RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY

'Established by Government of Central Provinces Education Department by Notification No. 513 dated the 1st of August, 1923 & presently a State University governed by Maharashtra Public Universities Act, 2016 (Mah. Act No. VI of2017)

# DIRECTION NO.37 OF 2024

## ADMISSION AND EXAMINATIONS LEADING TO THE AWARD OF DEGREE OF M.E./M.TECH. (FULL TIME) (SEMESTER PATTERN) (CHOICE BASED CREDIT SYSTEM), DIRECTION, 2024

**Whereas,** the Maharashtra Public Universities Act, 2016 (hereinafter 'Act') (VI of 2017) has come into force with effect from 1st March, 2017 and the same has been made applicable to Rashtrasant Tukadoji Maharaj Nagpur University (hereinafter "the University");

**AND**

**Whereas,** the University has issued Direction No.27 of 2022 dealing with the composition of the four faculties created by the Act, where under the existing different faculties of the University have been merged into the four new faculties created by the Act, by which the subject of Engineering and Architecture have been included in the faculty of Science and Technology;

**AND**

**Whereas,** the Ad-hoc Committee for Computer Engineering And Computer Science & Engineering

in the Faculty of Engineering and Technology at its meeting held on **16/10/2020**, has decided to introduce a new programme named "Master of Technology (M.Tech.) in Artificial Intelligence & Machine Learning( AI&ML) ( Semester Pattern) (Choice Based Credit System) in the Faculty of Engineering and Technology;

**AND**

**Whereas**, the Faculty of Science And Technology in its meeting held on 16/10/2020 and the Academic Council in its meeting held on 29/10/2020 Item No. 78 have approved the structure of "Master of Technology (M.Tech.) in Artificial Intelligence & Machine Learning (AI&ML) (Semester Pattern) (Choice Based Credit System) programme and also the draft Direction in that regard, as required by the provisions of sections 35(c) and 33(1)(b) of the Act;

**Whereas**, the Adhoc Committee in inter disciplinary programmes in Engineering and Technology in its meeting held on 8/9/2021 and the Board of studies in civil Engineering in its meeting held on 11/10/2021 recommended to the faculty of Science and Technology the syllabus and the examination scheme of the new M.Tech. in Computer Aided structural Engineering (Two years, Four semesters Choice Based Credit system (CBCS) programme which has been approved by the Vice- Chancellor, acting on behalf of the Faculty of science and Technology, in exercise of the powers under section 12(7) of the Act;

**AND**

**Whereas**, the Board of Studies in civil Engineering in its meeting held on 15/09/2021, resolved and recommended that the degree of B.E./B.Tech(Structures) shall be considered as eligibility for admission to the M.Tech (Structural engineering) programme, and the said recommendation was approved by the Vice-Chancellor, acting on behalf of the faculty of Science and Technology, in exercise of the powers under section 12(7) of the Act;

**AND**

**Whereas,** the Board of Studies in Civil Engineering in the faculty of Science and Technology, in its meeting dt. 04/01/2022 has taken the decision with respect to the eligibility qualification for the programme of M.Tech. (Civil Engineering) in Computer Aided Structural Engineering and the same has received the approval of the Vice-Chancellor on 25/01/2022;

**Whereas**, the Dean faculty of science and Technology has directed certain modifications in the eligibility qualification for the M.Tech.in Artificial intelligence and Machine learning programme;

**AND**

**Whereas**, introduction of new academic programme requires making of an Ordinance as per the provisions of section 12(7) of the Act, however, since Ordinance making is a time consuming

process and there is urgency in introducing the new "Master of Technology (M.Tech.) in Artificial Intelligence & Machine Learning (AI&ML) ( Semester Pattern) (Choice Based Credit System) programme in the faculty of Science and Technology from the academic session 2020-21 and in such a situation section 12(8) of the Act empowers the Vice-Chancellor to issue a Direction as an interimmeasure;

**AND**

Whereas, In the meeting of Board of Studies in Defence and Aerospace Studies on 14.12.22 certain recommendations were made regarding eligibility criteria for the supervisors for the thesis prescribed under M.Tech Defence Technology programme, the said recommendations were approved on behalf of the Faculty of Science and Technolgy by the Vice Chancellor under section 12(7) of the Act;

**AND**

**Whereas,** DIRECTION NO. 3 OF 2023 ENTITLED "ADMISSION EXAMINATIONS LEADING TO THE AWARD OF THE DEGREE OF M.E./M.TECH. ( FULL TIME) (SEMESTER PATERN) ( CHOICE BASED CREDIT SYSTEM), DIRECTION,2023 issued by the University is lapse by virtue of the provisions of proviso to Section 12(8) of the Act, this has necessitated the issuance of new Direction incorporating the provisions of the Direction no. 3 of 2023;

**Now,** therefore, I, Dr. Prashant Bokare , Vice-Chancellor of Rashtrasant Tukadoji Maharaj Nagpur University, in exercise of my powers under section 12(8) of the Act, do hereby issue the following Directions;

1. This Direction shall be called "**ADMISSION AND EXAMINATIONS LEADING TO THE AWARD OF DEGREE OF M.E./M.TECH. (FULL TIME) (SEMESTER PATTERN) (CHOICE BASED CREDIT SYSTEM), DIRECTION, 2024.**

2. This Direction shall come in to force from the date of its issuance. However, the provisions of this direction shall also be applicable to the students admitted in 1st semester of the Programmes in the academic year 2020-21, except for the provision regarding eligibility for M.Tech (Civil Engineering) which shall be applicable from academic year 2021-22 only.

3. In this Direction unless the context requires otherwise: -

a. **"Ad-hoc Committee"** means the ad-hoc committee constituted by the university for the subjects of "Computer Engineering" and "Computer Science & Engineering" in the Faculty of Engineering and Technology

b. **"ATKT"** means "Allowed to Keep Term" in the higher semester, as per the rules herein.

c. **"Course"** means a theory, practical (or the combination of theory and practical) subject, and research project, prescribed for any semester and carrying maximum and minimum passing marks, which a student, admitted to the programme of Master of Engineering (M.E.), Master of Technology ( M.Tech.), governed by this Direction has to study in order to become eligible for the award of the Degree under this Direction.

d. **"Credit"** means the unit by which the course work is measured. It is measured in terms of weekly class hours assigned to a Course.

e. **"Credit Point" (CP)**it is the value obtained by multiplying the Grade Point by the Credit i.e. No. of Credits assigned for the course ×Grade Points secured for that course.

f. **"Cumulative Grade Point Average (CGPA)"** CGPA refers to the Cumulative Grade Point Average weighted across all the semesters. It is obtained by dividing total number of credit points in all the semesters by the total number of credits in all the semesters.

g. **"Degree"** means the Degrees of Master of Engineering (M.E.), Master of Technology ( M.Tech.), (Semester Pattern) (Choice Based Credit System).

h. **"Grade Letter"** it is an index to indicate the performance of a student in a particular course/paper. It is the transformation of actual marks secured by a student in a course/paper. It is indicated by a Grade letter O,A,B,C,D,E and F. There is a range of marks for each Grade.

i. **"Grade Point"** grade Point is weight allotted to each grade letter depending on the marks awarded in a course/paper.

j. **"Programme"** means the Master of Engineering (M.E.), Master of Technology ( M.Tech.), (Semester Pattern) (Choice Based Credit System) programme under this Direction.

k. **"Student"** means a student admitted to the programme under this Direction.

l. **"Semester Grade Point Average (SGPA)"** SGPA indicates the performance of a student in a given semester. It is based on the total credit points earned by the student in all the courses and the total number of credits assigned to the courses/papers in a Semester.

m. **"University"** means Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.

4. **Admission and eligibility to the Programme:** Subject to the compliance with the provisions of this Direction and other Directions/Ordinances of the University issued from time to time and the other relevant guidelines/directions/instructions issued by AICTE and state of Maharashtra from time to time, following persons shall be eligible for admission to various programmes, enumerated in Table No.1, under this Direction:

a) **M.E./M.Tech (First Semester):-**

i) The college shall get the list of admitted students scrutinized and approved from the university, strictly as per sanctioned quota and in accordance with the prescribed rules and regulations.

ii) The general eligibility qualification for admission to the respective post graduate course shall be as mentioned in Table No. 1 given below:

**Table No. 1**

| Sr. No. | Course M.E./M.Tech in | Eligibility Qualification B.E./B.Tech of this university or any other statutory university recognized equivalent thereto OR Maharashtra Gov. Equivalence GR. |
|---|---|---|
| 1 | CAD/CAM | Mechanical/ Production/ Industrial Engg./ Automobile / Industrial /Aeronautical Engg |
| 2 | CADMA | Mechanical/ Production/ Industrial Engg./ Automobile/ Industrial/Aeronautical Engg |
| 3 | Computer Science Engineering | CT/CE/EC/EandT/Electronics/CSE/ IT/ MCA with 60%/M.Sc (Maths, Statistics) |

| | | |
|---|---|---|
| 4 | Electronics Communication | Electronics/EDT/E&T /M.Sc Physics/ Electronics & Communication/ Digital Electronics, |
| 5 | Electronics | Electronics /EDT/E&T /M.Sc Physics/ Electronics & Communication/ Digital Electronics, |
| 6 | Embedded System and Computing | CT/CSE/CE/EDT/ IT/ MCA with 60% |
| 7 | Environment Engg | Civil/Chemical/M.Sc. Chemistry |
| 8 | Heat Power Engineering | Mechanical Engg./Automobile/Power Engg/Producation /Industrial/Aeronautical Engg. |
| 9 | Industrial Drives and Control | Electrical Engg/E&P/Power Electronics/Power Engg. |
| 10 | Industrial Engg. | Any Branch of Engineering & Technology |
| 11 | Integrated Power System | E&P/Power Electronics/Electrical Engg |
| 12 | Mechanical Engg. Design | Mechanical/Producation/Automobile/Power Engg/Industrial Engg/Aeronautical Engg./Manufacturing Engg/Mechanical & Automation Engg/Metallurgy Engg. |
| 13 | Power Electronics and Power System | E&P/ Power Electronics electrical Engg. |
| 14 | Software System | CT/CSE/CE/EDT/IT/MCA with 60% |
| 15 | Structural Engg | Civil Engineering, B.E./B.Tech. (Structures) |
| 16 | VLSI | Electronics/EDT/E&T/Biomedical Engg/M.Sc. Physics/Electronics & Telecommunication. |
| 17 | Wireless Communication & Computing | CT/CS/CSE/CE/EDT/IT/MCA with 60% |
| 18 | Artificial Intelligence & Machine Learning | B.E./B.Tech. CSE./CT/CE/IT/Electronics Engg/Electronics & Communication Engg/Electronics& Telecommunication Engg/Electrical Engg / Mechanical Engg/ Artificial Intelligence and Data Science/AMIE(Mech.Engg.) AMIE(Computer Science & Engg, |

| | | |
|---|---|---|
| | | AMIE/Electronics and communication Engg. and MCA with 60% |
| 19 | Artificial Intelligence and Data Science | B.E; B.Tech. in any branch |
| 20 | M.Tech ( Civil Engineering)(Computer Aided Structural Enineering. | B.E./B.Tech in<br>1) Civil Engineering<br>2)Civil Technology<br>3)Construction Engineering and Management<br>4) Construction Technology<br>5)Construction Technology and Management<br>6)Structural Engineering<br>7) Building Construction and Technology<br>8) Infrastructural Engineering<br>9) Architectural Engineering |
| 21 | M.Tech Defence Technology | 1) Aerospace Engineering<br>2) Aeronautical engineering<br>3) Applied Electronics and Communication Engineering<br>4) Applied Electronics and Instrumentation Engineering<br>5) Chemical Technology<br>6) Chemical engineering<br>7) Computer Science & Engineering<br>8) Computer and Communication Engineering<br>9) Computer Engineering<br>10) Computer Engineering and Applications<br>11) Computer Networking<br>12) Computer Science and Information Technology<br>13) Computer Science and Technology<br>14) Computer Technology<br>15) Electrical and Computer Engineering<br>16) Electrical and Electronics Engineering<br>17) Electrical and Instrumentation Engineering<br>18) Electrical and Power Engineering<br>19) Electrical Engineering<br>20) Electronics engineering<br>21) Electrical, Electronics and Power Engineering<br>22) Electronics and Communication engineering<br>23) Instrumentation engineering<br>24) Electronics, Instrumentation and Control Engineering<br>25) Electronics, Science and Engineering<br>26) Electronics and Computer Engineering |

| | | |
|---|---|---|
| | | 27) Electronics and Communication Engineering<br>28) Electronics and Computer Science<br>29) Electronics and Control Systems<br>30) Electronics and Power Engineering<br>31) Electronics and Telecommunication<br>32) Electronics, Instruments and Control Engineering<br>33) Electronics System Engineering<br>34) Instrumentation and Electronics<br>35) Instrumentation Engineering<br>36) Marine Engineering<br>37) Marine Technology<br>38) Mechanical and Automation Engineering<br>39) Mechatronics Engineering<br>40) Mechanical engineering<br>41) Metallurgical and Materials Engineering<br>42) Military engineering<br>43) Optics and Opto-electronics<br>44) Power Electronics Engineering<br>45) Radio, Physics and Electronics<br>46) Software Engineering<br>47) Structural Engineering<br>48) Telecommunication Engineering |

iii) student should have pursued a regular course of study in a college affiliated to the University for Conduct of the course or a university department/center for not less than one semester in the subjects in which he/she offers for examination.

b) **M.E./M.Tech. (Second Semester):-** A student who has after passing the M.E./M.Tech.. (First Semester) examination prosecuted a regular course of study in a college affiliated to the university for conduct of the course or a university department/ center for not less than one semester in the subjects in which he/she offers for examination.

6. **Duration of the Programme:** The duration of the programme shall be of two academic years consisting of four semesters for which the teaching sessions shall be held during regular college hours and the university examination shall be conducted at the end of each semester namely, the first, second, third and fourth semester.

7. **Medium of Instructions:** The medium of instructions shall be English.

8. **Structure of the Programmes:**

i. The **M.E./M.Tech.** (Full Time) programmes governed by this Direction & the corresponding Boards of Studies shall be as detailed in the following Table No. 2

**Table No. 2**

| Sr. No. | M.Tech. Specialization | Board of Studies |
|---|---|---|
| 1 | CAD/CAM | Mechanical |
| 2 | CADMA | Mechanical |
| 3 | Computer Science Engineering | Computer Engineering and Computer Science & Engineering |
| 4 | Electronics Communication | Electronic |
| 5 | Electronics | Electronic |
| 6 | Embedded System and Computing | Computer Engineering and Computer Science & Engineering |
| 7 | Environmental Engg. | Civil |
| 8 | Heat Power Engg. | Mechanical |
| 9 | Industrial Drives and Control | Electrical |
| 10 | Industrial Engg. | Industrial Engg. |
| 11 | Integrated Power System | Electrical |

| | | |
|---|---|---|
| 12 | Mechanical Engg. Design | Mechanical |
| 13 | Power Electronics and Power System | Electrical |
| 14 | Software Systems | Computer Tech. |
| 15 | Structural Engg. | Civil |
| 16 | VLSI | Electronic |
| 17 | Wireless Communication and Computing | Computer Engineering and Computer Science & Engineering |
| 18 | Artificial Intelligence & Machine Learning | Computer Engineering and Computer Science & Engineering |
| 19 | Artificial Intelligence and Data Science | Ad-hoc committee in Inter-disciplinary programmes |
| 20 | Defence Technology | Defence and aerospace studies |

**Note:-** i. The number of courses ( Theory papers, Practicals, College Assessment, Project Work, Viva-Voce and Seminar), maximum and minimum passing marks assigned to each of them, the minimum marks required for passing the semester examination shall be as indicated in the respective scheme appended to this Direction.

(The list is subject to necessary revision from time to time as per introduction of new full time course)

ii. The scope of the course/subject shall be as indicated in the respective syllabus, appended to this Direction.

iii. The subjects under Foundation Course-I, would be taught by Approved Ph.D. Supervisors only and the subjects under Open Electives would be taught by concerned subject teachers only. The paper setting, Moderation and Valuation work would be done by respective BOS who have proposed the said subjects.

iv. An examinee shall carry out his thesis work beginning from third semester up to the end of fourth semester under the supervision of:

a) A recognized Post-Graduate teacher in the college or institute.

OR

b) A person from industry or research institute possessing B.E., degree in the appropriate subject and has not less than 5 years experience in an industry or research institution in a responsible capacity.

OR

c) A person who is an approved teacher having experience of more than 3 years and post graduate degree in the related specialization or a person who is an approved teacher having Ph.D. degree in related field.

d) No faculty can guide more than 5 projects.

v. The examinee shall submit his Project Work to the university through the Head of institute or college not later than 30th April / 30th October certified by the guide that the work was carried out satisfactorily under his guidance.

vi. The examinations based on the Project report shall be conducted by the Board of examiners consisting of an external examiner appointed by the university and internal examiner.

vii. As the subject of Defence and Aerospace studies is relatively new therefore for M.Tech. Defence Technology, supervisors will be from the following Board/Branches:

a. Mechanical Engineering
b. Automobile Engineering
c. Chemical Engineering
d. Electronics and Telecommunication Engineering
e. Aeronautical Engineering

**9. Scheme of Examinations: -**

i) Subject to the provisions of the general rules of the University with respect to conduct of examinations and in particular the rules regarding payment of examination fees, award of grace marks, eligibility for getting exemption in any passing heads, there shall be end semester examination to be conducted by the University as per the scheme and modalities to be notified from time to time.

ii) In **M.E./M.Tech.** minimum passing marks for clearing the subject (Theory/Practical) shall be 50% of total marks comprised of College assessment and University assessment taken together.

iii) **Audit Course**: a. Teaching learning and evaluation of these courses, designed by concern faculty/industry expert, shall be done at institute level.

b. Institute shall submit the result of the students in audit course with **"Satisfactory" or "Not satisfactory"** to the University.

c. **Audit courses** in the curriculum shall be offered to the students to understand the way their expertise/domain knowledge can be utilized for developing research paper writing skill (Semester - I) and pedagogy studies (Semester -II).

d. A student shall pursue the entire audit course as specified in the course structure of the M.Tech. programme.

e. These courses are among the compulsory courses but **do not carry any credits** and shall not be counted for computation of SGPA/CGPA.

f. The students shall have two chances in total to clear an audit course.

g. Audit courses shall not carry any credits but securing **50 marks out of 100** in internal examination (at college level) shall be **necessary requirement** for the student to quality for the **award of Degree**.

iv) General rules of the University relating to the award of grace marks for passing an examination, securing higher division/class and for securing distinction in subject(s) as modified from time to time shall apply to the examination under this Direction.

v) Unsuccessful examinee shall be eligible for grant of exemption in any course/paper as per the general rules of the University.

vi) An Examinee who does not pass or who fails to present himself/herself for the examination(s) (College assessment and/or University assessment) shall be eligible for reappearing in the same examination on payment of a fresh fee and as such other fees as may be prescribed from time to time. However, for clearing the College Assessment the detained student is required to take casual admission in the concerned semester. However, casual admission to semester should be allowed only when a regular session for the same session is running.

vii) In the case of unsuccessful examinees, the marks obtained in college assessment in the subjects in which they failed shall be carried forward. However, the student has option to forego the College Assessment marks.

viii) Where a graduate wishes to improve his CGPA, he can reappear in the theory exam for improvement of his CGPA in a period of maximum two consecutive year after the declaration of result

ix) Examinees successful at the final examinations shall on payment of the prescribed fees shall he entitled for the award of the degree of **M.E./M.Tech.** in the respective specialization & branch of Engineering in the prescribed form signed by the Vice- Chancellor.

x) An examinee at the fourth semester examination, who fails to submit his Project Work within the prescribed date or fails to present himself for the Project Work may, subject to other provisions of this Direction shall be readmitted to the examination at any subsequent date provided: -

a) He/She pays the fee prescribed from time to time.

b) His/her application is received by the Controller of Examinations not later than one month before the date of commencement of examination. xi) The marks will be allotted in all examinations which will include college assessment marks and the total marks for each Theory / Practical shall be converted into Grades as per **Table No.3.**

xii) SGPA shall be calculated based on Grade Points corresponding to percentage of marks as given in **Table No.3** and the Credits allotted to respective Theory / Practical shown in the scheme for respective semester.

xiii) GRADE Conversion Table and Computation of SGPA & CGPA

**Table: 3(a) Grade Conversion Table (Theory)**

| SN | Letter Grade | Grade Point | Mark Range | Performance |
|---|---|---|---|---|
| 1 | O | 9.00- 10.00 | 90-100 | Outstanding |
| 2 | A+ | 8.00- <9.00 | 80-<90 | Excellent |
| 3 | A | 7.00- <8.00 | 70-<80 | Very Good |
| 4 | B+ | 6.00- <7.00 | 60-<70 | Good |
| 5 | B | 5.50- <6.00 | 55-60 | Above Average |
| 6 | C | 5.00- <5.50 | 50-<55 | Average |
| 7 | P | 4.00- <5.00 | 40-<50 | Pass |
| 8 | F | Below 4 | Below40 | Fail |
| 9 | AB | 0 | - | Absent |

**Table: 3(b) Grade Conversion Table (Practical)**

| SN | Letter Grade | Grade Point | Mark Range | Performance |
|---|---|---|---|---|
| 1 | O | 9.00- 10.00 | 90-100 | Outstanding |
| 2 | A+ | 8.00- <9.00 | 80-<90 | Excellent |
| 3 | A | 7.00- <8.00 | 70-<80 | Very Good |
| 4 | B+ | 6.00- <7.00 | 60-<70 | Good |
| 5 | B | 5.50- <6.00 | 55-60 | Above Average |
| 6 | P | 5.00- <5.50 | 50-<55 | Average |
| 7 | F | Below 5 | Below 50 | Fail |
| 8 | AB | 0 | - | Absent |
| | | | | |

**Computation of SGPA & CGPA:**

The UGC recommends the following procedure to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA):

**i.** The SGPA is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student, i.e

$$SGPA\ (Si) = \Sigma(Ci \times Gi) / \Sigma Ci$$

where Ci is the number of credits of the ith course and Gi is the grade point scored by the student in the ith course.

**ii.** The CGPA is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a programme, i.e.

$$CGPA = \Sigma(Ci \times Si) / \Sigma Ci$$

where Si is the SGPA of the ith semester and Ci is the total number of credits in that semester.

**iii.** The SGPA and CGPA shall be rounded off to 2 decimal points

**iv.** CGPA to Percentage (%) conversion formula:

$$Percentage\ (\%) = (CGPA) * 10$$

Table-3

THEORY

| Letter Grade | Academic Performance | Percentage of marks | Grade Point |
|---|---|---|---|
| O | Outstanding | 100 | 10 |
| A+ | Excellent | 90-99.99 | 9 |
| A | Very Good | 80-89.99 | 8 |
| B+ | Good | 70-79.99 | 7 |
| B | Above Average | 60-69.99 | 6 |
| C | Pass | 50-59-.99 | 5 |
| F | Fail | <50 | 0 |
| Ab | Absent | - | 0 |

**Note:-Same table is to be used for practicals also**

xv) As soon as possible, after the examination, the Board of Examinations shall publish a list of successful examinees and the degree shall be awarded based on CGPA thereon for **M.E./M.Tech.** students.

**10. A.T.K.T. Rules:-**

i. Student will have no restriction to take admission to II Semester.

ii. For admission to Second year of ME./M.Tech. the student should have passed at least 50% of subject heads taking together I & II Semester.

**Table No. 4**

| Admission to Semester | Student should have appear for the examination | Student should have passed in all the subjects of the following examination of R.T.M. Nagpur University | Student should have passed at least 50% of the papers of the following examinations |
|---|---|---|---|
| Semester-I | ---------- | As Provided in the Eligibility Criteria mentioned in Table-I | ---------- |
| Semester –II | Semester-I | ---------- | ---------- |
| Semester-III | Semester-II | ---------- | Semester-I& II taken together |
| Semester-IV | Semester-III | ---------- | ---------- |

**11.** In the event of any question of interpretation or application of the provisions of this Direction arising the same shall be referred to the decision of the Vice-Chancellor whose decision in the matter shall be final and binding on all the concerned people.

( Dr. PRASHANT BOKARE )
VICE-CHANCELLOR

Nagpur
Date: / / 2024