Course Description			Teaching Scheme			Credit
	Type of subject	Course Code	Course Title	Contact Hrs/WK			
				L	T	P	
1	Core	BBIOT-601	Bio Analytical Tools and Techniques	3	-	-	3
2	Core	BBIOT-602	Recombinant DNA Technology	3	-	-	3
3	Core	BBIOT-603	Bio Analytical Tools and Techniques Lab	-	-	4	2
4	Elective	BBIOT-EL-	Elective III	3	-	-	3
5	SEC	BBIOT-604	Minor Project/Industrial Training	3	-	-	3
				12	00	04	14
OR							
1	Core	BBIOT-605	Industrial Training/ Internship				14

Note: Student can replace two subjects in a semester from the MOOC courses (SWAYAM) with the same credits and course category of the replaced subject.

Exit with Degree in Biotechnology @ 132 Credits


 Professor & Head
 Deptt. of Bio-Technology,
 M.M.E.C, Mullana (Ambeta)

7th Semester (4thYear)

Sr.No.	Course Description			Teaching Scheme			Credit
	Type of subject	Course Code	Course Title	Contact Hrs/WK			
				L	T	P	
1	Generic	MP-01	Research Methodology	3	1	-	4
2	Generic	MP-06	Research Publication & Ethics	3	1	-	4
3	Specialization	MP-04	Seminar based on literature review and data collection	-	-	8	4
4	Core	MP-05	Departmental Elective (Research-based)	3	1	-	4
				09	03	08	16

8th Semester (4thYear)

Sr.No.	Course Description			Teaching Scheme			Credit
	Type of subject	Course Code	Course Title	Contact Hrs/WK			
				L	T	P	
1	Core	BBIOT-801	Research Project/ Dissertation	-	-	-	12

Exit with Degree in Biotechnology Hons./Research @ 160 Credits

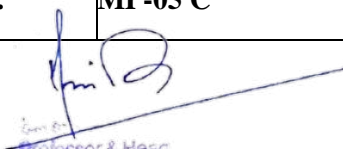


Dr. A.K. Sharma, Professor and Head,
Department of Biotechnology
MMEC, MM (DU), Mullana.
hod.biotech@mmumullana.org

Branch/Course: B.Sc. Biotechnology (Hons./Research)
(Four Year Undergraduate Programme)
List of Electives

Department will offer the following elective courses:

Sr. No.	Course Code	Course Title	Credit
<u>Electives-I</u>			
1.	BBIOT-EL-001	Industrial Biotechnology	3.0
2.	BBIOT-EL-002	Nanobiotechnology	3.0
3.	BBIOT-EL-003	Molecular Carcinogenesis and Therapy	3.0
<u>Electives-II</u>			
1.	BBIOT-EL-004	Elementary Forensic Biotechnology	4.0
2.	BBIOT-EL-005	Transgenic Biotechnology	4.0
3.	BBIOT-EL-006	Bioreactor Design and Product Analysis	4.0
<u>Electives-III</u>			
1.	BBIOT-EL-007	Biophysics and Technology Innovations	3.0
2.	BBIOT-EL-008	Food Biotechnology	3.0
3.	BBIOT-EL-009	Plant Tissue Culture	3.0
<u>Departmental Electives (Research-Based)</u>			
1.	MP-05 A	Plant Biotechnology	4.0
2.	MP-05 B	Animal Biotechnology	4.0
3.	MP-05 C	Microbial Biotechnology	4.0


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DEPARTMENT OF PHYSICS
Maharishi Markandeshwar (Deemed to be University)
Mullana - Ambala
(NAAC Accredited Grade 'A++' University)

MM(DU)/PHY/2022/47

Dated: 09/08/2022

A meeting of the Board of Studies was held on August 09, 2022 at 11.00 am. in the office of undersigned.

Following attended the meeting:

1. Dr. Vandana Sharma (Chairman BOS)
2. Dr. B.S Sandhu, Professor & Head, Department of Physics, Punjabi University, Patiala (External Member)
3. Dr. Ashavani Kumar, Professor, Department of Physics, National Institute of Technology Kurukshetra, Haryana. (External Member)
4. Dr. J.K Sharma (Member)
5. Dr. Dixit Prasher (Member)
6. Dr. Rajeev Sehrawat (Member)
7. Dr Milan Kumar Bera (Member)
8. Dr. Suresh Kumar (Supervisor of Ph.D. Candidate)

After extensive discussion following recommendation were made:

1. Approval of minutes of previous BOS held on 23/11/2021
2. Approval of Synopses of following Ph.D candidates (Annexure-A):
 - Ms. Anju Rani
 - Mr. Shubham
 - Mr. Aman Kumar
 - Ms. Amrita
3. Approval of panel of evaluators for the Ph.D. theses of following candidates (Annexure-B):
 - Ms. Anju Bala
 - Mr. Anju Rani
 - Ms. Akanksha Parmar
 - Ms. Neetu Sharma
 - Mr. Varun Dutt Sharma
4. Approval of Inclusion of Dissertation as an elective in final year of the Scheme of B.Sc (Physics Honors). (Annexure-C)
5. Approval of scheme of B.Sc. Physics (Hon's/Research) as per NEP 2020 Policy (Annexure-D)
6. Approval of panel of paper setters and evaluators for B.Tech, B.Sc. (Honors) Physics, B.Sc (Non-Medical), M.Sc. (Physics) and Ph.D course work. (Annexure-E)
7. Approval of Value Added Courses (Annexure-F)


Dr. Vandana Sharma
Chairman BOS

CC.

1. PA to The Director for information please.
2. Dy Registrar Academics
3. Dy Registrar Finance

M. M. ENGINEERING COLLEGE

July 2022 Onwards

Credit System for the four year undergraduate Programme
B.Sc. Physics (Hons./Research)—NEP-2020 Policy

Semester	Core Course (Cc) Sub. 1	Core Course (Cc) Sub. 2	Core Course (Cc) Sub. 3	Common Course (Cc)	Disciplinary Minor	Introductory Course	Total Credits	Exit With
1 st Sem	Mechanics @ 6 Credits			Modern Language (Hindi & English) @ 6 Credits	Mathematical Physics @ 6Credits (DSE-I)	Astronomy And Astrophysics@ 6 Credits	@ 24 Credits	Certificate In Physics@48
2 nd Sem	Electricity and Magnetism @ 4Credits	Computational Physics @ 2 Credits		English Communication@ 6 Credits	Analog System And Applications @ 6 Credits (DSE-II)	Economics /Human Values @ 6 Credits	@ 24 Credits	Credits
3 rd Sem	Waves And Optics @ 4 Credits	Nuclear & Particle Physics@ 4Credits		Digital System And Application @4 credits	Thermal Physics And Statistical Mechanics @ 6 Credits	Philosophy@ 6 Credits	@ 24 Credits	Diploma In Physics @ 96 Credits
4 th Sem	Elements Of Modern Physics@6 Credits	Nanomaterial and applications@4Credits		Understanding India (Demography, Culture and Lingual Diversity)@3Credits	Experimental Techniques @ 5Credits (DSE-III)	Banking@ 6 Credits	@ 24 Credits	
5 th Sem	Solid State Physics@ 6 Credits	Atomic Spectroscopy @ 4 Credits	Laser and Fiber Optics@ 4 Credits	Yoga And Sports @ 2 Credits	Quantum Mechanics @ 6 Credits(DSE-IV)	Physics Workshop Skill @2 Credits	@ 22Credits	Degree In Physics @ 132Credits
6 th Sem	Electro-Magnetic Theory@6Credits	Renewable Energy Sources@3Credits		Environmental Science @3 Credits			@ 14 Credits	
OR								
INDUSTRIAL PROJECT @ 14 Credits								
7 th Sem	Research Methodology@6 Credit	Development of Research Proposal@4 Credit	Field immersion @ 3 Credit	Community Engagement and Service (NCC,NSS) @3 Credit			@ 16 Credits	Honors In Physics @ 164Credits
8 th Sem				Dissertation@16				

Note: *The Students can replace two subjects per semester from the MOOC/ Swayam courses with the same credit of the replaced subject
**Six weeks industrial training is mandatory for the certificate/diploma course prior to exit of the programme.

 V. Sharma
 B.S. Sandhu
 A. Kumar
 J.K. Sharma
 D. Prasher
 R. Sehrawat
 M.K. Bera

SCHEME FOR
Credit System for the four year under graduate Programme
B.Sc. Physics (Hons./Research)–NEP-2020 Policy

SEM	COURSE OPTED	COURSE NAME	L	T	P	Credits
I	Core Course -I	Mechanics	4	0	0	4
	Core Course -I Practical	Mechanics Lab	0	0	4	2
	Disciplinary Minor(DSE-I)	Mathematical Physics	5	1	0	6
	Common Course	Modern Language (Hindi)	3	0	0	3
	Common Course	Modern Language (English)	3	0	0	3
	Introductory Course	Astronomy and Astrophysics	5	1	0	6
			20	2	2	24
II	Core Course -II	Electricity and Magnetism	4	0	0	4
	Core Course III	Computational Physics	2	0	0	2
	Common Course	English Communication	4	1	0	5
	Common Course	English Communication Lab	0	0	2	1
	Disciplinary Minor (DSE-II)	Analog system and Application	4	0	0	4
	Practical	Analog system and Application Lab	0	0	4	2
	Introductory Course	Economics / Human Values	5	1	0	6
			19	2	3	24
III	Core Course -IV	Waves and Optics	4	0	0	4
	Core Course -V	Nuclear and Particle Physics	4	0	0	4
	Common Course	Digital System and Application	4	0	0	4
	Disciplinary Minor	Thermal Physics and Statistical Mechanics	4	0	0	4
			Thermal Physics and Statistical Mechanics Lab	0	0	4
	Introductory Course	Philosophy	5	1	0	6
			21	1	2	24
IV	Core Course -VI	Element of Modern Physics	4	0	0	4
	Core Course VII	Nano Materials and Application	4	0	0	4
	Common Course	Understanding India	3	0	0	3
	Disciplinary Minor (DSE-III)	Experimental Techniques	5	0	0	5
	Core Course -VI Practical	Element of Modern Physics lab	0	0	4	2
	Introductory Course	Banking	5	1	0	6
			21	1	2	24
V	Core Course -VIII	Solid State Physics	4	0	0	4
	Core Course IX	Atomic Spectroscopy	4	0	0	4
	Core Course VIII Practical	Solid State Physics Lab	0	0	4	2
	Core Course X	Laser and Fiber Optics	4	0	0	4
		Common Course	Yoga and Sport	2	0	0

V. Sharma B.S. Sandhu J.K. Sharma D. Prasher R. Sehrawat M.K. Bera

	Disciplinary Minor (DSE-IV)	Quantum Mechanics	5	1	0	0	6
			19	1	2		22
	Core Course -XI	Electro-Magnetic Theory	4	0	0	4	
	Core Course -XI Practical	Electro-Magnetic Theory Lab	0	0	4	2	
VI	Common Course -XII	Renewal Energy Sources	3	0	0	3	
	Common Course	Environmental Science	3	0	0	3	
	Disciplinary Minor	Physics Workshop Skill	2	0	0	2	
	OR		12	0	2	14	
		Industrial Project @14 Credits					
VII	Core Course XIII	Research Methodology	5	1	0	6	
	Core Course XIV	Development of Research Proposal	4	0	0	4	
	Common Course	Community Engagement and Service (NCC, NSS)	3	0	0	3	
	Disciplinary Minor	Field immersion	3	0	0	3	
VIII		Dissertation @16 Credits	15	1	0	16	

Note: *The Students can replace two subjects per semester from the MOOC/ Swayam courses with the same credit of the replaced subject
 **Six weeks industrial training is mandatory for the certificate/diploma course prior to exit of the programme.

 V. Sharma
 B.S. Sandhu
 A. Kumar
 J.K. Sharma
 D. Prasher
 R. Sehrawat
 M.K. Bera

BOS: 19.01.2021

Annexure-I

M.M. ENGINEERING COLLEGE, MULLANA (AMBALA)

Study Scheme for Batch **2018-2022 Only**

Branch: **Civil Engineering Department**

Bachelor of Technology: 1st Semester								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Basic Science Courses	BSC-001	Physics -I	3	1	0	4	4
2	Basic Science Courses	BSC-002/ BSC-002A	Mathematics -I (Common for all branches except Biotechnology) Mathematics -I (Biotechnology Only)	3	1	0	4	4
3	Engineering Science Courses	ESC-007	Manufacturing Process	2	0	0	2	2
4	Basic Science Courses	BSC-004 / BSC-005	Chemistry-I / Biology	3	1	0	4	4
5	Humanities and Social Science including Management Course	HSMC-001	English	2	0	0	2	2
6	Basic Science Courses	BSC-003	Physics Lab-I	0	0	2	2	1
7	Engineering Science Courses	ESC-008	Workshop Practice	0	0	3	3	1.5
8	Basic Science Courses	BSC-006 / BSC-007	Chemistry-I Lab / Biology Lab	0	0	3	3	1.5
9	Humanities and Social Science including Management Course	HSMC-002	English Lab	0	0	2	2	1
10	Engineering Science Courses	ESC-006	SAP-01	0	0	2	2	1
Total				13	3	12	28	22
Bachelor of Technology: 2nd Semester								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Basic Science Courses	BSC-008	Physics-II	3	1	0	4	4
2	Basic Science Courses	BSC-009 / BSC-009A	Mathematics-II (Common for all branches except Biotechnology) Mathematics -II (Biotechnology Only)	3	1	0	4	4
3	Engineering Science Courses	ESC-001	Basic Electrical Engineering	3	1	0	4	4
4	Engineering Science Courses	ESC-002	Engineering Graphics & Design	0	0	5	5	2.5
5	Engineering Science Courses	ESC-003	Engineering Mechanics	3	1	0	4	4
6	Engineering Science Courses	ESC-004	Computer Programing Lab-I	0	0	4	4	2
7	Engineering Science Courses	ESC-005	Basic Electrical Engineering Lab	0	0	2	2	1
8	Engineering Science Courses	ESC-009 / ESC-010	Advance Computer Programing Lab / SAP-02	0	0	3	3	1.5
9	Personality Development Course	PDC-001	Personality Development ((Non-Creditable)	2	0	0	2	0
10	Mandatory Course	ES-101	Environmental Studies	3	0	0	3	0
Total				17	4	14	35	23

Optional

BCIV-029/A

Internship

Three to Six Weeks

m/m
Phadeta
19/01/21
19/11/2021
19/11/2021
19/11/2021

M.M. ENGINEERING COLLEGE, MULLANA (AMBALA)

Study Scheme for Batch **2018-2022 Only**

Branch: **Civil Engineering Department**

Bachelor of Technology: 3rd Semester								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Basic Science Course	BMAT-003	Mathematics-III	3	1	-	4	4
2	Professional Core Course	BCIV-001	Introduction to Fluid Mechanics	3	1	-	4	4
3	Professional Core Course	BCIV-002	Introduction to Solid Mechanics	2	2	-	4	4
4	Professional Core Course	BCIV-003	Surveying & Geomatics	3	1	-	4	4
5	Professional Core Course	BCIV-004	Materials, Testing & Evaluation	3	-	-	3	3
6	Mandatory Course	BMAT-004	Indian Constitution	2	-	-	2	-
7	Professional Core Course	BCIV-005	Fluid Mechanics Lab	-	-	2	2	1
8	Professional Core Course	BCIV-006	Surveying & Geomatics Lab	-	-	2	2	1
Total				16	5	4	25	21

Bachelor of Technology: 4th Semester								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Core Course	BCIV-007	Design of Concrete Structures-I	2	2	-	4	4
2	Professional Core Course	BCIV-008	Concrete Technology	3	-	-	3	3
3	Humanities and Social Science including Management Course	-	Humanities - I	3	-	-	3	3
4	Professional Elective Course	-	Elective - I	3	-	-	3	3
5	Professional Core Course	BCIV-009	Concrete Technology Lab	-	-	2	2	1
6	Professional Core Course	BCIV-010	Structural Mechanics Lab	-	-	2	2	1
7	Engineering Science Courses	BCIV-011	Building Construction Drawing	-	-	2	2	1
8	Project	BCIV-012	Project - I	-	-	4	4	2
9	Professional Core Course	BCIV-013	Environmental Engineering	2	1	-	3	3
Total				13	3	10	26	21

Optional

BCIV-029/B

Internship

Three to Six Weeks

Bachelor of Technology: 5th Semester								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Core Course	BCIV-014	Geotechnical Engineering	3	1	-	4	4
2	Professional Core Course	BCIV-015	Transportation Engineering	2	1	-	3	3
3	Professional Elective Course	-	Elective-II	3	-	-	3	3
4	Professional Elective Course	-	Elective-III	2	1	-	3	3
5	Open Elective Course	-	Open Elective-I	3	-	-	3	3
6	Professional Core Course	BCIV-016	Transportation Engineering Lab	-	-	2	2	1
7	Professional Core Course	BCIV-017	Geotechnical Engineering Lab	-	-	2	2	1
8	Engineering Science Courses	BCIV-019	Environmental Engineering Lab	-	-	2	2	1
9	Project	BCIV-020	Project - II	-	-	4	4	2
Total				13	3	10	26	21

Shruti
 19/1/2021
M/m
 Phadnis
 19/01/21
S.D.W.
 19/1/2021
Prady
 19/1/2021

M.M. ENGINEERING COLLEGE, MULLANA (AMBALA)
Study Scheme for Batch 2018-2022 Only
Branch: Civil Engineering Department

Bachelor of Technology: 6th Semester									
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits	
				L	T	P			
1	Professional Core Course	BCIV-021	Hydrology & WaterResource Engineering/Irrigation Engineering	3	1	-	4	4	
2	Professional Core Course	BCIV-022	Design of Steel Structures	2	2	-	4	4	
3	Professional Elective Course	-	Elective-IV	3	-	-	3	3	
4	Open Elective Course	-	Open Elective-II	3	-	-	3	3	
5	Open Elective Course	-	Open Elective-III	3	-	-	3	3	
6	Project	BCIV-023	Project-III	-	-	4	4	2	
7	Mandatory Course	BHUM-117	Essence of Indian Traditional Knowledge	2	-	-	2	0	
8	Project	BCIV-024	Seminar	-	-	2	2	1	
9	Engineering Science Courses	BCIV-025	Computer-aided-Civil Engineering Design	-	-	2	2	1	
Total				16	3	8	27	21	

Optional BCIV-029/C Internship Three to Eight Weeks

Bachelor of Technology: 7th Semester									
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits	
				L	T	P			
1	Professional Core Course	BCIV-26	Engineering Economics, Estimation & Costing	2	2	-	4	4	
2	Professional Elective Course	-	Elective-V	3	-	-	3	3	
3	Professional Elective Course	-	Elective-VI	3	-	-	3	3	
4	Open Elective Course	-	Open Elective-IV	3	-	-	3	3	
5	Humanities and Social Science including Management Course	-	Humanities -II	3	-	-	3	3	
6	Engineering Science Courses	BCIV-027	Concrete Structure Drawing	-	-	2	2	1	
7	Project	BCIV-028	Project-IV	-	-	8	8	4	
8	Project	BCIV-018	Survey Camp	-	-	-	-	2	
Total				14	2	10	26	23	

Bachelor of Technology: 8th Semester									
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits	
				L	T	P			
1	Project	BCIV-029	Internship	-	-	-	-	8	
Total				0	0	0	0	8	

OR

Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Core Course	BCIV-030	Airport Planning and Design	3	1	-	4	4
2	Professional Core Course	BCIV-031	Bridge Engineering	3	1	-	4	4
Total				6	2	0	8	8

For Honours Degree									
1	Professional Elective Course	-	Elective-VII	3	1	-	4	4	
2	Professional Elective Course	-	Elective-VIII	3	1	-	4	4	
3	Professional Elective Course	-	Elective-IX	3	1	-	4	4	
Total				9	3	0	12	12	

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M.M. ENGINEERING COLLEGE, MULLANA (AMBALA)
 Study Scheme for Batch 2018-2022 Only
 Branch: **Civil Engineering Department**

Total Credit	160
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Total No. of Credits Offered	160+21(Swayam)+8(Internship)+12(Honors)=201
Credits required for Honours Degree	180
Credits required for B. Tech. Degree	160
Maximum permissible Internship	8 Weeks/8 Credits for normal B.Tech degree

Elective - I								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Elective Course	BCIV-032	Construction Equipments	3	-	-	3	3
2	Professional Elective Course	BCIV-033	Building Construction Practice	3	-	-	3	3
3	Professional Elective Course	BCIV-034	Ecological Engineering	3	-	-	3	3
4	Professional Elective Course	BCIV-035	Air and Noise Pollution and Control	3	-	-	3	3
5	Professional Elective Course	BCIV-036	Masonry Structures	3	-	-	3	3
6	Professional Elective Course	BCIV-037	Structural Geology	3	-	-	3	3

Elective - II								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Elective Course	BCIV-038	Pavement Materials	3	-	-	3	3
2	Professional Elective Course	BCIV-039	Construction Engineering Materials	3	-	-	3	3
3	Professional Elective Course	BCIV-040	Solid and Hazardous Waste Management	3	-	-	3	3
4	Professional Elective Course	BCIV-041	Groundwater Engineering	3	-	-	3	3
5	Professional Elective Course	BCIV-042	Engineering Materials for Sustainability	3	-	-	3	3
6	Professional Elective Course	BCIV-043	Foundation Engineering	3	-	-	3	3

Elective - III								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Elective Course	BCIV-044	Geometric Design of Highways	2	1	-	3	3
2	Professional Elective Course	BCIV-045	Transportation Economics	2	1	-	3	3
3	Professional Elective Course	BCIV-046	Construction Cost Analysis	2	1	-	3	3
4	Professional Elective Course	BCIV-047	Urban Hydrology and Hydraulics	2	1	-	3	3
5	Professional Elective Course	BCIV-048	Structural Analysis	2	1	-	3	3
6	Professional Elective Course	BCIV-049	Soil Mechanics-I	2	1	-	3	3

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M.M. ENGINEERING COLLEGE, MULLANA (AMBALA)Study Scheme for Batch **2018-2022 Only**Branch: **Civil Engineering Department**

Elective - IV								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Elective Course	BCIV-050	Traffic Engineering and Management	3	-	-	3	3
2	Professional Elective Course	BCIV-051	Pavement Construction and Management	3	-	-	3	3
3	Professional Elective Course	BCIV-052	Environmental Impact Assessment and Life Cycle Analyses	3	-	-	3	3
4	Professional Elective Course	BCIV-053	Rock Mechanics	3	-	-	3	3
5	Professional Elective Course	BCIV-054	Ground Improvement Technique	3	-	-	3	3

Elective - V								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Elective Course	BCIV-055	Urban Transportation Planning	3	-	-	3	3
2	Professional Elective Course	BCIV-056	Contracts Management	3	-	-	3	3
3	Professional Elective Course	BCIV-057	Repairs & Rehabilitation of Structures	3	-	-	3	3
4	Professional Elective Course	BCIV-058	Environmental Laws and Policy	3	-	-	3	3
5	Professional Elective Course	BCIV-059	Environmental Geo-technology	3	-	-	3	3

Elective - VI								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Elective Course	BCIV-060	Construction Project Planning & Systems	3	-	-	3	3
2	Professional Elective Course	BCIV-061	Sustainable Construction Methods	3	-	-	3	3
3	Professional Elective Course	BCIV-062	Environmental Systems	3	-	-	3	3
4	Professional Elective Course	BCIV-063	Physico-Chemical Processes for Water and Wastewater Treatment	3	-	-	3	3
5	Professional Elective Course	BCIV-064	Sewage and Sewerage Treatment	3	-	-	3	3

Elective - VII								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Elective Course	BCIV-065	Pavement Design	3	1	-	4	4
2	Professional Elective Course	BCIV-066	Railway Engineering	3	1	-	4	4
3	Professional Elective Course	BCIV-067	River Engineering	3	1	-	4	4
4	Professional Elective Course	BCIV-068	Environmental Fluid Mechanics	3	1	-	4	4
5	Professional Elective Course	BCIV-069	Prestressed Concrete	3	1	-	4	4

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M.M. ENGINEERING COLLEGE, MULLANA (AMBALA)
Study Scheme for Batch 2018-2022 Only
Branch: Civil Engineering Department

Elective - VIII								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Elective Course	BCIV-070	Public Transportation Systems	3	1	-	4	4
2	Professional Elective Course	BCIV-071	Open Channel Flow	3	1	-	4	4
3	Professional Elective Course	BCIV-072	Surface Hydrology	3	1	-	4	4
4	Professional Elective Course	BCIV-073	Structural Dynamics	3	1	-	4	4
5	Professional Elective Course	BCIV-074	Geotechnical Design	3	1	-	4	4

Elective - IX								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Elective Course	BCIV-075	Construction Engineering & Management	3	1	-	4	4
2	Professional Elective Course	BCIV-076	Transport of Water and Wastewater	3	1	-	4	4
3	Professional Elective Course	BCIV-077	Design of Concrete Structures-II	3	1	-	4	4
4	Professional Elective Course	BCIV-078	Structural Engineering	3	1	-	4	4
5	Professional Elective Course	BCIV-079	Soil Mechanics-II	3	1	-	4	4

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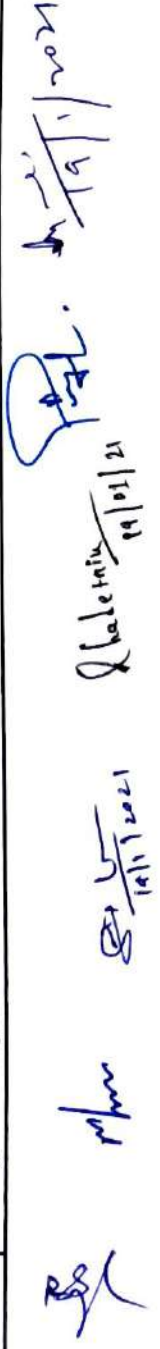
Annexure-I

Department of Civil Engineering for 2018-2022 batch only
Humanities and Social Science including Management Course (Humanities Elective-I and II)

Sr. No.	Course Code	Course Title
1	BHUM-121	Entrepreneurship Development and Management
2	BHUM-120	Marketing Management
3	BHUM-005	Principles of Management
4	BHUM-112	Introduction to Civil Engineering
5	BHUM-113	Effective Technical Communication
6	BHUM-114	Civil Engineering – Societal & Global Impact
7	BHUM-115	Professional Practice, Law and Ethics

List of Open Elective I to IV

Sr. No.	Department	Course Code	Course Title
1	CSE	BCSE-510	Database Management Systems
2	CSE	BCSE-503	Data Structure & Algorithm
3	CSE	BCSE-509	Object Oriented Programming in JAVA
4	CSE	BCSE-502	Computer Organization & Architecture
5	Civil	BCIV-080	Disaster Management
6	Civil	BCIV-081	Project Management (Common to All Branches Except Civil Engineering)
7	Civil	BCIV-082	General Principles of Building Construction (Common to All Branches Except Civil Engineering)
8	Civil	BCIV-083	Planning for Sustainable Development
9	Civil	BCIV-084	Engineering Risk - Benefit Analysis
10	Civil	BCIV-085	Infrastructure Systems Planning
11	Civil	BCIV-086	Rural Technology and Community Development
12	ECE	BECE-001	Analog and Digital Electronics
13	ECE	BECE-504	Analog and Digital Communication



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14	ECE	BECE-531	Embedded System
15	ECE	BECE-535	Digital Image and Video Processing
16	ECE	BECE-536	Biomedical Electronics
17	ECE	BECE-538	Wireless Sensor Networks
18	ECE	BECE-540	Antenna and Wave Propagation
19	ECE	BECE-545	Speech and Audio Processing
20	ECE	BECE-550	Internet of Things
21	ME	BMEC-551	Project & Production Management
22	ME	BMEC-552	Quality Assurance and Reliability
24	ME	BMEC-553	Supply Chain Management

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Annexure-XXII

M.M. ENGINEERING COLLEGE, MULLANA (AMBALA)

Study Scheme for Batches 2019-2023 onwards

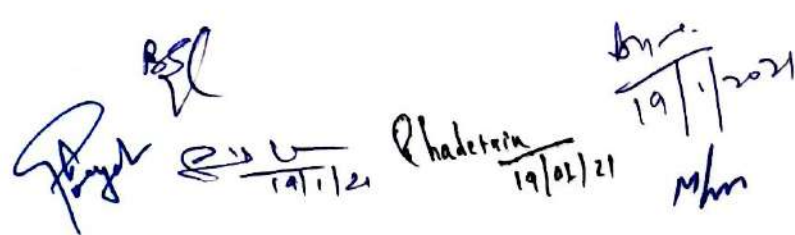
Branch: **Civil Engineering Department**

Bachelor of Technology: 1st Semester									
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits	
				L	T	P			
1	Basic Science Courses (Foundation)	BPHY-001	Physics -I	3	1	0	4	4	
2	Basic Science Courses	BMAT-001/ BMAT-001/A	Mathematics -I (Common for all branches except Biotechnology) Mathematics -I (Biotechnology Only)	3	1	0	4	4	
3	Engineering Science Courses	BELE-001	Basic Electrical Engineering	3	1	0	4	4	
4	Engineering Science Courses	BMEC-001	Engineering Graphics & Design	0	0	4	4	2	
5	Engineering Science Courses	BMEC-002	Engineering Mechanics	3	1	0	4	4	
6	Basic Science Courses	BPHY-002	Physics Lab-I	0	0	2	2	1	
7	Engineering Science Courses	BCSE-001	Computer Programing Lab	0	0	2	2	1	
8	Engineering Science Courses	BELE -002	Basic Electrical Engineering Lab	0	0	2	2	1	
9	Engineering Science Courses	BCSE-002	Business Processes	0	0	2	2	1	
Total				12	4	12	28	22	

Bachelor of Technology: 2nd Semester									
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits	
				L	T	P			
1	Basic Science Courses	BPHY-001	Physics-I	3	1	0	4	4	
2	Basic Science Courses	BMAT-001/ BMAT-001/A	Mathematics-I (Common for all branches except Biotechnology) Mathematics -I (Biotechnology Only)	3	1	0	4	4	
3	Engineering Science Courses	BMEC-003	Manufacturing Process	2	0	0	2	2	
4	Basic Science Courses	BCHE-001/ BBIO-001	Chemistry-I / Biology	3	1	0	4	4	
5	Humanities and Social Science including Management Course	BHUM-001	English	2	0	0	2	2	
6	Engineering Science Courses	BMEC-004	Workshop Practice	0	0	4	4	2	
7	Basic Science Courses	BCHE-002/ BBIO-002	Chemistry-I / Biology Lab	0	0	2	2	1	
8	Humanities and Social Science including Management Courses	BHUM-002	English Lab	0	0	2	2	1	
9	Engineering Science Courses	BCSE-003	IT Workshop	0	0	2	2	1	
10	Personality Development Course	BPD-001	Personality Development (Non-Creditable)	1	0	0	1	-	
11	Mandatory Course	ES-101	Environmental Studies	3	0	0	3	3	
Total				17	3	10	30	24	

One Course -3 Credit Swayam

Optional	BCIV-029/A	Internship	Three to Six Weeks
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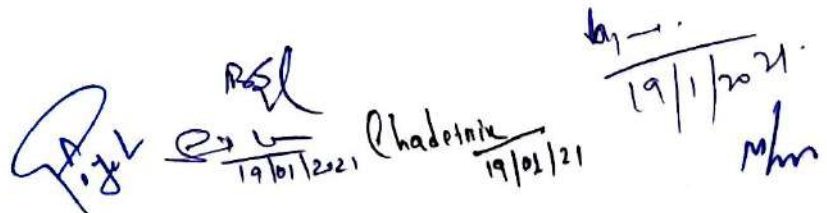
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M.M. ENGINEERING COLLEGE, MULLANA (AMBALA)
 Study Scheme for Batches 2019-2023 onwards
 Branch: Civil Engineering Department

Bachelor of Technology: 3rd Semester									
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits	
				L	T	P			
1	Basic Science Course	BMAT-003	Mathematics-III	3	1	-	4	4	
2	Professional Core Course	BCIV-001	Introduction to Fluid Mechanics	3	1	-	4	4	
3	Professional Core Course	BCIV-002	Introduction to Solid Mechanics	2	2	-	4	4	
4	Professional Core Course	BCIV-003	Surveying & Geomatics	3	1	-	4	4	
5	Professional Core Course	BCIV-004	Materials, Testing & Evaluation	3	-	-	3	3	
6	Mandatory Course	BMAT-004	Indian Constitution	2	-	-	2	-	
7	Professional Core Course	BCIV-005	Fluid Mechanics Lab	-	-	2	2	1	
8	Professional Core Course	BCIV-006	Surveying & Geomatics Lab	-	-	2	2	1	
Total				16	5	4	25	21	

Bachelor of Technology: 4th Semester									
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits	
				L	T	P			
1	Professional Core Course	BCIV-007	Design of Concrete Structures-I	2	2	-	4	4	
2	Professional Core Course	BCIV-008	Concrete Technology	3	-	-	3	3	
3	Humanities and Social Science including Management Course	-	Humanities -I	3	-	-	3	3	
4	Professional Elective Course	-	Elective - I	3	-	-	3	3	
5	Professional Core Course	BCIV-009	Concrete Technology Lab	-	-	2	2	1	
6	Professional Core Course	BCIV-010	Structural Mechanics Lab	-	-	2	2	1	
7	Engineering Science Courses	BCIV-011	Building Construction Drawing	-	-	2	2	1	
8	Project	BCIV-012	Project-I	-	-	4	4	2	
9	Professional Core Course	BCIV-013	Environmental Engineering	2	1	-	3	3	
Total				13	3	10	26	21	
Optional		BCIV-029/B	Internship				Three to Six Weeks		

Bachelor of Technology: 5th Semester									
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits	
				L	T	P			
1	Professional Core Course	BCIV-014	Geotechnical Engineering	3	1	-	4	4	
2	Professional Core Course	BCIV-015	Transportation Engineering	2	1	-	3	3	
3	Professional Elective Course	-	Elective-II	3	-	-	3	3	
4	Professional Elective Course	-	Elective-III	2	1	-	3	3	
5	Open Elective Course	-	Open Elective-I	3	-	-	3	3	
6	Professional Core Course	BCIV-016	Transportation Engineering Lab	-	-	2	2	1	
7	Professional Core Course	BCIV-017	Geotechnical Engineering Lab	-	-	2	2	1	
8	Project	BCIV-018	Survey Camp	-	-	-	-	2	
9	Engineering Science Courses	BCIV-019	Environmental Engineering Lab	-	-	2	2	1	
10	Project	BCIV-020	Project - II	-	-	4	4	2	
Total				13	3	10	26	23	


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M.M. ENGINEERING COLLEGE, MULLANA (AMBALA)
 Study Scheme for Batches 2019-2023 onwards
 Branch: Civil Engineering Department

Bachelor of Technology: 6th Semester								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Core Course	BCIV-021	Hydrology & WaterResource Engineering/Irrigation Engineering	2	1	-	3	3
2	Professional Core Course	BCIV-022	Design of Steel Structures	2	2	-	4	4
3	Professional Elective Course	-	Elective-IV	3	-	-	3	3
4	Open Elective Course	-	Open Elective-II	3	-	-	3	3
5	Open Elective Course	-	Open Elective-III	3	-	-	3	3
6	Project	BCIV-023	Project-III	-	-	4	4	2
7	Mandatory Course	BHUM-117	Essence of Indian Traditional Knowledge	2	-	-	2	-
8	Project	BCIV-024	Seminar	-	-	2	2	1
9	Engineering Science Courses	BCIV-025	Computer-aided-Civil Engineering Design	-	-	2	2	1
Total				15	3	8	26	20
Optional		BCIV-029/C	Internship	Three to Eight Weeks				

Bachelor of Technology: 7th Semester								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Core Course	BCIV-26	Engineering Economics, Estimation & Costing	2	2	-	4	4
2	Professional Elective Course	-	Elective-V	3	-	-	3	3
3	Professional Elective Course	-	Elective-VI	3	-	-	3	3
4	Open Elective Course	-	Open Elective-IV	3	-	-	3	3
5	Humanities and Social Science including Management Course	-	Humanities-4	3	-	-	3	3
6	Engineering Science Courses	BCIV-027	Concrete Structure Drawing	-	-	2	2	1
7	Project	BCIV-028	Project-IV	-	-	8	8	4
Total				14	2	10	26	21

Bachelor of Technology: 8th Semester								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Project	BCIV-029	Internship	-	-	-	-	8
Total				0	0	0	0	8

OR

Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Core Course	BCIV-030	Airport Planning and Design	3	1	-	4	4
2	Professional Core Course	BCIV-031	Bridge Engineering	3	1	-	4	4
Total				6	2	0	8	8

For Honours Degree								
3	Professional Elective Course	-	Elective-VII	3	1	-	4	4
4	Professional Elective Course	-	Elective-VIII	3	1	-	4	4
5	Professional Elective Course	-	Elective-IX	3	1	-	4	4
Total				9	3	0	12	12

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M.M. ENGINEERING COLLEGE, MULLANA (AMBALA)
 Study Scheme for Batches 2019-2023 onwards
 Branch: Civil Engineering Department

Total Credit	160
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Total No. of Credits Offered	
Credits required for Honours Degree	160+21(Swayam)+8(Internship)+12(Honors)=201
Credits required for B. Tech. Degree	180
Maximum permissible Internship	160
	8 Weeks/8 Credits for normal B.Tech degree

Elective - I								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Elective Course	BCIV-032	Construction Equipments	3	-	-	3	3
2	Professional Elective Course	BCIV-033	Building Construction Practice	3	-	-	3	3
3	Professional Elective Course	BCIV-034	Ecological Engineering	3	-	-	3	3
4	Professional Elective Course	BCIV-035	Air and Noise Pollution and Control	3	-	-	3	3
5	Professional Elective Course	BCIV-036	Masonry Structures	3	-	-	3	3
6	Professional Elective Course	BCIV-037	Structural Geology	3	-	-	3	3

Elective - II								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Elective Course	BCIV-038	Pavement Materials	3	-	-	3	3
2	Professional Elective Course	BCIV-039	Construction Engineering Materials	3	-	-	3	3
3	Professional Elective Course	BCIV-040	Solid and Hazardous Waste Management	3	-	-	3	3
4	Professional Elective Course	BCIV-041	Groundwater Engineering	3	-	-	3	3
5	Professional Elective Course	BCIV-042	Engineering Materials for Sustainability	3	-	-	3	3
6	Professional Elective Course	BCIV-043	Foundation Engineering	3	-	-	3	3

Elective - III								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Elective Course	BCIV-044	Geometric Design of Highways	2	1	-	3	3
2	Professional Elective Course	BCIV-045	Transportation Economics	2	1	-	3	3
3	Professional Elective Course	BCIV-046	Construction Cost Analysis	2	1	-	3	3
4	Professional Elective Course	BCIV-047	Urban Hydrology and Hydraulics	2	1	-	3	3
5	Professional Elective Course	BCIV-048	Structural Analysis	2	1	-	3	3
6	Professional Elective Course	BCIV-049	Soil Mechanics-I	2	1	-	3	3

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M.M. ENGINEERING COLLEGE, MULLANA (AMBALA)
 Study Scheme for Batches 2019-2023 onwards
 Branch: Civil Engineering Department

Elective - IV								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Elective Course	BCIV-050	Traffic Engineering and Management	3	-	-	3	3
2	Professional Elective Course	BCIV-051	Pavement Construction and Management	3	-	-	3	3
3	Professional Elective Course	BCIV-052	Environmental Impact Assessment and Life Cycle Analyses	3	-	-	3	3
4	Professional Elective Course	BCIV-053	Rock Mechanics	3	-	-	3	3
5	Professional Elective Course	BCIV-054	Ground Improvement Technique	3	-	-	3	3

Elective - V								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Elective Course	BCIV-055	Urban Transportation Planning	3	-	-	3	3
2	Professional Elective Course	BCIV-056	Contracts Management	3	-	-	3	3
3	Professional Elective Course	BCIV-057	Repairs & Rehabilitation of Structures	3	-	-	3	3
4	Professional Elective Course	BCIV-058	Environmental Laws and Policy	3	-	-	3	3
5	Professional Elective Course	BCIV-059	Environmental Geo-technology	3	-	-	3	3

Elective - VI								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Elective Course	BCIV-060	Construction Project Planning & Systems	3	-	-	3	3
2	Professional Elective Course	BCIV-061	Sustainable Construction Methods	3	-	-	3	3
3	Professional Elective Course	BCIV-062	Environmental Systems	3	-	-	3	3
4	Professional Elective Course	BCIV-063	Physico-Chemical Processes for Water and Wastewater Treatment	3	-	-	3	3
5	Professional Elective Course	BCIV-064	Sewage and Sewerage Treatment	3	-	-	3	3

Elective - VII								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Elective Course	BCIV-065	Pavement Design	3	1	-	4	4
2	Professional Elective Course	BCIV-066	Railway Engineering	3	1	-	4	4
3	Professional Elective Course	BCIV-067	River Engineering	3	1	-	4	4
4	Professional Elective Course	BCIV-068	Environmental Fluid Mechanics	3	1	-	4	4
5	Professional Elective Course	BCIV-069	Prestressed Concrete	3	1	-	4	4

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M.M. ENGINEERING COLLEGE, MULLANA (AMBALA)
 Study Scheme for Batches 2019-2023 onwards
 Branch: Civil Engineering Department

Elective - VIII								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Elective Course	BCIV-070	Public Transportation Systems	3	1	-	4	4
2	Professional Elective Course	BCIV-071		Open Channel Flow	3	1	-	4
3	Professional Elective Course	BCIV-072	Surface Hydrology		3	1	-	4
4	Professional Elective Course	BCIV-073		Structural Dynamics	3	1	-	4
5	Professional Elective Course	BCIV-074	Geotechnical Design		3	1	-	4

Elective - IX								
Sr. No.	Category	Code	Course Title	Hours per week			Total hours	Credits
				L	T	P		
1	Professional Elective Course	BCIV-075	Construction Engineering & Management	3	1	-	4	4
2	Professional Elective Course	BCIV-076		Transport of Water and Wastewater	3	1	-	4
3	Professional Elective Course	BCIV-077	Design of Concrete Structures-II		3	1	-	4
4	Professional Elective Course	BCIV-078		Structural Engineering	3	1	-	4
5	Professional Elective Course	BCIV-079	Soil Mechanics-II		3	1	-	4

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**Department of Civil Engineering for 2019-2023 batch onwards
Humanities and Social Science including Management Course (Humanities Elective-I and II)**

Sr. No.	Course Code	Course Title
1	BHUM-121	Entrepreneurship Development and Management
2	BHUM-120	Marketing Management
3	BHUM-005	Principles of Management
4	BHUM-112	Introduction to Civil Engineering
5	BHUM-113	Effective Technical Communication
6	BHUM-114	Civil Engineering – Societal & Global Impact
7	BHUM-115	Professional Practice, Law and Ethics

List of Open Elective I to IV

Sr. No.	Department	Course Code	Course Title
1	CSE	BCSE-510	Database Management Systems
2	CSE	BCSE-503	Data Structure & Algorithm
3	CSE	BCSE-509	Object Oriented Programming in JAVA
4	CSE	BCSE-502	Computer Organization & Architecture
5	Civil	BCIV-080	Disaster Management
6	Civil	BCIV-081	Project Management (Common to All Branches Except Civil Engineering)
7	Civil	BCIV-082	General Principles of Building Construction (Common to All Branches Except Civil Engineering)
8	Civil	BCIV-083	Planning for Sustainable Development
9	Civil	BCIV-084	Engineering Risk - Benefit Analysis
10	Civil	BCIV-085	Infrastructure Systems Planning
11	Civil	BCIV-086	Rural Technology and Community Development
12	ECE	BECE-001	Analog and Digital Electronics
13	ECE	BECE-504	Analog and Digital Communication



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14	ECE	BECE-531	Embedded System
15	ECE	BECE-535	Digital Image and Video Processing
16	ECE	BECE-536	Biomedical Electronics
17	ECE	BECE-538	Wireless Sensor Networks
18	ECE	BECE-540	Antenna and Wave Propagation
19	ECE	BECE-545	Speech and Audio Processing
20	ECE	BECE-550	Internet of Things
21	ME	BMEC-551	Project & Production Management
22	ME	BMEC-552	Quality Assurance and Reliability
24	ME	BMEC-553	Supply Chain Management

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w.e. f. July 2020

Bachelor of Technology (B.Tech) in Computer Science & Engineering: 8th Semester Scheme

Sr. No.	Course No.	Course Category	Course Title	Teaching Schedule			Credits	Examination Marks			
				L	T	P		Internal	Theory	Practical	Total
1.	CS-46	Core	Industrial Project / In-house training (Minimum 16 weeks)	-	-	-	16	-	-	400	400
2.	CS-51	Core	General Fitness & Professional Aptitude	-	-	-	4	-	-	100	100
Total				-	-	-	20	-	-	500	500

OR

Sr. No.	Course No.	Course Category	Course Title	Teaching Schedule			Credits	Examination Marks			
				L	T	P		Internal	Theory	Practical	Total
1.	CS-47	Core	Programming Languages	3	-	-	3	40	60	-	100
2.	CS-48	Core	Soft Computing	3	-	-	3	40	60	-	100
3.	CS-49	Core	High Performance Computing	3	-	-	3	40	60	-	100
4.	CS-50	Core	Project-IV	-	-	7	7	60	-	40	100
5.	CS-51	Core	General Fitness & Professional Aptitude	-	-	-	4	-	-	100	100
Total				9	0	7	20	180	180	140	500

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w. e. f. July 2020

Bachelor of Technology (B.Tech) in **Computer Science & Engineering**: 7th Semester Scheme

Sr. No.	Course No.	Course Category	Course Title	Teaching Schedule			Credits	Examination Marks			
				L	T	P		Internal	Theory	Practical	Total
1.	CS-39	Core	Genetic Algorithms	3	-	-	3	40	60	-	100
2.	CS-40	Core	Distributed Operating System	3	-	-	3	40	60	-	100
3.	CS-41	Specialization	Elective – IV	3	-	-	3	40	60	-	100
4.	CS-42	Specialization	Elective – V	3	-	-	3	40	60	-	100
5.		Interdisciplinary	Open Elective –I	3	1	-	4	40	60	-	100
6.		Interdisciplinary	Open Elective -II	3	1	-	4	40	60	-	100
7.	CS-43	Core	Genetic Algorithms Lab	-	-	2	2	60	-	40	100
8.	CS-44	Core	Project-III	-	-	7	7	60	-	40	100
9.	CS-45	Specialization	Seminar-II	-	1	-	1	100	-	-	100
Total				18	3	9	30	460	360	80	900

One Course -3 credit Swayam

*Swayam means subject that cover under self study/learning mode via online study material

Elective-IV & V

Course No.	Course Title	Course No.	Course Title
Elective-IV		Elective-V	
CS-41 (a)	Software Project Management	CS-42 (a)	Neural Networks
CS-41 (b)	Blockchain Technology	CS-42 (b)	Dataware Housing & Data Mining
CS-41 (c)	Statistical Modeling and Queuing Theory	CS-42 (c)	AI & Machine Learning

List of Open Elective Courses

Course Code	Course Name	Course Code	Course Name
OE-CSE-01 / BCSE-510	Database Management Systems	OE-CE-10	Project Management
OE-CSE-02 / BCSE-503	Data Structure & Algorithm	OE-CE-11	General Principles of Building Construction
OE-CSE-03 / CS-32 (c)	Python Programming	OE-CE-12	Planning for sustainable development
OE-CSE-04 / BCSE-509	Object Oriented Programming in JAVA	OE-ECE-13 / EC-11	Principles of Communication
OE-CSE-05 / BCSE-502	Computer Organization & Architecture	OE-ECE-14 / EC-10	Digital Electronics
OE-CSE-06 / IT-321	Essentials of IT	OE-ECE-15 / EC-47	Internet of Things
OE-CSE-07 / CS-25	Business Intelligence & its Applications	OE-ECE-16 / EC-38	Embedded System
OE-ME-05	Project & Production Management	OE-EE-17 / EE-04	Analog Electronics
OE-ME-06	Quality Assurance & Reliability	OE-EE-18 / EE-05	Network Analysis & Synthesis
OE-ME-07	Entrepreneurship & Family Business	OE-EE-19 / EE-18	Control Systems
OE-ME-08	Supply Chain Management	OE-EE-20 / EE-12	Measurements & Instrumentation
OE-CE-09	Disaster Management		

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
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Breakup of Courses

S. No.	Category	Total No. of Credits
1	Foundation	31
2	Core	85
3	General	53
4	Specialization	53
5	Interdisciplinary	8
6	Swayam	21
Total		251

Total Credits required for award of degree	220	
Mandatory requirement (Foundation & Core subjects)	116	
Choice based credits (as per choice of student)	104	
Choice available for the students		
General/ Specialization/ Interdisciplinary /Swayam/ Industry Integrated & value added course (Free)/ Paid Course (Normal beyond working hours)	135	
i. General Course (credits available)	53	
ii. Specialization Course (credits available)	53	
iii. Interdisciplinary Course (credits available)	08	
iii. Swayam Courses (Max. Seven) one course each semester: https://swayam.gov.in (online portal)	21	
Industry Integrated & value added course (Free)		
1. SAP-online training	(12 credit)	
2. Economics for Engineers	(04 credit)	
3. Law for Engineers	(04 credit)	
4. Swayam course-Approved list	(03 credit Per semester)	
5. Virtual Lab by National Instrument (NI)	(03 credit)	
6. Marketing Management	(03 credit)	
7. Finance Management	(03 credit)	
8. HR Management	(03 credit)	
9. Entrepreneurship & Family Business	(03 credit)	
10. Research Methodology	(03 credit)	
11. Personality development	(02 credit)	
12. Project Management –MS project/Primavera	(03 credit)	
13. Medical Courses	(03 credit)	
14. Auto Cad	(03 credit)	
Paid Course (Normal beyond working hours)		
Name of Course	Fee	Credit
Culinary skills- MM continental	8000/-	3
Advance life skills	TBD	6
Foreign Industrial Internship/Tour (02 Weeks)	TBD	2
BOSCH (90 hrs.)	9000/-	5
CISCO (CCNA-100 hrs)	4000/-	5
Note: List of free/paid courses are expendable and more courses will be added to both the list in due course of time		

Open Elective I & II :-		
Course Code	Course Name	Course Prerequisite
OE-CSE-01 / BCSE-510	Database Management Systems	-
OE-CSE-02 / BCSE-503	Data Structure & Algorithm	-
OE-CSE-03 / CS-32 (c)	Python Programming	-
OE-CSE-04 / BCSE-509	Object Oriented Programming in JAVA	-
OE-CSE-05 / BCSE-502	Computer Organization & Architecture	-
OE-CSE-06 / IT-321	Essentials of IT	-
OE-CSE-07 / CS-25	Business Intelligence & its Applications	-
OE-ME-05	Project & Production Management	-
OE-ME-06	Quality Assurance & Reliability	-
OE-ME-07	Entrepreneurship & Family Business	-
OE-ME-08	Supply Chain Management	-
OE-CE-09	Disaster Management	-
OE-CE-10	Project Management	-
OE-CE-11	General Principles of Building Construction	-
OE-CE-12	Planning for sustainable development	-
OE-ECE-13 / EC-11	Principles of Communication	-
OE-ECE-14 / EC-10	Digital Electronics	-
OE-ECE-15 / EC-47	Internet of Things	-
OE-ECE-16 / EC-38	Embedded System	-
OE-EE-17 / EE-04	Analog Electronics	-
OE-EE-18 / EE-05	Network Analysis & Synthesis	-
OE-EE-19 / EE-18	Control Systems	-
OE-EE-20 / EE-12	Measurements & Instrumentation	-
Department Elective-I		
Code	Course Title	Course Prerequisite
CS-32 (a)	Mobile Application Development	Java Programming
CS-32 (b)	Advanced Java Programming	Java Programming
CS-32 (c)	Computer Graphics	-
CS-32 (d)	Internetworking Technologies	-
Department Elective-II		
Code	Course Title	Course Prerequisite
CS-33 (a)	Cryptography & Network Security	Computer Networks
CS-33 (b)	Wireless & Mobile Communication	Computer Networks
CS-33 (c)	Adhoc Networks	Computer Networks
CS-33 (d)	Robotic Process Automation Design & Development	-
Department Elective-III		
Code	Course Title	Course Prerequisite
CS-34 (a)	Microprocessor & Interfacing	-
CS-34 (b)	Software Testing	Software Engineering
CS-34 (c)	Advanced Python Programming	Python Programming
CS-34 (d)	Advanced Web Technology	Web Technology
Department Elective-IV		
Code	Course Title	Course Prerequisite
CS-41 (a)	Software Project Management	Software Engineering
CS-41 (b)	Blockchain Technology	-
CS-41 (c)	Statistical Modelling and Queuing Theory	-
Department Elective-V		
Code	Course Title	Course Prerequisite
CS-42 (a)	Neural Networks	-
CS-42 (b)	Dataware Housing & Data Minning	Database Management System
CS-42 (c)	AI & Machine Learning	-


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w.e.f. Jan 2021
Bachelor of Technology (B.Tech) in Computer Science & Engineering: 6th Semester Scheme

Sr. No.	Category	Course	Course Title	Teaching Schedule			Credits	Examination Marks			
				L	T	P		Internal	Theory	Practical	Total
1	Professional Core Course	BCSE-521	Compiler Design	3	1	-	4	40	60	-	100
2	Professional Core Course	BCSE-522	Cryptography & Network Security	3	-	-	3	40	60	-	100
3	Professional Elective Course		Elective-II	3	-	-	3	40	60	-	100
4	Professional Elective Course		Elective-III	3	-	-	3	40	60	-	100
6	Open Elective Course		Open Elective-I	3	-	-	3	40	60	-	100
5	Professional Elective Course		Elective-II Lab	-	-	2	1	60	-	40	100
7	Professional Elective Course		Elective-III Lab	-	-	2	1	60	-	40	100
8	Mandatory Course (non-credit)	BHUM-116	Indian Constitution	2	-	-	0	40	60	-	100
9	Project	BCSE-523	Project-III	-	-	4	2	60	-	40	100
TOTAL				17	1	8	20	420	360	120	900

Elective-II	Elective-II Lab	Open Elective-I
BCSE-537: Big Data & Analytics	BCSE-543: Big Data & Analytics Lab	BCIV-080: Disaster Management
BCSE-538: Internetworking Technologies	BCSE-544: Internetworking Technologies Lab	OE-ME-08: Supply Chain Management
BCSE-539: Software Testing	BCSE-545: Software Testing Lab	BELE-550: System Engineering & Reliability
Elective-III	Elective-III Lab	OE-ME-001: Robotics
BCSE-540: Web Technologies	BCSE-546: Web Technologies Lab	
BCSE-541: Mobile App Development	BCSE-547: Mobile App Development Lab	
BCSE-542: Advance Java Programming	BCSE-548: Advance Java Programming lab	

Additional (Value added) courses offered for Honors Degree / Normal Degree

*1	MOOC/Swayam / Online Courses	As per the list of courses to be provided in the beginning of semester	NA (Self study mode)	As per course offered	**40	**60	-	**100
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* Student can earn additional credits (1-4) that can be used in place of subject of respective category in this semester or will be reflected in the respective semester but finally will be taken into consideration in 8th semester mark sheet for the calculation and award of B.Tech Honor degree only if additional credit earn is at least 20.

* This course should not be opted by the respective student during selection of electives in next semesters.

** In-house assessment marks will be used in case assessment will not be done by external agency (MOOC / Swayam Portal).


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w.e. f. June 2019 / July 2020

Bachelor of Technology (B.Tech) in Computer Science & Engineering: 5th Semester Scheme

Sr. No.	Course Category	Course No.	Course Title	Teaching Schedule			Credits	Examination Marks			
				L	T	P		Internal	Theory	Practical	Total
1	Professional Core Course	BCSE-514	Software Engineering	3	1	0	4	40	60	-	100
2	Professional Core Course	BCSE-515	Design and Analysis of Algorithm	3	1	0	4	40	60	-	100
3	Professional Core Course	BCSE-516	Formal Language & Automata Theory	3	1	0	4	40	60	-	100
4	Professional Core Course	BCSE-517	Computer Networks	3	0	0	3	40	60	-	100
5	Professional Elective Course		Elective-I	3	0	0	3	40	60	-	100
6	Professional Core Course	BCSE-518	Design and Analysis of Algorithm Lab	0	0	2	1	60	-	40	100
7	Professional Core Course	BCSE-519	Computer Networks Lab	0	0	2	1	60	-	40	100
8	Professional Elective Course		Elective-I Lab	0	0	2	1	60	-	40	100
9	Project	BCSE-520	Project-II	0	0	4	2	60	-	40	100
10.	Mandatory Course (non-credit)	BHUM-117	Essence of Indian Traditional Knowledge.	2	0	0	0	40	60	-	100
Total				17	3	10	23	480	360	160	1000

Additional (Value added) courses offered for Honors Degree / Normal Degree

***1	Project	BCSE-508	Training Seminar-II	0	0	0	3 to 6	100	-	-	100
*2	MOOC/Swayam /Online Courses	As per the list of courses to be provided in the beginning of semester		NA (Self study mode)			As per course offered	**40	**60	-	**100

Elective-I	Elective-I Lab
BCSE-529: Microprocessor & Interfacing	BCSE-533: Microprocessor & Interfacing Lab
BCSE-530: AI & Machine Learning	BCSE-534: AI & Machine Learning Lab
BCSE-531: Computer Graphics	BCSE-535: Computer Graphics Lab
BCSE-532: Cloud Computing	BCSE-536: Cloud Computing Lab

*Student can earn additional credits (1-4) that can be used in place of subject of respective category in this semester or will be reflected in the respective semester but finally will be taken into consideration in 8th semester mark sheet for the calculation and award of B.Tech Honor degree only if additional credit earn is atleast 20.

**Student can earn additional credits (3-6) that can be used against internship of 8 credits for award of normal degree or will be reflected in the respective semester but finally will be taken into consideration in 8th semester mark sheet for the calculation and award of B.Tech Honor degree only if additional credit earn is atleast 20.

*This course should not be opted by the respective student during selection of electives in next semesters.

*** In-house assessment marks will be used in case assessment will not be done by external agency (MOOC / Swayam Portal).

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w.e. f. Jan 2021

Bachelor of Technology (B.Tech) in Computer Science & Engineering: 4th Semester SchemeB. Tech. (4th Sem) Computer Science & Engineering

Sr. No.	Category	Course	Course Title	Teaching Schedule			Credits	Examination Marks			
				L	T	P		Internal	Theory	Practical	Total
1	Humanities and Social Sciences including Management Course	BHUM-005	Principle of Management	3	0	0	3	40	60	-	100
2	Professional Core Course	BCSE-508	Discrete Mathematics	3	1	0	4	40	60	-	100
3	Engineering Science Course	BECE-001	Analog & Digital Electronics	2	1	0	3	40	60	-	100
4	Professional Core Course	BCSE-509	Object Oriented Programming Using Java	3	0	0	3	40	60	-	100
6	Professional Core Course	BCSE-510	Database Management System	3	0	0	3	40	60	-	100
5	Engineering Science Course	BECE-002	Analog & Digital Electronics Lab	0	0	2	1	60	-	40	100
7	Professional Core Course	BCSE-511	Object Oriented Programming Using Java Lab	0	0	2	1	60	-	40	100
8	Professional Core Course	BCSE-512	Database Management System Lab	0	0	2	1	60	-	40	100
9	Project	BCSE-513	Project-I	0	0	4	2	60	-	40	100
10	Professional Core Course	BCSE-601	Business Communication and Presentation Skills	0	0	2	1	60	-	40	100
TOTAL				14	2	12	22	500	300	200	1000

Additional (Value added) courses offered for Honors Degree / Normal Degree

*1	MOOC/Swayam/Online Courses	As per the list of courses to be provided in the beginning of semester	NA (Self study mode)	As per course offered	**40	**60	-	**100
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*Student can earn additional credits (1-4) that can be used in place of subject of respective category in this semester or will be reflected in the respective semester but finally will be taken into consideration in 8th semester mark sheet for the calculation and award of B.Tech Honor degree only if additional credit earn is at least 20.

* This course should not be opted by the respective student during selection of electives in next semesters.

** In-house assessment marks will be used in case assessment will not be done by external agency (MOOC / Swayam Portal).

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w.e. f. Jan 2021

Bachelor of Technology in CSE with specialization in Cloud Technology & Information Science: 4th Semester

Sr. No.	Category	Course	Course Title	Teaching Schedule			Credits	Examination Marks			
				L	T	P		Internal	Theory	Practical	Total
1	Professional Core Course	BCSE-517	Computer Networks	3	0	0	3	40	60	-	100
2	Professional Core Course	BCSE-651	Introduction to Cloud Computing	3	0	0	3	40	60	-	100
3	Professional Core Course	BCSE-502	Computer Organization & Architecture	3	1	0	4	40	60	-	100
4	Professional Core Course	BCSE-509	Object Oriented Programming Using Java	3	0	0	3	40	60	-	100
6	Professional Core Course	BCSE-510	Database Management System	3	0	0	3	40	60	-	100
5	Professional Core Course	BCSE-519	Computer Networks Lab	0	0	2	1	60	-	40	100
7	Professional Core Course	BCSE-511	Object Oriented Programming Using Java Lab	0	0	2	1	60	-	40	100
8	Professional Core Course	BCSE-512	Database Management System Lab	0	0	2	1	60	-	40	100
9	Professional Core Course	BCSE-601	Business Communication and Presentation Skills	0	0	2	1	60	-	40	100
10	Project	BCSE-513	Project-I	0	0	4	2	60	-	40	100
TOTAL				15	1	12	22	500	300	200	1000

Additional (Value added) courses offered for Honors Degree / Normal Degree

*1	MOOC/Swayam/Online Courses	As per the list of courses to be provided in the beginning of semester	NA (Self study mode)	As per course offered	**40	**60	-	**100
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*Student can earn additional credits (1-4) that can be used in place of subject of respective category in this semester or will be reflected in the respective semester but finally will be taken into consideration in 8th semester mark sheet for the calculation and award of B.Tech Honor degree only if additional credit earn is at least 20.

* This course should not be opted by the respective student during selection of electives in next semesters.

** In-house assessment marks will be used in case assessment will not be done by external agency (MOOC / Swayam Portal).

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w.e. f. Jan 2021

Bachelor of Technology (B. Tech) in CSE with specialization in Data Science: 4th Semester Scheme

Sr. No.	Category	Course	Course Title	Teaching Schedule			Credits	Examination Marks			
				L	T	P		Internal	Theory	Practical	Total
1	Professional Core Course	BCSE-517	Computer Networks	3	0	0	3	40	60	-	100
2	Professional Core Course	BCSE-600	Introduction to Data Science	3	0	0	3	40	60	-	100
3	Professional Core Course	BCSE-502	Computer Organization & Architecture	3	1	0	4	40	60	-	100
4	Professional Core Course	BCSE-509	Object Oriented Programming Using Java	3	0	0	3	40	60	-	100
6	Professional Core Course	BCSE-510	Database Management System	3	0	0	3	40	60	-	100
5	Professional Core Course	BCSE-519	Computer Networks Lab	0	0	2	1	60	-	40	100
7	Professional Core Course	BCSE-511	Object Oriented Programming Using Java Lab	0	0	2	1	60	-	40	100
8	Professional Core Course	BCSE-512	Database Management System Lab	0	0	2	1	60	-	40	100
9	Professional Core Course	BCSE-601	Business Communication and Presentation Skills	0	0	2	1	60	-	40	100
10	Project	BCSE-513	Project-I	0	0	4	2	60	-	40	100
TOTAL				15	1	12	22	500	300	200	1000

Additional (Value added) courses offered for Honors Degree / Normal Degree

*1	MOOC/Swayam /Online Courses	As per the list of courses to be provided in the beginning of semester	NA (Self study mode)	As per course offered	**40	**60	-	**100
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*Student can earn additional credits (1-4) that can be used in place of subject of respective category in this semester or will be reflected in the respective semester but finally will be taken into consideration in 8th semester mark sheet for the calculation and award of B.Tech Honor degree only if additional credit earn is at least 20.

* This course should not be opted by the respective student during selection of electives in next semesters.

** In-house assessment marks will be used in case assessment will not be done by external agency (MOOC / Swayam Portal).

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w.e.f. June 2019

Bachelor of Technology (B.Tech) in Computer Science & Engineering: 3rd Semester Scheme

Sr. No.	Category	Course	Course Title	Teaching Schedule			Credits	Examination Marks			
				L	T	P		Internal	Theory	Practical	Total
1	Humanities and Social Sciences including Management Course	BHUM-004	Economics for Engineers	3	0	0	3	40	60	-	100
2	Basic Science Course	BMAT-003	Mathematics-III (Probability & Statistics)	3	1	0	4	40	60	-	100
3	Professional Core Course	BCSE-502	Computer Organization & Architecture	3	1	0	4	40	60	-	100
4	Professional Core Course	BCSE-503	Data Structure & Algorithms	3	0	0	3	40	60	-	100
6	Professional Core Course	BCSE-504	Operating System	3	0	0	3	40	60	-	100
5	Professional Core Course	BCSE-505	Data Structure & Algorithms Lab	0	0	2	1	60	-	40	100
7	Professional Core Course	BCSE-506	Operating System Lab	0	0	2	1	60	-	40	100
8	Professional Core Course	BCSE-507	Python Programming Lab	0	0	4	2	60	-	40	100
9	Mandatory Course (non-credit)	BHUM-117	Essence of Indian Traditional Knowledge	2	0	0	0	40	60	-	100
TOTAL				17	2	8	21	420	360	120	900

Additional (Value added) courses offered for Honors Degree / Normal Degree

**1	Project	BCSE-508	Training Seminar-I	0	0	0	3 to 6	100	-	-	100
*2	MOOC/Swayam/Online Courses	As per the list of courses to be provided in the beginning of semester		NA (Self study mode)			As per course offered	***40	***60	-	***100

*Student can earn additional credits (1-4) that can be used in place of subject of respective category in this semester or will be reflected in the respective semester but finally will be taken into consideration in 8th semester mark sheet for the calculation and award of B.Tech Honor degree only if additional credit earn is atleast 20.

**Student can earn additional credits (3-6) that can be used against internship of 8 credits for award of normal degree or will be reflected in the respective semester but finally will be taken into consideration in 8th semester mark sheet for the calculation and award of B.Tech Honor degree only if additional credit earn is atleast 20.

* This course should not be opted by the respective student during selection of electives in next semesters.

*** In-house assessment marks will be used in case assessment will not be done by external agency (MOOC / Swayam Portal).

J. Goyal
 Head
 Department of Computer
 Science & Engineering
 M.M. Engineering College
 Maharishi Markandeshwar
 Deemed To Be University
 Mullana, Ambala, Haryana-133207

w.e.f. July 2020

**Bachelor of Technology (B.Tech) in Computer Science & Engineering with specialization in Cloud
Technology & Information Security
3rd Semester Scheme**

Sr. No.	Category	Course	Course Title	Teaching Schedule			Credits	Examination Marks			
				L	T	P		Internal	Theory	Practical	Total
1	Humanities and Social Sciences including Management Course	BHUM-004	Economics for Engineers	3	0	0	3	40	60	-	100
2	Basic Science Course	BMAT-003	Mathematics-III (Probability & Statistics)	3	1	0	4	40	60	-	100
3	Engineering Science Course	BECE-001	Analog & Digital Electronics	2	1	0	3	40	60	-	100
4	Professional Core Course	BCSE-503	Data Structure & Algorithms	3	0	0	3	40	60	-	100
5	Professional Core Course	BCSE-504	Operating System	3	0	0	3	40	60	-	100
6	Engineering Science Course	BECE-002	Analog & Digital Electronics Lab	0	0	2	1	60	-	40	100
7	Professional Core Course	BCSE-505	Data Structure & Algorithms Lab	0	0	2	1	60	-	40	100
8	Professional Core Course	BCSE-506	Operating System Lab	0	0	2	1	60	-	40	100
9	Professional Core Course	BCSE-507	Python Programming Lab	0	0	4	2	60	-	40	100
10	Mandatory Course (non-credit)	BHUM-117	Essence of Indian Traditional Knowledge	2	0	0	0	40	60	-	100
TOTAL				16	2	10	21	480	360	160	1000

Additional (Value added) courses offered for Honors Degree / Normal Degree

**1	Project	BCSE-508	Training Seminar-I	0	0	0	3 to 6	100	-	-	100
*2	MOOC/Swayam/Online Courses	As per the list of courses to be provided in the beginning of semester		NA (Self study mode)			As per course offered	***40	***60	-	***100

*Student can earn additional credits (1-4) that can be used in place of subject of respective category in this semester or will be reflected in the respective semester but finally will be taken into consideration in 8th semester mark sheet for the calculation and award of B.Tech Honor degree only if additional credit earn is atleast 20.

**Student can earn additional credits (3-6) that can be used against internship of 8 credits for award of normal degree or will be reflected in the respective semester but finally will be taken into consideration in 8th semester mark sheet for the calculation and award of B.Tech Honor degree only if additional credit earn is atleast 20.

* This course should not be opted by the respective student during selection of electives in next semesters.

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 Head
 Department of Computer
 Science & Engineering
 M.M. Engineering College
 Maharishi Markandeshwar
 (Deemed To Be University)
 Mullana, Ambala, Haryana-133207

w.e.f. July 2020

Bachelor of Technology (B.Tech) in Computer Science & Engineering with specialization in Data Science
3rd Semester Scheme

Sr. No.	Category	Course	Course Title	Teaching Schedule			Credits	Examination Marks			
				L	T	P		Internal	Theory	Practical	Total
1	Humanities and Social Sciences including Management Course	BHUM-004	Economics for Engineers	3	0	0	3	40	60	-	100
2	Basic Science Course	BMAT-003	Mathematics-III (Probability & Statistics)	3	1	0	4	40	60	-	100
3	Engineering Science Course	BECE-001	Analog & Digital Electronics	2	1	0	3	40	60	-	100
4	Professional Core Course	BCSE-503	Data Structure & Algorithms	3	0	0	3	40	60	-	100
5	Professional Core Course	BCSE-504	Operating System	3	0	0	3	40	60	-	100
6	Engineering Science Course	BECE-002	Analog & Digital Electronics Lab	0	0	2	1	60	-	40	100
7	Professional Core Course	BCSE-505	Data Structure & Algorithms Lab	0	0	2	1	60	-	40	100
8	Professional Core Course	BCSE-506	Operating System Lab	0	0	2	1	60	-	40	100
9	Professional Core Course	BCSE-507	Python Programming Lab	0	0	4	2	60	-	40	100
10	Mandatory Course (non-credit)	BHUM-117	Essence of Indian Traditional Knowledge	2	0	0	0	40	60	-	100
TOTAL				16	2	10	21	480	360	160	1000

Additional (Value added) courses offered for Honors Degree / Normal Degree

**1	Project	BCSE-508	Training Seminar-I	0	0	0	3 to 6	100	-	-	100
*2	MOOC/Swayam/Online Courses	As per the list of courses to be provided in the beginning of semester		NA (Self study mode)			As per course offered	***40	***60	-	***100

*Student can earn additional credits (1-4) that can be used in place of subject of respective category in this semester or will be reflected in the respective semester but finally will be taken into consideration in 8th semester mark sheet for the calculation and award of B.Tech Honor degree only if additional credit earn is atleast 20.

**Student can earn additional credits (3-6) that can be used against internship of 8 credits for award of normal degree or will be reflected in the respective semester but finally will be taken into consideration in 8th semester mark sheet for the calculation and award of B.Tech Honor degree only if additional credit earn is atleast 20.

* This course should not be opted by the respective student during selection of electives in next semesters.

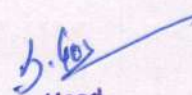
*** In-house assessment marks will be used in case assessment will not be done by external agency (MOOC / Swayam Portal).

B. Goyal
Head
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Science & Engineering
M.M. Engineering College
Maharishi Markandeshwar
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Mullana-133207

w.e. f. July 2020

Master of Technology (M.Tech) in Computer Science & Engineering: 1st Semester Scheme

Sr. No.	Course No.	Course Title	Teaching Schedule			Credits	Examination Marks			
			L	T	P		Internal	Theory	Practical	Total
1.	MCSE-001	Advanced Data Structure & Algorithms	3	-	-	3	40	60	-	100
2.	MCSE-002	Advanced Operating Systems	3	-	-	3	40	60	-	100
3.	MCSE-003	Advanced Computer Networks	3	-	-	3	40	60	-	100
4.	MCSE-004	Advanced Computer Architecture	3	-	-	3	40	60	-	100
5.	MCSE-005	Mathematical Concepts for Computer Science	3	-	-	3	40	60	-	100
6.	MCSE-006	Advanced Data Structure & Algorithms Lab	-	-	2	1	60	-	40	100
7.	MCSE-007	Advanced Computer Networks Lab	-	-	2	1	60	-	40	100
8.	MCSE-008	Excel Skills for Business	-	-	2	1	60	-	40	100
Total			15	-	6	18	380	300	120	800



Head
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 Mullana, Ambala, Haryana-133207

w.e. f. July 2020

Master of Technology (M.Tech) in Computer Science & Engineering: 2nd Semester Scheme

Sr. No.	Course No.	Course Title	Teaching Schedule			Credits	Examination Marks			
			L	T	P		Internal	Theory	Practical	Total
1.	MCSE-009	Advanced Database Management System	3	-	-	3	40	60	-	100
2.	MCSE-010	Elective-I	3	-	-	3	40	60	-	100
3.	MCSE-011	Elective-II	3	-	-	3	40	60	-	100
4.	MCSE-012	Elective-III	3	-	-	3	40	60	-	100
5.	MCSE-013	Elective-I Lab	-	-	2	1	60	-	40	100
6.	MCSE-014	Advanced Database Management System Lab	-	-	2	1	60	-	40	100
Total			12	-	4	14	360	300	80	600

Elective-I		Elective-I Lab	
MCSE-010 (a)	Advanced Software Testing	MCSE-013 (a)	Advanced Software Testing Lab
MCSE-010 (b)	Embedded Systems	MCSE-013 (b)	Embedded Systems Lab
MCSE-010 (c)	Cloud Computing	MCSE-013 (c)	Cloud Computing Lab

Elective-II		Elective-III	
MCSE-011 (a)	E-commerce & ERP	MCSE-012 (a)	Mobile Computing
MCSE-011 (b)	Cryptography & Network Security	MCSE-012 (b)	Soft Computing
MCSE-011 (c)	Object Oriented Software System & Design	MCSE-012 (c)	AI & Machine Learning

B. Goyal
 Head
 Department of Computer
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 M.M. Engineering College
 Maharishi Markandeshwar
 (Deemed To Be University)
 Mullana, Ambala, Haryana-133207

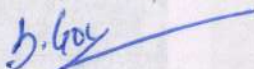
Master of Technology (Computer Science & Engineering)

THIRD SEMESTER

Sr.No	Paper Code	Paper	Hrs/Week			Cr.	EVALUATION(MARKS)			
			Lecture	Tutorial	Practical		Internal	Theory	External	Total
1		Elective-IV	3	-	-	3	40	60	-	100
2		Elective-V	3	-	-	3	40	60	-	100
3		Elective-VI	3	-	-	3	40	60	-	100
3	CSE-555	Seminar	-	2	-	1	100	-	-	100
4	CSE-557	Project	-	-	6	3	60	-	40	100
5	CSE-559	Elective-IV (Pr.)	-	-	3	1.5	60	-	40	100
	Total		9	2	9	14.5				

Elective Subjects-IV, V and VI

- CSE-513 (A) Mobile Computing
- CSE-513 (B) E-Commerce & ERP
- CSE-513 (C) Advanced Java
- CSE-513 (D) Ad Hoc Networks
- CSE-513 (E) Network Programming
- CSE-513 (F) Neural Networks
- CSE-513 (G) Network Security & Cryptography
- CSE-513 (H) Digital Signal Processing
- CSE- 513(I) Embedded Systems


 Head
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 K. J. Somaiya Engineering College
 Maharishi Markandeshwar
 Deemed To Be University
 Mullana, Ambala, Haryana-133207

Master of Technology (Computer Science & Engineering)

FOURTH SEMESTER

S.No.	Paper Code	Paper	Hrs/Week			Cr.	EVALUATION(MARKS)			
			Lecture	Tutorial	Practical		Internal	Theory	External	Total
1	CSE-556	Dissertation & Comprehensive Viva-Voce	-	-	-	-	-	-	-	


Head
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G. M. Engineering College
(Formerly Maharishi Markandeshwar
Deemed To Be University)
Ambala, Ambala, Haryana-133207

Semester III [Second year]

Branch/Course: Electronics and Communication Engineering

S. No	Course No.	Category	Course Title	Teaching Schedule				Exam Scheme (Marks)				Total Contact Hours	Credits
				L	T	P	Total	TH	SES	P/V	TOTAL		
1.	BECE-502	Program Core Course	Analog Circuits	3	0	0	3	60	40	0	100	3	3
2.	BECE-503	Program Core Course	Network Theory	3	1	0	4	60	40	0	100	4	4
3.	BECE-504	Program Core Course	Analog & Digital Communication	3	1	0	4	60	40	0	100	4	4
4.	BMAT-003	General	Maths III (Probability and Statistics)	3	1	0	4	60	40	0	100	4	4
5.	BMAT-004	Mandatory Course	Indian Constitution	2	0	0	2	60	40	0	100	2	0
6.	BECE-505	Program Core Course	Analog Circuits Lab	0	0	2	2	0	60	40	100	2	1
7.	BECE-506	Program Core Course	Analog & Digital Communication Lab	0	0	2	2	0	60	40	100	2	1
8.	BECE-507	ESC	MATLab Programming Lab	0	0	2	2	0	60	40	100	2	1
9.	BECE-508	Program Core Course	Virtual Instrumentation Lab	0	0	2	2	0	60	40	100	2	1
10.	IIoT-1	Project/ Training	IOT Foundation	0	0	4	4	0	60	40	100	4	2
TOTAL				14	3	12	29				1000	29	21

Note: Student can earn 3 credits through MOOC / Swayam courses in a semester which can be used in place of any subject having same credit value in that semester only.

Faculty Res. No. 16.5.6 dated 06-07-2021 approved by the Academic Council vide its Res. No. 27 dated 27-08-2021.

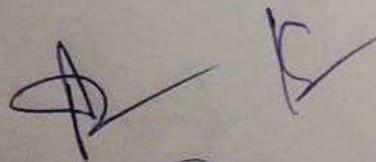
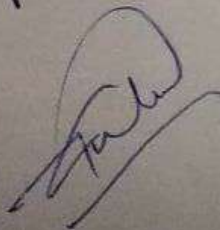
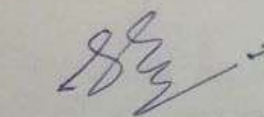
[Signature]
Professor & Head
Dept. of Electronics & Comm. Engg.
M.M. (Deemed to be) Univ., Mullana, Ambala

Semester III [Second year]

Branch/Course: **Electronics and Communication Engineering**

Course No.	Category	Course Title	Teaching Schedule				Exam Scheme (Marks)				Total Contact Hours	Credits
			L	T	P	Total	TH	SES	P/V	TOTAL		
BECE-502	Program Core Course	Analog Circuits	3	0	0	3	60	40	0	100	3	3
BECE-503	Program Core Course	Network Theory	3	1	0	4	60	40	0	100	4	4
BECE-504	Program Core Course	Analog & Digital Communication	3	1	0	4	60	40	0	100	4	4
BMAT-003	General	Maths III (Probability and Statistics)	3	1	0	4	60	40	0	100	4	4
BMAT-004	Mandatory Course	Indian Constitution	2	0	0	2	60	40	0	100	2	0
BECE-505	Program Core Course	Analog Circuits Lab	0	0	2	2	0	60	40	100	2	1
BECE-506	Program Core Course	Analog & Digital Communication Lab	0	0	2	2	0	60	40	100	2	1
BECE-507 ✓	ESC	MATLab Programming Lab	0	0	4	4	0	60	40	100	4	2
BECE-508 ✓	Program Core Course	Virtual Instrumentation Lab	0	0	2	2	0	60	40	100	2	1
TOTAL			14	3	10	27					27	20

One Swayam Course: 3 Credits
(Credits will be added in the final semester marksheet)

Professor & Head
Deptt. of Electronics & Comm. Engg.
M. M. Engg. College
Mullana, Ambala.

Semester IV [Second year]

Branch/Course: Electronics and Communication Engineering

S. No	Course No.	Category	Course Title	Teaching Schedule				Exam Scheme (Marks)				Total Contact Hours	Credits
				L	T	P	Total	TH	SES	P/V	TOTAL		
1	BECE-509	Program Core Course	Signals and Systems	3	1	0	4	60	40	0	100	4	4.0
2	BECE-510	Program Core Course	Digital System Design	3	1	0	4	60	40	0	100	4	4.0
3	BECE-511	Program Core Course	Computer Organization and Architecture	3	0	0	3	60	40	0	100	3	3.0
4	BECE-512	Program Core Course	Probability Theory & Stochastic Processes	3	0	0	3	60	40	0	100	3	3.0
5	BHUM-117	Mandatory Course	Essence of Indian Traditional Knowledge	2	0	0	2	60	40	0	100	2	0
5	BECE-513	Program Core Course	Digital System Design Lab	0	0	2	2	0	60	40	100	2	1.0
5	BECE-514	Mandatory Course	Project lab-I	0	0	4	4	0	60	40	100	4	2.0
Total				14	2	6	22				700		17

One Swayam Course: 3 Credits
(Credits will be added in the final semester marksheet)

[Signature]
Professor & Head
Deptt. of Electronics & Comm. Engg.
M. M. Engg. College
Mullana, Ambala.

Semester V [Third year]

Branch/Course: Electronics and Communication Engineering

Course Code	Category	Course Title	Teaching Schedule				Exam Scheme (Marks)				Total Contact Hours	Credits
			L	T	P	Total	TH	SES	P/V	Total		
BECE-515	Program Core Course	Electromagnetic Field Theory	3	1	0	4	60	40	0	100	4	4
BECE-516	Program Core Course	Microprocessors & Microcontrollers	3	0	0	3	60	40	0	100	3	3
BECE-517	Program Core Course	Digital Signal Processing	3	1	0	4	60	40	0	100	4	4
BECE*	Specialization	Program Elective - 1	3	1	0	4	60	40	0	100	4	4
	Interdisciplinary	OE-1	3	1	0	4	60	40	0	100	4	4
BHUM-004	Mandatory	Economics for Engineers	3	0	0	3	60	40	0	100	3	3
BECE-518	Program Core Course	Digital Signal Processing Lab	0	0	2	2	0	60	40	100	2	1
BECE-519	Program Core Course	Microprocessors & Microcontrollers Lab	0	0	2	2	0	60	40	100	2	1
BECE-520	Program Core Course	Project II	0	0	4	4	0	60	40	100	4	2
Total			18	04	8	30					30	26

One Swayam Course: 3 Credits

(Credits will be added in the final semester marksheet)

	Course Name	Course Title
Program Elective-I	BECE-521	Information Theory and Coding
	BECE-522	Nano Electronics
	BECE-523	Introduction to MEMS

	Course Name	Course Title
Open Elective-I	BCSE-503	Data Structure & Algorithm
	BCSE-512	Database Management System
	BCIV-080	Disaster Management

[Signature]
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 Deptt. of Electronics & Comm. Engg.
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 Mullana, Ambala.

Semester VI [Third year]

Branch/Course: Electronics and Communication Engineering

Course Code	Category	Course Title	Teaching Schedule				Exam Scheme (Marks)				Total Contact Hours	Credits
			L	T	P	Total	TH	SES	P/V	Total		
BECE-524	Program Core Course	Control Systems	3	1	0	4	60	40	0	100	4	4
BECE-525	Program Core Course	Computer Network	3	0	0	3	60	40	0	100	3	3
	Specialization	Program Elective -2	3	1	0	4	60	40	0	100	4	4
	Interdisciplinary	OE-2	3	1	0	4	60	40	0	100	4	4
BHUM-005	General	Principles of Management	3	0	0	3	60	40	0	100	3	3
BECE-526	Program Core Course	Computer Networks Lab	0	0	2	2	0	60	40	100	2	1
BECE-527	Program Core Course	Electronic Measurement Lab	0	0	2	2	0	60	40	100	2	1
BECE-528	Program Core Course	Mini project/ Electronic Design W/S	0	0	4	4	0	60	40	100	4	2
Total			15	3	8	26					26	22

One Swayam Course: 3 Credits
(Credits will be added in the final semester marksheet)

	Course Name	Course Title
Program Elective-II	BECE-529	Power Electronics (Common with EE 4 th Sem)
	BECE-530	Adaptive Signal Processing
	BECE-531	Embedded system

	Course Name	Course Title
Open Elective-II	BELE-529	Measurements and Instrumentation
	BCSE-522	Cryptography & Network Security
	BCIV-081	Project Management

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Semester VII (Fourth year)

Branch/Course Electronics & Communication Engineering

Course Code	Category	Course Title	Teaching Schedule				Exam Scheme (Marks)				Total Contact Hours	Credits
			L	T	P	Total	TH	SES	P/V	Total		
	Specialization	Program Elective -3	3	1	0	4	60	40	0	100	4	4
	Specialization	Program Elective -4	3	0	0	3	60	40	0	100	3	3
	Specialization	Program Elective -5	3	0	0	3	60	40	0	100	3	3
	Interdisciplinary	OE-3	3	0	0	3	60	40	0	100	3	3
	Interdisciplinary	OE-4	3	0	0	3	60	40	0	100	3	3
BECE-532	Program Core Course	Simulation Lab	0	0	4	4	0	60	40	100	4	2
BECE-533	Program Core Course	Project Stage IV	0	0	8	8	0	60	40	100	8	4
Total			15	1	12	28						22

One Swayam Course: 3 Credits
(Credits will be added in the final semester marksheet)

	Course Name	Course Title
Program Elective-III	BECE-534	Microwave Theory & Techniques
	BECE-535	Digital Image and Video Processing
	BECE-536	Bio Medical Electronics
Program Elective-IV	BECE-537	Mobile Communication and Network
	BECE-538	Wireless Sensor Networks
	BECE-539	CMOS Design
Program Elective-V	BECE-540	Antenna and Wave Propagation
	BECE-541	High Speed Electronics
	BECE-542	Wavelets

	Course Name	Course Title
Open Elective-III	BELE-540	HVDC Transmission System
	BCIV-083	Planning for Sustainable Development
	BCSE-541	Mobile App Development
Open Elective IV	BHUM-005	Principle of Management
	BCSE-532	Cloud Computing
	BELE-537	Wind and Solar Energy Systems

[Handwritten Signature]
 Professor & Head
 Deptt. of Electronics & Comm. Engg.
 M. M. Engg. College
 Mullana, Ambala.

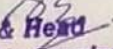
M. Tech Semester I [First Year]

Branch/Course: Electronics and Communication Engineering

Course Code	Category	Course Title	Teaching Schedule				Exam Scheme (Marks)				Total Contact Hours	Credits
			L	T	P	Total	TH	SES	P/V	Total		
MECE-501	Program Core Course	Advanced Communication Networks	3	0	0	3	60	40	0	100	3	3
MECE-502	Program Core Course	Wireless and Mobile Communication	3	0	0	3	60	40	0	100	3	3
MECE*	Program Specific Elective	Elective I	3	0	0	3	60	40	0	100	3	3
MECE*	Program Specific Elective	Elective II	3	0	0	3	60	40	0	100	3	3
MECE-509	Program Core Course	Advanced Communication Networks Lab	0	0	4	4	0	60	40	100	4	2
MECE-510	Program Core Course	Wireless and Mobile Communication Lab	0	0	4	4	0	60	40	100	4	2
MECE-511	Program Core Course	Research Methodology and IPR	2	0	0	2	60	40	0	100	2	2
BHUM-116	Aud I	Audit Course 1 Indain Constitution	2	0	0	2	60	40	0	100	2	0
			16	0	8	24					24	18

	Course Name	Course Title
Elective-I	MECE-503	Wireless Sensor Networks
	MECE-504	Optical Networks
	MECE-505	Statistical Information Processing

	Course Name	Course Title
Elective-II	MECE-506	Cognitive Radio
	MECE-507	RF and Microwave Circuit Design
	MECE-508	DSP Architecture


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M. Tech Semester I [First Year]

Branch/Course: Electronics and Communication Engineering

S. No	Course Code	Category	Course Title	Teaching Schedule				Exam Scheme (Marks)				Total Contact Hours	Credits
				L	T	P	Total	TH	SES	P/V	Total		
1	MECE-501	Program Core Course	Advanced Communication Networks	3	0	0	3	60	40	0	100	3	3
2	MECE-502	Program Core Course	Wireless and Mobile Communication	3	0	0	3	60	40	0	100	3	3
3	MECE*	Program Specific Elective	Elective I	3	0	0	3	60	40	0	100	3	3
4	MECE*	Program Specific Elective	Elective II	3	0	0	3	60	40	0	100	3	3
5	MECE-509	Program Core Course	Advanced Communication Networks Lab	0	0	4	4	0	60	40	100	4	2
6	MECE-510	Program Core Course	Wireless and Mobile Communication Lab	0	0	4	4	0	60	40	100	4	2
7	MECE-511	Program Core Course	Research Methodology and IPR	2	0	0	2	60	40	0	100	2	2
8		Aud 1	Audit Course 1	2	0	0	2	60	40	0	100	2	0
Total				16	0	8	24					24	18

	Course Name	Course Title
Elective-I	MECE-503	Wireless Sensor Networks
	MECE-504	Optical Networks
	MECE-505	Statistical Information Processing

	Course Name	Course Title
Elective-II	MECE-506	Cognitive Radio
	MECE-507	RF and Microwave Circuit Design
	MECE-508	DSP Architecture

[Signature]
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 Mullana, Ambala,

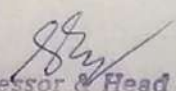
M. Tech Semester II [First Year]

Branch/Course: **Electronics and Communication Engineering**

S. No.	Course Code	Category	Course Title	Teaching Schedule				Exam Scheme (Marks)				Total Contact Hours	Credits
				L	T	P	Total	TH	SES	P/V	Total		
1	MECE-512	Program Core Course	Antennas and Radiating Systems	3	0	0	3	60	40	0	100	3	3
2	MECE-513	Program Core Course	Advanced Digital Signal Processing	3	0	0	3	60	40	0	100	3	3
3	MECE*	Program Specific Elective	Elective III	3	0	0	3	60	40	0	100	3	3
4	MECE*	Program Specific Elective	Elective IV	3	0	0	3	60	40	0	100	3	3
5	MECE-520	Program Core Course	Antennas and Radiating Systems lab	0	0	4	4	0	60	40	100	4	2
6	MECE-521	Program Core Course	Advanced Digital Signal Processing Lab	0	0	4	4	0	60	40	100	4	2
	MECE-522	Program Core Course	Mini Project	0	0	4	4	0	60	40	100	4	2
	Aud 2		Audit Course 2	2	0	0	2	60	40	0	100	2	0
Total				14	0	12	26					26	18

	Course Name	Course Title
Elective-III	MECE-514	Satellite Communication
	MECE-515	Internet of Things
	MECE-516	Voice and data networks

	Course Name	Course Title
Elective-IV	MECE-517	Markov Chain and Queuing System
	MECE-518	MIMO System
	MECE-519	Programmable Networks – SDN, NFV


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M. Tech Semester III [Second Year]**Branch/Course: Electronics and Communication Engineering**

S. No.	Course Code	Category	Course Title	Teaching Schedule				Exam Scheme (Marks)				Total Contact Hours	Credits
				L	T	P	Total	TH	SES	P/V	Total		
1	MECE*	Program Specific Elective	Elective V	3	0	0	3	60	40	0	100	3	3
2		Open Elective		3	0	0	3	60	40	0	100	3	3
3	MECE-526	Dissertation	Dissertation Phase-I	0	0	20	20	0	60	40	100	20	10
Total				06	0	20	26					26	16

	Course Name	Course Title
Elective-V	MECE-523	High Performance Networks
	MECE-524	Pattern Recognition and Machine Learning
	MECE-525	Remote Sensing

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(Established under Section 3 of the UGC Act. 1956)

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Department of Mathematics & Humanities

Scheme of B.Sc. (Honours) Mathematics**(From the Batch 2019-22)****I. FIRST SEMESTER**

w.e.f. 2019-20

S.No.	Course	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex. +In.)		
				Lecture	Practical	Tutorial				
1	Core	BMAT-511	Calculus	4	-	-	4	100(60+40)		
2		BMAT-512	Calculus (LAB)		4	-	2	50(20+30)		
3	Core	BMAT-513	Algebra	5		1	6	150(90+60)		
4	AECC	BHUM-111	English Communication	2	-	-	2	50(30+20)		
5	GE	Option I	BCAP-001	Web Designing using HTML	4	-	-	4	100(60+40)	
6			BCAP-002	Web Designing using HTML Lab	-	4	-	2	50(20+30)	
OR										
7			Option II	BMAT-514	Finite Element Methods	5	-	1	6	150(90+60)
Total				15	8	1	20	500		

II. SECOND SEMESTER

S.No.	Course	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex. +In.)		
				Lecture	Practical	Tutorial				
1	Core	BMAT-521	Real Analysis	5	-	1	6	150(90+60)		
2	Core	BMAT-522	Differential Equation	4	-	-	4	100(60+40)		
3		BMAT-523	Differential Equation(LAB)	-	4	-	2	50(20+30)		
4	AECC	BEVS-001	Environmental Science	2	-	-	2	50(30+20)		
5	GE	Option I	BCAP-003	Database Management Systems	4	-	-	4	100(60+40)	
6			BCAP-004	Database Management System Lab	-	4	-	2	50(20+30)	
OR										
7			Option II	BMAT-525	Econometrics	5	-	1	6	150(90+60)
Total				16	4	2	20	500		

Dr. F.
Head

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Department of Mathematics & Humanities

Scheme of B.Sc. (Honours) Mathematics**(From the Batch 2019-22)****III. THIRD SEMESTER**

w.e.f. 2020-21



S. No.	Course	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex. +In.)
				Lecture	Practical	Tutorial		
1	Core	BMAT-531	Theory of Real Function	5	-	1	6	150(90+60)
2		BMAT-532	Group Theory I	5	-	1	6	150(90+60)
		BMAT-533	P.D.E and System of O.D.E.	4	-		4	100(60+40)
3		BMAT-534	P.D.E and System of O.D.E.(LAB)	-	4	-	2	50(30+20)
4	SEC	BMAT- 535	Latex Writing Software (Lab)	-	4	-	2	50(30+20)
5	GE	Option I BCAP-005	Object Oriented Programming in C++	4	-	-	4	100(60+40)
6		BCAP-006	Object Oriented Programming in C++ (Lab)	-	4	-	2	50(30+20)
OR								
7		Option II BMAT-536	Mathematical Finance	5	-	1	6	150(90+60)
Total				18	12	2	26	650

IV. FOURTH SEMESTER

S. No	Course	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex. +In.)
				Lecture	Practical	Tutorial		
1	Core	BMAT-541	Numerical Methods	4	-	-	4	100(60+40)
2		BMAT-542	Numerical Method LAB	-	4	-	2	50(30+20)
		BMAT-543	Probability and Statistics	5	-	1	6	150(90+60)
3		BMAT-544	Ring Theory and Linear Algebra I	5	-	1	6	150(90+60)
4	SEC	BMAT- 545	Statistical Programming Language R (Lab)	0	4	-	2	50(30+20)
5	GE	Opti on I BCAP-007	Programming in Java	4	-	-	4	100(60+40)
6		BCAP-008	Programming in Java Lab.	-	4	-	2	50(30+20)
OR								
7		Opti on II BMAT-546	Combinatorial Mathematics	5	-	1	6	150(90+60)
Total				18	12	2	26	650

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Scheme of B.Sc. (Honours) Mathematics

(From the Batch 2019-22)

V. Fifth SEMESTER

w.e.f. 2021-22

S. No.	Course	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex. +In.)
				Lecture	Practical	Tutorial		
1	Core	BMAT-551	Multivariate Calculus	5	-	1	6	150(90+60)
2		BMAT-552	Group Theory- II	5	-	1	6	150(90+60)
3	DSE 1	BMAT- 553	Riemann Integration and Series of Functions	5	-	1	6	150(90+60)
4		BMAT-554	Number Theory	5	-	1	6	150(90+60)
5	DSE-2	BMAT-555	Metric Spaces	5	-	1	6	150(90+60)
6		BMAT-556	Analytical Geometry	5	-	1	6	150(90+60)
		Total		20		4	24	600

VI. SIXTH SEMESTER

S. No	Course	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex. +In.)
				Lecture	Practical	Tutorial		
1	CORE	BMAT-561	Complex Analysis	5	-	1	6	150(90+60)
2		BMAT-562	Ring Theory and Linear Algebra II	5	-	1	6	150(90+60)
3	DSE-3	BMAT-563	Linear Programming Problem	5	-	1	6	150(90+60)
4		BMAT-564	Mechanics	5	-	1	6	150(90+60)
5	DSE-4	BMAT-565	Theory of Equations	5	-	1	6	150(90+60)
6		BMAT-566	Differential Geometry	5	-	1	6	150(90+60)
		Total		20		4	24	600

Deepu

Head

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M.M. Engineering College
Mullana-Ambala



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Department of Mathematics & Humanities

Ph.D. (Course Work) Mathematics

1. SCHEME OF EXAMINATION:

w.e.f. 2021-22

S. No	Paper code	Course nomenclature	L T P	External marks	Internal marks	Total marks	Credits
1	MP-01	Research Ethics methodology & Quantitative methods	4 - -	60	40	100	4.0
2	MP-02	Computer applications	2 - -	60	40	100	2.0
3	MP-03	Software lab (based on (MP-01 MP-02)	- - 2	60	40	100	1.0
4	* MP-04	Seminar based on (literature survey and work done in relevant field)	2	--	100	100	2.0
5	MP-05 M(A)	Waiting time models	4 - -	100	-	100	4.0
	MP-05 M(B)	Fixed point theory	4 - -	100	-	100	4.0
	MP-05 M(C)	Mechanics of continuous media	4 - -	100	-	100	4.0
	MP-05 M(D)	Symmetries and differential equations	4 - -	100	-	100	4.0
	MP-05 M(E)	Information Measures and Coding Theory	4 - -	100	-	100	4.0
	MP-05 M(F)	Reliability Theory and Modeling	4 - -	100	-	100	4.0
	MP-05 M(G)	Differential Geometry	4 - -	100	-	100	4.0
	MP-05 M(H)	Fluid Dynamics	4 - -	100	-	100	4.0

* The Students will be required to submit a detailed report of the literature survey done as well as the work done in the relevant field before the research advisory committee (RAC)


Head
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Semester III [Second year]

Branch/Course: Electrical Engineering

Category	Course Code	Course Title	Hours Per Week			Total Contact Hours	Credit
			Lecture	Tutorial	Practical		
Program Core Course	BELE-502	Analog Electronics Circuits	3	-	-	3	3
Program Core Course	BELE-503	Electrical Circuit Analysis	3	1	-	4	4
Program Core Course	BELE-504	Electrical Machines – I –	3	-	-	3	3
Basic Science Course (General)	BMAT-003	Mathematics – III (Probability and Statistics)	3	1	-	4	4
Mandatory Course	BMAT-004	Indian Constitution	2	-	-	2	-
Program Core Course	BELE-505	Analog Electronics Circuits Lab	-	-	2	2	1
Program Core Course	BELE-506	Electrical Machines Lab – I	-	-	2	2	1
Program Core Course	BELE-507	Virtual Instrumentation Lab	-	-	2	2	1
SC	BELE-508	MATLab Programming Lab	-	-	4	4	2
			14	02	10	26	19

Note:

- Students can opt one Swayam Course whose credits will be added in the 8th semester marksheet.


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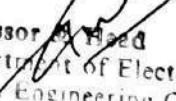
Semester IV [Second year]

Branch/Course: Electrical Engineering

Category	Course Code	Course Title	Hours Per Week			Total Contact Hours	Credits
			Lecture	Tutorial	Practical		
Program Core Course	BELE-509	Digital Electronics	3	1	-	4	4
Program Core Course	BELE-510	Signals and Systems	3	1	-	4	4
Program Core Course	BELE-511	Electrical Machines – II	3	-	-	3	3
Program Core Course	BELE-512	Power Electronics	3	-	-	3	3
Mandatory Course	BHUM-117	Essence of Indian Traditional Knowledge	2	-	-	2	-
Program Core Course	BELE-513	Digital Electronics Lab	-	-	2	2	1
Program Core Course	BELE-514	Electrical Machines Lab – II	-	-	2	2	1
Program Core Course	BELE-515	Power Electronics Lab	-	-	2	2	1
Program Core Course	BELE-516	Project-I	-	-	4	4	2
			14	02	10	26	19

te:

1. Students can go for internship after 4th semester (**Summer Vacation**) for 3-4 weeks after seeking due permission from Department/ TPO Office. However the benefit on this account will only be admissible during final semester.
2. Students can opt one Swayam Course whose credits will be added in the 8th semester marksheet.


 Professor A. K. Singh
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Semester V [Third year]
Branch/Course: Electrical Engineering

Category	Course Code	Course Title	Hours Per Week			Total Contact Hours	Credits
			Lecture	Tutorial	Practical		
Program Core Course	BELE-517	Electromagnetic Field Theory	3	1	-	4	4
Program Core Course	BELE-518	Microprocessors and Microcontrollers	3	-	-	3	3
Program Core Course	BELE-519	Power Systems – I (Apparatus and Modelling)	3	-	-	3	3
Specialization		Program Elective - 1	3	1	-	4	4
Interdisciplinary		OE-1	3	1	-	4	4
Humanities And Social Sciences Including Management	BHUM-004	Economics for Engineers	3	-	-	3	3
Program Core Course	BELE-523	Microprocessors and Microcontrollers Lab	-	-	2	2	1
Program Core Course	BELE-524	Power Systems Lab	-	-	2	2	1
Program Core Course	BELE-525	Project-II	-	-	4	4	2
			18	03	08	29	25

One Swayam Course: 3 Credits


(Credits will be added in the final semester marksheet)

Program Elective – 1

1. BELE-520 Line Commutated and Active rectifiers
2. BELE-521 Electrical Energy Conservation & Auditing
3. BELE-522 Digital Signal Processing

Open Elective-1

1. BCSE-502/ OE-CSE-05 Computer Organization and Architecture
2. BCSE-503/ OE-CSE-02 Data Structure & Algorithm
3. BECE-504 Analog and Digital Communication


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Semester VI [Third year]

Branch/Course: Electrical Engineering

Category	Course Code	Course Title	Hours Per Week			Total Contact Hours	Credits
			Lecture	Tutorial	Practical		
Program Core Course	BELE-526	Control Systems	3	1	-	4	4
Program Core Course	BELE-527	Power Systems – II (Operation and Control)	3	-	-	3	3
Specialization		Program Elective - 2	3	1	-	4	4
Specialization		Program Elective - 3	3	1	-	4	4
Interdisciplinary		OE-2	3	1	-	4	4
Humanities And Social Sciences Including Management	BHUM-005	Principle of Management	3	-	-	3	3
Program Core Course	BELE-534	Control Systems Lab	-	-	2	2	1
Program Core Course	BELE-535	Measurements and Instrumentation Lab	-	-	2	2	1
Program Core Course	BELE-536	Project-III	-	-	4	4	2
			18	04	08	30	26

One Swayam Course: 3 Credits

(Credits will be added in the final semester marksheet)

Program Elective – 2

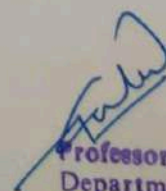
1. BELE-528 Electrical Machine Design
2. BELE-529 Measurements and Instrumentation
3. BELE-530 Electrical and Hybrid Vehicles

Program Elective - 3

1. BELE-531 Power System protection
2. BELE-532 Computational Electromagnetics
3. BELE-533 Electric Drives

Open Elective- 2

1. BECE-525 Computer Network
2. OE-CSE-06/ IT-321 Essentials of IT
3. BCIV-083 Planning for Sustainable Development



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Semester VII [Fourth year]
Branch/Course: Electrical Engineering

Category	Course Code	Course Title	Hours Per Week			Total Contact Hours	Credits
			Lecture	Tutorial	Practical		
Specialization		Program Elective-4	3	-	-	3	3
Specialization		Program Elective-5	3	-	-	3	3
Interdisciplinary		OE-3	3	-	-	3	3
Interdisciplinary		OE-4	3	-	-	3	3
	BELE-543	Project -IV	-	-	8	8	4
	BELE-544	Simulation Lab	-	-	4	4	2
			12	-	12	24	18

ote:

1. Students can opt one Swayam Course whose credits will be added in the 8th semester marksheet.

rogram Elective – 4

1. BELE-537 Wind and Solar Energy Systems
2. BELE-538 Power System Dynamics and Control
3. BELE-539 Industrial Electrical Systems

rogram Elective - 5

4. BELE-540 HVDC Transmission Systems
5. BELE-541 Power Quality and FACTS
6. BELE-542 Control Systems Design

pen Elective- 3

4. BECE-535 Digital Image and Video Processing
5. BECE-536 Biomedical Electronics
6. BECE-545 Speech and Audio Processing

pen Elective- 4

1. BECE-531 Embedded System
2. BECE-538 Wireless Sensor networks
3. BECE-540 Antenna and Wave Propagation

[Signature]
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Semester VIII [Fourth year]
Branch/Course: **Electrical Engineering**

Sl. No.	Course Code	Course Title	Hours Per Week			Total Contact Hours	Credits
			Lecture	Tutorial	Practical		
1	BELE-545	Internship	-	-	-	Full Semester	08

OR (Two subjects)

Course Code	Category	Course Title	Hours Per Week			Total Contact Hours	Credits
			Lecture	Tutorial	Practical		
Specialization	BELE-546	Internet of Things (IOT)	3	1	-	4	4
Specialization	BELE-547	Installation, Testing, Commissioning and maintenance of Electrical equipments	3	1	-	4	4
Specialization	BELE-548	High Voltage Engineering	3	1	-	4	4
Specialization	BELE-549	Computer Methods in Power System	3	1	-	4	4
Specialization	BELE-550	System Engineering and Reliability	3	1	-	4	4
			15	05	-	20	20

For award of Under Graduate Degree:

1. Student has to earn total 160 credits.
 - a. Out of which 152 credits can be earned through class room teaching – learning upto 7th semester.
 - b. Rest 08 credits can be earned through either by opting 02 subjects in 8th semester or through internship in industry in the 8th semester after seeking due permission from Department/ TPO Office..

OR

2. Student has to earn total 160 credits.
 - a. Out of which 145 credits can be earned through class room teaching – learning upto 7th semester.
 - b. Rest 15 credits can be earned through a combination of MOOC Courses (Minimum 02) + Industrial Internship/ Industrial Project after seeking due permission from Department/ TPO Office.

For award of Under Graduate Degree (Honors):

Student has to earn extra 20 credits i.e. 180 credits through classroom teaching learning by opting extra courses in the department or outside department/ MOOC Courses after seeking due permission from Department/ TPO Office.

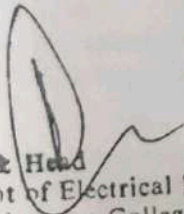
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B.TECH Electrical Engineering

3rd SEMESTER

Course No.	Category	Course Title	Teaching Schedule				Exam Scheme (Marks)				Duration of Exam (Hrs.)	Credits
			L	T	P	Total	TH	SES	P/V	Total		
MA-04	Foundation	Optimization & Calculus of Variation	2	1	0	3	60	40	-	100	3	3
MA-05	General	Multivariate Analysis, Linear Algebra and Special Functions	3	1	0	4	60	40	-	100	3	4
EE-02	Core	Power Apparatus & Machine-I	3	1	0	4	60	40	-	100	3	4
EE-03	Specialization	Signals & Systems	3	1	0	4	60	40	-	100	3	4
EE-04	Core	Analog Electronics	3	1	0	4	60	40	-	100	3	4
EE-05	Core	Network Analysis & Synthesis	3	0	0	3	60	40	-	100	3	3
EE-06	Core	Network Analysis & Synthesis Lab	0	0	2	2	-	60	40	100	3	2
EE-07	Core	Power Apparatus & Machine Lab	0	0	2	2	-	60	40	100	3	2
EE-08	Core	Analog Electronics Lab	0	0	2	2	-	60	40	100	3	2
HUM-03	General	Personality Development	2	0	0	2	-	100	-	100	-	2
Total			19	5	6	30	360	520	120	1000		30

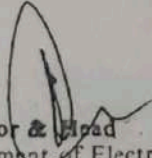
One Course -3 credit Swayam


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B.TECH ELECTRICAL ENGINEERING**4TH SEMESTER**

Sr. No.	Course No.	Category	Course Title	Teaching Schedule								Duration of Exams (Hrs)	Credits
				L	T	P	Total	TH	SES	P/V	Total		
1.	MA-06	General	Complex Analysis	2	1	0	3	60	40	-	100	3	3
2.	EE-09	Specialization	Digital Electronics	3	0	0	3	60	40	-	100	3	3
3.	EE-10	Specialization	Digital Signal Processing	3	0	0	3	60	40	-	100	3	3
4.	EE-11	Core	Power Apparatus & Machine-II	3	1	0	4	60	40	-	100	3	4
5.	EE-12	Core	Measurements & Instrumentation	3	1	0	4	60	40	-	100	3	4
6.	EE-13	Specialization	Electromagnetic Theory	3	0	0	3	60	40	-	100	3	3
7.	EE-14	Core	Measurements and Instrumentation Lab	0	0	2	2	-	60	40	100	3	2
8.	EE-15	Core	Power Apparatus & Machine Lab - II	0	0	2	2	-	60	40	100	3	2
9.	EE-16	Core	Digital Electronics Lab	0	0	2	2	-	60	40	100	3	2
10.	EE-17	Core	Project	0	0	4	4		60	40	100		4
Total				17	3	10	30	360	480	160	1000		30

One Course -3 credit Swayam


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From Batch 2016 onwards

B.TECH ELECTRICAL ENGINEERING

5th SEMESTER

Sr. No	Course No.	Category	Course Title	Teaching Schedule				Exam Scheme (Marks)				Duration of Exams (Hrs)	Credits
				L	T	P	Total	TH	SES	P/V	Total		
1.	MA-07	General	Discrete Mathematics	2	1	0	3	60	40	-	100	3	3
2.		Specialization	Elective -I	3	0	0	3	60	40	-	100	3	3
3.	*EE-18	Core	Control Systems	3	1	0	4	60	40	-	100	3	4
4.	EE-19	Specialization	Power Electronics-I	3	0	0	3	50	40	-	100	3	3
5.	EE-20	Core	Power System-I	3	1	0	4	60	40	-	100	3	4
6.	EE-21	Specialization	Communication Engineering	3	0	0	3	60	40	-	100	3	3
7.	MA-08	General	Mathematics Lab	0	0	2	2	-	60	40	100	3	2
8.	EE-22	Specialization	Control System Lab	0	0	2	2	-	60	40	100	3	2
9.	EE-23	Specialization	Power Electronics Lab -I	0	0	2	2	-	60	40	100	3	2
10.	EE-24	Core	Electrical Design Project	0	0	4	4		60	40	100	-	4
Total				17	3	10	30	360	480	160	1000		30

One Course -3 credit Swayam

Elective - I

- EE-35 Power Generation and Techniques
- EE-36 Utilization of Electrical Energy
- EE-37 Installation, Testing, Commissioning and Maintenance of Electrical Equipments
- EE-38 Industrial Processes Control

* EE-18 (Control Systems) of Electrical Engineering Department is common with EC-17 (Control Systems) of Electronics & Communication Engineering Department.

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Professor & Head
Department of Electrical Engg.
M. M. Engineering College
Mullana (A.P.) 133203

From batch 2016 onwards

B.TECH ELECTRICAL ENGINEERING

6th SEMESTER

Sr. No	Course No.	Category	Course Title	Teaching Schedule								Duration of Exams (Hrs)	Credits
				L	T	P	Total	TH	SES	P/V	Total		
1.	EE-25	Specialization	Power System -II	2	1	0	3	60	40	-	100	3	3
2.	MA-09	General	Fuzzy Maths	3	0	0	3	60	40	-	100	3	3
3.	EE-26	Specialization	Power Electronics -II	3	1	0	4	60	40	-	100	3	4
4.		Specialization	Elective-II	3	1	0	4	60	40	-	100	3	4
5.	*EE-27	Specialization	Microprocessors & Microcontrollers	3	1	0	4	60	40	-	100	3	4
6.		Specialization	Elective-III	3	1	0	4	60	40	-	100	3	4
7.	EE-28	Specialization	Power System Lab	0	0	2	2	-	60	40	100	3	2
8.	**EE-29	Specialization	Microprocessors & Microcontrollers Lab	0	0	2	2	-	60	40	100	3	2
9.	EE-30	Core	Project	0	0	4	4	-	60	40	100	3	4
Total				17	5	08	30	360	480	160	1000		30

One Course -3 credit Swayam

Elective-II

- EE-39 Non-Conventional Energy Sources
- EE-40 Electrical Machine Design
- EE-41 Non Linear and optimal control system

Elective-III

- EE-42 Power Quality Management
- ***EE-43 Embedded System
- EE-44 System engineering and Reliability

* EE-27 (Microprocessors & Microcontrollers) of Electrical Engineering Department is common with EC-24 (Microprocessors & Microcontrollers) of Electronics & Communication Engineering Department.

** EE-29 (Microprocessors & Microcontrollers Lab) of Electrical Engineering Department is common with EC-25 (Microprocessors & Microcontrollers Lab) of Electronics & Communication Engineering Department.

*** EE-43 (Embedded System) of Electrical Engineering Department is common with EC- 38 (Embedded System) of Electronics & Communication Engineering Department.

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B.TECH 7th SEMESTER

Sr. No	Course No.	Category	Course Title	Teaching Schedule								Duration of Exams (Hrs)	Credits
				L	T	P	Total	TH	SES	P/V	Total		
1.	EE-31	Core	Computer Method in Power Systems	3	1	0	4	60	40	-	100	3	4
2.	EE-32	Specialization	Power System Operation and Control	3	1	0	4	60	40	-	100	3	4
3.		Specialization	Elective-IV	3	1	0	4	60	40	-	100	3	4
4.		Specialization	Elective-V	3	1	0	4	60	40	-	100	3	4
5.		Interdisciplinary	Open Elective-I	3	1	0	4	60	40	-	100	3	4
6.		Interdisciplinary	Open Elective-II	3	1	0	4	60	40	-	100	3	4
7.	EE-33	Core	Project	0	0	6	6	-	60	40	100	3	6
Total				18	06	06	30	360	300	40	700		30

One Course -3 credit Swayam

Elective-IV

- EE-45 Materials, Components and Processes
- EE-46 Industrial automation and Control
- EE-47 Flexible AC Transmission System
- EE-48 Electric Drives

Elective-V

- EE-49 Digital Control System
- EE-50 Extra High Voltage AC
- *EE-51 Fuzzy Logic and Neural Networks
- EE-52 High Voltage DC

* EE-51 (Fuzzy Logic and Neural Networks) of Electrical Engineering Department is common with EC- 44 (Neural Networks and Fuzzy Logic) of Electronics & Communication Engineering Department.

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8th SEMESTER

Sr. No	Course No.		Course Title	Teaching Schedule			
				L	T	P	Total
1.	EE-34	Core	Industrial Project (24 Week)	-	-	-	30

Breakup of Courses

S. No.	Category	Total No. of Credits
1	Foundation	31
2	Core	91
3	General	49
4	Specialization	61
5	Interdisciplinary	08
6	Swayam	21
		261

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Semester III [Second year]
Course/ Branch: B.Tech./ Electrical Engineering

Sr. No.	Category	Course Code	Course Title	Hours Per Week			Total Contact Hours	Credit
				Lecture	Tutorial	Practical		
1	Program Core Course	BELE-502	Analog Electronics Circuits	3	-	-	3	3
2	Program Core Course	BELE-503	Electrical Circuit Analysis	3	1	-	4	4
3	Program Core Course	BELE-504	Electrical Machines – I	3	1	-	4	4
4	Basic Science Course (General)	BMAT-003	Mathematics – III (Probability and Statistics)	3	1	-	4	4
5	Mandatory Course	BMAT-004	Indian Constitution	2	-	-	2	-
6	Program Core Course	BELE-505	Analog Electronics Circuits Lab	-	-	2	2	1
7	Program Core Course	BELE-506	Electrical Machines Lab – I	-	-	2	2	1
8	Program Core Course	BELE-507	Virtual Instrumentation Lab	-	-	2	2	1
9	ESC	BELE-508	MATLab Programming Lab	-	-	2	2	1
10	Project/ Training	IHOT-1	IOT Foundation	-	-	4	4	2
Total				14	3	12	29	21

Note: Student can earn 3 credits through MOOC / Swayam courses in a semester which can be used in place of any subject having same credit value in that semester only.

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Mullana (Ambala) 13320



MAHARISHI MARKANDESHWAR ENGINEERING COLLEGE

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DEPARTMENT OF BIOTECHNOLOGY

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M.M.ENGINEERING COLLEGE
w.e.f. July 2019 (Batches 2018 onwards)
Branch/Course: Biotechnology

B.Tech. 3rd Semester (Biotechnology)

Sr. No.	Course Code	Type	Course Title	Teaching Schedule				Credits
				L	T	P	Total contact Hrs.	
1.	BBIO- 502	Core	Fundamentals of Microbiology	2	1	-	3	3
2.	BBIO-503	Core	Biochemistry	2	1	-	3	3
3.	BBIO-504	Core	Cell Biology	2	1	-	3	3
4.	BBIO- 505	Core	Genetics	2	1	-	3	3
5.	BBIO-506	Core	Microbiology Practical	-	-	2	2	1
6.	BBIO-507	Core	Bio-Chemistry Practical	-	-	2	2	1
7.	BBIO-508	Core	Cell Biology Practical	-	-	2	2	1
8.	BBIO-509	Core	Genetics Practical	-	-	2	2	1
9.	BBIO-510	Core	Fermentation Technology (P)	-	-	2	2	1
10.	BBIO-511	Foundati on	Introduction to Biotechnology	2	1	-	3	3
11.	BBIO-512	General	Industrial Training -I	-	-	2	2	2
	Total			10	5	12	27	22

*One course of three credits (SWAYAM)


Head of the Department
U.S.G. Mullana (Ambala)



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M.M.ENGINEERING COLLEGE
w.e.f. July 2019 (Batches 2018 onwards)


Branch/Course: Biotechnology

B.Tech. 4th Semester (Biotechnology)

Sr.No.	Course Code	Type	Course Title	Teaching Schedule				Credits
				L	T	P	Total contact hrs.	
1.	BBIO-513	Professional Core	Molecular Biology	3	1	-	3	4
2.	BBIO-514	Professional Core	Immunology	3	1	-	3	4
3.	BBIO-515	General	Bio Analytical Techniques/ SWAYAM/T-series	2	1	-	3	3
4.	BBIO-516	Specialized	Industrial Microbiology	3	1	-	4	4
5.	BMAT-004	Mandatory Course (Non Creditable)	Indian Constitution	2	-	-	2	-
6.	BBIO-517	General	Molecular Biology Practical	-	-	4	4	2
7.	BBIO-518	Specialized	Industrial Microbiology (P)	-	-	4	4	2
8.	BBIO-519	Professional Core	Immunology practical	-	-	4	4	2
	Total			13	4	12	29	21

Summer training:

Industrial training for six week, 100 marks


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M.M. ENGINEERING COLLEGE
w.e.f. July 2019 (Batches 2018 onwards)
Branch/Course: Biotechnology

B.Tech. 5th Semester (Biotechnology)

Sr.No.	Course Code	Type	Course Title	Teaching Schedule				Credits
				L	T	P	Total contact hrs.	
1.	BBIO-520	Specialized	Genomics and Proteomics	2	1	-	3	3
2.	BBIO-521	Interdisciplinary	Food Biotechnology	2	1	-	3	3
3.	ES-101	Interdisciplinary	EVS	2	1	-	3	3
4.	BBIO-522	Professional Core	Genetic engineering	2	1	-	3	3
5.	BBIO-523	Professional Core	Genetic engineering Practical	-	-	4	4	2
6.	BBIO-EL	Professional Elective	Elective-I	2	1	-	3	3
7.	BBIO-524	Industrial Training (SEC)	Industrial Training-II	-	-	4	4	4
8.	BIT-003	Interdisciplinary	Essentials of Information Technology-I	2	1	-	3	3
9.	BIT-004	Interdisciplinary	Essential of IT-I Practical	-	-	2	2	1
	Total			12	6	10	28	25

*Course code following the elective offered.


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M.M.ENGINEERING COLLEGE
w.e.f. July 2019 (Batches 2018 onwards)
Branch/Course: Biotechnology

B.Tech. 6th Semester (Biotechnology)

Sr. No.	Course Code	Type	Course Title	Teaching Schedule			Total contact hrs.	Credits
				L	T	P		
1.	BBIO-525	Specialized	Biostatistics & Computer Application	2	1	-	3	3
2.	BBIO-526	General	Fermentation Technology	2	1	-	3	3
3.	BBIO-527	Professional Core	Plant Biotechnology	2	1	-	3	3
4.	BBIO-528	Professional Core	Plant Tissue Culture laboratory	-	-	4	4	2
5.	BBIO-EL	Professional Elective	Elective-II	2	1	-	3	3
6.	BBIO-529	Specialized	IPR, Biosafety and Bioethics	2	1	-	3	3
7.	BBIO-530	General	Bio-Entrepreneurship/ Swayam/ T-Series	2	1	-	3	3
8.	BIT-005	Interdisciplinary	Essentials of Information Technology -II	2	1	-	3	3
9.	BIT-006	Interdisciplinary	Essential of IT-II Practical	-	-	2	2	1
	Total			14	7	6	27	24

Summer training:

Industrial training for six week, 100 marks


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M.M. ENGINEERING COLLEGE
w.e.f. July 2019 (Batches 2018 onwards)
Branch/Course: Biotechnology

B.Tech. 7th Semester (Biotechnology)

Sr.No.	Course Code	Type	Course Title	Teaching Schedule				Credits
				L	T	P	Total contact hrs.	
1	BBIO-531	Specialized	Transgenic Technology	2	1	-	3	3
2	BBIO-532	Specialized	Diagnostic Technology	2	1	-	3	3
3	BCIV-007	Interdisciplinary	Disaster Management	2	1	-	3	3
4	BBIO-533	Specialized	Bioreactor Design and Product Analysis	2	1	-	3	3
5	BBIO-EL-	Professional Elective	Elective-III	2	1	-	3	3
6	BBIO-534	Industrial Training (SEC)	Industrial Training-III	-	-	4	4	4
7	BBIO-535	Professional Core	Diagnostic Technology Laboratory	-	-	4	4	2
8	BCO-008	Interdisciplinary	Business Intelligence (BI) and its Applications	2	1	-	3	3
	Total			12	06	08	26	24

*Course code following the elective offered.

*One course of three credits (SWAYAM)


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DEPARTMENT OF BIOTECHNOLOGY

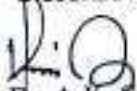
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M.M.ENGINEERING COLLEGE
w.e.f. July 2019 (Batches 2018 onwards)
Branch/Course: Biotechnology

B.Tech. 8th Semester (Biotechnology)

Sr. No.	Course Code	Type	Course Title	L	T	P	Total contact hrs.	Total Credits
1.	BBIO-536 OR BBIO-537	Project(SEC)	Dissertation on- Campus or Industrial Project Course Off -Campus OR	-	-	-	-	16
1.	BBIO-538	Specialized	Stem Cell Culture Technology	2	1	-	3	3
2.	BBIO-539	Interdisciplinary	Pharmaceutical Microbiology	2	1	-	3	3
3.	BBIO-EL-	Professional Elective	Elective-IV	2	1	-	3	3
4.	BBIO-540	Specialized	rDNA Technology Laboratory	-	-	6	6	3
5.	BBIO-541	Project (SEC)	Minor Project course	-	-	10	10	10
6.	MAN-002	Mandatory Course (Non Creditable)	Essence of Indian Traditional Knowledge	2	-	-	2	-
	Total			8	3	16	27	22 or 16*

*Dissertation is mandatory for those students who didn't undergo Training in earlier Semesters.


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M. M. ENGINEERING COLLEGE
w.e.f. July 2019 Onwards
Branch/Course: B.Sc. Biotechnology (Hons.)

1st Semester (1st Year B.Sc. Biotechnology (Hons.) Course)

Sr.No.	Course Description			Teaching Scheme			
	Type of subject	Course Code	Course Title	Contact Hrs/WK			Credit
				L	T	P	
1	Core	BBIT-502	Biochemistry & Metabolism	3	1	-	4.0
2	Core	BBIT-503	Cell Biology	3	1	-	4.0
3	AECC	BHUM-001	English	3	1	-	4.0
4	GE	BBIT-504	Biotechnology and Human Welfare	3	1	-	4.0
5	Core	BBIT-505	Biochemistry & Metabolism Lab	-	-	6	3.0
6	Core	BBIT-506	Cell Biology Lab	-	-	6	3.0
							22

2nd Semester (1st Year B. Sc. Biotechnology (Hons.) Course)

Sr.No.	Course Description			Teaching Scheme			
	Type of subject	Course Code	Course Title	Contact Hrs/WK			Credit
				L	T	P	
1	Core	BBIT-507	Mammalian Physiology	3	1	-	4.0
2	Core	BBIT-508	Microbial and Plant Physiology	3	1	-	4.0
3	AECC	BCIV-008	EVS	3	1	-	4.0
4	GE	BBIT-509	Entrepreneurship Development	3	1	-	4.0
5	Core	BBIT-510	Mammalian Physiology Lab	-	-	6	3.0
6	Core	BBIT-511	Microbial and Plant Physiology lab	-	-	6	3.0
							22


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 Dept. of Bio-Technology
 M.M.E.C. Mullana (Ambala)

3rd Semester (2nd Year B. Sc. Biotechnology (Hons.) Course)

Sr.No.	Course Description			Teaching Scheme			
	Type of subject	Course Code	Course Title	Contact Hrs/WK			Credit
				L	T	P	
1	Core	BBIT-512	Genetics	3	1	-	4.0
2	Core	BBIT-513	General Microbiology	3	1	-	4.0
3	Core	BCHE-001	Chemistry - 1	3	1	-	4.0
4	SEC	BBIT-514	Enzymology	3	1	-	4.0
5	GE	BBIT-515	Bioethics and Biosafety	3	1	-	4.0
6	Core	BBIT-516	General Microbiology Lab	-	-	6	3.0
7	Core	BCHE-002	Chemistry Lab	-	-	6	3.0
	Total						26

4th Semester (2nd Year B. Sc. Biotechnology (Hons.) Course)

Sr.No.	Course Description			Teaching Scheme			
	Type of subject	Course Code	Course Title	Contact Hrs/WK			Credit
				L	T	P	
1	Core	BBIT-517	Molecular Biology	3	1	-	4.0
2	Core	BBIT-518	Immunology	3	1	-	4.0
3	Core	BCHE-003	Chemistry -2	3	1	-	4.0
4	GE	BBIT-519	Developmental Biology	3	1	-	4.0
5	SEC	BBIT-520	Molecular Diagnostics	3	1	-	4.0
6	Core	BBIT-521	Molecular Biology Lab	-	-	6	3.0
7	Core	BBIT-522	Immunology and Molecular Diagnostics Lab	-	-	6	3.0
	Total						26

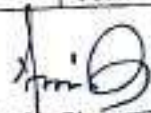

 Professor & Head
 Deptt. of Bio-Technology,
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5th Semester (3rd Year B. Sc. Biotechnology (Hons.) Course)

Sr.No.	Course Description			Teaching Scheme			Credit
	Type of subject	Course Code	Course Title	Contact Hrs/WK			
				L	T	P	
1	Core	BBIT-523	Industrial Fermentations	3	1	-	4.0
2	Core	BBIT-524	Recombinant DNA Technology	3	1	-	4.0
3	DSE	BBIT-525	Bioinformatics	3	1	-	4.0
4	DSE	BBIT-526	Biostatistics	3	1	-	4.0
5	Core	BBIT-527	Bioinformatics Lab	-	-	6	3.0
6	Core	BBIT-528	Industrial Fermentation Lab	-	-	6	3.0
7	SEC	BBIT-529	Training Seminar		2		1.0
	Total						27

6th Semester (3rd Year B. Sc. Biotechnology Hons.) Course)

Sr.No.	Course Description			Teaching Scheme			Credit
	Type of subject	Course Code	Course Title	Contact Hrs/WK			
				L	T	P	
1	Core	BBIT-530	Bio Analytical Tools	3	1	-	4.0
2	Core	BBIT-531	Genomics and Proteomics	3	1	-	4.0
3	DSE	BBIT-532	Plant Biotechnology	3	1	-	4.0
4	DSE	BBIT-533	Environmental Biotechnology	3	1	-	4.0
5	Core	BBIT-534	Environmental Biotechnology Lab	-	-	6	3.0
6	Core	BBIT-535	Bio Analytical Tools Lab	-	-	6	3.0
	Total						22


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M.M. Engineering College, Mullana (Ambala)

Higher Degree Program; M.Sc. Biotechnology

Scheme for M.Sc. Biotechnology Two Year Masters Program

ELIGIBILITY: Students with B Tech Degree in disciplines Engineering/Medical/Dental/ Pharmacy/BSc. in all Branches of Sciences or Equivalent are Eligible for Admission. Preferences will be given to applicants, with BSc. Biotechnology, Chemistry & Biological Sciences.

(M.Sc. -- Biotechnology Course Scheme 2018-19)

1st Semester

Course Description		Teaching Scheme				Credit
Sr. No.	Course Code	Course Title	Contact Hrs/ WK			
			L	T	P	
1.	MATH-S 500	Mathematical Basis of	3	-	-	3.0
2.	OR BT-S -501	Biotechnology.				
		Concepts in Molecular Biology				
		&Biotechnology				
3.	BT-S -503	Biochemistry	3	-	-	3.0
4.	BT-S- 505	Biotechnology Laboratory-I	-	-	6 (3+3)	3.0
5.	BT-S- 507	Microbial Biotechnology	3	-	-	3.0
6.	BT-S -509	Biostatistics & Research	3	-	-	3.0
		Methodology				
7.	BT-S-511	Tools & Techniques in	3	-	-	3.0
		Biotechnology				
8.	BT-S-513	Microbial Bio-technology	-	-	6 (3+3)	3.0
		(Practical)				


2nd Semester

Course Description		Teaching Scheme				Credit
Sr.No	Course Code	Course Title	Contact Hrs/WK			
			L	T	P	
1.	BT-S-502	Environmental Biotechnology	3	-	-	3.0
2.	BT-S 504	Molecular Immunology	3	-	-	3.0
3.	BT-S 506(P)	Genetic Engineering	-	-	9 (3+3+3)	4.5
		Practical				
4.	BT-S 508	Genetic Engineering	3	-	-	3.0
5.	BT-S 510	Development Biology & Stem	3	-	-	3.0
		Cell Technology				
6.	BT-S-EL*	Elective - I	3	-	-	3.0
7.	BT-S-512	Project course	-	-	10	5.0

*Should be selected from elective list.

Note: BT-S -504 (Molecular Immunology) and BT-M-504 (Molecular Immunology & Immunotechnology) question paper will be same.

BT-S -502 (Environmental Biotechnology) and BT-M-510 ((Environmental Biotechnology) question paper will be same.


Professor in Charge
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DEPARTMENT OF BIOTECHNOLOGY

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3rd Semester

Course Description		Teaching Scheme				Credit
Sr.No	Course Code	Course Title	Contact Hrs/WK			
			L	T	P	
1.	BT-S 601	Transgenic Animal & Plant Biotechnology	3	-	-	3.0
2.	BT-S 603	Tissue Culture Techniques Practical	-	-	6(3+3)	3.0
3.	BT-S 605	Concept in Pharmaceutical science	3	-	-	3.0
4.	BT-S-607	Proteomics & Genomics	3	-	-	3.0
5.	BT-S-EL*	Elective - II	3	-	-	3.0
6.	BT-S-609	Project Course	-	-	10	5.0

*Should be selected from elective list.


Note: The project course could be study oriented project, laboratory oriented project, computer oriented project & Special project. Project course will be evaluated by a panel of internal examiners. H.O.D will coordinate the same & award will be sent to examination branch by Coordinator biotech./HOD.

4th Semester

4 th Semester (2nd year M.Sc. Biotechnology Course)						
Course Description		Teaching Scheme				Credit
Sr.No	Course Code	Course Title	Contact Hrs/WK			
			L	T	P	
1.	BT-S 602	Dissertation On--Campus	-	-	-	20
2.	BT-S 604	Structured Industrial Training Course, off--Campus	-	-	-	20

Electives in M.Sc. Biotechnology

Sr. No.	Course No.	Course Title
1.	BT-S-EL-640	Design & production of Vaccine
2.	BT-S-EL-641	Nano Biotechnology
4.	BT-S-EL-643	Hormones & Neuro Transmitters
5.	BT-S-EL-644	Enzymes & Gene Function
6.	BT-S-EL-645	Cloning & gene regulations
7.	BT-S-EL-646	Diagnostic Techniques & health care
8.	BT-S-EL-647	Biosensors & Bio-Instrumentation
9.	BT-S-EL-648	Molecular Carcinogenesis & therapy
10.	BT-S-EL-649	IPR, Biosafety and Bioethics


Dr. A.K. Sharma, Professor and Head,
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Professor & Head
Deptt. of Bio-Technology
M.M.E.C. Mullana (Ambala)



MAHARISHI MARKANDESHWAR ENGINEERING COLLEGE

An ISO 9001-2002 Certified Institute
MULLANA - 133 207 (AMBALA)

DEPARTMENT OF BIOTECHNOLOGY

Tel. No.: 01731-304148.
E-mail: hod.biotech@mmumullana.org

Higher Degree Program; M. Sc-Microbiology Scheme for M.Sc Microbiology Two Year Masters Program

ELIGIBILITY: Students with B. Sc or B-Tech Degree in disciplines of Engineering or Medical/Dental/ Pharmacy or M.Sc. in Physical & biological Sciences or Equivalent are Eligible for Admission.

----- (M.Sc.-- Microbiology Course Scheme 2018-19) -----

1st Semester

Course Description			Teaching Scheme			Credit
Sr.No.	Course Code	Course Title	Contact Hrs/WK			
			L	T	P	
1.	BT-M I-501	Fundamentals of Microbiology	3	-	-	3.0
2.	BT-M I-503	Bacteriology, Phycology, Mycology and Virology	3	-	-	3.0
3.	BT-MI- 505	Microbial Physiology and Metabolism	3	-	-	3.0
4.	BT-M I-507	Cellular Microbiology	3	-	-	3.0
5.	BT-M I-509	Lab course based on Basic Microbiology.	-	-	6	3.0
6.	BT-MI-511	Lab course based on Microbial Physiology & Cellular Microbiology	-	-	6	3.0

2nd Semester

Course Description			Teaching Scheme			Credit
Sr.No	Course Code	Course Title	Contact Hrs/WK			
			L	T	P	
1.	BT- MI-502	Medical Microbiology	3	-	-	3.0
2.	BT- MI-504	Immunology	3	-	-	3.0
3.	BT- MI-506	Elements of Molecular Biology	3	-	-	3.0
4.	BT- MI-508	Microbial Genetics	3	-	-	3.0
5.	BT-MI-EL*	Elective-I	3	-	-	3.0
6.	BT- MI-510	Lab course based on Medical Microbiology & Immunology	-	-	6	3.0
7.	BT- MI-512	Lab course based on Molecular Biology & Microbial Genetics	-	-	6	3.0

* Should be selected from the elective subjects list.


Professor A. N. S. C.
Dept. of Bio-Technology
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3rd Semester

Course Description			Teaching Scheme			Credit
Sr.No	Course Code	Course Title	Contact Hrs/WK			
			L	T	P	
1.	BT- MI-513	Food Microbiology	3	-	-	3.0
2.	BT- MI- 515	Agriculture and Environmental Microbiology	3	-	-	3.0
3.	BT- MI-517	Microbial Biotechnology and Industrial Microbiology	3	-	-	3.0
4.	BT- MI-519	Recombinant DNA technology	3	-	-	3.0
5.	BT- MI-521	Biostatistics and computers	3	-	-	3.0
6.	BT-MI-EL*	Elective-II	3	-	-	3.0
7.	BT- MI-523	Lab course based on Applied Microbiology	-	-	6 (3+3)	3.0
8.	BT- MI-525	Lab course based on Microbial Biotechnology	-	-	6(3+3)	3.0

* Should be selected from the elective subjects list.

4th Semester

Course Description			Teaching Scheme			Credit
Sr.No	Course Code	Course Title	Contact Hrs			
			L	T	P	
1.	BT-MI-514	Dissertation On--Campus	-	-	-	20

Cumulative credit: of Higher Degree M.Sc-- Program

M.Sc -with Dissertation (BT-M-514 on-campus) =77 (credits)

Evaluation Components of BT-MI -514

For the course, BT-MI -514 , features & the evaluation components are as below:

*Identification of Project Title, Objective, Project work fulfilling the aims.

* Submission of Project Report, Hard copy & Soft copy.

* Seminar / Viva, on-campus.

HOD will co-ordinate in the academic process.

HOD may involve faculty members in the department, if necessary.

List of elective subjects.

Sr.No.	Course No.	Course Title
1.	BT-MI-640	Microbial Biochemistry
2.	BT- MI -641	Bioinstrumentation in Microbiology
3.	BT- MI -642	Pharmaceutical Microbiology
4.	BT- MI -643	Bioinformatics


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----- M.Sc. Botany Course Scheme July 2019 onwards -----

1st year of M.Sc. Botany course: 1st Semester

Course Description		Teaching Scheme				Credit
Sr. No.	Course Code	Course Title	Contact Hrs/ WK			
			L	T	P	
1.	MBOT -502	Phycology	4	-	-	4.0
2.	MBOT -503	Mycology	4	-	-	4.0
3.	MBOT -504	Microbiology	4	-	-	4.0
4.	MBOT -505	Plant Ecology and Environment	4	-	-	4.0
5.	MBOT -506	Cell and Molecular Biology	4	-	-	4.0
6.	MBOT -507	Phycology and Mycology Practical	-	-	6(3+3)	3.0
7.	MBOT -508	Microbiology and Plant Ecology Practical	-	-	6(3+3)	3.0

1st year of M.Sc. Botany course: 2nd Semester

Course Description		Teaching Scheme				Credit
Sr.No.	Course Code	Course Title	Contact Hrs/ WK			
			L	T	P	
1.	MBOT -509	Bryophytes, Pteridophytes & Gymnosperms	4	-	-	4.0
2.	MBOT -510	Biostatistics	4	-	-	4.0
3.	MBOT -511	Plant Physiology	4	-	-	4.0
4.	MBOT -512	Biochemistry and Metabolism	4	-	-	4.0
5.	MBOT -513	Cytogenetics and Plant Breeding	4	-	-	4.0
6.	MBOT -514	Bryophytes, Pteridophytes and Gymnosperm Practical	-	-	6(3+3)	3.0
7.	MBOT -515	Plant Physiology and Biochemistry Practical	-	-	6(3+3)	3.0


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DEPARTMENT OF BIOTECHNOLOGY

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2nd year of M.Sc. Botany course: 3rd Semester

Course Description		Teaching Scheme				Credit
Sr. No.	Course Code	Course Title	Contact Hrs/ WK			
			L	T	P	
1.	MBOT -516	Angiosperms Taxonomy	4	-	-	4.0
2.	MBOT -517	Plant Anatomy and Embryology	4	-	-	4.0
3.	MBOT -518	Plant Pathology	4	-	-	4.0
4.	MBOT -519	Economic Botany	4	-	-	4.0
5.	MBOT -520	Plant Cell Tissue and Organ Culture	4	-	-	4.0
6.	MBOT -521	Plant Anatomy, Embryology and Tissue Culture Practical	-	-	6(3+3)	3.0
7.	MBOT -522	Plant Taxonomy and Pathology Practical	-	-	6(3+3)	3.0

2nd year of M.Sc. Botany course: 4th Semester

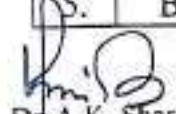
Course Description		Teaching Scheme				Credit
Sr. No.	Course Code	Course Title	Contact Hrs/ WK			
			L	T	P	
1.	MBOT -523	Bio analytical Techniques	4	-	-	4.0
2.	MBOT -524	Plant Biotechnology	4	-	-	4.0
3.	MBOT -525	Biodiversity and Conservation	4	-	-	4.0
4.	MBOT -526	Project and Seminar	-	-	-	8.0
5.	MBOT -527	Bio analytical Techniques and Biotechnology Practical	-	-	6(3+3)	3.0

Total Credits- 101

Total Marks-2800

List of Elective Subjects.

Sr. No.	Course No.	Course Title
1.	BO-S-EL-601	Cell and Molecular Biology
2.	BO-S-EL-602	Plant Cell and Tissue Culture
3.	BO-S-EL-603	Genetics and Plant Breeding
4.	BO-S-EL-604	Bioanalytical Techniques
5.	BO-S-EL-605	Applied Botany


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CHOICE BASED CREDIT SYSTEM

B. Sc. HONOURS WITH CHEMISTRY

(2019 onwards)



Department of Chemistry
Maharishi Markandeshwar
(Deemed To Be University)
Mullana (Ambala) Haryana
INDIA-133207



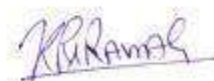
Dr Bhawna Pareek



Dr D P Singh



Mr Keemat Jain



Dr R K Rawal



Dr P K Gupta

Dr V. Prakash



Dr J. Sharma



Dr Nadeem



Dr P. Sethi

SCHEME FOR B.Sc. [2019 onwards]

(Honours with Chemistry)

(12+3 SYSTEM OF EDUCATION)

Under

(Choice Based Credit System)



Department of Chemistry

Maharishi Markandeshwar(Deemed to be University) Mullana, Ambala, Haryana

INDIA-133207


Dr Bhawna Pareek


Dr D P Singh


Mr Keemat Jain


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Dr P K Gupta

Dr V. Prakash


Dr J. Sharma


Dr Nadeem


Dr P. Sethi

SCHEME FOR B.Sc.HONOURS WITH CHEMISTRY

Batch- 2019onwards(CBCS)

SUMMARY

(SEMESTER SYSTEM)

B.Sc.I,II & III
1. Chemistry
2. Mathematics(Ist & IInd Semester)
3. English (Ist Semester)
4. Environmental Science(IInd Semester)
5. Computer Science(IIIrd & IVth Semester)

SUBJECT CODES

SUBJECT	CODE USED
1. Chemistry	BCHE
2. Mathematics	BMAT
3.English Communication	BHUM
4. Environmental Science	BEVS
5. Computer Science	BCAP



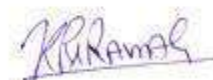
Dr Bhawna Pareek



Dr D P Singh



Mr Keemat Jain



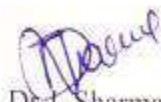
Dr R K Rawal



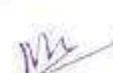
Dr P K Gupta



Dr V. Prakash



Dr J. Sharma



Dr Nadeem



Dr P. Sethi

B. Sc. Honours with Chemistry
SCHEME FOR CHOICE BASED CREDIT SYSTEM(2019 onwards)

Sem.	Core Course (14)	Ability Enhancement Compulsory Course (AECC) (2)	Ability Enhancement Elective Course (AEEC) (2) (Skilled Based)	Elective Discipline Specific (DSE) (4)	Elective Generic (GE)(4)
I	Inorganic Chemistry-I(4L+4P=8) (8hrs)	English Communication (2L)(2 hrs)			GE-1 (5/4L+1T/4P=6/8 (6/8hrs)
	Physical Chemistry-I (4L+4P=8) (8hrs)				
Honours= Total Credits = 20		Teaching hours= 24/26			
II	Organic Chemistry-I(4L+4P=8) (8hrs)	EVS(2L)(2hrs)			GE-2 (5/4L+1T/4P=6/8 (6/8hrs)
	Physical Chemistry-II (4L+4P=8) (8hrs)				
Honours= Total Credits = 20		Teaching hours= 24/26			
III	Inorganic Chemistry-II(4L+4P=8) (8hrs)		SEC- 1 (2L)(2 hrs) (Fuel Chemistry)		GE-3 (5/4L+1T/4P=6/8 (6/8 hrs)
	Organic Chemistry-II (4L+4P=8) (8hrs)				
	Physical Chemistry-III(4L+4P=8)(8hrs)				
Honours= Total Credits = 26		Teaching hours= 32/34			
IV	Inorganic Chemistry-III(4L+4P=8) (8hrs)		SEC-2(2L)(2 hrs) (Chemistry of cosmetics and perfumes)		GE-4 (5/4L+1T/4P=6/8 (6/8 hrs)
	Organic Chemistry-III (4L+4P=8) (8hrs)				
	Physical Chemistry-IV(4L+4P=8)(8hrs)				
Honours= Total Credits = 26		Teaching hours= 32/34			
V	Organic Chemistry-IV(4L+4P=8) (8hrs)			DSE-1(4L+4P=8) (8hrs)(Analytical methods in chemistry)	


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	Physical Chemistry- V(4L+4P=8) (8hrs)			DSE- 2(4L+4P=8) (8hrs)(Industrial chemicals and environment)	
Honours= Total Credits = 24			Teaching hours= 32		
VI	Inorganic Chemistry- IV(4L+4P=8) (8hrs)			DSE- 3(5L+1T=6) (6hrs)(Research Methodology for Chemistry)	
	Organic Chemistry - V(4L+4P=8)(8hrs)			DSE- 4(4L+4P=8) (8hrs) (Polymer Chemistry)	
Honours= Total Credits = 24			Teaching hours= 32		

Total Credits = 140 Total teaching hours=176/ 184



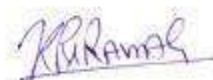
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Dr V. Prakash



Dr J. Sharma



Dr Nadeem



Dr P. Sethi

B.Sc. (Honours with Chemistry)
CHOICE BASED CREDIT SYSTEM- 2019 onwards

I. FIRST SEMESTER

S.No.	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex.+In.)
			Lecture	Practical	Tutorial		
1	BCHE-502	Inorganic Chemistry-I(CC)	4	-	-	4	100(60+40)
2	BCHE-503	Inorganic Chemistry Practical-I(CC)	-	4	-	2	50(20+30)
3	BCHE-504	Physical Chemistry-I(CC)	4	-	-	4	100(60+40)
4	BCHE-505	Physical Chemistry Practical-I(CC)	-	4	-	2	50(20+30)
5	BHUM-101	English Communication(AECC)	2	-	-	2	50(30+20)
6	Biology/ Computer Science/ Mathematics/ Physics	GE-1*	5 or 4	- or 4	1 or -	6	150(90+60) Or 100(60+40) 50(20+30)
	Total		15/14	08/12	01/-	20	500

II. SECOND SEMESTER

S.No.	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex.+In.)
			Lecture	Practical	Tutorial		
1	BCHE-506	Organic Chemistry-I(CC)	4	-	-	4	100(60+40)
2	BCHE-507	Organic Chemistry Practical-I(CC)	-	4	-	2	50(20+30)
3	BCHE-508	Physical Chemistry-II(CC)	4	-	-	4	100(60+40)
4	BCHE-509	Physical Chemistry Practical-II(CC)	-	4	-	2	50(20+30)
5	BEVS-001	Environmental Science(AECC)	2	-	-	2	50(30+20)
6	Biology/ Computer Science/ Mathematics/ Physics	GE-2*	5 or 4	- or 4	1 or -	6	150(90+60) Or 100(60+40) 50(20+30)
	Total		15/14	08/12	01/-	20	500


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 Dr Nadeem


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III. THIRD SEMESTER

S.No.	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex.+In.)
			Lecture	Practical	Tutorial		
1	BCHE-601	Inorganic Chemistry-II(CC)	4	-	-	4	100(60+40)
2	BCHE-602	Inorganic Chemistry Practical-II(CC)	-	4	-	2	50(20+30)
3	BCHE-603	Organic Chemistry-II(CC)	4	-	-	4	100(60+40)
4	BCHE-604	Organic Chemistry Practical-II(CC)	-	4	-	2	50(20+30)
5	BCHE-605	Physical Chemistry-III(CC)	4	-	-	4	100(60+40)
6	BCHE-606	Physical Chemistry Practical-III(CC)	-	4	-	2	50(20+30)
7	BCHE-607	Fuel Chemistry(SEC-1)	2	-	-	2	50(30+20)
8	Biology/ Computer Science/ Mathematics/ Physics	GE-3*	5 or 4	-or 4	1 or -	6	150(90+60) Or 100(60+40) 50(20+30)
Total			19/18	12/16	01/-	26	650

IV. FOURTH SEMESTER

S.No.	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex.+In.)
			Lecture	Practical	Tutorial		
1	BCHE-608	Inorganic Chemistry-III(CC)	4	-	-	4	100(60+40)
2	BCHE-609	Inorganic Chemistry Practical-III(CC)	-	4	-	2	50(20+30)
3	BCHE-610	Organic Chemistry-III(CC)	4	-	-	4	100(60+40)
4	BCHE-611	Organic Chemistry Practical-III(CC)	-	4	-	2	50(20+30)
5	BCHE-612	Physical Chemistry-IV(CC)	4	-	-	4	100(60+40)
6	BCHE-613	Physical Chemistry Practical-IV(CC)	-	4	-	2	50(20+30)
7	BCHE-614	Chemistry of Cosmetics and Perfumes(SEC-2)	2	-	-	2	50(30+20)
8	Biology/ Computer Science/ Mathematics/ Physics	GE-4*	5 or 4	- or 4	1 or -	6	150(90+60) Or 100(60+40) 50(20+30)
Total			19/18	12/16	01/-	26	650


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V. FIFTH SEMESTER

S. No.	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex.+In.)
			Lecture	Practical	Tutorial		
1	BCHE-701	Organic Chemistry-IV(CC)	4	-	-	4	100(60+40)
2	BCHE-702	Organic Chemistry Practical-IV(CC)	-	4	-	2	50(20+30)
3	BCHE-703	Physical Chemistry-V(CC)	4	-	-	4	100(60+40)
4	BCHE-704	Physical Chemistry Practical-V(CC)	-	4	-	2	50(20+30)
5	BCHE-705	Analytical Methods in Chemistry(DSE-1)	4	-	-	4	100(60+40)
6	BCHE-706	Analytical Methods in Chemistry Practical(DSE-1a)	-	4	-	2	50(20+30)
7	BCHE-707	Industrial Chemicals and Environment(DSE-2)	4	-	-	4	100(60+40)
8	BCHE-708	Industrial Chemicals and Environment practical(DSE-2a)	-	4	-	2	50(20+30)
	Total		16	16	-	24	600

VI. SIXTH SEMESTER

S. No.	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex.+In.)
			Lecture	Practical	Tutorial		
1	BCHE-709	Inorganic Chemistry-IV(CC)	4	-	-	4	100(60+40)
2	BCHE-710	Inorganic Chemistry Practical-IV(CC)	-	4	-	2	50(20+30)
3	BCHE-711	Organic Chemistry-V(CC)	4	-	-	4	100(60+40)
4	BCHE-712	Organic Chemistry Practical-V(CC)	-	4	-	2	50(20+30)
5	BCHE-713	Research Methodology for Chemistry(DSE-3)	5	-	1	6	150(90+60)
6	BCHE-714	Polymer Chemistry(DSE-4)	4	-	-	4	100(60+40)
7	BCHE-715	Polymer Chemistry Practical (DSE-4a)	-	4	-	2	50(20+30)
	Total		17	12	01	24	600


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***GENERIC ELECTIVE PAPERS (GE)-1-4 (Four papers from any one discipline)**

Any set of four papers offered by other departments / disciplines to the students of B.Sc.
 Hon's with chemistry

SET-I (BIOLOGY)

S. No.	Sem.	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex.+In.)
				Lecture	Practical	Tutorial		
1	I	BBIO-001	Biochemistry and Metabolism	5	-	1	6	150(90+60)
2	II	BBIO-002	Biotechnology and Human Welfare	5	-	1	6	150(90+60)
3	III	BBIO-003	Biodiversity(Microbes, Algae, Fungi and Archegoniates)	5	-	1	6	150(90+60)
4	IV	BBIO-004	Biodiversity-Animal	5	-	1	6	150(90+60)

SET-II (Computer Science)

S.No.	Sem.	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex.+In.)
				Lecture	Practical	Tutorial		
1	I	BCAP - 001	Web Designing using HTML	4	-	-	4	100(60+40)
2		BCAP - 002	Web Designing using HTML Lab	-	4	-	2	50(20+30)
3	II	BCAP - 003	Database Management Systems	4	-	-	4	100(60+40)
4		BCAP - 004	Database Management Systems Lab	-	4	-	2	50(20+30)
5	III	BCAP - 005	Object Oriented Programming using C++	4	-	-	4	100(60+40)
6		BCAP - 006	Object Oriented Programming using C++ Lab	-	4	-	2	50(20+30)
7	IV	BCAP - 007	Programming in java	4	-	-	4	100(60+40)
8		BCAP - 008	Programming in java Lab	-	4	-	2	50(20+30)


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SET-III (Mathematics)

S.No.	Sem.	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex.+In.)
				Lecture	Practical	Tutorial		
1	I	BMAT-101	Mathematics-I(Differential Calculus)	5	-	1	6	150(90+60)
2	II	BMAT-102	Mathematics-II(Differential Equation)	5	-	1	6	150(90+60)
3	III	BMAT-103	Mathematics-III(Real Analysis)	5	-	1	6	150(90+60)
4	IV	BMAT-104	Mathematics-IV(Algebra)	5	-	1	6	150(90+60)

SET-IV (Physics)

S.No.	Sem.	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex.+In.)
				Lecture	Practical	Tutorial		
1	I	BPHY-127	Electricity and magnetism	4	-	-	4	100(60+40)
2		BPHY-128	Electricity and magnetism lab	-	4	-	2	50(20+30)
3	II	BPHY-129	Elements of Modern Physics	4	-	-	4	100(60+40)
4		BPHY-130	Elements of Modern Physics lab	-	4	-	2	50(20+30)
5	III	BPHY-131	Waves and Optics	4	-	-	4	100(60+40)
6		BPHY-132	Waves and Optics lab	-	4	-	2	50(20+30)
7	IV	BPHY-133	Quantum Mechanics	5	-	1	4	150(90+60)


 Dr Bhawna Pareek


 Dr D P Singh


 Mr Keemat Jain


 Dr R K Rawal


 Dr P K Gupta

Dr V. Prakash


 Dr J. Sharma


 Dr Nadeem


 Dr P. Sethi

Maharishi Markandeshwar(Deemed to be University)
Mullana-133207(Ambala), Haryana (India)

(Established under Section 3 of the UGC Act, 1956 vide Notification No. F.9-65/2006-U.3 (A) dated 12-6-2007)

WEBSITE: www.mmumullana.org

M. M. ENGINEERING COLLEGE, CHEMISTRY DEPARTMENT

(An ISO 9001-2002 Certified Institute)E-Mail: hod.chemistry@mmumullana.org, Tel. No.: 01731-304229

SCHEME FOR B.Sc. (Non-Medical)

Batch- 2017 onwards(CBCS)

SUMMARY

(SEMESTER SYSTEM)

B.Sc I,II & III (Non-Medical)
1. Physics
2. Chemistry
3. Mathematics
4. English (Ist Semester)
5. Environmental Science(IIInd Semester)
6. Computer Applications(IIIrd Semester)

SUBJECT CODES

SUBJECT	CODE USED
Physics	BP
Chemistry	BC
Mathematics	BM
English	BE
Environmental Science	ES
IT Skills(Computer Applications)	BIT

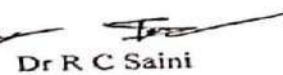

Dr R. Khare

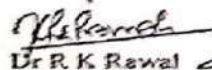

Dr D P Singh

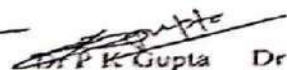

Mr Keemat Jain

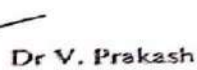

Dr A. K. Gupta


Dr P Dogra

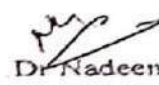

Dr R C Saini


Dr R. K. Rawal


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Sem.	Core Course (Credit)(Hours)	Ability Enhancement Compulsory Course (AECC) (2)	Ability Enhancement Elective Course (AEEC) (2) (Skilled Based)	Elective Discipline Specific (DSE) (4)
I	Chemistry-I(4L+4P=8) (8hrs)	(English)		
	Physics-I (4L+4P=8) (8hrs)	Communication		
	Maths-I(6+2=8)(8hrs)	(2)(2 hrs)		
	General= Total Credit =21,		Teaching hrs=26	
II	Chemistry-II (4L+4P=8) (8hrs)	EVS(2)(2hrs)		
	Physics-II(4L+4P=8) (8hrs)			
	Maths-II(6+2=8)(8hrs)			
	General= Total Credit =21,		Teaching hrs=26	
III	Chemistry-III(4L+4P=8) (8hrs)		SEC- I (2)(2 hrs) (IT Skills for Chemists) Computer Applications	
	Physics-III(4L+4P=8) (8hrs)			
	Maths-III(6+2=8)(8hrs)			
	General= Total Credit =21,		Teaching hrs=26	
IV	Chemistry-IV(4L+4P=8) (8hrs)		SEC-II(2)(2 hrs) (Chemistry)	
	Physics-IV(4L+4P=8) (8hrs)			
	Maths-IV(6+2=8)(8hrs)			
	General= Total Credit =21,		Teaching hrs=26	
V			SEC-III(2)(2 hrs) (Physics)	DSE-1(4L+4P=8) (8hrs)(Chemistry-V)
				DSE-2(4L+4P=8) (8hrs) (Physics-V)
				DSE-3(4L+4P=8) (8hrs) (Maths-V)
	General= Total Credit =21,		Teaching hrs=26	
VI			SEC-IV(2)(2 hrs) (Maths)	DSE-4(4L+4P=8) (8hrs) (Chemistry-VI)
				DSE-5(4L+4P=8) (8hrs) (Physics-VI)
				DSE-6(4L+4P=8) (8hrs) (Maths-VI)
	General= Total Credit =21,		Teaching hrs=26	
	Total Credits = 126			

Dr R. Khare

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Scheme for B.Sc. (Non-Medical:july, 2017 onwards)

CHOICE BASED CREDIT SYSTEM

I. FIRST SEMESTER


S.No.	Course	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex.+In.)
				Lecture	Practical	Tutorial		
1	Core	BC-111	Chemistry-I	4	-	-	4	100(60+40)
2	Core	BC-112	Chemistry Practical-I	-	4	-	2	50(20+30)
3	Core	BP-111	Physics-I	4	-	-	4	100(60+40)
4	Core	BP-112	Physics Practical-I	-	4	-	2	50(20+30)
5	Core	BM-111	Mathematics-I	6	-	2	7	150(90+60)
6	AECC	BE-111	English Communication	2	-	-	2	50(30+20)
		Total		16	08	2	21	500

II. SECOND SEMESTER

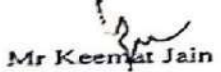
S.No.	Course	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex.+In.)
				Lecture	Practical	Tutorial		
1	Core	BC-121	Chemistry-II	4	-	-	4	100(60+40)
2	Core	BC-122	Chemistry Practical-II	-	4	-	2	50(20+30)
3	Core	BP-121	Physics-II	4	-	-	4	100(60+40)
4	Core	BP-122	Physics Practical-II	-	4	-	2	50(20+30)
5	Core	BM-121	Mathematics-II	6	-	2	7	150(90+60)
6	AECC	ES-101	Environmental Science	2	-	-	2	100(60+40)
		Total		16	08	2	21	550



Dr R. Khare



Dr D P Singh



Mr Keemat Jain



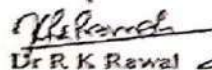
Dr A. K. Gupta



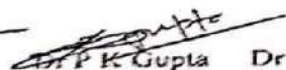
Dr P Dogra



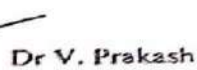
Dr R C Saini



Dr R. K. Rawal



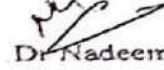
Dr P. K. Gupta



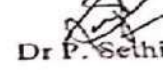
Dr V. Prakash



Dr J. Sharma



Dr Nadeem



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III. THIRD SEMESTER

S.No.	Course	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex.+In.)
				Lecture	Practical	Tutorial		
1	Core	BC-231	Chemistry-III	4	-	-	4	100(60+40)
2	Core	BC-232	Chemistry Practical-III	-	4	-	2	50(20+30)
3	Core	BP-231	Physics-III	4	-	-	4	100(60+40)
4	Core	BP-232	Physics Practical-III	-	4	-	2	50(20+30)
5	Core	BM-231	Mathematics-III	6	-	2	7	150(90+60)
6	SEC	BIT-231	IT Skills for chemists	2	-	-	2	50(30+20)
		Total		16	08	2	21	500

IV. FOURTH SEMESTER

S.No.	Course	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex.+In.)
				Lecture	Practical	Tutorial		
1	Core	BC-241	Chemistry-IV	4	-	-	4	100(60+40)
2	Core	BC-242	Chemistry Practical-IV	-	4	-	2	50(20+30)
3	Core	BP-241	Physics-IV	4	-	-	4	100(60+40)
4	Core	BP-242	Physics Practical-IV	-	4	-	2	50(20+30)
5	Core	BM-241	Mathematics-IV	6	-	2	7	150(90+60)
6	SEC	BC-243/ BP-243/ BM-242	Basic Analytical Chemistry	2	-	-	2	50(30+20)
		Total		16	08	2	21	500



Dr R. Khare



Dr D P Singh



Mr Keemat Jain



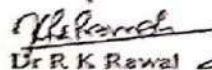
Dr A. K. Gupta



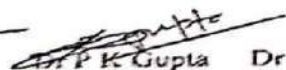
Dr P Dogra



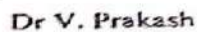
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V. FIFTH SEMESTER

S.No.	Course	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex.+In.)
				Lecture	Practical	Tutorial		
1	DSE	BC-351	Chemistry-V	4	-	-	4	100(60+40)
2	DSE	BC-352	Chemistry Practical-V	-	4	-	2	50(20+30)
3	DSE	BP-351	Physics-V	4	-	-	4	100(60+40)
4	DSE	BP-352	Physics Practical-V	-	4	-	2	50(20+30)
5	DSE	BM-351	Mathematics-V	6	-	2	7	150(90+60)
6	SEC	BC-353/ BP-353/ BM-352	Analytical Clinical Biochemistry	2	-	-	2	50(30+20)
Total				16	08	2	21	500

VI. SIXTH SEMESTER

S.No.	Course	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex.+In.)
				Lecture	Practical	Tutorial		
1	DSE	BC-361	Chemistry-VI	4	-	-	4	100(60+40)
2	DSE	BC-362	Chemistry Practical-VI	-	4	-	2	50(20+30)
3	DSE	BP-361	Physics-VI	4	-	-	4	100(60+40)
4	DSE	BP-362	Physics Practical-VI	-	4	-	2	50(20+30)
5	DSE	BM-361	Mathematics-VI	6	-	2	7	150(90+60)
6	SEC	BC-363/ BP-363/ BM-362	Pesticide Chemistry	2	-	-	2	50(30+20)
Total				16	08	2	21	500

Total Credits = **126**


Dr R. Khare

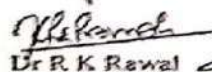

Dr D P Singh

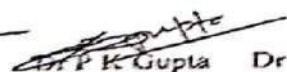

Mr Keemat Jain

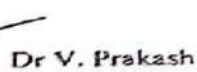

Dr A K Gupta


Dr P Dogra

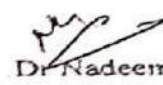

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B. SC. Non- Medical with Honours in Chemistry

SCHEME FOR CHOICE BASED CREDIT SYSTEM (2017 onwards)

Sem.	Core Course (Credit)(Hours)	Ability Enhancement Compulsory Course (AECC) (2)	Ability Enhancement Elective Course (AECC) (2) (Skilled Based)	Elective Discipline Specific (DSE) (4)	Elective Generic (GE)(4)
I	Chemistry-I(4L+4P=8) (8hrs)	(English) Communication (2)(2 hrs)			GE-1 (Chemistry- I A) (4L+3P=7) (7hrs)
	Physics-I (4L+4P=8) (8hrs)				
	Maths-I(6+2=8)(8hrs)				
Honours= Total Credits= 26.5		Teaching hours= 33			
II	Chemistry-II(4L+4P=8) (8hrs)	EVS(2)(2hrs)			GE-2 (Chemistry- II A) (4L+3P=7) (7hrs)
	Physics-II (4L+4P=8) (8hrs)				
	Maths-II(6+2=8)(8hrs)				
Honours= Total Credits= 26.5		Teaching hours= 33			
III	Chemistry-III(4L+4P=8) (8hrs)		IT Skills for chemists- (SEC-I)		GE-3 (Chemistry- III A) (4L+3P=7) (7hrs)
	Physics-III (4L+4P=8) (8hrs)				
	Maths-III(6+2=8)(8hrs)				
Honours= Total Credits= 26.5		Teaching hours= 33			
IV	Chemistry-IV(4L+4P=8) (8hrs)		SEC-II(2)(2 hrs) (Chemistry)		GE-4 (Chemistry- IV A) (4L+3P=7) (7hrs)
	Physics-IV (4L+4P=8) (8hrs)				
	Maths-IV(6+2=8)(8hrs)				
Honours= Total Credits= 26.5		Teaching hours= 33			
V	Chemistry-V(4L+4P=8) (8hrs)		SEC- III (2)(2 hrs) (Chemistry)		GE-5 (Chemistry- V A) (4L+3P=7) (7hrs)
	Physics-V (4L+4P=8) (8hrs)				
	Maths-V(6+2=8)(8hrs)				
Honours= Total Credits= 26.5		Teaching hours= 33			
VI	Chemistry-VI(4L+4P=8) (8hrs)		SEC- IV (2)(2 hrs) (Chemistry)		GE-6 (Chemistry- VI A) (4L+3P=7) (7hrs)
	Physics-VI (4L+4P=8) (8hrs)				
	Maths-VI(6+2=8)(8hrs)				
Honours= Total Credits= 26.5		Teaching hours= 33			

Total Credit = 159

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B.Sc. (Non-Medical with Honours in Chemistry)

CHOICE BASED CREDIT SYSTEM- 2017 onwards

I. FIRST SEMESTER

S.No.	Course	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex.+In.)
				Lecture	Practical	Tutorial		
1	Core	BC-111	Chemistry-I	4	-	-	4	100(60+40)
2	Core	BC-112	Chemistry Practical-I	-	4	-	2	50(20+30)
3	Core	BP-111	Physics-I	4	-	-	4	100(60+40)
4	Core	BP-112	Physics Practical-I	-	4	-	2	50(20+30)
5	Core	BM-111	Mathematics-I	6	-	2	7	150(90+60)
6	AECC	BE-111	English Communication	2	-	-	2	50(30+20)
7	GE	BC-113	Chemistry-IA	4	-	-	4	100(60+40)
8	GE	BC-114	Chemistry Practical –IA	-	3	-	1.5	50(20+30)
		Total		20	11	2	26.5	650

II. SECOND SEMESTER

S.No.	Course	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex.+In.)
				Lecture	Practical	Tutorial		
1	Core	BC-121	Chemistry –II	4	-	-	4	100(60+40)
2	Core	BC-122	Chemistry Practical-II	-	4	-	2	50(20+30)
3	Core	BP-121	Physics –II	4	-	-	4	100(60+40)
4	Core	BP-122	Physics Practical-II	-	4	-	2	50(20+30)
5	Core	BM-121	Mathematics-II	6	-	2	7	150(90+60)
6	AECC	ES-101	Environmental Science	2	-	-	2	100(60+40)
7	GE	BC-123	Chemistry-IIA	4	-	-	4	100(60+40)
8	GE	BC-124	Chemistry Practical –IIA	-	3	-	1.5	50(20+30)
		Total		20	11	2	26.5	700



Dr R. Khare



Dr D P Singh



Mr Keemat Jain



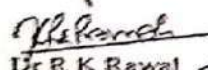
Dr A. K. Gupta



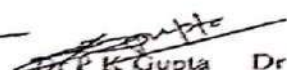
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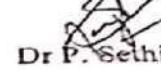
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III. THIRD SEMESTER

S.No.	Course	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex.+In.)
				Lecture	Practical	Tutorial		
1	Core	BC-231	Chemistry –III	4	-	-	4	100(60+40)
2	Core	BC-232	Chemistry Practical-III	-	4	-	2	50(20+30)
3	Core	BP-231	Physics –III	4	-	-	4	100(60+40)
4	Core	BP-232	Physics Practical-III	-	4	-	2	50(20+30)
5	Core	BM-231	Mathematics-III	6	-	2	7	150(90+60)
6	SEC	BIT-231	IT Skills for chemists	2	-	-	2	50(30+20)
7	GE	BC-233	Chemistry-III A	4	-	-	4	100(60+40)
8	GE	BC-234	Chemistry Practical –III A	-	3	-	1.5	50(20+30)
		Total		20	11	2	26.5	650

IV. FOURTH SEMESTER

S.No.	Course	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex.+In.)
				Lecture	Practical	Tutorial		
1	Core	BC-241	Chemistry –IV	4	-	-	4	100(60+40)
2	Core	BC-242	Chemistry Practical-IV	-	4	-	2	50(20+30)
3	Core	BP-241	Physics –IV	4	-	-	4	100(60+40)
4	Core	BP-242	Physics Practical-IV	-	4	-	2	50(20+30)
5	Core	BM-241	Mathematics-IV	6	-	2	7	150(90+60)
6	SEC	BC-243	Basic Analytical Chemistry	2	-	-	2	50(30+20)
7	GE	BC-244	Chemistry-IVA	4	-	-	4	100(60+40)
8	GE	BC-245	Chemistry Practical –IVA	-	3	-	1.5	50(30+20)
		Total		20	11	2	26.5	650



Dr R. Khare



Dr D P Singh



Mr Keemat Jain



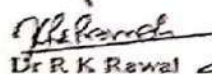
Dr A. K. Gupta



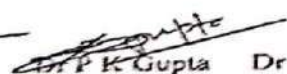
Dr P Dogra



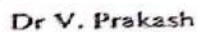
Dr R C Saini



Dr R. K. Rawal



Dr P. K. Gupta



Dr V. Prakash



Dr J. Sharma



Dr Nadeem



Dr P. Selhi

Maharishi Markandeshwar (Deemed to be University)

Mullana-133207(Ambala), Haryana (India)

(Established under Section 3 of the UGC Act, 1956 vide Notification No. F.9-65/2006-U.3 (A) dated 12-6-2007)

WEBSITE: www.mmumullana.org

M. M. ENGINEERING COLLEGE, CHEMISTRY DEPARTMENT

(An ISO 9001-2002 Certified Institute) E-Mail: hod.chemistry@mmumullana.org, Tel. No.: 01731-304229

V. FIFTH SEMESTER

S.No.	Course	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex.+In.)
				Lecture	Practical	Tutorial		
1	Core	BC-351	Chemistry –V	4	-	-	4	100(60+40)
2	Core	BC-352	Chemistry Practical-V	-	4	-	2	50(20+30)
3	Core	BP-351	Physics –V	4	-	-	4	100(60+40)
4	Core	BP-352	Physics Practical-V	-	4	-	2	50(20+30)
5	Core	BM-351	Mathematics-V	6	-	2	7	150(90+60)
6	SEC	BC-353	Analytical Clinical Biochemistry	2	-	-	2	50(30+20)
7	GE	BC-354	Chemistry-VA	4	-	-	4	100(60+40)
8	GE	BC-355	Chemistry Practical –VA	-	3	-	1.5	50(30+20)
		Total		20	11	2	26.5	650

VI. SIXTH SEMESTER

S.No.	Course	Paper Code	Paper	Hrs/Week			Cr.	Marks T (Ex.+In.)
				Lecture	Practical	Tutorial		
1	Core	BC-361	Chemistry –VI	4	-	-	4	100(60+40)
2	Core	BC-362	Chemistry Practical-VI	-	4	-	2	50(20+30)
3	Core	BP-361	Physics – VI	4	-	-	4	100(60+40)
4	Core	BP-362	Physics Practical- VI	-	4	-	2	50(20+30)
5	Core	BM-361	Mathematics- VI	6	-	2	7	150(90+60)
6	SEC	BC-363	Pesticide Chemistry	2	-	-	2	50(30+20)
7	GE	BC-364	Chemistry- VI A	4	-	-	4	100(60+40)
8	GE	BC-365	Chemistry Practical – VI A	-	3	-	1.5	50(30+20)
		Total		20	11	2	26.5	650

Total Credits= 159



Dr R. Khare



Dr D P Singh



Mr Keemat Jain



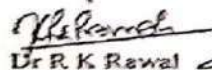
Dr A. K. Gupta



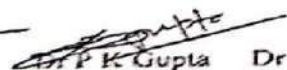
Dr P Dogra



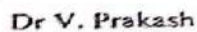
Dr R C Saini



Dr R. K. Rawal



Dr P. K. Gupta



Dr V. Prakash



Dr J. Sharma



Dr Nadeem



Dr P. Selhi

**SCHEME & SYLLABUS FOR M.Sc. Chemistry
(2019 ONWARDS)**

Under

(Choice Based Credit System)



Department of Chemistry
Maharishi Markandeshwar
(Deemed to be University), Mullana
Ambala, Haryana
INDIA-133207


Dr Bhawna Pareek


Dr D P Singh


Mr Keemat Jain


Dr R K Rawal


Dr P K Gupta

Dr V. Prakash


Dr J. Sharma


Dr Nadeem


Dr P. Sethi

M.Sc.Chemistry- Scheme and Syllabi
(2019 Onward)

i) FIRST SEMESTER

S.No.	Paper Code	Paper	Hrs/Week		Credit	Marks (Ex+Int)
			Lecture	Practicals		
1	MCHE-801	Inorganic Chemistry-I	4	0	4.0	100(60+40)
2	MCHE-802	Organic Chemistry-I	4	0	4.0	100(60+40)
3	MCHE-803	Physical Chemistry-I	4	0	4.0	100(60+40)
4	MCHE-804/ MMAT-001	Bio Sciences/ Basic Mathematics for Chemists	3	0	3.0	100(60+40)
5	MCHE-805	Inorganic Chemistry Practical-I	0	4	2.0	100(40+60)
6	MCHE-806	Organic Chemistry Practical-I	0	4	2.0	100(40+60)
7	MCHE-807	Physical Chemistry Practical-I	0	4	2.0	100(40+60)
8	MCHE-808	Seminar	0	2	1.0	50(Int)
	Total		15	14	22.0	850

SECOND SEMESTER

S.No.	Paper Code	Paper	Hrs/Week		Credit	Marks (Ex+Int)
			Lecture	Practicals		
1	MCHE-809	Inorganic Chemistry-II	4	0	4.0	100(60+40)
2	MCHE-810	Organic Chemistry-II	4	0	4.0	100(60+40)
3	MCHE-811	Physical Chemistry-II	4	0	4.0	100(60+40)
4	MCHE-812	Spectroscopy and its applications in Organic Chemistry	4	0	4.0	100(60+40)
5	MCHE-813	Inorganic Chemistry Practical-II	0	4	2.0	100(40+60)
6	MCHE-814	Organic Chemistry Practical-II	0	4	2.0	100(40+60)
7	MCHE-815	Physical Chemistry Practical-II	0	4	2.0	100(40+60)
	Total		16	12	22	700

6 week Summer/Industrial training after second semester


Dr Bhawna Pareek


Dr D P Singh


Mr Keemat Jain


Dr R K Rawal


Dr P K Gupta

Dr V. Prakash


Dr J. Sharma


Dr Nadeem


Dr P. Sethi

ii) **THIRD SEMESTER**

S.No.	Paper Code	Paper	Hrs/Week		Credit	Marks (Ex+Int)
			Lecture	Practicals		
1	MCHE-901	Advanced Inorganic Chemistry	4	0	4	100(60+40)
2	MCHE-902	Pericyclic Reactions and Photochemistry	4	0	4	100(60+40)
3	MCHE-903	Advanced Physical Chemistry	4	0	4	100(60+40)
4	MCHE-904	Reagents and Heterocyclic Chemistry	4	0	4	100(60+40)
5	MCHE-905	Inorganic Chemistry Practical-III	0	6	3	100(40+60)
6	MCHE-906	Organic Chemistry Practical-III	0	6	3	100(40+60)
7	MCHE-907	Physical Chemistry Practical-III	0	6	3	100(40+60)
8	MCHE-908	Summer Training	0	0	6	100(60+40)
	Total		16	18	31	800

Summer Training presentations/evaluations will be on Saturdays

FOURTH SEMESTER

S.No.	Paper Code	Paper	Hrs/Week		Credit	Marks (Ex+Int)
			Lecture	Practicals		
1	MCHE-909	Analytical Techniques	4	0	4	100(60+40)
2	MCOM-001	Application of Computers in Chemical Analysis	4	0	4	100(60+40)
3	MCHE-910/911/912	Elective I- Inorganic/Organic/Physical Chemistry	5	0	5	100(60+40)
4	MCHE-913/914/915	Elective II- Inorganic/Organic/Physical Chemistry	5	0	5	100(60+40)
5	MCOM-002	Applications of computers in chemistry- Lab	0	2	1	50(30+20)
6	MCHE-916	Project (Minor)* OR	0	12 hrs	6	200(80+120)
	MCHE-917/918/919	Practical Elective I- Inorganic/Organic/Physical Chemistry		6	3	100(40+60)
	MCHE-920/921/922	Practical Elective II- Inorganic/Organic/Physical Chemistry		6	3	100(40+60)
	Total		18	14	25	650


Dr Bhawna Pareek


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Dr P. Sethi

S.No	Inorganic Chemistry	Organic Chemistry	Physical Chemistry
1	Elective-I Nuclear Chemistry	Elective-I Bio-Organic and Medicinal Chemistry	Elective-I Macromolecules and Biophysical Chemistry
2	Elective-II Bioinorganic Chemistry	Elective-II Chemistry of Natural Products & Disconnection approach	Elective-II Statistical thermodynamics and advanced Kinetics



Dr Bhawna Pareek



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Dr Nadeem



Dr P. Sethi



MAHARISHI MARKANDESHWAR (Deemed to be University),

Mullana- Ambala, 133207

(Established under Section 3 of the UGC Act. 1956)

Department of Mathematics & Humanities

SCHEME OF EXAMINATION: M.Sc. (MATHEMATICS)

W.e.f. the session-2018-19

M. Sc 1st Semester

Sr. No.		Paper Code	Paper Name	L	T	P	S	Sessional Marks	Theory Marks	Total Marks	Credit
1.	Core	MAT 101	Advanced Abstract Algebra	4	1	0		40	60	100	5
2.		MAT 102	Real Analysis	4	1	0		40	60	100	5
3.		MAT 103	Topology	4	1	0		40	60	100	5
		MAT 104	Advance Excel Lab				4	50	30	80	4
		MAT 105	Seminar				1		20	20	1
One from each Elective I and II											
4.	Elective I	MAT 106	Complex Analysis	4	1	0		40	60	100	5
5.		MAT 107	Commutative Algebra	4	1	0		40	60	100	5
6.	Elective II	MAT 108	Differential Equations	4	1	0		40	60	100	5
7.		MAT 109	Spherical Trigonometry and Astronomy	4	1	0		40	60	100	5
									Total	600	30

M.Sc 2nd Semester

Sr. No.		Paper Code	Paper Name	L	T	P	S	Sessional Marks	Theory Marks	Total Marks	Credit
1.	Core	MAT 201	Measure theory and Integration	4	1	0		40	60	100	5
2.		MAT 202	Differential Geometry	4	1	0		40	60	100	5
3.		MAT 203	Partial differential Equation	4	1	0		40	60	100	5
4.		MAT 204	Seminar				1			20	1
One from each Elective I, II and III											
5.	Elective -I	MAT 205	Discrete Mathematics	4	1	0		40	60	100	5
		MAT 206	Cryptography	4	1	0		40	60	100	5
6.	Elective -II	MAT 207	Wavelets	4	1	0		40	60	100	5
		MAT 208	Analytical Mechanics & Variational Methods	4	1	0		40	60	100	5
7.	Elective -III	MAT 209	MATLAB				4	50	30	80	4
8.		MAT 210	SPSS/R				4	50	30	80	4
									Total	600	30

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MAHARISHI MARKANDESHWAR (Deemed to be University),

Mullana- Ambala, 133207

(Established under Section 3 of the UGC Act. 1956)

Department of Mathematics & Humanities

SCHEME OF EXAMINATION: M.Sc. (MATHEMATICS)

M.Sc. 3rd Semester

w.e.f. 2018-19

Sr. No.		Paper Code	Paper Name	L T P S	Sessional Marks	Theory/ Practical Marks	Total Marks	Credit	
1.	Core	MAT 301	Functional Analysis	4 1 0	40	60	100	5	
2.		MAT 302	Solid Mechanics	4 1 0	40	60	100	5	
3.		MAT 303	Optimization Techniques	4 1 0	40	60	100	5	
4.		MAT 304	Essentials of Information Technology-I	2 0 0	15	25	40	2	
5.		MAT 305	Python Software	0 0 2	25	15	40	2	
6.		MAT 306	Seminar		1		20	20	1
One from each Elective I and II									
7.	Elective I	MAT 307	Mathematical Statistics	4 1 0	40	60	100	5	
8.		MAT 308	Fuzzy Sets	4 1 0	40	60	100	5	
9.	Elective II	MAT 309	Integral Transforms	4 1 0	40	60	100	5	
10.		MAT 310	Mathematics of Finance & Insurance	4 1 0	40	60	100	5	
							Total	600	30

M.Sc. 4th Semester

w.e.f. 2018-19

Sr. No.		Paper Code	Paper Name	L T P S	Sessional Marks	Theory/ Practical Marks	Total Marks	Credit	
1.	Core 1	MAT 401	Integral Equation	4 1 0	40	60	100	5	
2.		MAT 402	Operation Research	4 1 0	40	60	100	5	
3.		MAT 403	Theoretical Seismology	4 1 0	40	60	100	5	
4.		MAT 404	Latex		4	50	30	80	4
5.		MAT 405	Seminar		1		20	20	1
The students are required to opt Two paper of Elective –I and Elective-II (one form each) or Elective-III									
6.	Elective -I	MAT 406	Fluid Mechanics	4 1 0	40	60	100	5	
7.		MAT 407	Theory of vibration with applications	4 1 0	40	60	100	5	
8.		MAT 408	Programming and its Applications	4 1 0	40	60	100	5	
9.	Elective -II	MAT 409	Graph Theory	4 1 0	40	60	100	5	
10.		MAT 410	Number Theory	4 1 0	40	60	100	5	
11.	Elective -III	MAT 411	Dissertation /Project	40 [Seminar-I] (On Research Topic)	40 [Seminar-II] (on Research Topic)	120 [Final Dissertati on & Viva-Voce]	200	10	
							Total	600	30

Deepu

M.M. ENGINEERING COLLEGE
w.e.f. July 2019 (Batches 2019-2023 onwards)
Branch/Course: Common to all Branches

Bachelor of Technology-1st year (Semester -2nd) Group-I

Sr. No.	Category	Code	Course Title	Hours per week			Total Hours	Credit
				L	T	P		
1	Basic Science Courses	BPHY-003	Physics-II	3	1	0	4	4.0
2	Basic Science Courses	BMAT-002/ BMAT-002/A	Mathematics-II (Common for all branches except Biotechnology) Mathematics -II (Biotechnology Only)	3	1	0	4	4.0
3	Engineering Science Courses	BMEC-003	Manufacturing Process	2	0	0	2	2.0
4	Basic Science Courses	BCHE-001/ BBIO-001	Chemistry-I / Biology	3	1	0	4	4.0
5	Humanities and Social Science including Management Course	BHUM-001	English	2	0	0	2	2.0
6	Engineering Science Courses	BMEC-004	Workshop Practice	0	0	4	4	2.0
7	Basic Science Courses	BCHE-002/ BBIO-002	Chemistry-I / Biology Lab	0	0	2	2	1.0
8	Humanities and Social Science including Management Courses	BHUM-002	English Lab	0	0	2	2	1.0
9	Engineering Science Courses	BCSE-004	Computer Programing Lab-II	0	0	2	2	1.0
10	Personality Development Course	BPD-001	Personality Development ((Non-Creditable))	1	0	0	1	-
11	Mandatory Course	ES-101	Environmental Studies	3	0	0	3	3.0
Total Credit								24

Bachelor of Technology-1st year (Semester -2nd) Group-II

Sr. No.	Category	Code	Course Title	Hours per week			Total Hours	Credit
				L	T	P		
1	Basic Science Courses	BPHY-003	Physics -II	3	1	0	4	4.0
2	Basic Science Courses	BMAT-002/ BMAT-002/A	Mathematics -I(Common for all branches except Biotechnology) Mathematics -II (Biotechnology Only)	3	1	0	4	4.0
3	Engineering Science Courses	BELE-001	Basic Electrical Engineering	3	1	0	4	4.0
4	Engineering Science Courses	BMEC-001	Engineering Graphics & Design	0	0	4	4	2.0
5	Engineering Science Courses	BMEC-002	Engineering Mechanics	3	1	0	4	4.0
6	Basic Science Courses	BPHY-002	Physics Lab-I	0	0	2	2	1.0
7	Engineering Science Courses	BCSE-001	Computer Programing Lab	0	0	2	2	1.0
8	Engineering Science Courses	BELE-002	Basic Electrical Engineering Lab	0	0	2	2	1.0
9	Engineering Science Courses	BCSE-002	Business Processes	0	0	2	2	1.0
Total Credit								22.0

(Signature)
Head
Mech. Engg. Deptt.
M.M.E. College
Mullana (Ambala)

M.M. ENGINEERING COLLEGE
w.e.f. July 2019 (Batches 2018 onwards)
Branch/Course: Mechanical Engineering

B. Tech. 3rd Semester

Sr. No	Category	Code	Course Title	Hours per week			Total Hours	Credits
				L	T	P		
1	Basic Science Courses	BMAT-003	Mathematics III (Probability & Statistics)	3	1	0	4	4.0
2	Professional Core Courses	BMEC-502	Fluid Mechanics & Fluid Machines	3	1	0	4	4.0
3	Professional Core Courses	BMEC-503	Strength of Materials	3	1	0	4	4.0
4	Professional Core Courses	BMEC-504	Manufacturing Processes	3	0	0	3	3.0
5	Professional Core Courses	BMEC-505	Thermodynamics	3	1	0	4	4.0
6	Professional Core Courses	BMEC-506	Fluid Mechanics & Machine Lab	0	0	2	2	1.0
7	Professional Core Courses	BMEC-507	Strength of Materials Lab	0	0	2	2	1.0
8	Professional Core Courses	BMEC-508	Production Technology Lab	0	0	2	2	1.0
9	Project (SEC)	BMEC-509	Project-I (Non-creditable)	-	-	-	-	-
Total Credit								22.0

One Course -3 Credit Swayam

B. Tech. 4th Semester

Sr. No	Category	Code	Course Title	Hours per week			Total Hours	Credits
				L	T	P		
1	Professional Core Courses	BMEC-510	Applied Thermodynamics	3	1	0	4	4.0
2	Engineering Science Courses	BMEC-511	Materials Engineering	3	1	0	4	4.0
3	Professional Core Courses	BMEC-512	Mechatronics	3	0	0	3	3.0
4	Professional Core Courses	BMEC-513	Advance Solid Mechanics	3	1	0	4	4.0
5	Professional Core Courses	BMEC-514	Kinematics & Theory of Machines	3	1	0	4	4.0
6	Professional Core Courses	BMEC-515	Kinematics & Theory of Machines Lab	0	0	2	2	1.0
7	Project (SEC)	BMEC-516	Project-II	-	-	4	4	2.0
Total Credit								22.0

One Course -3 Credit Swayam



Head
Mech. Engg. Deptt.
M.M.E. College
Mullana (Ambala)

M.M. ENGINEERING COLLEGE
w.e.f. July 2019 (Batches 2018 onwards)
Branch/Course: Mechanical Engineering

B. Tech. 5th Semester

Sr. No	Category	Code	Course Title	Hours per week			Total Hours	Credits
				L	T	P		
1	Professional Core Courses	BMEC-517	Heat & Mass Transfer	3	1	0	4	4.0
2	Professional Elective Courses	BMEC-	Elective-I	3	0	0	3	3.0
3	Professional Core Courses	BMEC-518	Design of Machine Elements-I	3	1	0	4	4.0
4	Professional Elective Courses	BMEC-	Elective-II	3	0	0	3	3.0
5	Humanities and Social Science including Management Course (Foundation)	BHUM-	Humanities-I (Elective)	3	0	0	3	3.0
6	Professional Core Courses	BMEC-519	Thermal Lab-II	0	0	2	2	1.0
7	Professional Core Courses	BMEC-520	CAD Lab -I	0	0	2	2	1.0
8	Project (SEC)	BMEC-521	Project-III	-	-	4	4	2.0
9	Mandatory Course (Non -Creditable)	MAN-001	Indian Constitution	2	0	0	2	-
Total Credit							21.0	

One Course -3 Credit Swayam

B. Tech. 6th Semester

Sr. No	Category	Code	Course Title	Hours per week			Total Hours	Credits
				L	T	P		
1	Professional Core Courses	BMEC-522	Design of Machine Element -II	2	2	0	4	4.0
2	Professional Elective Courses	BMEC-	Elective-III	3	0	0	3	3.0
3	Professional Elective Courses	BMEC-	Elective-IV	3	0	0	3	3.0
4	Humanities and Social Science including Management Course (Foundation)	BHUM-	Humanities-II (Elective)	3	0	0	3	3.0
5	Professional Elective Courses	BMEC-	Elective-V	3	0	0	3	3.0
6	Professional Core Courses	BMEC-523	Ansys Lab	0	0	2	2	1.0
7	Professional Core Courses	BMEC-524	Automobile Lab	0	0	2	2	1.0
8	Project (SEC)	BMEC-525	Project-IV	0	0	4	4	2.0
9	Mandatory Course (Non Creditable)	MAN-002	Essence of Indian Traditional Knowledge	2	0	0	2	-
Total Credit							20.0	

One Course -3 Credit Swayam

(Signature)

Head
Mech. Engrg. Dept.
M.M.E. College
Mullana (Ambala)

M.M. ENGINEERING COLLEGE
w.e.f. July 2019 (Batches 2018 onwards)
Branch/Course: Mechanical Engineering

B. Tech. 7th Semester

Sr. No	Category	Code	Course Title	Hours per week			Total Hours	Credits
				L	T	P		
1	Professional Elective Courses	BMEC-	Elective-VI	3	0	0	3	3.0
2	Open Elective Courses	BMEC-	Open Elective-I	3	1	0	4	4.0
3	Open Elective Courses	BMEC-	Open Elective-II	3	1	0	4	4.0
4	Open Elective Courses	BMEC-	Open Elective-III	3	0	0	3	3.0
5	Open Elective Courses	BMEC-	Open Elective-IV	3	0	0	3	3.0
6	Project (SEC)	BMEC-526	Project-V	0	0	8	8	4.0
7	Industrial Training (SEC)	BMEC-527	Industrial Training	-	-	-	-	8.0
Total Credit								29.0

One Course -3 Credit Swayam

Note: Industrial training of 8 Weeks is mandatory. The slot for three to six weeks is provided after 2nd, 4th & 6th sem.

B. Tech. 8th Semester

Sr. No	Category	Code	Course Title	Hours per week			Total Hours	Credits
				L	T	P		
1	Professional Core Courses	BMEC-528	Industrial Tribology	3	1	-	4	4
2	Professional Core Courses	BMEC-529	Metrology	3	1	-	4	4
Total credits								12.0

OR

B. Tech. 8th Semester

Sr. No.	Category	Code	Course Title	Hours per week			Total Hours	Credits
				L	T	P		
1	Industrial Training (SEC)	BMEC-530	Training	-	-	-	-	12.0

For Honours degree

Sr. No.	Category	Code	Course Title	Hours per week			Total Hours	Credits
				L	T	P		
1	Professional Elective Courses	BMEC-	Elective-VII	3	1	-	4	4
2	Professional Elective Courses	BMEC-	Elective-VIII	3	1	-	4	4
3	Professional Elective Courses	BMEC-	Elective-IX	3	1	-	4	4
Total credits								12.0

(Signature)

Head
Mech. Engrg. Deptt.
M.M.E. College
Mullana (Ambala)

Structure of Undergraduate Engineering program:

Sr. No.	Category	Category Code	First Year	ME
1	Humanities and Social Sciences including Management courses	HSMC	3	6
2	Basic Science courses	BSC	22	4
3	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc	ESC	21	4
4	Professional core courses	PCC		50
5	Professional Elective courses relevant to chosen specialization/branch	PEC		18
6	Open subjects – Electives from other technical and /or emerging subjects	OEC		14
7	Project work, seminar and internship in industry or elsewhere	PROJ		18
8	Mandatory Courses [Environmental Sciences, Induction training, Indian Constitution, Essence of Indian Knowledge Tradition]	MC		
	Total Credit		46	114

Humanities and Social Science including Management Course (Humanities Elective- I & II)

Course Code	Thermal Engineering	Course Prerequisite
BHUM-003	Entrepreneurship Development & Management	
BHUM-004	Engineering Society	
BHUM-005	Marketing Management	
BHUM-006	Operation Research	
BHUM-007	Civil Engineering –Society & global	
BHUM-008	Principal Management	

Open Elective Courses I, II & III-

Deptt	Course Title	Course Prerequisite
CSE	Database Management Systems	-
CSE	Software Engineering	-
CSE	Design and Analysis of Algorithms	-
CIVIL	Disaster Management	-
CIVIL	Project Management	-
CIVIL	Engineering Risk-Benefit Analysis	-
CIVIL	Infrastructure Systems Planning	-
	Global Strategy and Technology	-
	Knowledge Management	-
CIVIL	Rural Technology & Community Development	-
CSE	Artificial Intelligence and Robotics	-
CSE	Cloud Computing	-
ECE	Digital Signal Processing	-
ECE	Digital Communication	-
BOIT	Introduction to Human Body Mechanics	-
ECE	Modern Control Theory	-
EE	Machinery Fault Diagnostics and Signal Processing	-

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Technology (Sion, Mumbai)

CSE	Soft Computing Techniques	-
	Performs Arts by T-Series (Maximum 3 courses)	Paid course
	Culinary skills- MM continental	Paid course
	Advance life skills	Paid course
	Foreign Industrial Internship/Tour (02 Weeks)	Paid course
	CISCO (CAN-100hrs)	Paid course

Professional Elective Courses –I, II, III, IV, V, VI, VII, VIII & IX

Course Code	Thermal Engineering	Course Prerequisite
BMEC-602	Power Plant Engineering	
BMEC-603	Environmental Pollution and Abatement	
BMEC-604	Advanced Engineering Thermodynamics	
BMEC-605	Turbo Machinery	
BMEC-606	Automobile Engineering	
BMEC-607	Nuclear Power Generation and Supply	
BMEC-608	Theory of Combustion and Emission	
BMEC-609	Computational Fluid Dynamics	
BMEC-610	Gas Dynamics and Jet Propulsion	
BMEC-611	Power Plant Engineering	
BMEC-612	Refrigeration and Air Conditioning	
BMEC-613	Internal Combustion Engines	Paid course
BMEC-614	BOSCH (90hrs.)	
Design		
BMEC-615	Vibration and Noise Control	
BMEC-616	Advanced Mechanics of Solids	
BMEC-617	Advanced Computer Graphics and Solid Modeling	
BMEC-618	Finite Element Methods in Engineering	
BMEC-619	Finite Element Analysis	
BMEC-621	Simulation of Mechanical Systems	
BMEC-622	Applied Elasticity and Plasticity	
BMEC-623	Engineering System Analysis and Design	
BMEC-624	Engineering System Modeling and Simulation	
BMEC-625	Engineering System Design Optimization	
BMEC-626	Design and Optimization	
BMEC-627	Design of Transmission Systems	
BMEC-628	Computer Aided Design	
BMEC-629	Composite Materials	
Manufacturing & Automation		
BMEC-630	Machine Tools & Manufacturing	
BMEC-631	Non-Traditional & Computer Aided Manufacturing	
BMEC-632	Welding Technology	
BMEC-633	Non-Destructive Evaluation & Testing	
BMEC-634	Technology of Surface Coating	
BMEC-635	Industrial Automation and Robotics	
BMEC-636	Mechatronics	
BMEC-637	Robotics: Mechanics and Control	
Industrial Engineering		
BMEC-638	Project & Production Management	
BMEC-639	Quality Assurance and Reliability	
BMEC-640	Mechanical Handling Systems & Equipment	
BMEC-641	Quantity Production Methods	
BMEC-642	Design of Machine Elements -II	


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BMEC-643	Managing Innovation and Entrepreneurship	
BMEC-644	Game Theory with Engineering Applications	
BMEC-645	Supply Chain Management-Planning	
BMEC-646	Energy Conservation and Management	
BMEC-647	Total Quality Management	
BMEC-648	Principles of Management	
BMEC-649	Process Planning and Cost Estimation	



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Mullana (Ambala)

M.TECH (MANUFACTURING SYSTEM) w.e.f. July 2014

1ST SEMESTER

S.No.	COURSE NO.	COURSE TITLE	TEACHING SCHEDULE				Cr.	EXAMINATION SCHEDULE			
			Lecture	Tutorial	Practical	Total		Theory	Sessional	Practical	Total Marks
1	ME-601E	Flexible Manufacturing Systems	3	1	0	4	3.5	60	40	-	100
2	ME-602E	Robotics	3	1	0	4	3.5	60	40	-	100
3	ME-603E	Machine Tool Engineering	3	1	0	4	3.5	60	40	-	100
4	ME-	Elective-I	3	1	0	4	3.5	60	40	-	100
5	ME-	Elective -II	3	1	0	4	3.5	60	40	-	100
6	ME-604E	CNC Lab	-	-	3	3	1.5	-	60	40	100
		Total	15	5	3	23	19.0	300	260	40	600

Electives Subjects* I & II

1. ME-612 E Advanced Metal Casting Technology
2. ME-613 E Metal Forming Process
3. ME-614 E Modern Machining Technologies
4. ME-615 E Manufacturing Planning and Control


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M.TECH (MANUFACTURING SYSTEM) w.e.f. July 2014

2nd SEMESTER

S.NO.	COURSE NO.	COURSE TITLE	TEACHING SCHEDULE				Cr	EXAMINATION SCHEDULE			
			Lecture	Tutorial	Practical	Total		Theory	Sessional	Practical	Total Marks
1	ME- 605E	Computer Control of Machine Tools	3	1	0	4	3.5	60	40	-	100
2	ME-618E	Finite Element Method	3	1	0	4	3.5	60	40	-	100
3	ME- 607E	Tribology	3	1	0	4	3.5	60	40	-	100
4	ME-	Elective -III	4	1	0	5	4.5	60	40	-	100
5	ME-	Elective- IV	4	1	0	5	4.5	60	40	-	100
6	ME-608E	Tibology Lab	-	-	3	3	1.5	-	60	40	100
		Total	17	5	3	25	21	300	260	40	600

Electives Subjects III & IV

1. ME-616E Advance Welding Technology
2. ME-617E Modeling & Simulation
3. ME-606E Advance Manufacturing Technology
4. ME-619E Fracture Mechanics & Mechanism
5. ME-620E Experimental Design
6. ME-621E Precision Engineering
7. ME-622E Material Technology
8. ME-623E Design And Manufacturing Of MEMS And Micro Systems
9. ME- 624E Performance Modeling And Analysis Of Manufacturing Systems

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M.TECH (MANUFACTURING SYSTEM) w.e.f. July 2014

3rd SEMESTER

S.No.	COURSE NO.	COURSE TITLE	TEACHING SCHEDULE				Cr.	EXAMINATION SCHEDULE			
			Lecture	Tutorial	Practical	Total		Theory	Sessional	Practical	Total
1	ME-609E	Mechatronics	3	1	0	4	3.5	60	40	-	100
2	ME-	Elective- V	4	1	0	5	4.5	60	40	-	100
3	ME-610E	Seminar	-	-	6	6	3.0	-	100	-	100
4	ME-640E	Dissertation (Start)	-	-	-	-	-	-	-	-	-
		Total	7	2	6	15	11.0	120	140	40	300

Electives Subjects* V

1. ME-625 E Theory of Plasticity
2. ME-626 E Quality control and Reliability
3. ME-627 E Intelligent Machine & System
4. ME-628 E Lasers In Manufacturing
5. ME-629 E Non Destructive Testing
6. ME-630 E Sustainable Manufacturing


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M.M.UNIVERSITY,MULLANA

Batch 2014-15

M.TECH (MANUFACTURING SYSTEM) w.e.f. July 2014

4th SEMESTER

S.NO.	COURSE NO.	COURSE TITLE	TEACHING SCHEDULE				Cr.	EXAMINATION SCHEDULE			
			Lecture	Tutorial	Practical	Total		C.E*	Theory	Practical	Total
1.	ME- 640E	Dissertation	-	-	-	-	-	-	-	-	


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(Batches 2018 onwards)
M.TECH (Mechanical Engineering)

M. Tech 1st SEMESTER (Common to All)

Sr. No.	COURSE NO.	COURSE TITLE	TEACHING SCHEDULE				Cr.
			L	T	P	Total	
1	ME-701	Flexible Manufacturing Systems	3	1	0	4	4.0
2	ME-702	Finite Element Method	3	1	0	4	4.0
3	ME-703	Robotics	3	1	0	4	4.0
4	ME-	Elective -I	3	1	0	4	4.0
5	ME-704	Simulation Lab I	-	-	3	3	1.5
Total			12	4	3	19	17.5

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(Batches 2018 onwards)
M.TECH (Mechanical Engineering)

M. Tech. 2nd SEMESTER (Manufacturing System)

Sr. No.	COURSE NO.	COURSE TITLE	TEACHING SCHEDULE				Cr.
			L	T	P	Total	
1	ME-705M	Machine Tool Engineering	3	1	0	4	4.0
2	ME-706M	Experimental Design	4	1	0	5	5.0
3	ME-707M	Advance Manufacturing Technology	4	1	0	5	5.0
4	ME-	Elective -II	3	1	0	4	4.0
5	ME-708M	CNC Lab	-	-	3	3	1.5
Total			14	4	3	21	19.5

M. Tech. 2nd SEMESTER (CAD/CAM)

Sr. No.	COURSE NO.	COURSE TITLE	TEACHING SCHEDULE				Cr.
			L	T	P	Total	
1	ME-705C	Computer Integrated Manufacturing System	3	1	0	4	4.0
2	ME-706C	Industrial Automation & Control	4	1	0	5	5.0
3	ME-707C	Computer Programming & Data Structure	4	1	0	5	5.0
4	ME-	Elective -II	3	1	0	4	4.0
5	ME-708C	CNC Lab	-	-	3	3	1.5
Total			14	4	3	21	19.5

M. Tech. 2nd SEMESTER (Thermal Engineering)

S.No.	COURSE NO.	COURSE TITLE	TEACHING SCHEDULE				Cr.
			L	T	P	Total	
1	ME-605 T	Advanced Engineering Mathematics	3	1	0	4	4
2	ME-606 T	Advanced Thermodynamics	3	1	0	4	4
3	ME-607 T	Advanced Heat Transfer	3	1	0	4	4
4	ME-	Elective-II	3	1	0	4	4
5	ME-608 T	Thermal Engineering Lab.	-	-	3	3	1.5
Total			12	4	3	19	17.5



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(Batches 2018 onwards)
M.TECH (Mechanical Engineering)

M. Tech, 3rd SEMESTER (Manufacturing System)

Sr. No.	COURSE NO.	COURSE TITLE	TEACHING SCHEDULE				Cr.
			L	T	P	Total	
1	ME-709	Modeling & Simulation	3	1	0	4	4.0
2	ME-	Elective-III	4	1	0	5	5.0
3	ME-710	Seminar	-	-	6	6	3.0
4	ME-711	Dissertation (Start)	-	-	-	-	-
Total			7	2	6	15	12.0

M. Tech, 3rd SEMESTER (CAD/CM)

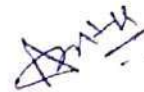
Sr. No.	COURSE NO.	COURSE TITLE	TEACHING SCHEDULE				Cr.
			L	T	P	Total	
1	ME-709	Modeling & Simulation	3	1	0	4	4.0
2	ME-	Elective-III	4	1	0	5	5.0
3	ME-710	Seminar	-	-	6	6	3.0
4	ME-711	Dissertation (Start)	-	-	-	-	-
Total			7	2	6	15	12.0

M. Tech, 3rd SEMESTER (Thermal Engineering)

Sr. NO.	COURSE NO.	COURSE TITLE	TEACHING SCHEDULE				Cr.
			L	T	P	Total	
1	ME- 609 T	Experimental Methods in Thermal Engineering	3	1	0	4	4.0
2	ME-	Elective-III	4	1	0	5	5.0
3	ME-610 T	Seminar	-	-	6	6	3.0
4	ME-611 T	Dissertation (Start)	-	-	-	-	-
Total			7	2	6	15	12.5

M. Tech, 4th SEMESTER

S.NO.	COURSE NO.	COURSE TITLE	TEACHING SCHEDULE				Cr.
			L	T	P	Total	
1.	ME- 712	Dissertation	-	-	-	-	-




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(Batches 2018 onwards)
M.TECH (Mechanical Engineering)

Elective Subjects:

(Manufacturing System)	(CAD/CAM)
ME-709M Advanced Metal Casting Technology	ME- 709C Computer Aided Design
ME-710M Metal Forming Process	ME- 710C Design of Hydraulic and Pneumatic System
ME-711M Manufacturing Planning and Control	ME- 711C Optimization Technique
ME-712M Mechatronics	ME- 712C Management Information System
ME-713M Advance Welding Technology	ME- 713C Computational Fluid Dynamics
ME-714M Tribology	ME- 714C Interactive Computer Graphics & Techniques
ME-715M Fracture Mechanics & Mechanism	ME- 715C Artificial Intelligence
ME-716M Precision Engineering	ME- 716C Data Base Management System
ME-717M Material Technology	ME- 717C Product Design
ME- 718M Performance Modeling And Analysis Of Manufacturing Systems	ME- 718C Computer Control of Machine Tools
ME-719M Theory of Plasticity	ME- 719C Mechatronics
ME-720M Quality control and Reliability	ME- 720C Modern Machining Technology
ME-721M Lasers In Manufacturing	
ME-722M Non Destructive Testing	
ME-723M Sustainable Manufacturing	
ME- 724M Computer Control of Machine Tools	
ME- 725M Mechatronics	(Thermal Engineering)
ME- 726M Modern Machining Technology	ME-613T Turbomachinery
ME-727M Intelligent Machines & System	ME-614T Computational Fluid Dynamics
	ME-616T Fuel & Combustion
	ME-617T Alternative fuels for I.C. Engines
	ME-618T Heat Exchanger Design & Analysis
	ME-619T Cogeneration & Waste Heat Recovery Systems
	ME-620T Thermal & Nuclear Power Plants
	ME-621T Two Phase Flow
	ME-622T Gas Dynamics
	ME-623T Environmental Engineering & Pollution Control
	ME-624T Advanced Computational Fluid Dynamics
	ME-625T Solar Thermal Engineering
	ME-626T Hydrel Power & Wind Energy
	ME-627 T Steam Generators & Steam Turbines


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**SCHEME FOR CHOICE BASED CREDIT SYSTEM IN
B.Sc. Honours (PHYSICS)
(AS PER UGC GUIDELINES)
(W.E.F. 2019 Onwards)**

S. No	COURSE OPTED	COURSE NAME	Paper Code	L	T	P	Credits
I	Core Course -I	Mathematical Physics-I	BPHY-101	5	1	0	6
	Core Course-II	Mechanics	BPHY-102	4	0	0	4
	Core course-II Practical	Mechanics Lab	BPHY-103	0	0	4	2
	AECC-I	English Communication(AECC)	BHUM-101	2	0	0	2
	Generic Elective -1	Mathematics-I(Differential Calculus)	BMAT-101	05	01	0	6
		Web Designing using HTML	BCAP - 001	4	0	0	4
		Web Designing using HTML Lab	BCAP - 002	0	0	4	2
			16	2	4	20	
Core course-III	Electricity and Magnetism	BPHY-104	4	0	0	4	
Core Course-III Practical	Electricity and Magnetism Lab	BPHY-105	0	0	4	2	
II	Core course-IV	Waves and Optics	BPHY-106	5	1	0	6
	AECC-2	Environmental Science(AECC)	BEVS-001	2	0	0	2
	Generic Elective -2	Mathematics-II(Differential Equation)	BMAT-102	5	1	0	6
		Database Management Systems	BCAP - 003	4	0	0	4
		Database Management Systems Lab	BCAP-004	0	0	4	2
Core course V	Mathematical Physics-II	BPHY-107	5	1	0	6	
Core course-VI	Thermal Physics	BPHY-108	5	1	0	6	
III	Core course-VII	Digital Systems & Application	BPHY-109	4	0	0	4
	Core Course-VII Practical	Digital Systems & Application Lab	BPHY-110	0	0	4	2
	AECC -1	Computational Physics	BPHY-111	2	0	0	2
	Generic Elective -3	Mathematics-III(Real Analysis)	BMAT-103	5	1	0	6
		Object Oriented Programming using C++	BCAP-105	4	0	0	4
		Object Oriented Programming using C++ Lab	BCAP-106	0	0	4	2
	Core Course VIII	Mathematical Physics-III	BPHY-112	5	1	0	6
Core course-IX	Elements of Modern Physics	BPHY-113	4	0	0	4	
Core course-IX Practical	Elements of Modern Physics Lab	BPHY-114	0	0	4	2	
IV	Core Course X	Analog Systems and Applications	BPHY-115	5	1	0	6
	AECC -2	Renewable Energy Sources	BPHY-116	2	0	0	2
	Generic Elective -4	Mathematics-IV(Algebra)	BMAT-104	5	1	0	6
		Programming in java	BCAP-107	4	0	0	4
		Programming in java Lab	BCAP-108	0	0	4	2
				21	03	04	26
Core course-XI	Quantum Mechanics & Applications	BPHY-117	5	1		6	
Core course-XII	Solid State Physics	BPHY-118	4	0	0	4	
Core course-XII LAB	Solid State Physics Lab	BPHY-119	0	0	4	2	
V	DSE-1	Physics of Devices and Instrumentation	BPHY-120	5	1	0	6
	DSE-2	Experimental Techniques	BPHY-121	5	1	0	6

			19	3	4	24	
VI	Core course-XIII	Electro-magnetic Theory	BPHY-122	4	0	0	4
	Core course-XIII LAB	Electro-magnetic Theory Lab	BPHY-123	0	0	4	2
	Core course-XIV	Statistical Mechanics	BPHY-124	5	1	0	6
	DSE-3	Nuclear & Particle Physics	BPHY-125	5	1	0	6
	DSE-4	Nano materials & applications	BPHY-126	5	1	0	6
				19	3	4	24
						140	

General Elective (Semester 1 to IV) courses are to be selected by the student from the pool of GE subjects offered by - Mathematics, Chemistry and Computer Science Departments of the MMDU.

SKILL ENHANCEMENT COURSES (any one per semester in semesters III and IV)

1. PHY-SEC1: Computational Physics Skills (Semester III)
2. PHY-SEC2: Renewable Energy and Energy Harvesting (Semester IV)

DISCIPLINE SPECIFIC ELECTIVE COURSES (Semester V & VI)

1. PHY-DSE1: Experimental Techniques
2. PHY-DSE2: Physics of Devices and Instrumentation
3. PHY-DSE3: Nuclear & Particle Physics
4. PHY-DSE4: Nano materials & applications

GENERIC ELECTIVE SUBJECTS (Offered by Physics Department) for the students of B.Sc Hon's Mathematics and Chemistry.

SEMESTER	COURSE OPTED	COURSE NAME	PAPER CODE	CREDITS
I	GE1	Electricity and Magnetism	BPHY-127	04
	GE-1 LAB	Electricity and Magnetism Lab	BPHY-128	02
II	GE2	Elements of Modern Physics	BPHY-129	04
	GE-2 LAB	Elements of Modern Physics Lab	BPHY-130	02
III	GE-3	Waves and Optics	BPHY-131	04
	GE-3 LAB	Waves and Optics Lab	BPHY-132	02
IV	GE-4 lab	Quantum Mechanics	BPHY-133	06

Prof. & Head
Department of Physics
Maharshi Markandeshwar
(Deemed to be University)
Mullana Ambala 133207

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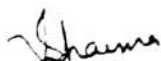
w.e.f 2020
onwards20th BOS meeting held on 06 July 2020

Scheme of Examination (As per UGC Norms)


Program: M.Sc. Physics

Duration: 2 Years (Four Semesters)

SEMESTER-I								
Course Code	Course Title	Credits	Teaching Hours/ Week			Maximum Marks		
						Internal Assess.	End-sem Exam.	Total
Core Papers			L	T	P			
PH-501	Classical Mechanics	4	3	1	0	40	60	100
PH-503	Mathematical Physics-I	4	3	1	0	40	60	100
PH-505	Quantum Mechanics-I	4	3	1	0	40	60	100
PH-507	Nuclear Physics	4	3	1	0	40	60	100
PH-509	Electronics-I	4	3	1	0	40	60	100
PH-511A	Physics Lab-I A	2	0	0	4	24	16	40
PH-511B	Physics Lab-I B	2	0	0	4	24	16	40
PH-511 C	Seminar	2	0	0	2	20	--	20
Total Credits/ Marks		26	30			268	332	600
SEMESTER-II								
Core Papers			L	T	P			
PH-502	Electrodynamics	4	3	1	0	40	60	100
PH-504	Mathematical Physics-II	4	3	1	0	40	60	100
PH-506	Quantum Mechanics-II	4	3	1	0	40	60	100
PH-508	Nuclear and Particle Physics	4	3	1	0	40	60	100
PH-510 N	Electronics-II	4	3	1	0	40	60	100
PH-512A	Physics Lab-II A	2	0	0	4	24	16	40
PH-512B	Physics Lab-II B	2	0	0	4	24	16	40
PH-512 C	Seminar	2	0	0	2	20	--	20
Total Credits/ Marks		26	30			268	332	600
SEMESTER-III								
Core Papers**			L	T	P			
PH-513	Atomic and Molecular Physics	4	3	1	0	40	60	100
PH-515	Condensed Matter Physics-I	4	3	1	0	40	60	100
General Paper								
PH-517	Computational Techniques & Programming-I	4	3	1	0	40	60	100
Elective-I (Any one of the following)								
PH-519 A	Polymer Physics	4	3	1	0	40	60	100


V. Sharma

M K Sharma


J.K. Sharma
Prof. & Head


D. Prasher



R Sharma

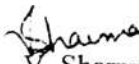
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onwards20th BOS meeting held on 06 July 2020

PH-519 B	Advanced Quantum Mechanics	4	3	1	0	40	60	100	
Elective-II (Any one of the following)									
PH-521 A	Laser & Fibre Optics	4	3	1	0	40	60	100	
PH-521 B	Materials Science	4	3	1	0	40	60	100	
PH-523A	Physics Lab-III A	2	0	0	4	24	16	40	
PH-523B	Physics Lab-III B	2	0	0	4	24	16	40	
PH-523 C	Seminar	2	0	0	2	20	--	20	
Total Credits/ Marks		26	30			268	332	600	
SEMESTER-IV									
Core Papers									
PH-514	Statistical Physics & Thermodynamics	4	3	1	0	40	60	100	
PH-516	Condensed Matter Physics-II	4	3	1	0	40	60	100	
General Paper									
PH-518	Physics of Nano-Materials	4	3	1	0	40	60	100	
Elective/Specialization-III (Any one of the following subject)*									
PH-520 A	Computational Techniques & Programming-II	4	3	1	0	40	60	100	
PH-520 B	Advanced Electronics	4	3	1	0	40	60	100	
Elective/Specialization-IV (Any one of the following)**									
PH-522 A	Experimental Techniques in Radiation Physics	4	3	1	0	40	60	100	
PH-522 B	Advanced Materials	4	3	1	0	40	60	100	
PH-524A	Physics Lab-IV A/	2	0	0	4	24	16	40	
PH-524B	Physics Lab-IV B	2	0	0	4	24	16	40	
PH-524 C	Seminar	2	0	0	2	20	--	20	
PH-524	OR Dissertation*	6*	0	0	8	60	40	100	
Total Credits/ Marks		26	30			268	332	600	
Grand Total		104	120			1072	1328	2400	


- DISSERTATION is offered in place of PH-524A, PH-524B and PH-524C.


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 V. Sharma

M K Sharma



 J.K. Sharma


 D. Prasher


 R Sharma

Scheme of Examination (As per UGC Norms)
Program: Ph.D Physics (Course work)

Subject Code	Nomenclature	Teaching			Internal Marks	External Marks	Total Marks	Credits
		L	T	P				
COMPULSORY PAPERS								
MP-01 (A)	Research Methodology (For all Subjects other than English and Nursing)	4	-	-	40	60	100	4.0
MP-02	Computer Application	2	-	-	40	60	100	2.0
MP-03	Software Lab. (Based on MP-01 & MP-02)	-	-	2	60	40	100	1.0
MP-04	Seminar (Based on Literature survey and work done in relevant field)	-	2	-	100	-	100	2.0
MP-05*	Department Electives: (As per details below)	4	-	-	40	60	100	4.0
MP-06	Research and Publication Ethics (RPE -1).	1	-	2	40	60	100	2.0
*Department Of Physics								
MP-05 (A)	Materials Science	4	-	-	40	60	100	4.0
MP-05 (B)	Radiation Physics	4	-	-	40	60	100	4.0
MP-05 (C)	Techniques in Experimental Physics	4	-	-	40	60	100	4.0
MP-05 (D)	Nanotechnology and Nanoscale Processing	4	-	-	40	60	100	4.0


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