NORTH MAHARASHTRA UNIVERSITY,

JALGAON (M.S.)

Bachelor of Engineering (B.E.)

Faculty of Science and Technology

'A' Grade
NAAC Re-Accredited
(3rd Cycle)

Revised Rules and Regulations Relating to Degree of Bachelor of Engineering (B.E.) & Bachelor of Technology (B.Tech.)

w.e.f. 2017 – 18

Revised Rules and Regulations Relating to Degree of

Bachelor of Engineering (B.E.)& Bachelor of Technology (B.Tech)

(To Be Introduced from Academic Year, 2017-18)

Degree Course with Effect from Academic Year 2017-18

(These rules and regulations will supersede earlier rules and regulations)

Preamble

An Engineering and Technology personnel plays a very vital role in the economic development of any country. Economic development of country is very much based on the technological up gradation. India as a developing country paying more prominencetoengineering and technology disciplines to create technology skilled engineers to face the challenges in global scenario.

Taking into consideration the importance of wide spectrum of engineering and technologydisciplines, these rules, regulations and curriculum of undergraduate courses are prepared after detailed deliberations, brain storming sessions, etc. of senior experts from all engineering colleges in the NMU region with consideration guide lines of MHRD/UGC/AICTE/NMU.

Features of the CGPA system:

1) The degree course BE/B. Tech. being run under the faculty of Engineering and Technology shall be of 48 credits for 1st, 44 credits for 2nd,44 credits for 3rd year and 44 credits for final year respectively. There shall be total 180 credits allotted for 4-year degree course.

Note: For lateral entry admitted students (Diploma and B.Sc. students), total No. of credits allotted shall be 132. But B.Sc. student has to complete credits of courses based on Civil Engineeringand Mechanical Engineering of first year in addition to 132 credits of Second year to final year.

2) The credits shall be awarded as follows except for some special subjects:

- 1 credit for 1-hour theory lecture/ Tutorial
- ½ credit for 1-hour practical.

3) The batch size for practical for B. Tech / BE shall be as follows:

- First year & Second year 20 to 23 students

• Third year & final year: 15 to 18 students

4) The batch size for Mini Project and B. E. Project shall be of 02to 05 students. Each teacher can guide maximum 02 groups of mini projects and 04 groups of B.E. projects.

Course Title: Bachelor of Engineering / Bachelor of Technology

Abbreviation: B.E. / B. Tech.

Type of Course: A four-year degree course divided into eight semesters with two semesters per year.

Pattern: Semester

Nomenclature of Semesters: The revised Rules, Regulations and Syllabus for four year courses shall be introduced gradually as follows:

No	Year	Semester	With effect from
1	First Year	I & II	2017-18
2	Second Year	III & IV	2018-19
3	Third Year	V & VI	2019-20
4	Final Year	VII &V III	2020-21

Award of the Degree: Degree shall be awarded to students earning credits of all eight semesters, 180 Credits

Note: For lateral entry admission (Diploma and B.Sc. students), minimum number of credits shall be 132.

Duration of Semester: Each Semester shall be normally minimum of 14weeks' duration for class room teaching / laboratory work.

Definitions:

University: North Maharashtra University, Jalgaon.

College / Institute: Any college / Institute conducting B.E / B. Tech.course and affiliated to North Maharashtra University, Jalgaon.

State Government: Government of Maharashtra.

Admission Authority: Any authority to conduct admission process asprescribed by Government of Maharashtra.

DTE: Directorate of Technical Education, Maharashtra State.

Rule 1: B.E. / B. Tech. Entry levels into the course, eligibility criteria,admission authority and procedures forEntry levels into the course shall be at the beginning of the Semester – I

for 12th pass students or at thebeginning of the Semester – III for B. Sc. or Diploma students.Eligibility criteria, admission authority and procedures shall be decided by Government ofMaharashtra / Directorate of Technical Education and procedure shall be as perdirections of admission authority prevailing at the time of admission.

Rule 2: B.E. / B. Tech. Examinations

Rule 2.1: The Examination conducting authority shall be North MaharashtraUniversity, Jalgaon.

Rule 2.2: The examination at the end of each semester shall be normally held inNovember / December and April / May in each academic year.

Rule 3: Attendance Rule and Detention Rule

Rule 3.1: The student will not be allowed to appear for the examinations i.e. he /she shall be detained if he / she do not attend minimum 75 % classes of theory,practical etc.

The attendance rules will be governed by DTE rules and relevant ordinance ofuniversity as applicable at that time.

Rule 3.2: If a candidate is detained in first term of any year, he / she will not beallowed to register for second term. He / she will have to register for the same insucceeding year(s).

If a candidate is detained in second term of any year, he / she will have to registerfor the second term of succeeding year(s).

Rule 4: Passing Criteria for Courses

Rule 4.1: For the End Semester Examination (ESE) in Theory courses, minimum passing marks are 24 out of 60. Marks obtained in Internal Sessional Examinations (ISE) are to be added to marks obtained in ESE, if he/she will obtain 24 marks out of 60 marks in ESE of the respective theory course. 40 marks (ESE plus ISE) out of 100 marks (ESE plus ISE) are to be secured by the student to pass the respective theory course.

Rule 4.2: In ESE and ICA of all courses other than theory, minimum 40 % of total marks shall be required for passing.

Rule 4.3: For ESE re-examination of failed student (secured less than 24 marks) is to be conducted in consecutive semester by the university.

Rule 5: Internal Sessional Examination (ISE)

To ensure uniform attention of the students of their work throughout each semester of their study, Internal Sessional Examinations (ISE) shall be conducted in each semester. Each ISE is for 20 marks. Conducting authority shall be Institute where candidate is admitted. The institutional examination committee shall consist of Principal as a Chairman and HOD from each department. In addition, Departmental Examination Committee shall consist of HOD as

a coordinator and 1 or 2 teachers nominated by the Principal. Internal Sessional examinations (ISE-I & ISE-II) shall normally be conducted after completion of 40% and 80% syllabus respectively. For ISE, minimum passing marks are 16 out of 40. Re-examination of ISE for failed students is to be conducted by the concern college for 40 marks and 2 hours duration on complete syllabus of the theory subject at the end of consecutive semesters. The institute must submit the ISE marks at the end of semester to the university.

If the candidate remains, absent for the ISE the candidate shall be just treated as not appeared for the test securing zero marks. The ISE marks obtained by the candidate shall be added to the marks obtained by the candidate in End Semester Examination (ESE) conducted by the University as per rule 4.1.

Rule 6: Internal Continuous Assessment (ICA)

ICA shall be based on continuous evaluation of student's performance throughout semester.

Rule 7: Eligibility Criteria for Admission in Next Year

Rule 7.1: Student has to earn minimum 32 Creditsin FEfor an academic year tobe eligible for admission to SE.

Rule 7.2: Student shall be admitted in TE provided he / she have earned allcredits of FE and minimum 30 credits of SE. Similarly, the student shall beadmitted in BE provided he / she have earned all credits of SE and minimum 30credits of TE.

Note: For latterly admitted B.Sc. students, credits against courses 'Introduction toCivil Engineering & Engineering Mechanics' and 'Introduction to MechanicalEngineering & Engineering Drawing' of FE shall not be considered while decidingeligibility for TE admission. These students shall be allowed for admission in BEonly after earning credits of these courses.

Rules 7.3: If student does not complete ICA of any course, he / she shall beawarded 'I' (Incomplete) grade. In case of 'I' or 'F' grade in ICA, student shall notbe allowed to appear for ESE (Practical / Oral) of the same course, if there is anESE for that course. In all cases, if the student secures 'I' or 'F' grade, he / shehave to register for the same course in succeeding semester when the samecourse is offered. However, if the institute offers the same course in next semester,the student can register for the same in the very next semester also.

Rule 7.4: If a student secures 'F' or 'I' grade in any course, his / her SGPA andCGPA shall not be declared till he / she earns the credit of that course.

Rule 8: Calculation of SGPA and CGPA

Semester Grade Point Average (SGPA):

The performance of a student in a semester is indicated by a number calledSGPA. SGPA is the weighted average of the grade points obtained in all courses registered by the student during the semester. It shall be calculated as follows:

$$SGPA = \frac{\sum_{i=1}^{n} C_i \, p_i}{\sum_{i=1}^{n} C_i}$$

where,

C_i = the number of credits earned in the i^{th} course of a semester for which SGPAis to be calculated

p_i = grade point earned in the i^{th} course.

i = 1, 2, 3……n, where 'n' represents the number of courses in which a student isregistered in that semester.

The SGPA is rounded up to two decimal places.

Cumulative Grade Point Average (CGPA):

Up-to-date assessment of the overall performance of a student from the time ofhis / her first registration is obtained by calculating a number called CumulativeGrade Point Average (CGPA), which is weighted average of the grade pointsobtained in all courses registered by the student since he/she entered theinstitute. It shall be calculated as follows:

$$CGPA = \frac{\sum_{j=1}^{m} C_j \, p_j}{\sum_{j=1}^{m} C_j}$$

Where,

C_j= The number of credits offered in the j^{th} course up to the semester for which CGPA is to be calculated.

p_j = Grade point earned in the j^{th} course. A letter grade lower than E in a course shall not be taken into consideration for calculation of CGPA.

j = 1, 2, 3……m, where 'm' represent the number of courses in which a student is registered up to the semester for which the CGPA is to be calculated.

The CGPA is rounded up to two decimal places.

Rule 8.1: Conversion of CGPA to Percentage Marks and Vice-versa

CGPA = (% Marks + 7.5) / 10

Percentage Marks = (CGPA - 0.75) * 10 %

Rule 9: CGPA Improvement

A student shall be allowed to improve his / her CGPA by reappearing for the courses from VII and / or VIII Semesters of BE as per prevalent policy of the university.

Rule 10: Methodology for award of Grades

Conversion of course marks into Grades shall be done as per table given below:

Sr. No.	Marks Range in %	Grade	Grade Points
1	≥ 90	A+	10
2	80 - 89	A	9
3	70 - 79	B	8
4	60 - 69	C	7
5	50 - 59	D	6
6	40 - 49	E	5
7	Less than 40	F	0

Rule 11: Audit Course

In addition to academic credits, student has to complete audit course for

1. Environmental Science
2. Road Safety
3. Cyber Laws and Use of Social Media
4. Health, Hygiene and Good Habits
5. Professional Skills and Ethics
6. Intellectual Property Rights (IPR)

Rule 11.1.: It is compulsory to complete above audit course for all admitted students in the duration of degree course.

a) ESE for Environmental Science shall be conducted as per the prevalent rules of the university.
b) College should arrange workshop/ Training/ Seminar for above courses (Sr.2 to 6).
c) There shall be 6 audit points for each above audit courses.

Rule 12: Credit Groups

The syllabus of all branches shall be divided into 5 groups with curriculum distribution as given in the following table:

Sr. No.	Group Name	Group Code	% of Coverage in curriculum
1	Core Engineering Course/ Program specific course	A	60
2	Basic Sciences/ Humanities / Social Sciences course	B	15
3	Discipline Specific Course / Elective Course	C	5
4	Ability Enhancement Course/ Skill development course	D	15
5	Interdisciplinary/ Generic Elective course	E	5

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Audit Course Outline

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AUDIT COURSE:

CYBER LAWS AND USE OF SOCIAL MEDIA

SESSION-I: IT Act (01 hr.)

Evolution of the IT Act, Genesis and Necessity

Various authorities under IT Act and their powers: Penalties & Offences, amendments

SESSION-II: Cyber Space Jurisdiction (01 hr.)

a. Jurisdiction issues under IT Act, 2000,

b. Traditional Principals of Jurisdiction

c. Extra-terrestrial Jurisdiction

d. Case Laws on Cyber Space Jurisdiction

SESSION-III: Cyber Law: International Perspective (01 hr.)

a) EDI: Concept and legal Issues.

b) UNCITRAL Model Law.

c) Electronic Signature Laws of Major Countries

d) Cryptography Laws

e) Cyber Laws of Major Countries

f) EU Convention on Cyber Crime

SESSION-IV: Cyber Forensic and Computer Crimes (01 hr.)

Types, Crimes targeting Computers: Definition of Cyber Crime & Computer related crimes

Classification & Differentiation between traditional crime and cyber-crimes.

Cyber-crimes and cyber terrorism: -

a) Cyber-crimes and the categories of crime i) Cyber frauds ii) Cyber thefts iii) Cyber stacking

b) Cyber Terrorism. c) Hacking, Virus, Trojan, worms etc.

SESSION- V: Use of Social Media (01 hr.)

Elements of Social Networks, Social Media Outlets. (Facebook, Twitter, etc.): How the differences impact, how to use them.Videos: Broadcasting to peers, many to many, friends and followers, apps, pages, pseudonyms of good and evil

Focused Networks (Flickr, Linked In, YouTube, etc.) networks that focus on specific topics or activities

AUDIT COURSE:

ENVIRONMENTAL STUDIES

SESSION–I: Multidisciplinary nature of environmental studies & Natural Resources

Definition, scope and importance, need for public awareness, Natural sources and associated problems.

a) Forest resources:

b) Water resources:

c) Mineral resources:

d) Food resources:

e) Energy resources:

f) Land resources:

•Role of an individual in conservation of natural resources.

•Equitable use of resources for sustainable lifestyles

SESSION – II: Ecosystems, Biodiversity and its conservation

•Concept of an ecosystem.

•Structure and function of an ecosystem.

•Producers, consumers and decomposers.

•Energy flow in the ecosystem.

•Ecological succession.

•Food chains, food webs and ecological pyramids.

•Introduction, types, characteristic features, structure and function of the following ecosystems: - Forest ecosystem, Grass land ecosystem, Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

•Introduction – Definition: genetic, species and ecosystem diversity.

•Bio-geographical classification of India

•Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values

•Biodiversity at global, National and local levels.

•India as a mega-diversity nation

•Hot-spots of biodiversity.

•Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts.

•Endangered and endemic species of India

•Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

SESSION – III: Environmental Pollution, Social Issues and the Environment

•From Unsustainable to Sustainable development

•Urban problems related to energy

•Water conservation, rain water harvesting, watershed management

•Resettlement and rehabilitation of people; its problems and concerns. Case Studies

•Environmental ethics: Issues and possible solutions.

•Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies.

•Wasteland reclamation.

•Consumerism and waste products.

•Environment Protection Act.

•Air (Prevention and Control of Pollution) Act.

•Water (Prevention and control of Pollution) Act

•Wildlife Protection Act

•Forest Conservation Act

•Issues involved in enforcement of environmental legislation.

•Public awareness.

SESSION – IV: Human Population and the Environment

•Population growth, variation among nations.

•Population explosion – Family Welfare Programme.

•Environment and human health.

•Human Rights.

•Value Education.

•HIV/AIDS.

•Women and Child Welfare.

•Role of Information Technology in Environment and human health.

•Case Studies.

SESSION –V: Field work

•Visit to a local area to document environmental assets river/forest/grassland/hill/mountain

•Visit to a local polluted Site-Urban/Rural/Industrial/Agricultural

•Study of common plants, insects, birds.

•Study of simple ecosystems-pond, river, hill slopes, etc.

AUDIT COURSE:

HEALTH, HYGIENE AND GOOD HABITS

SESSION – I: **(01 hr.)**

- Definition and Meaning of Health, Dimension and Determinants of Health
- Physical Activity and Health Benefits, Effect of Exercise on Body systems: Circulatory, Respiratory, Endocrine, Skeletal and Muscular
- Role of Physical Education Programme on Community Health Promotion (Individual, Family and Society)

SESSION – II: **(01 hr.)**

- Structure & functioning of the human body, Hygiene & Sanitation (Personal & Food hygiene)
- Physical & Mental Health
- Infectious & Contagious Diseases & its prevention
- Basics of Home Nursing & First-Aid in common medical emergencies

SESSION – III: **(01 hr.)**

- Introduction to Yoga & Exercises, Current life style and Physical health
- Scientific development and mechanical life competitive world, mental stress
- Three forms of body: Physical body, Astral body, Causal body
- Hand exercises, Leg exercises Benefits, Eye exercises& Breathing exercises

SESSION – IV: **(01 hr.)**

- The Importance of Ethics in Science and Engineering; Philosophy, Religion, and Ethics;
- Moral Analysis; The Role of Codes of Ethics, Virtues and the Psyche; Habits and Morals; Distinguishing Exterior and Interior Morality; The Importance of Intention;
- Hierarchy of Moral Values; Virtuous Imprinting

SESSION – V: **(01 hr.)**

- Fairness in Supervising; Fairness in Contracting; Intellectual Property and Society; Environmental and Sustainability Issues; Social Aspects of Employment;
- Resource Allocation by Merit, Social Worth, Need, Ability to Pay, Equal or Random Assignment and Similarity;
- Differing Anthropologies, Principles, and Methods; Global Cultural Considerations

AUDIT COURSE:

Intellectual Property Rights

SESSION – I: **(01 hr.)**

Introduction to IPR; Overview & Importance; IPR in India and IPR abroad;

Patents: their definition; granting; infringement; searching& filing; Utility Models an introduction;

SESSION – II: **(01 hr.)**

Copyrights; their definition; granting; infringement; searching& filing, distinction between related and copy rights;

SESSION – III: **(01 hr.)**

Trademarks, role in commerce, importance, protection, registration; domain names;

SESSION – IV: **(01 hr.)**

Industrial Designs; Design Patents; scope; protection; filing infringement; difference between Designs & Patents'

SESSION – V: **(01 hr.)**

Geographical indications, international protection; Plant varieties; breeder's rights, protection; biotechnology& research and rights managements; licensing, commercialisation; legal issues, enforcement, Case studies in IPR.

AUDIT COURSE:

PROFESSIONAL SKILLS AND ETHICS

SESSION – I: **(01 hr.)**

Course introduction and overview, Morals and ethics, Comparison of ethics and engineering ethics, Ethics at personal and student level.

The concept of professions, the importance of ethics in science and engineering, the role of codes of ethics, Professional responsibilities of engineers

SESSION – II: **(01 hr.)**

The concept of morality, the importance of core values, Moral/ethical dilemmas and hierarchy of moral values

Factors affecting moral responsibility and degrees of responsibility

SESSION – III: **(01 hr.)**

Overview of ethical theories and applications, Basics of ethical analyses and decision-making

The importance if intention, Truth (personal and social), the concept of whistle blowing

SESSION – IV: **(01 hr.)**

Ethical leadership in engineering and society, Conflicts of interests, Engineers in organizations, Ethics in the workplace, Fairness (personal and social)

SESSION – V: **(01 hr.)**

Reliability, risk and safety, Risk management, Resource allocations

Ethics in the electronic and digital age, Privacy and confidentiality issue

Responsible conduct of research, Intellectual property and society

AUDIT COURSE:

ROAD SAFETY

SESSION – I: **(01 hr.)**

- Introduction to Road Safety
- Road Safety Management
- Accidents

SESSION – II: **(01 hr.)**

- Various Authorities Dealing with Road Safety
- Road Safety Programmes: Government Initiatives

SESSION – III: **(01 hr.)**

- Economics of Road Safety
- Hazardous Material Movements

SESSION – IV: **(01 hr.)**

- Loads & Loading Patterns
- Accident and Trauma Care

SESSION – V: **(01 hr.)**

- Human Factors leading to Road Safety
- Incidents of Vehicle Fire