RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR.
(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 of 2017)
(Academic Section)
Rashtrasant Tukadoji Maharaj Nagpur University, Jamnalal Bajaj Administrative Building, Mahatma Jotiba Phule Educational Premises, Campus Square to Ambazari T-Point Road, Nagpur-440033

No.RTMNU/ Acad../2021/ 97

Date: 01 September 2021

NOTIFICATION

It is notified for general information of all the concerned that the Academic Council in its emergent Online meeting held on 31th August, 2021 item No.1 (A) to (C) has approved the following recommendations of the respective Board of Studies and Faculty of Science & Technology. The recommendation of scheme of Examination of B.E.& B.Tech(1st to 8th Sem.) will come to effect from the session 2020-21 and all following recommendation will be implemented from the session 2021-22 & onwards.

Item No	Examination	Details of the approved items
1(A)	**B.E.& B.Tech**	The revised syllabus of Bachelor of Engineering (B.E) and Bachelor of Technology (B.Tech.) third and fourth Semester for choice based credit system along with scheme of examination for third semester onwards for Civil Engg., Electrical Engg., Mechanical Engg., Electronic Engg.,Electonics & Tele Communication Engg., Aeronautical Engg., Computer Engg.,Computer Science & Engg. Information Technology, Computer Technology, Fire Engg. Chemical Engg., Bio-Technology, Chemical, Technology Artificial Intelligence & Data Science and Artificial Intelligence as per as per AICTE Model Curriculum. Will come to effect from the session 2021-22 and onwards phasewise.
(B)	**P.G. Diploma in Industrial Robotics and Cloud Technology**	**The Council considered and approved** the revised Syllabus and Scheme of Examination of Post Graduate Diploma in Industrial Robotics and Post Graduate Diploma in Cloud Technology will come to effect from the session **2021-2022** and onwards phasewise
(C)	**M. Tech in Defense Technology**	**The Council considered and approved** the New Syllabus of M. Tech in Defense Technology first to fourth Semester for choice based credit system along with scheme of examination. Will come into effect from the session **2021-22** and onwards phasewise.

Note:- All the concerned are requested to take a note of this notification & respective changes in the Syllabus. The Revise & New Syllabus is available on Rashtrasant Tukadoji Maharaj Nagpur University Website (www.nagpuruniversity.ac.in)

(Dr.Raju Hiwase)
Registrar

Copy forwarded for information & necessary action to:

1. All the Principal of affiliated and conducted Colleges of Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.
2. Deans, of Faculty of Science & Technology
3. All Chairman of Faculty of Science & Technology
4. The Director Board of Examinations and Evaluation,
5. The Deputy Registrar (Pre/ Post Exams.),
6. The Asstt. Registrar (Gen./Prof./ Confidential Exams. Enqr. &Gen.Exam),
7. The Officer in –charge, Publication
8. The Deputy Registrar, to the office of the Hon'ble Vice Chancellor,
9. P.A. to Hon'ble Pro-Vice-Chancellor
10. P. A. to Registrar,
11. Smt. Veena Prakashe Information Scientist,

RashtrasantTukadojiMaharaj
Nagpur University, Nagpur.

(Sanjay Bahekar)
Deputy Registrar(Acad)

DIRECTION NO. 35 OF 2016

DIRECTION TO PROVIDE FOR THE EXAMINATION LEADING TO THE DEGREE M.E./M.TECH./M.ARCH./M.DES. (FULL TIME) IN THE FACULTY OF ENGINEERING AND TECHNOLOGY UNDER CHOICE BASED CREDIT SYSTEM (CBCS)

Direction issued under section 14(8) of the Maharashtra Universities Act, 1994, relating to M.E., M.Tech. &M.Arch., first to last semesterin Choice Based Credit System Semester Patternfor the award of Degree of Master of Engineering (two years degree course), Master of Technology (two years degree course), & Master of Architecture (two years degree course), Full Time in the Faculty of Engineering and Technology.

Whereas, the Maharashtra Universities Act No. XXXV of 1994 has come into force with effect from 22nd July, 1994.

AND

Whereas, the amendment to the said Act came to be effected from 22nd July 1994.

AND

Whereas, the Dean of the Faculty of Engineering and Technology has concurred with the recommendations of All the Board of Studies in the Faculty of Engineering and Technology on 29/3/2016.

AND

Whereas, All the Board of Studies in the Faculty of Engineering and Technology at its meeting held on 13/4/2016, have decided to make amendments related to M.E., M.Tech. &M.Arch, first to last semester, in CBCS Semester Pattern for award of degree of Master of Engineering, Master of Technology & Master of Architecture of Full time in the Faculty of Engineering and Technology.

AND

Whereas, the Faculty of Engineering & Technology has consented to the draft direction for the award of M.E/M.Tech./M.Arch degree in its meeting held on 13/4/2016.This Direction shall come into force from the date of its issuance.

Now, therefore, I, **Dr. Pramod Yeole (Acting) Vice-chancellor of Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur** in exercise of powers vested in me under section 14(8) of the Maharashtra Universities Act, 1994, do hereby issue the following Direction pertaining to the amendment as made for M.E., M.Tech. &M.Arch, first to last semester in Choice Based Credit Pattern for award of M.E./M.Tech./M.Arch.Degree in the Faculty of Engineering and Technology.

1. This Direction shall be called "Direction regarding Choice Based Credit System Pattern Scheme and Examination leading to M.E., M.Tech. &M.Arch first to last semester in CBCS Semester Pattern in the Faculty of Engineering and Technology, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.

2. Subject to the compliance with the provisions of this Direction and any other Ordinance which is in force from time to time shall be applicable.

3. The M.E./M.Tech./M.Arch./M.Des.(Full Time) courses governed by this Direction & the corresponding Board of Studies shall be as detailed in the following Table-1.

Table 1

Sr. No.	M.Tech. Specialization	Board of Studies	Scheme & Syllabus Appendix
1	Environmental Architecture	Architecture	A
2	Architecture Education	Architecture	B
3	CAD/CAM	Mechanical	C
4	CADMA	Mechanical	D
5	Chemical Engineering	Chemical Engineering	E
6	Computer Science Engineering	Computer Tech.	F
7	Electronic Communication	Electronic	G
8	Electronics	Electronic	H
9	Embedded System and Computing	Computer Tech.	I
10	Environmental Engg.	Civil	J
11	Food Technology	Chemical Technology	K
12	Heat Power Engg.	Mechanical	L
13	Industrial Design	Architecture	M
14	Industrial Drives and Control	Electrical	N
15	Industrial Engg.	Industrial Engg.	O
16	Integrated Power System	Electrical	P

17	Mechanical Engg. Design	Mechanical	Q
18	Oil Technology	Chemical Technology	R
19	Paint Technology	Chemical Technology	S
20	Petrochemical Technology	Chemical Technology	T
21	Power Electronics and Power System	Electrical	U
22	Software Systems	Computer Tech.	V
23	Structural Engg.	Civil	W
24	VLSI	Electronic	X
25	Wireless Communication and Computing	Computer Tech.	Y

* Accepted by the Management Council vide item No. 21, under the draft Direction No. 31 of 2007 & Hon'ble Chancellor vide letter No. CS/NU/STT/43/09/(6573)/3937, dt. 26 October, 2009.

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

4. The duration of the course 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.

5. The examinations shall be held as far as possible, in October – November and March – April every year at such places and on such dates as may be decided by the university.

6. Subject to the compliance with the provisions of this Direction, other relevant Directions & directions issued by AICTE and state of Maharashtra in force from time to time, the following persons shall be eligible for admission to the, examinations,

   a) M.E./M.Tech./M.Arch./M.Des. **M.Des /(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 – 2 given below:

Table 2

Sr. No.	Course M.E./M.Tech./M.Arch./M.Design	Eligibility Qualification B.E./ B.Tech. of this university or any other statutory university recognized equivalent thereto OR AMIE in
1	Environmental Architecture	B.E. Civil/B.Arch.
2	Architecture Education	B.E. Civil/B.Arch.
3	CAD/CAM	Mechanical/ Production/ Industrial Engg./ Automobile/ Industrial
4	CADMA	Mechanical/ Production/ Industrial Engg./ Automobile/ Industrial/ Instrumentation
5	Chemical Engineering	B.E. or B.Tech in Chemical Engg./ B.E. or B.Tech in any of the Technology branches having qualified GATE and holding VALID GATE SCORE.
6	Computer Science Engineering	CT/CS/ IT/ MCA with 60%/M.Sc(Maths,Statistics)
7	Electronic Communication	Electronics/EDT/E&T /M.Sc Physics/ EC/ Biomedical Engg.
8	Electronics	Electronics/EDT/E&T /M.Sc Physics/ EC/ Biomedical Engg.
9	Embedded System and Computing	CT/CS/CE/EDT/ IT/ MCA with 60%
10	Environmental Engg.	Civil/Chemical / M.Sc Chemistry
11	Food Technology	B.E. or B.Tech Food technology, Chemical Engg/ Chemical Technology
12	Heat Power Engg.	Mechanical Engg./ automobile/ Power Engg./ Production/ Industrial
13	Industrial Design	B.E. Civil/B.Arch.
14	Industrial Drives and Control	E & P/ Power Electronics/ Electrical
15	Industrial Engg.	Any branch of Engineering or Technology
16	Integrated Power System	E & P/ Power Electronics/ Electrical
17	Mechanical Engg. Design	Mechanical/ Production/ Automobile/ Power Engg./ Industrial Engineering
18	Oil Technology	B.E/B.Tech Oil technology, Chemical Engg/ Chemical Technology
19	Paint Technology	B.E/B.Tech Paint technology, Chemical Engg/ Chemical Technology
20	Petrochemical Technology	B.E/B.Tech Petrochemical technology, Chemical Engg/ Chemical Technology
21	Power Electronics and Power System	E & P/ Power Electronics/ Electrical
22	Software Systems	CT/CS/CE/EDT/ IT/ MCA with 60%
23	Structural Engg.	Civil Engg.
24	VLSI	Electronics/EDT/E&T /Biomedical Engg./ M.Sc Physics

25	Wireless Communication and Computing	CT/CS/CE/EDT/ IT/MCA with 60%

iii) The student should have perceived 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.

iv) **M.E./M.Tech./M.Arch./M.Des (Second Semester):-** A student who has after passing the M.E./M.Tech./M.Arch./M.Des (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.

v) **M.E./M.Tech./M.Arch./M.Des.(Third Semester):-** A student who has after passing the M.E./M.Tech./M.Arch./M.Des.(Second 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.

vi) **M.E./M.Tech./M.Arch./M.Des.(Fourth Semester):-** a student who has after passing the M.Tech./M.Arch./M.Des./M.E. (Third 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.

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

8. The fees for each of the examinations shall be such as may be prescribed by the university from time to time.

9. The number of Papers, Practical, College Assessment, Project Work, Viva-Voce and Seminar, if any, maximum marks assigned to each of them, and the minimum marks an examinee must obtain in order to pass the examination shall be as indicated in the respective scheme appended to this Direction.

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

11. For admission to Second year of M.E./M.Tech/M.Arch,/M.Des. the student should have passed at least 50% of subject heads taking together I& II Semester.

12. 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.

i) 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 year 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.

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

iii) 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. No faculty can guide more than 5 projects.

13. Provisions of Direction No. 3 of 2007 relating to the award of grace marks for passing an examination, securing higher division/class and for securing distinction in subject(s) as updated from time to time shall apply to the examination under this Direction.

14. However if a graduant 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

15. 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/M.Arch in the respective specialization & branch of Engineering in the prescribed form signed by the Vice-Chancellor.

Special Instructions:

a) **A student having passed in a particular subject heads of passing of annual /semester pattern at any semester level shall be exempted from such subject heads at any level (lower/higher). Even if the subject is named with a new nomenclature having similar contents, shall also be exempted and such subject heads are/ shall be mentioned in the absorption scheme provided by the respective B.O.S. for relevant semester. In case of absorption, if required, proportionate marks/grades shall be awarded to absorbed subject heads.**

b) **If a new subject head is introduced in the CBCS Pattern, then the internal marks shall be awarded in proportion to the marks/grades earned by a student in the university/external examination in the same subject head.**

c) **In M.E./M.Tech./M.Arch./M.Des., minimum passing marks for the theory subject shall be 50% of total marks & 50% for practical of total marks in respective subject head.**

5. Students failing under old semester pattern shall be provided maximum five consecutive examination to clear the subject(s), after which they shall be absorbed in the new scheme (CBCS).

Whereas, any student willing to opt for New Choice Based Credit System Scheme shall be absorbed as per the absorption schemes provided by relevant Board of Studies. However, student will have to appear for the examinations under CBCS Scheme for the match able subjects in which student has not cleared the subject in Semester Pattern Scheme/Annual Pattern.

6. **i)** The Scope of subject shall be as indicated in the syllabus.
ii) The medium of instruction and examination shall be English.

7. **The provisions of Ordinance no. 7(a) relating to "condonation of deficiency of marks" for passing an examination and of Ordinance no. 10 as amended up-to-date relating to "exemptions and compartments" shall apply to the examination under this Ordinance.**

8. An Examinee who does not pass or who fails to present himself/herself for the examination(s) 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, **readmission** to semester should be allowed only when a regular session is running for a particular semester.

9. As 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.

10. **The following note will be applicable after implementation of CBCS pattern:**

i) 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.**

ii) 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.

iii) SGPA shall be computed for every semester as per formula (1) and CGPA shall be computed only in IV Semester

$$\mathbf{SGPA} = \frac{\mathbf{C1 \times G1 + C2 \times G2 + \cdots Cn \times Gn}}{\mathbf{C1 + C2 + \cdots + Cn}} \text{---------- (1)}$$

Where:

C = Credit of individual Theory / Practical

G = Corresponding Grade Point obtained in the respective Theory /Practical.

n = Number of subject heads in a given semester

iv) The CGPA shall be calculated based on SGPA of I, II, III & IV Semester taken together as per formula.

$$\mathbf{CGPA} = \frac{[(SGPA)_{I} * (CGPA)_{I}] + [(SGPA)_{II} * (CGPA)_{II}] + [(SGPA)_{III} * (CGPA)_{III}] + [(SGPA)_{IV} * (CGPA)_{IV}]}{(Cr)_{I} + (Cr)_{II} + (Cr)_{III} + (Cr)_{IV}}$$

Where:

(SGPA) $_{I}$	= SGPA of I Semester
(Cr) $_{I}$	= Total Credits for I Semester
(SGPA) $_{II}$	= SGPA of II Semester
(Cr) $_{II}$	= Total Credits for II Semester
(SGPA) $_{III}$	= SGPA of III Semester
(Cr) $_{III}$	= Total Credits for III Semester
(SGPA) $_{IV}$	= SGPA of IV Semester
(Cr) $_{IV}$	= Total Credits for IV Semester
SGPA	= Semester Grade Point Average
CGPA	= Cumulative Grade Point Average

CGPA equal to 6.75 and above shall be considered as equivalent to First Class and CGPA equal to 8.25 and above shall be considered as equivalent to Distinction on Grade Card of IV Semester as a foot note. Equivalent percentage calculation will be based on the following formula:

Equivalent % = (CGPA – 0.75) x 10

Table No. 3

THEORY			PRACTICAL		
Grade	**Percentage of Marks**	**Grade Points**	**Grade**	**Percentage of Marks**	**Grade Points**
AA	80 ≤ Marks ≤ 100	10	**AA**	85 ≤ Marks ≤ 100	10
AB	70 ≤ Marks < 80	9	**AB**	80 ≤ Marks < 85	9
BB	60 ≤ Marks < 70	8	**BB**	75 ≤ Marks < 80	8
BC	55 ≤ Marks < 60	7	**BC**	70 ≤ Marks < 75	7
CC	50 ≤ Marks < 55	6	**CC**	65 ≤ Marks < 70	6
			CD	60 ≤ Marks < 65	5
			DD	50 ≤ Marks < 60	4
FF	00 ≤ Marks < 50	0	**FF**	00 ≤ Marks < 50	0
ZZ	Absent in Examination	--	**ZZ**	Absent in Examination	--

11. 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./M.Arch./M.Des. Students.

12. The subjects under Foundation Course I would be taught by Approved Ph.D. Supervisors only.

13. 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.

14. The students who are passed in the subject Research Methodology (Foundation Course I) would be exempted for doing course work in Research Methodology for undergoing Ph.D. Program.

15. I, further direct that the aforesaid Direction shall come into force from the date of issuance and shall remain in force till the relevant Ordinance comes into force in accordance with the provisions of Maharashtra Universities Act, 1994 and the relevant provisions published by this Direction shall be repealed from the existing Directions.

Sd/-

Nagpur
Date: 16/6/2016

Dr. Pramod Yeole
(Acting)Vice-Chancellor

R.T.M. Nagpur University, Nagpur

FOUR-YEAR B.E. COURSE

(Revised Curriculum as per AICTE Model Curriculum)

SCHEME OF EXAMINATION FOR

B.E. FIRST YEAR (All Branches of Engineering)

(SEMESTER – I)

Code	Subject	Teaching Scheme				Credits				MARKS				
										Theory		Practical		Total Marks
		L	P	T/A	Total	L	P	T/A	Total	Internal	Univ.	Internal	Univ.	
BSE1-1T	Mathematics-I	3	-	1T	4	3	-	1	4	30	70	-	-	100
BSE1-2T	Applied Physics	3	-	1T	4	3	-	1	4	30	70	-	-	100
BSE1-3T	Energy and Environment	2	-	1T	3	2	-	1	3	30	70	-	-	100
BSE1-4T	Communication Skills	2	-	-	2	2	-	-	2	15	35	-	-	50
BSE1-5T	Engineering Graphics	1	-	-	1	1	-	-	1	15	35	-	-	50
BSE1-6T	Basics of Civil & Mechanical Engineering	4	-	-	4	-	-	-	AUDIT	50	-	-	-	AUDIT
BSE1-2P	Applied Physics Lab	-	3	-	3	-	1.5	-	1.5	-	-	25	25	50
BSE1-3P	Energy and Environment Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
BSE1-4P	Communication Skills Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
BSE1-5P	Engineering Graphics Lab	-	4	-	4	-	2	-	2	-	-	25	25	50
	Three weeks Induction Program													
Total		15	11	3T	29	11	5.5	3	19.5	120	280	100	100	600

- L- Lecture , P-Practical, T- Tutorial , A- Activity (Half Credit perHour)
- Audit course marks are not counted in totalmarks

SCHEME OF EXAMINATION FOR
B.E. FIRST YEAR (All Branches of Engineering)
(SEMESTER – II)

Code	Subject	Teaching Scheme				Credits				MARKS				
										Theory		Practical		Total Marks
		L	P	T/A	Total	L	P	T/A	Total	Internal	Univ.	Internal	Univ.	
BSE2-1T	Mathematics-II	3	-	1T	4	3	-	1	4	30	70	-	-	100
BSE2-2T	Advanced Engineering Materials	2	-	1A	3	2	-	1	3	30	70	-	-	100
BSE2-3T	Applied Chemistry	3	-	1T	4	3	-	1	4	30	70	-	-	100
BSE2-4T	Computational Skills	2	-	-	2	2	-	-	2	15	35	-	-	50
BSE2-6T	Basics of Electrical Engineering	2	-	-	2	2	-	-	2	15	35	-	-	50
BSE2-7T	Engineering Mechanics	2	-	-	2	2	-	-	2	15	35	-	-	50
BSE2-8T	Indian Culture & Constitution	2	-	-	2	-	-	-	AUDIT	50	-	-	-	AUDIT
BSE1-5P	Workshop Practices	-	4	-	4	-	2	-	2	-	-	50	50	100
BSE2-2P	Advanced Engineering Materials Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
BSE2-3P	Applied Chemistry Lab	-	3	-	3	-	1.5	-	1.5	-	-	25	25	50
BSE2-4P	Computational Skills Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
	Three weeks Induction Program													
Total		**16**	**11**	**2T+1A**	**30**	**14**	**5.5**	**3**	**22.5**	**135**	**315**	**125**	**125**	**700**

Guidelines

- Energy and Environment shall be taught by faculty of Chemistry and will come under board of Applied Science and Humanities (only by ChemistryDept)
- Advance Engineering Materials shall be taught by faculty of Physics and will come under board of Applied Science and Humanities (only by PhysicsDept)

R.T.M. Nagpur University, Nagpur

SCHEME OF EXAMINATION

B.E. ELECTRONICS & TELECOMMUNICATION / ELECTRONICS & COMMUNICATION ENGINEERING/ ELECTRONICS ENGINEERING

(SEMESTER – III)

Code	Subject	Teaching Scheme				Credit				MARKS				
										Theory		Practical		Total Marks
		L	Practical	Tutorial/ Activity	Total	L	P	T/A	Total	Internal	Univ.	Internal	Univ.	
BEETC-301	Applied Maths-III	3	-	1T	4	3	-	1	4	30	70	-	-	100
BEETC-302T	Components for Electronic circuit design	3	-		3	3	-	-	3	30	70	-	-	100
BEETC-302P	Components for Electronic circuit design Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
BEETC-303T	Digital System Design	3	-	1T	4	3	-	1	4	30	70	-	-	100
BEETC-303P	Digital System Design Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
BEETC-304P	Network Theory	3	-	-	3	3	-	-	3	30	70	-	-	100
BEETC-305T	Signal & System	3	-	-	3	3	-	-	3	30	70	-	-	100
BEETC-306T	Measurement and Instrumentation	3	-	-	3	3	-	-	3	30	70	-	-	100
BEETC-307P	Electronics Workshop I Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
BEETC-308T	Consumer affairs	2	-		2							-	-	Audit
	Total	**20**	**6**	**2T**	**28**	**18**	**3**	**2**	**23**	**180**	**420**	**75**	**75**	**750**

SCHEME OF EXAMINATION FOR

B.E. ELECTRONICS & TELECOMMUNICATION / ELECTRONICS & COMMUNICATION ENGINEERING/ ELECTRONICS ENGINEERING

(SEMESTER – IV)

Code	Subject	Teaching Scheme				Credit				MARKS				
										Theory		Practical		Total Marks
		L	Practical	Tutorial / Activity	Total	L	P	T/A	Total	Internal	University	Internal	Univ.	
BEETC -401T	Microcontrollers & Applications	3	-	1T	4	3	-	1	4	30	70	-	-	100
BEETC -401P	Microcontrollers & Applications Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
BEETC -402T	Analog &Digital Communications	3	-	1T	4	3	-	1	4	30	70	-	-	100
BEETC -403P	Analog and Digital Electronics Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
BEETC -404T	Analog System Design	3	-	1T	4	3	-	1	4	30	70	-	-	100
BEETC -405T	Data structure & Algorithm	3	-	-	3	3	-	-	3	30	70	-	-	100
BEETC -406T	HSC: Numerical Analysis with MATLAB	2	-	-	2	2	-	-	2	15	35	-	-	50
BEETC -407T	Programming for problem solving	2	-	-	2	2	-	-	2	15	35	-	-	50
BEETC-407P	Programming for problem solving Lab	-	4	-	4	-	2	-	2			25	25	50
BEETC -408I	Internship								1			50	-	50
BEETC-409A	Audit Course HSC: Universal human values	1			1									AUDIT
	Total	**17**	**8**	**3T**	**28**	**16**	**4**	**3**	**24**	**150**	**350**	**125**	**75**	**700**

- L- Lecture , P-Practical, T- Tutorial , A- Activity Audit course marks are not counted in total marks

SCHEME OF EXAMINATION FOR
B.E. ELECTRONICS & TELECOMMUNICATION / ELECTRONICS & COMMUNICATION ENGINEERING/Electronics Engg.
(SEMESTER – V)

Code	Subject	Teaching Scheme				Credits				MARKS				
										Theory		Practical		Total Marks
		L	P	T/A	Total	L	P	T/A	Total	Internal	Univ.	Internal	Univ.	
BEETC -501T	Embedded System Design	2	-	1T	3	2	-	1	3	30	70	-	-	100
BEETC -501P	Embedded System Design Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
BEETC -502T	Electromagnetic Waves	3	-	1T	4	3	-	1	4	30	70	-	-	100
BEETC -503T	Digital Signal Processing	3	-	-	3	3	-		3	30	70	-	-	100
BEETC -503P	Digital Signal Processing Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
BEETC -504OT	HSC: IEED(Economics)	2	-	1A	3	2	-	1	3	30	70			100
BEETC -505PE	PEC-I	2	-	1T	3	2	-	1	3	30	70	-	-	100
BEETC -506P	Electronic Workshop II	-	2	-	2		1	-	1	-	-	25	25	50
BEETC -507A	Audit Course													AUDIT
	Total	**12**	**6**	**3T+1A**	**22**	**12**	**3**	**4**	**19**	**150**	**350**	**75**	**75**	**650**

SCHEME OF EXAMINATION FOR
B.E. ELECTRONICS & TELECOMMUNICATION / ELECTRONICS & COMMUNICATION ENGINEERING
(SEMESTER – VI)

Code	Subject	Teaching Scheme				Credit				MARKS				
										Theory		Practical		Total Marks
		L	P	T/A	Total	L	P	T/A	Total	Internal	Univ.	Internal	Univ.	
BEETC-601T	Computer Communication Network	2	-	-	2	2	-	-	2	30	70	-	-	100
BEETC-601P	Computer Communication Network Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
BEETC-602T	Internet of Things (IOT)	2	-	-	2	2	-	-	2	30	70	-	-	100
BEETC-602P	IOT Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
BEETC-603T	Wireless Sensor Network	2	-	-	2	2	-	-	2	30	70	-	-	100
BEETC-603P	Wireless Sensor Network Lab	-	2	-	2		1	-	1	-	-	25	25	50
BEETC-604PE	PEC-II	2	-	1T	3	2	-	1	3	30	70	-	-	100
BEETC-605OE	OE-I	2	-	1A	3	2	-	1	3	30	70	-	-	100
BEETC-606T	HSC: Effective Technical Communication	-		3A	3	-	-	3	3	-	-	50		50
BEETC-607I	Mini Project(Internship)	-		3A	3	--	-	3	3	-	-	25	25	50
BEETC-608A	Audit Course	-								-	-			AUDIT
Total		**10**	**6**	**1T+7A**	**24**	**10**	**3**	**8**	**21**	**150**	**350**	**150**	**100**	**750**

SCHEME OF EXAMINATION FOR
B.E. ELECTRONICS & TELECOMMUNICATION / ELECTRONICS & COMMUNICATION ENGINEERING/Electronics Engg.
(SEMESTER – VII)

Code	Subject	Teaching Scheme				Credit				MARKS				
										Theory		Practical		Total Marks
		L	P	T/A	Total	L	P	T/A	Total	Internal	Univ.	Internal	Univ.	
BEETC-701PE	PEC–III	3	2	1T	6	3	1	1	5	30	70	25	25	150
BEETC-702PE	PEC-IV	3	2	1T	6	3	1	1	5	30	70	25	25	150
BEETC-703PE	PEC–V	3	-		3	3	-		3	30	70	-	-	100
BEETC-704OE	OE-II	2	-	1T	3	2	-	1	3	30	70	-	-	100
BEETC-705I	Seminar/Internship	-	2	-	2	-	1	-	1	-	-	50	-	50
BEETC-706A	IPR	1		1A	2	-	-	-	-	-	-	-	-	AUDIT
	Total	**12**	**6**	**3T+1A**	**22**	**11**	**3**	**3**	**17**	**120**	**280**	**100**	**50**	**550**

SCHEME OF EXAMINATION FOR
B.E. ELECTRONICS & TELECOMMUNICATION / ELECTRONICS & COMMUNICATION ENGINEERING/Electronics Engg.
(SEMESTER – VIII)

Code	Subject	Teaching Scheme				Credit				MARKS				
										Theory		Practical		Total Marks
		L	P	T/A	Total	L	P	T/A	Total	Internal	Univ.	Internal	Univ.	
BEETC - 801PE	Program Elective –VI MOOC/NPTEL Course	3	-	-	3	3	-	-	3	30	70	-	-	100
BEETC - 802PE	Program Elective -VII MOOC/NPTEL Course	3	-	-	3	3	-	-	3	30	70	-	-	100
BEETC -803P	Project	-	12	-	12	-	6	-	6	-	-	50	50	100
	Seminar	-	-	2A	2	-	-	2	2	-	-	50	-	50
Total		**6**	**12**	**2A**	**20**	**6**	**6**	**2**	**14**	**60**	**140**	**100**	**50**	**350**

LIST OF ELECTIVE COURSES

Semester	Elective Type	Subject
V	Program Elective-I	1. Operating Systems
		2. Information Theory and Error Correcting Codes
		3. Electronic Design Techniques With HDL
		4. Sensors and Systems
VI	Program Elective-II	1. Computer Architecture
		2. Database Management Systems
		3. Antennas & Wave Propagation
		4. Control System Engineering
	Open Elective-I	1. Consumer Electronics
		2. Industrial Electronics
VII	Program Elective-III	1. Audio and Video Engineering
		2. Web Technologies
		3. Mobile Communications
		4. Robotics and Automation
	Program Elective-IV	1. Mixed Signal Design
		2. Data Science/ Cloud Computing
		3. Radar and Satellite Communication
		4. PLA and Scada
	Program Elective-V	1. Soft computing
		2. Fundamentals of Machine Learning
		3. Optical Communication
		4. Biomedical Engineering
	Open Elective II	1. Mechatronics
		2. Bioengineering
VIII	Mooc I	1. CMOS VLSI Design
		2. Artificial Intelligence
		3. Evolution of Air Interface towards 5G
		4. MEMS
	MOOC	1. VLSI Signal Processing
		2. Android Programming

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B.E. (Electrical Engineering) (CBCS)
SCHEME OF EXAMINATION

THIRD SEMESTER

Board	Subject Code	Subject	Teaching Scheme				Credit	MARKS					Minimum Passing Marks	
								Theory		Practical		Total	Theory	Practical
			L	P	T/A	Total		Internal	Uni.	Internal	Uni.			
GS	BEEE3O1T	Electrical Engineering Mathematics	3	-	1T	4	4	30	70	-	-	100	45	
EE	BEEE3O2T	Network Analysis	3	-	1A	4	4	30	70	-	-	100	45	
EE	BEEE3O3T	Electrical Measurement & Instrumentation	3	-	1A	4	4	30	70	-	-	100	45	
EE	BEEE3O4T	Analog Devices & Circuits	3	-	1A	4	4	30	70	-	-	100	45	
EE	BEEE3O5T	Renewable Energy studies	3	-	-	3	3	30	70	-	-	100	45	
EE	BEEE3O6T	Introduction to Python programming	1	-	-	1	1	15	35	-	-	50	23	
	BEEE3O7T	Environmental studies	1	-	1A	1	Audit	50	-	-	-	Audit	-	
EE	BEEE3O2P	Network Analysis Lab	-	2	-	2	1	-	-	25	25	50		25
EE	BEEE3O3P	Electrical measurement & instrumentation Lab	-	2	-	2	1	-	-	25	25	50		25
EE	BEEE3O4P	Analog Devices & circuits Lab	-	2	-	2	1	-	-	25	25	50		25
EE	BEEE3O6P	Introduction to Python programming Lab	-	2	-	2	1	-	-	25	25	50		25
		Total	**17**	**8**	**1T+4A**	**29**	**24**	**165**	**385**	**100**	**100**	**750**		

- L- Lecture, P-Practical(Half Credit per Hour), T- Tutorial, A- Activity

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B.E. (Electrical Engineering) (CBCS)
SCHEME OF EXAMINATION

FOURTH SEMESTER

Board	Subject Code	Subject	Teaching Scheme				Credit	MARKS					Minimum Passing Marks	
								Theory		Practical		Total	Theory	Practical
			L	P	T/A	Total		Internal	Uni.	Internal	Uni.			
EE	BEEE4O1T	Signal & Systems	3	-	1T	4	4	30	70	-	-	100	45	
EE	BEEE4O2T	Digital Electronics	3	-	-	3	3	30	70	-	-	100	45	
EE	BEEE4O3T	Electrical machines-I	3	-	-	3	3	30	70	-	-	100	45	
EE	BEEE4O4T	Power System	3	-	-	3	3	30	70	-	-	100	45	
EE	BEEE4O5T	Electromagnetic Fields	3	-	1T	4	4	30	70	-	-	100	45	
EE	BEEE4O6T	Simulation & Programming Techniques	3	-	-	3	3	30	70	-	-	100	45	
		Internship (2 to 3 weeks)	-	-	-	-	1	-	-	-	-	-		
EE	BEEE4O2P	Digital Electronics lab	-	2	-	2	1	-	-	25	25	50		25
EE	BEEE4O3P	Electrical machines-I Lab	-	2	-	2	1	-	-	25	25	50		25
EE	BEEE4O6P	Simulation & Programming Techniques Lab	-	2	-	2	1	-	-	25	25	50		25
		Total	**18**	**6**	**2T**	**26**	**24**	**180**	**420**	**75**	**75**	**750**		

- L- Lecture, P-Practical(Half Credit per Hour), T- Tutorial, A- Activity

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SCHEME OF EXAMINATION

FIFTH SEMESTER

Board	Subject Code	Subject	Teaching Scheme				Credit	MARKS					Minimum Passing Marks	
								Theory		Practical		Total	Theory	Practical
			L	P	T/A	Total		Internal	Uni.	Internal	Uni.			
EE	BEEE5O1T	Microprocessor & Microcontroller	3	-	1T	4	4	30	70	-	-	100	45	
EE	BEEE5O2T	Control systems	3	-	1T	4	4	30	70	-	-	100	45	
EE	BEEE5O3T	Power electronics	3	-	1T	4	4	30	70	-	-	100	45	
	BEEE5O4T	Open elective -I	3	-	-	3	3	30	70	-	-	100	45	
EE	BEEE5O5T	Professional elective-I	3	-	-	3	3	30	70	-	-	100	45	
EE	BEEE5O1P	Microprocessor & Microcontroller lab	-	2	-	2	1	-	-	25	25	50		25
EE	BEEE5O2P	Control systems lab	-	2	-	2	1	-	-	25	25	50		25
EE	BEEE5O3P	Power Electronics lab	-	2	-	2	1	-	-	25	25	50		25
		Total	**15**	**6**	**3T**	**24**	**21**	**150**	**350**	**75**	**75**	**650**		

- L- Lecture, P-Practical(Half Credit per Hour), T- Tutorial, A- Activity

Open Electives -I	Professional Elective-I
1. PLC and SCADA systems	1. Electrical Machine – II
2. Solar PV Systems	2. Power Station Practice
3. Organizational behavior	3. Electrical Power Utilization

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SCHEME OF EXAMINATION

SIXTH SEMESTER

Board	Subject Code	Subject	Teaching Scheme				Credit	MARKS					Minimum Passing Marks	
								Theory		Practical		Total	Theory	Practical
			L	P	T/A	Total		Internal	Uni.	Internal	Uni.			
GS	BEEE6O1T	Engineering Economics & Management	3	-	-	3	3	30	70	-	-	100	45	
EE	BEEE6O2T	Computer Applications in power system	3	-	1T	4	4	30	70	-	-	100	45	
EE	BEEE6O3T	Switch gear & protection	3	-	1T	4	4	30	70	-	-	100	45	
	BEEE6O4T	Open electives-II	2	-	-	2	2	30	70	-	-	100	45	
EE	BEEE6O5T	Professional elective-II	3	-	-	3	3	30	70	-	-	100	45	
	BEEE6O6T	Yoga & Meditation	1	-	-	1	Audit	50	-	-	-	Audit		
		Internship 3 to 4 weeks	-	-	-	-	2	-	-	-	-	-		
EE	BEEE6O2P	Computer Applications in power system lab	-	2	-	2	1	-	-	25	25	50		25
EE	BEEE6O3P	Switch gear & protection lab	-	2	-	2	1	-	-	25	25	50		25
EE	BEEE6O7P	Electrical Workshop Lab	-	2	-	2	1	-	-	25	25	50		25
		Total	**15**	**6**	**2T**	**23**	**21**	**150**	**350**	**75**	**75**	**650**		

- L- Lecture, P-Practical(Half Credit per Hour), T- Tutorial, A- Activity

Open Electives -II	Professional Elective-II
1. Testing and maintenance of Electrical Equipments	1. Electrical Installation and Design
2. Advance Instrumentation	2. Electrical Machine Design
3. Optimization Technique	3. Electric Drives and their control

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SCHEME OF EXAMINATION

SEVENTH SEMESTER

Board	Subject Code	Subject	Teaching Scheme				Credit	MARKS					Minimum Passing Marks	
								Theory		Practical		Total	Theory	Practical
			L	P	T/A	Total		Internal	Uni.	Internal	Uni.			
EE	BEEE7O1T	Professional elective-III	3	-	-	3	3	30	70	-	-	100	45	
EE	BEEE7O2T	Professional elective-IV	3	-	-	3	3	30	70	-	-	100	45	
EE	BEEE7O3T	Professional elective-V	3	-	-	3	3	30	70	-	-	100	45	
EE	BEEE7O4T	Open electives-III	3	-	-	3	3	30	70	-	-	100	45	
	BEEE7O5T	Ancient Indian History	-	-	-	-	Audit	50	-	-	-	Audit		
EE	BEEE7O6P	Elective Lab-I	-	2	-	2	1	-	-	25	25	50		25
EE	BEEE7O7P	Elective Lab-II	-	2	-	2	1	-	-	25	25	50		25
EE	BEEE7O8P	Project &Seminar	-	-	3A	3	3	-	-	50	-	50		25
		Total	**12**	**4**	**3A**	**19**	**17**	**120**	**280**	**100**	**50**	**550**		

- L- Lecture, P-Practical(Half Credit per Hour), T- Tutorial, A- Activity

Open Electives III	Professional Elective III	Professional Elective IV	Professional Elective V
1. Energy Management and Audit	1. Advanced Power Electronics	1. Fuzzy Logic and Neural Networks	1. Introduction to Artificial Intelligence
2. Industrial Economics and Entrepreneurship	2. HV Engineering	2. Advanced Electrical Power Systems	2. Digital signal processing and its applications
3. Electric and Hybrid Vehicles	3. Integrated Renewable Energy Systems	3. Flexible AC Transmission System	3. Introduction to Smart Grid

Elective lab I	Elective lab II
1) HV Engineering OR 2) Electrical Drawing and Simulation	1) Electrical Installation & Design OR 2) Advance Power Electronics

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
B.E. (Electrical Engineering) (CBCS)
SCHEME OF EXAMINATION

EIGHTH SEMESTER

Board	Subject Code	Subject	Teaching Scheme				Credit	MARKS					Minimum Passing Marks	
								Theory		Practical		Total	Theory	Practical
			L	P	T/A	Total		Internal	Uni.	Internal	Uni.			
EE	BEEE8O1T	Advance Professional elective-VI #*	3	-	-	3	3	30	70	-	-	100	45	
EE	BEEE8O2T	Advance Professional elective-VII #*	3	-	-	3	3	30	70	-	-	100	45	
		Internship (5 to 6 weeks) in Industry at appropriate work place	-	-	-	-	4	-	-	-	-	-		
EE	BEEE8O3P	Project	-		3A	3	3	-	-	50	50	100		50
EE	BEEE8O4P	Seminar	-	-	2A	2	2	-	-	50	-	50		
		Total	**6**	**-**	**5A**	**11**	**15**	**60**	**140**	**100**	**50**	**350**		

 # These subjects should be undertaken through online mode.

***Alternatively students can choose any course with 3 credits from MOOCs Platform for which the list is given below.**

Additional subjects may be conducted through online courses.

Teacher shall be assigned workload for internship and industrial project.

List of MOOCs platforms which offer online certifications courses as below: -

1. **SWAYAM-https://swayam.gov.in**
2. **NPTEL-https://onlinecourses.nptel.ac.in**
3. **MOOC-http://mooc.org**

OR

Students may opt following online courses designed by BoS Electrical Engineering, RTMNU Nagpur

Professional Elective-VI	Professional Elective-VII
1. Power semiconductor drives	1. EHVAC / DC transmission System
2. Electrical Distribution System	2. Power Quality

LIST OF ELECTIVE SUBJECTS

Semester	Elective Type	Subject
V	Open Elective-I	1. PLC and SCADA systems
		2. Solar PV Systems
		3. Organizational behavior
	Professional Elective-I	1. Electrical Machine – II
		2. Power Station Practice
		3. Electrical Power Utilization
VI	Open Elective-II	1. Testing and maintenance of Electrical Equipments
		2. Advance Instrumentation
		3. Optimization Technique
	Professional Elective-II	1. Electrical Installation and Design
		2. Electrical Machine Design
		3. Electric Drives and their control
VII	Open Elective-III	1. Energy Management and Audit
		2. Industrial Economics and Entrepreneurship
		3. Electric and Hybrid Vehicles
	Professional Elective-III	1. Advanced Power Electronics
		2. HV Engineering
		3. Integrated Renewable Energy Systems
	Professional Elective-IV	1. Fuzzy Logic and Neural Networks
		2. Advanced Electrical Power Systems
		3. Flexible AC Transmission System
	Professional Elective-V	1. Introduction to Artificial Intelligence
		2. Digital signal processing and its applications
		3. Introduction to Smart Grid
VIII	Professional Elective-VI	1. SWAYAM – https://swayam.gov.in
		NPTEL – **https://onlinecourses.nptel.ac.in/**
		2. MOOC – https://mooc.org
		3. Power semiconductor drives
		4. Electrical Distribution System
	Professional Elective-VII	1. SWAYAM – https://swayam.gov.in
		2. NPTEL – **https://onlinecourses.nptel.ac.in/**
		3. MOOC – https://mooc.org
		4. EHVAC/DC transmission System
		5. Power Quality

Faculty of Science & Technology

Course and Examination Scheme of Bachelor of Engineering (Mechanical Engineering)

III Semester B. E. (Mechanical Engineering)

Sr No	Course Code	Category	Course Title	Teaching Scheme (Hours/Week)			Credits	Examination Scheme								
								Theory					Practical			
				L	T	P		Duration of Exam (Hrs)	Max. Marks College Assesment	Max. Marks University Assessment	Total Marks	Min. Passing Marks	Max. Marks College Assessment	Max. Marks University Assessment	Total Marks	Min. Passing Marks
1	BEME301T	Basic Science course	Applied Mathematics – III	3	1	-	4	3	30	70	100	40	-	-	-	-
2	BEME302T	Professional core courses	Manufacturing Processes	3	-	-	3	3	30	70	100	40	-	-	-	-
3	BEME302P	Professional core courses	Manufacturing Processes Lab	-	-	2	1	-	-	-	-	-	25	25	50	25
4	BEME303T	Professional core courses	Engineering Thermodynamics	3	1	-	4	3	30	70	100	40	-	-	-	-
5	BEME304T	Professional core courses	Kinematics of Machines	3	1	-	4	3	30	70	100	40	-	-	-	-
6	BEME305P	Professional core courses	Machine Drawing & Solid Modelling	-	1	2	2	-	-	-	-	-	50	50	100	50
7	BEME306P	Professional core courses	Computer Programming	-	1	2	2	-	-	-	-	-	50	50	100	50
8	BEME307P	Mandatory Course	Sports / Yoga / NSS/NCC	-	-	3	Audit (0)	College Assessment in Grades O, A, B, C (Evaluation guidelines mentioned in the syllabus of concerned course)								
Total				**12**	**5**	**9**	-	-	**120**	**280**	**400**	-	**125**	**125**	**250**	-
Semester Total				**26**			**20**	**Marks 650**								

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Faculty of Science & Technology

Course and Examination Scheme of Bachelor of Engineering (Mechanical Engineering)

IV Semester B. E. (Mechanical Engineering)

Sr No	Course Code	Category	Course Title	Teaching Scheme (Hours/Week)			Credits	Examination Scheme								
								Theory					Practical			
				L	T	P		Duration of Exam (Hrs)	Max. Marks College Assessment	Max. Marks University Assessment	Total Marks	Min. Passing Marks	Max. Marks College Assessment	Max. Marks University Assessment	Total Marks	Min. Passing Marks
1	BEME401T	Professional core courses	Machining Processes	3	-	-	3	3	30	70	100	40	-	-	-	-
2	BEME401P	Professional core courses	Machining Processes Lab	-	-	2	1	-	-	-	-	-	25	25	50	25
3	BEME402T	Professional core courses	Fluid Mechanics & Hydraulic Machines	3	1	-	4	3	30	70	100	40	-	-	-	-
4	BEME402P	Professional core courses	Fluid Mechanics & Hydraulic Machines Lab	-	-	2	1		-	-	-	-	25	25	50	25
5	BEME403T	Professional core courses	Material Science & Engineering	3	-	-	3	3	30	70	100	40	-	-	-	-
6	BEME404T	Professional core courses	Mechanics of Materials	3	1	-	4	3	30	70	100	40	-	-	-	-
7	BEME404P	Professional core courses	Materials Testing Lab	-	-	2	1		-	-	-	-	25	25	50	25

8	BEME405T	Humanities & Social Science	Professional Ethics	3	-	-	3	2	15	35	50	20	-	-	-	-
9	BEME406P	Mandatory Course	Sports /Yoga / NSS/NCC	-	-	3	Audit (0)	College Assessment in Grades O, A, B, C (Evaluation guidelines mentioned in the syllabus of concerned course)								
TOTAL				**15**	**2**	**9**	**-**	**-**	**135**	**315**	**450**	**-**	**75**	**75**	**150**	**-**
Semester Total				**26**			**20**	**Marks 600**								

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Faculty of Science & Technology

Course and Examination Scheme of Bachelor of Engineering (Mechanical Engineering)

IV **Semester B. E. (Mechanical Engineering)**

Sr No	Course Code	Category	Course Title	Teaching Scheme (Hours/Week)			Credits	Examination Scheme								
								Theory					Practical			
				L	T	P		Duration of Exam (Hrs)	Max. Marks College Assessment	Max. Marks University Assessment	Total Marks	Min. Passing Marks	Max. Marks College Assesment	Max. Marks University Assessment	Total Marks	Min. Passing Marks
1	BEME501T	Professional core courses	Heat Transfer	3	1	-	4	3	30	70	100	40				
2	BEME501P	Professional core courses	Heat Transfer Lab	-	-	2	1		-	-	-	-	25	25	50	25

3	BEME502T	Professional core courses	Energy Conversion-I	3	1	-	4	3	30	70	100	40	-	-	-	-
4	BEME503T	Professional core courses	Design of Machine Elements	3	1	-	4	3	30	70	100	40	-	-	-	-
5	BEME503P	Professional core courses	Design of Machine Elements Lab	-	-	2	1		-	-	-	-	25	25	50	25
6	BEME504T	Humanities, Social Sciences & Management courses	Industrial Econmics and Management	3	-	-	3	3	30	70	100	40	-	-	-	-
7	BEME505T	Open Elective Course	Open Elective - I	3	-	-	3	3	30	70	100	40	-	-	-	-
8	BEME506P	Project work, seminar and internship in industry or elsewhere	Industrial Visit*	-	-	2	1	-	-	-	-	-	50	-	50	25
9	BEME507P	Mandatory Course	Performing Art	-	-	3	Audit (0)	College Assessment in Grades O, A, B, C (Evaluation guidelines mentioned in the syllabus of concerned course)								
TOTAL				**15**	**3**	**9**	-	-	**150**	**350**	**500**	-	**100**	**50**	**150**	-
Semester Total				**27**			**21**	**Marks 650**								

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur

Faculty of Science & Technology

Course and Examination Scheme of Bachelor of Engineering (Mechanical Engineering)

V

V Semester B. E. (Mechanical Engineering)

Sr No	Course Code	Category	Course Title	Teaching Scheme (Hours/Week)			Credits	Examination Scheme								
								Theory								Practical
				L	T	P		Duration of Exam (Hrs)	Max. Marks College Assessment	Max. Marks University Assessment	Total Marks	Min. Passing Marks	Max. Marks College Assesment	Max. Marks University Assessment	Total Marks	Min. Passing Marks
1	BEME601T	Professional core courses	Automation in Production	3	1	-	4	3	30	70	100	40	-	-	-	-
2	BEME601P	Professional core courses	Automation in Production Lab	-	-	2	1	-	-	-	-	-	25	25	50	25
3	BEME602T	Professional core courses	Energy Conversion-II	3	1	-	4	3	30	70	100	40	-	-	-	-
4	BEME602P	Professional core courses	Energy Conversion Lab	-	-	2	1		-	-	-	-	25	25	50	25
5	BEME603T	Professional core courses	Dynamics of Machines	3	1	-	4	3	30	70	100	40	-	-	-	-
6	BEME603P	Professional core courses	Dynamics of Machines Lab	-	-	2	1		-	-	-	-	25	25	50	25

7	BEME604T	Professional Elective courses	Elective - I	3	-	-	3	3	30	70	100	40	-	-	-	-
8	BEME605T	Professional Elective courses	Elective - II	3	-	-	3	3	30	70	100	40	-	-	-	-
9	BEME606P	Project work, seminar and internship in industry or elsewhere	Skill Development*	-	-	4	2	-	-	-	-	-	50	-	50	25
10	BEME607P	Project work, seminar and internship in industry or elsewhere	Summer Internship**	During Summer Vacation			Audit (0)	-	-	-	-	-	-	-	-	-
11	BEME608P	Mandatory Course	Environment Science	-	-	2	Audit (0)	College Assessment in Grades O, A, B, C (Evaluation guidelines mentioned in the syllabus of concerned course)								
TOTAL				**15**	**3**	**13**	-	-	**150**	**350**	**500**		**125**	**75**	**200**	-
Semester Total				**31**			**23**	**Marks 700**								

Faculty of Science & Technology

Course and Examination Scheme of Bachelor of Engineering (Mechanical Engineering)

VII Semester B. E. (Mechanical Engineering)

Sr No	Course Code	Category	Course Title	Teaching Scheme (Hours/Week)			Credits	Examination Scheme								
								Theory					Practical			
				L	T	P		Duration of Exam (Hrs)	Max. Marks College Assessment	Max. Marks University Assessment	Total Marks	Min. Passing Marks	Max. Marks College Assessment	Max. Marks University Assessment	Total Marks	Min. Passing Marks
1	BEME701T	Professional Elective courses	Elective - III	3	-	-	3	3	30	70	100	40	-	-	-	-
2	BEME702T	Professional Elective courses	Elective - IV	3	-	-	3	3	30	70	100	40	-	-	-	-
3	BEME702P	Professional Elective courses	Elective - IV Lab	-	-	2	1		-	-	-	-	25	25	50	25
4	BEME703T	Open Elective Course	Open Elective - II	3	-	-	3	3	30	70	100	40	-	-	-	-
5	BEME704T	Open Elective Course	Open Elective - III	3	-	-	3	3	30	70	100	40	-	-	-	-
6	BEME705P	Project work, seminar and internship in industry or elsewhere	Project - I	-	-	12	6	-	-	-	-	-	50	-	50	25
7	BEME706P	Mandatory Course	Self Development	-	-	2	Audit (0)	College Assessment in Grades O, A, B, C (Evaluation guidelines mentioned in the syllabus of concerned course)								
TOTAL				**12**	**0**	**16**	-	-	**120**	**280**	**400**	-	**75**	**25**	**100**	-
Semester Total				**28**			**19**	**Marks 500**								

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur

Faculty of Science & Technology
Course and Examination Scheme of Bachelor of Engineering (Mechanical Engineering)

VIII Semester B. E. (Mechanical Engineering)

Sr No	Course Code	Category	Course Title	Teaching Scheme (Hours/Week)			Credits	Examination Scheme								
								Theory					Practical			
				L	T	P		Duration of Exam (Hrs)	Max. Marks College Assessment	Max. Marks University Assessment	Total Marks	Min. Passing Marks	Max. Marks College Assessment	Max. Marks University Assessment	Total Marks	Min. Passing Marks
1	BEME801T	Professional Elective courses	Elective - V	3	-	-	3	3	30	70	100	40	-	-	-	-
2	BEME801P	Professional Elective courses	Elective - V Lab	-	-	2	1	-	-	-	-	-	25	25	50	25
3	BEME802T	Professional Elective courses	Elective - VI	3	-	-	3	3	30	70	100	40	-	-	-	-
4	BEME803T	Open Elective Course	Open Elective -IV	3	-	-	3	3	30	70	100	40	-	-	-	-
5	BEME804P	Project work, seminar and internship	Project - II	-	-	12	6	-	-	-	-	-	100	100	200	100
6	BEME805P	Mandatory Course	Self Development	-	-	2	Audit (0)	College Assessment in Grades O, A, B, C (Evaluation guidelines mentioned in the syllabus of concerned course)								
TOTAL				**9**	**0**	**16**	**-**	**-**	**90**	**210**	**300**	**-**	**125**	**125**	**250**	**-**
Semester Total				**25**			**16**	**Marks 550**								

ELECTIVE I	ELECTIVE II	ELECTIVE III	ELECTIVE IV	ELECTIVE V	ELECTIVE VI	OPEN ELECTIVE I	OPEN ELECTIVE II	OPEN ELECTIVE III	OPEN ELECTIVE IV
VI SEM	**VI SEM**	**VII SEM**	**VII SEM (T+P)**	**VIII SEM (T & P)**	**VIII SEM**	**V SEM**	**VII SEM**	**VIII SEM**	**VIII SEM**
Mechanical Vibrations	Tribology	Design of Transmission System	Computer Aided Design	Finite Element Method	Design Optimization	Organizational Enterpreneurship Behaviour & Development	Industrial Safety & Environment	Design of Experiments	Industrial Robotics
Synthesis of Mechanism	Tool Design	Design of Material Handling System	Mechanical Measurement & Metrology	Computer Integrated Manufacturing	Stress Analysis	Automobile Engineering	Pollution and its Control	Fuel Cell Technology	Renewable Energy Resources
Operation Research	Advanced Manufacturing Techniques	Total Quality Management	Mechatronics	Refrigeration & Air conditioning	Industrial Engineering	Project Evaluation & Management	Finance & Cost Management	Intrumentation & Control	Waste Management
Production Planning & Control	CNC & Robotics	Composite Materials	Hydraulics & pneumatics	Additive Manufacturing	Green & Sustainable Manufacturing				
Convective Heat Transfer	Design of Heat Exchangers	Solar Energy & Utilization			Energy Conservation and Management				
Power Plant Engineering	Advanced I C Engines	Automobile Engineering			Computational Fluid Dynamics				

RASHTRASANT TUKDOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
FACULTY OF SCIENCE & TECHNOLOGY
SCHEME OF EXAMINATION & EVALUATION

CIVIL ENGINEERING

(CHOICE BASED CREDIT SYSTEM)
(W.E.F.2021-22)

SEMESTER: THIRD

Sr. No	Subject Code	Subject	Workload in Hours			Credit				Marks					Minimum passing marks	
										Theory		Practical				
			L	T/A	p	L	T/A	p	Total	Int	Uni	Int	Uni	Total	Theory	Practical
1	BECVE30lT	Applied Mathematics-Ill	3	1	0	3	1	0	4	30	70	--	--	100	45	--
2	BECVE302T	Fluid Mechanics	3	0	0	3	0	0	3	30	70	--	--	100	45	--
3	BECVE302P	Fluid Mechanics (Practical)	0	0	2	0	0	1	1	--	--	25	25	50	--	25
4	BECVE303T	Solid Mechanics	3	1	0	3	1	0	4	30	70	--	--	100	45	--
5	BECVE303P	Solid Meshanics (Practical)	0	0	2	0	0	1	1	--	--	25	25	50	--	25
6	BECVE304T	GP-otechnical Engineering	3	0	0	3	0	0	3	30	70	--	--	100	45	--
7	BECVE304P	Geotechnical Engineering (Practical)	0	0	2	0	0	1	1	--	--	25	25	50	--	25
8	BECVE305T	Building Construction & F:lomentary Building Drawing	2	0	0	2	0	0	2	30	70	--	--	100	45	--
9	BECYE305P	Building Construction & f::lementary Building Drawing (Practical)	0	0	2	0	0	1	1	--	--	25	25	50	--	25
10	BECVE306T	Effective Technical Communication	2	0	0	2	0	0	2	15	35	--	--	50	23	--
Total			16	2	8	16	2	4	22	165	385	150	100	800		

RASHTRASANT TUKDOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

FACULTY OF SCIENCE & TECHNOLOGY

SCHEME OF EXAMINATION & EVALUATION

CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

SEMESTER: FOURTH

Sr. No	Subject Code	Subject	Workload in Hours			Credit				Marks					Minimum passing marks	
										Theory		Practical		Total	Theory	Practical
			L	T/A	P	L	T	P	Total	Int.	Uni	Int	Uni			
1	BECVE401T	Concrete Technology	3	0	0	3	0	0	3	30	70	--	--	100	45	--
2	BECVE402T	Structural Analysis	3	1	0	3	1	0	4	30	70	--	--	100	45	--
3	BECVE402T	Structural Analysis (Practical)	0	0	2	0	0	1	1	--	--	25	25	50	--	25
4	BECVE403T	Environmental Engineering	3	0	0	3	0	0	3	30	70	--	--	100	45	--
5	BECVE403P	Environmental Engineering(Practical)	0	0	2	0	0	1	1	--	--	25	25	50	--	25
6	BECVE404T	Transportation Engineering	3	0	0	3	0	0	3	30	70	--	--	100	45	--
7	BECVE404P	Transportation Engineering (Practical)	0	0	2	0	0	1	1	--	--	25	25	50	--	25
8	BECVE405T	Surveying & Geomatics	3	0	0	3	0	0	3	30	70	--	--	100	45	--
9	BECVE405P	Surveying & Geomatics (Practical)	0	0	4	0	0	2	2	--	--	25	25	50	--	25
10	BECVE406P	Mini Project (Practical)	0	0	2	0	0	1	1	--	--	25	25	50	--	25
TOTAL			15	1	12	15	1	6	22	150	350	125	125	750		

- L-Lecture, P-Practical, T-Tutorial, A-Activity (Half Credit per Hour)

Note: In Summer vacation after 4th Semester, student have to complete 2 to 3 weeks industrial / Government / NGO / MSME / Rural Internship / Innovation/ Entrepreneurship training. In the beginning of 5th semester, student will have to submit detailed report of summer vacation training department.

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RASHTRASANT TUKDOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
FACULTY OF SCIENCE &TECHNOLOGY
SCHEME OF EXAMINATION & EVALUATION
CIVIL ENGINEE i'M -?t<if:i1iy>HCREDIT SYSTEM)

Sr. No	Subject Code	Subject	Workload in Hours			Credit				Marks					Minimum passing marks	
										Theory		Practical		Total		
			L	T/A	p	L	T	p	Total	Int	Uni	Int	Uni		Theory	Practical
1	BECVE501T	Hydraulic Engineering	3	0	0	3	0	0	3	30	70	--	--	100	45	--
2	BECVE501P	Hydraulic Engineering (Practical)	0	0	2	0	0	1	1	--	--	25	25	50	--	25
3	BECVE502T	Reinforced Cement Concrete (RCC) designs	3	1	0	3	1	0	4	30	70	--	--	100	45	--
4	BECVE503T	Civil Engineering Materials, Testing & Evaluation	3	0	0	3	0	0	3	30	70	--	--	100	45	--
5	BECVE503P	Civil Engineering Materials, Testing & Evaluation (Practical)	0	0	2	0	0	1	1	--	--	25	25	50	--	25
6	BECVE504T	Professional Practice, Law & Ethics	3	0	0	3	0	0	3	30	70	--	--	100	45	--
7	BECVE505T	Elective-I	3	0	0	3	0	0	3	30	70	--	--	100	45	--
8	BECVE506T	Elective-II	3	0	0	3	0	0	3	30	70	--	--	100	45	--
9	BECVE507P	Industrial Training (Already done in summer vacation after 4th sem)& Professional Skill Training (Software Applications in CivilEngineering	0	0	2	0	0	1	1	--	--	50	50	100	--	50
10	BECVE508AU	Organizational Behavior	2	0	0	0	0	0	0	--	--	50	Audit	50	--	--
TOTAL			20	1	6	18	1	3	22	180	420	150	100	850		

- L- Lecture, P-Practical, T- Tutorial, A- Activity (Half Credit per Hour)

RASHTRASANT TUKDOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
FACULTY OF SCIENCE & TECHNOLOGY
SCHEME OF EXAMINATION & EVALUATION
CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)
SEMESTER: SIXTH

Sr. No	Subject Code	Subject	Workload in Hours			Credit				Marks					Minimum passing marks	
										Theory		Practical				
			L	*TIA*	P	L	T	P	Total	Int	Uni	Int	Uni	Total	Theory	Practical
1	BECVE601T	Estimating & Costing	3	1	0	3	1	0	**4**	30	70	--	--	100	45	--
2	BECVE601P	Estimating & Costing (Practical)	0	0	2	0	0	1	1	--	--	25	25	50		25
3	BECVE602T	Construction Engineering & Management	2	1	0	2	1	0	3	30	70	--	--	100	45	--
4	BECVE602P	Computer Aided Civil Engineering Drawing (Practical)	0	0	2	0	0	1	**1**	--	--	50	50	100	--	50
5	BECVE603T	Water Resources Engineering	3	0	0	3	0	0	3	30	70	--	--	100	45	--
6	BECVE604T	Elective-III	3	0	0	3	0	0	**3**	30	70	--	--	100	45	--
7	BECVE605T	Open Elective-I	3	0	0	3	0	0	3	3.0	70	--	--	100	45	--
TOTAL			14	2	4	14	2	2	18	150	350	75	75	650	--	--

- L- Lecture, P-Practical, T- Tutorial, A- Activity (Half Credit per Hour)

Note: In summer vacation after 6th Semester, student have to complete 3 to 4 weeks industrial/ Government/ NGO/ MSME / Rural Internship/ Innovation / Entrepreneurship training. In the beginning of ih semester, students will have to submit detailed report of summer vacation training to department.

RASHTRASANT TUKDOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

FACULTY OF SCIENCE & TECHNOLOGY

SCHEME OF EXAMINATION & EVALUATION

CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

SEMESTER: SEVENTH

Sr. No	Subject Code	Subject	Workload in Hours			Credit				Marks					Minimum passing marks	
										Theory		Practical		Total	Theory	Practical
			L	T/A	p	L	T	p	Total	Int	Uni	Int	Uni			
1	BECVE701T	Design of Steel Structure	3	1	0	3	1	0	4	30	70	--	--	100	45	--
2	BECVE702T	Elective IV	3	0	0	3	0	0	3	30	70	--	--	100	45	--
3	BECVE703T	Elective V	3	0	0	3	0	0	3	30	70	--	--	100	45	--
4	BECVE704T	Elective VI	3	0	0	3	0	0	3	30	70	--	--	100	45	--
5	BECVE705T	Open Elective-II	3	0	0	3	0	0	3	30	70	--	--	100	45	--
6	BECVE706P	Project Work Phase-I	0	0	6	0	0	3	3	--	--	50	50	100	--	50
Total			15	1	6	15	1	3	19	150	350	59	50	600		

- L- Lecture, P-Practical, T- Tutorial, A- Activity (Half Credit per Hour)

Note:

1. Project Work Phase-I shall consist of detailed report of **"Internship report"** of 3 to 4 weeks underwent after 6th semester and **"Seminar Report"** shall consist of Topic selected for Project work
2. Equal weightage shall be given to the components of **"Internship Report" and "Seminar Report"**

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RASHTRASANT TUKDOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

FACULTY OF SCIENCE & TECHNOLOGY

SCHEME OF EXAMINATION & EVALUATION

CIVIL ENGIN ERING (CHOICE BASED CREDIT SYS!EM)

SEMESTER: EIGHTH

Sr. No	Subject Code	Subject	Workload in Hours			Credit				Marks					Minimum passing marks	
										Theory		Practical		Total	Theory	Practical
			L	T/A	p	L	T	p	Total	Int	Uni	Int	Uni			
1	BECVE801T	Construction Methods And Equipment Management#	3	0	0	3	0	0	3	30	70	--	--	100	45	--
2	BECVE802T	Digital Land Surveying And Mapping (DLS&M) #	3	0	0	3	0	0	3	30	70	--	--	100	45	--
3	BECVE803T	**Open Elective-III** : Introduction To Civil Engineering Profession #	3	0	0	3	0	0	3	30	70	--	--	100	45	--
4	BECVE804P	Project Work Phase-II	0	0	12	0	0	6	6	--	--	100	100	200	--	100
TOTAL			9	0	12	9	0	6	15	90	210	100	100	500		

Note:

1. These# subjects **(BECVE801T, BECVE802T and BECVE803T)** should be undertaken **Either** through **Online** mode by using NPTEL/SWAYAM /MOOCS Platforms **OR** Through **Regular Class room Teaching** in Department of Civil Engineering of affiliated Colleges. Examination will be conducted by RTMNU.
2. Project Work Phase-II shall consist of detailed report of continued project work from 7'h Semester or internship in industry or at appropriate work place.

R.T.M. ngpur Uoiversit , ngpur
Four Year B.E. Cour c
(Revised Curriculum a per AICTE 1odcl Curriculum)

III Semester (Computer Technology) Scheme

S.	Subject	Teaching Scheme			Evaluntiou Scheme			Credits	Cntegory
		L	T	p	CA	UE	Total		
I	Mathematics lII (TH)	3	I	0	30	70	100	4	BSC
2	Problem Solving using Python (TH)	3	0	0	30	70	100	3	PCC
3	Problem solving using Python (PR)	0	0	2	25	25	*50*	I	PCC
4	Digital Design and Fundamentals of Microprocessor (TH)	3	0	0	30	70	100	3	PCC
5	Digital Design and Fundamentals of Microprocessor (PR)	0	0	2	25	25	*50*	I	PCC
6	Computer Architecture and Organization (TH)	3	l	0	30	70	100	4	PCC
7	Theoretical Foundations of Computer Science	3	I	0	30	70	100	4	PCC
8	Universal Human Values (TH)	2	0	0	15	35	*50*	2	HSMC
9	Computer Workshop-I (Web Technologies) (PR)	0	0	2	25	25	SO	l	PCC
10	Consumer Affairs	2	.	.	.	.	-	-	Audit
	Total	19	3	06	240	460	700	23	

R.T.M. Nagpur University, Nagpur

Four Year B.E. Course

(Revised Curriculum as per AICTE Model Curriculum)

B.E. IV Semester(Computer Technology) Scheme

S.N.	Subject	Teaching Scheme			Evaluation Scheme			Credits	Category
		L	T	p	CA	UE	Total		
I	Discrete Mathematics and Graph Theory (TH)	3	1	0	30	70	100	4	BSC
2	Social Ethics in Information Technology (TH)	2	0	0	15	35	50	2	PCC-CS
3	Object Oriented Programming using Java (TH)	3	0	0	30	70	100	3	PCC-CS
4	Object Oriented Programming using Java (P)	0	0	2	25	25	SO	1	PCC-CS
5	Data Structures and Program Design (TH)	3	0	0	30	70	100	3	PCC-CS
6	Data Structures and Program Design(P)	0	0	2	25	25	50	1	PCC-CS
7	Compuler Networks (TH)	3	I	0	30	70	100	4	PCC-CS
8	Operating Systems (TH)	3	I	0	30	70	100	4	PCC-CS
9	Computer Workshop-n (PR)	0	0	2	25	25	50	I	PCC-CS
10	Environmental Science	2	0	0	0	0	0	Audit	MC
11	Internship	-	-	-	50	-	SO	I	PROJ-CS-Project
	Total	19	03	06	290	460	7S0	24	

PCC-CS-Professional Core Courses ESC-Engineering Science Courses LC-Laboratory Course
OEC-CS-Open Elective Courses MC- Mandatory Course **PROJ-CS-** Project (Min. one month internship is desirable)
BSC-Basic Science Courses PEC-CS-Professional Elective Courses
HSMC- Humanities and Social Sciences including Management Courses

R.T.M. Nagpur University, Nagpur
Four Year B.E. Course
(Revised Curriculum as per AICTE Model Curriculum)

B.E. V Semester(Computer Technology) Scheme

S.N.	Subject	Teaching Scheme			Evaluation Scheme			Credits	Category
		L	T	P	CA	UE	Total		
1	Design and Analysis of Algorithms (TH)	3	1	0	30	70	100	4	PCC
2	Design and Analysis of Algorithms Lab (PR)	0	0	2	25	25	50	1	PCC
3	Database Management System(TH)	3	1	0	30	70	100	4	PCC
4	Database Management System(PR)	0	0	2	25	25	50	1	PCC
5	Software Engineering and Project Management (TH)	3	1	0	30	70	100	3	PCC
6	Artificial Intelligence (TH)	3	1	0	30	70	100	4	PCC
7	Artificial Intelligence (PR)	0	0	2	25	25	50	1	PCC
8	TCP/IP (TH)	3	1	0	30	70	100	3	PCC
9	Business Communication and Ethics (Audit Course)	2	0	0	0	0	0	0	Audit
	Total	17	5	6	175	475	650	21	

R.T.M. Nagpur University, Nagpur
Four Year B.E. Course
(Revised Curriculum as per AICTE Model Curriculum)

B.E. VI Semester (Computer Technology) Scheme

S.N.	Subject	Teaching Scheme			Evaluation Scheme			Credits	Category
		L	T	P	CA	UE	Total		
1	Cyber and Information Security (TH)	3	1	0	30	70	100	3	PCC
2	Cyber and Information Security (PR)	0	0	2	25	25	50	1	PCC
3	Compiler Design (TH)	3	1	0	30	70	100	4	PCC
4	Compiler Design (PR)	0	0	2	25	25	50	1	PCC
5	Data Warehousing and Mining (TH)	3	1	0	30	70	100	3	PCC
6	Elective - I	3	1	0	30	70	100	3	PEC
7	Computer Graphics (TH)	3	1	0	30	70	100	3	PCC
8	Mini Project	0	0	4	25	25	50	2	PCC
9	Intellectual Property Rights	2	0	0	0	0	0	0	Audit
	Total	17	5	8	175	475	650	20	

Elective – I : Design Patterns
Soft Computing
Mobile Application Development
Advance Microprocessor and Microcontrollers

R.T.M. Nagpur University, Nagpur
Four Year B.E. Course
(Revised Curriculum as per AICTE Model Curriculum)

B.E. VII Semester (Computer Technology) Scheme

S.N.	Subject	Teaching Scheme			Evaluation Scheme			Credits	Category
		L	T	P	CA	UE	Total		
1	Parallel Computing(TH)	3	1	0	30	70	100	3	PCC
2	Parallel Computing (PR)	0	0	2	25	25	50	1	PCC
3	Cloud Computing (TH)	3	1	0	30	70	100	3	PCC
4	Cloud Computing (PR)	0	0	2	25	25	50	1	PCC
5	Internet of Things (TH)	3	1	0	30	70	100	3	PCC
6	Elective – II	3	0	0	30	70	100	3	PEC
7	Elective – III	3	0	0	30	70	100	3	PEC
8	Project	0	0	4	75	75	150	4	PCC
9	Society, Culture and Behavior	2	0	0	0	0	0	0	Audit
	Total	12	2	08	225	525	750	21	

Elective – II : Machine Learning ,
Image and Video Processing
Bioinformatics
Embedded systems

Elective – III : Web-Mining
Cognitive Systems
Software Testing and Quality Assurance
Data Visualization

R.T.M. Nagpur University, Nagpur
Four Year B.E. Course
(Revised Curriculum as per AICTE Model Curriculum)

B.E. VIII Semester (Computer Technology) Scheme

S.N.	Subject	Teaching Scheme			Evaluation Scheme			Credits	Category
		L	T	P	CA	UE	Total		
1	Big Data Analytics (TH)	3	1	0	30	70	100	3	PCC
2	Big Data Analytics (PR)	0	0	2	25	25	50	1	PCC
3	Elective – IV	3	0	0	30	70	100	3	PEC
4	Elective – V	3	0	0	30	70	100	3	PEC
5	Project	0	0	4	75	75	150	4	PCC
6	Cyber Law & Cyber Crime	2	0	0	0	0	0	0	Audit
	Total	11	1	06	160	340	500	14	

Elective – IV : Deep Learning.
Game Playing
Digital Forensic
Business Intelligence and Analytics

Elective – VI : Human Computer Interface
Natural Language Processing
Block Chain and Crypto currency Techniques
Quantum Information and Computation

R.T.M. NAGPUR UNIVERSITY, NAGPUR

(Revised Curriculum as per AICTE Model Curriculum)

SCHEME OF EXAMINATION FOR

FOUR YEAR BACHELOR OF ENGINEERING (B. E.) DEGREE COURSE

SEMESTER: THIRD BRANCH: INFORMATION TECHNOLOGY

Sr. No.	Subject Code	Subject	WorkLoad				Credit				Marks					Category
											Theory		Practical		Total Marks	
			Lecture	Practical	Tutorial/ Activity	Total	L	P	T/A	Total	Internal	University	Internal	Univcrsity		
1	BEIT301T	Applied Mathematics-LIi	3		I	4	3		I	4	30	70			100	BSC
2	BEIT302T	Programming Logic & Design using 'C'	3			3	3			3	30	70			100	PCC
3	BEIT302P	Programming Logic & Design using 'C'		2		2		I		I			25	25	50	PCC
4	BEIT303T	Digital Electronics and Fundamental of Microprocessor	3		I	4	3		I	4	30	70			JOO	ESC
5	BEIT303P	Digital Electronics and Fundamental of Microprocessor		2		2		I		I			25	25	50	ESC
6	BEIT304T	Emerging Trends in Information Technolo2.v	3			3	3			3	30	70			100	PCC
5	BEIT305T	System Programming	3			3	3			3	30	70			100	PCC
7	BEIT306P	Software Lab -1 -		2		2		I		I			25	25	50	LC
8	13E!T307T	Universal Human Values	2			2	2			2	15	35			50	HSMC
9	BEIT308T	Environmental Science (Audit)	2			2	-	-	-	-						MC
		Total	**19**	**6**	**2**	27	**17**	**3**	**2**	**22**	**165**	**385**	**75**	75	**700**	

R.T.M. NAGPUR UNIVERSITY, NAGPUR (Revised Curriculum as per AJCTE Model Curriculum)

SCHEME OF EXAMINATION FOR

FOUR YEAR BACHELOR OF ENGINEERING (B. E.) DEGREE COURSE

SEMESTER: FOURTH BRANCH: INFORMATION TECHNOLOGY

Sr. No.	Subject Code	Subject	WorkLoad				Credit				Marks					Category
											Theory		Practical		Total Marks	
			Lecture	Practical	Tutorial/ Activity	Total	L	p	T/A	Total	Internal	University	Internal	Univ.		
I	BEIT401T	Discrete Mathematics and Graph Theory	3		I	4	3		1	4	30	70			100	BSC
2	BEIT402T	Data Structure and Program Design	3			3	3			3	30	70			100	PCC
3	BEIT402P	Data Structure and Program Design -I		2		2		I		1			25	25	50	PCC
4	BEIT403T	Object Oriented Programing System	3			3	3			3	30	70			100	PCC
5	BEIT403P	Object Oriented Programing System		2		2		1		1			25	25	50	PCC
6	BEIT404T	Computer Architecture Organization	3			3	3			3	30	70			100	PCC
7	BEIT405T	Introduction to Computer Network	3			3	3			3	30	70			100	PCC
8	BEIT406T	Operating Systems	3			3	3			3	30	70			100	PCC
9	BEIT407P	Software Lab -2		2		2		I		I			25	25	50	LC
10	BEIT408T	Cosumer Affairs (Audit)	2			2										HSMC
11	BEIT409P	lntership		2		2		I		I			50		50	PROJ-CS
		Total	**20**	**8**	**1**	**29**	**18**	**4**	**1**	**23**	**180**	**420**	**125**	**75**	**800**	

R.T.M. NAGPUR UNIVERSITY, NAGPUR

(Revised Curriculum as per AICTE Model Curriculum)

SCHEME OF EXAMINATION FOR
FOUR YEAR BACHELOR OF ENGINEERING (B. E.) DEGREE COURSE

SEMESTER: FIFTH BRANCH: INFORMATION TECHNOLOGY

Sr. No.	Subject Code	Subject	Workload				Credit				Marks				
											Theory		Practical		Total Marks
			Lecture	Practical	Tutorial/ Activity	Total	L	P	T/A	Total	Internal	University	Internal	Univ.	
1	BEIT501T	Software Engineering & Project Management	3			3	3			3	30	70			100
2	BEIT501P	Software Engineering & Project Management		2		2		1		1			25	25	50
3	BEIT502T	Design and Analysis of Algorithms	3		1	4	3		1	4	30	70			100
4	BEIT503T	Gaming Architecture and Programming	3			3	3			3	30	70			100
5	BEIT503P	Gaming Architecture and Programming		2		2		1		1			25	25	50
6	BEIT504T	Theory of Computation	3		1	4	3		1	4	30	70			100
7	BEIT505T	Elective- I	3			3	3			3	30	70			100
8	BEIT506P	Software Lab - 3		2		2		1		1			25	25	50
9	BEIT507T	Soft Skill Development	2			2									
		Total	**17**	**06**	**2**	**25**	**15**	**3**	**2**	**20**	**100**	**400**	**75**	**75**	**650**

Elective –I (BEIT505T)

1. Enterprise Resource Planning (BEIT505T.1)

2. Wireless Sensor Network (BEIT505T.2)

3. High Performance Computer Architecture (BEIT505T.3)

R.T.M. NAGPUR UNIVERSITY, NAGPUR

(Revised Curriculum as per AICTE Model Curriculum)

SCHEME OF EXAMINATION FOR
FOUR YEAR BACHELOR OF ENGINEERING (B. E.) DEGREE COURSE

SEMESTER: SIXTH BRANCH: INFORMATION TECHNOLOGY

Sr. No.	Subject Code	Subject	Teaching Scheme				Credit				MARKS				
											Theory		Practical		Total Marks
			Lecture	Practical	Tutorial/ Activity	Total	L	P	T/A	Total	Internal	University	Internal	Univ.	
1	BEIT601T	Data Base Management System	3			3	3			3	30	70			100
2	BEIT601P	Data Base Management System		2		2		1		1			25	25	50
3	BEIT602T	Operating System	3			3	3			3	30	70			100
4	BEIT603T	Artificial Intelligence and Machine Learning	3			3	3			3	30	70			100
5	BEIT603P	Artificial Intelligence and Machine Learning		2		2		1		1			25	25	50
6	BEIT604T	Elective – II	2			2	2			2	30	70			100
7	BEIT605T	Elective – III	2			2	2			2	30	70			100
8	BEIT606T	Open Elective- I	3			3	3			3	30	70			100
9	BEIT607P	Project – I		6		6		3		3			25	25	50
10	BEIT608T	Essence of Indian Knowledge Tradition	2			2									
		Total	**18**	**10**		**28**	**16**	**5**		**21**	**120**	**480**	**75**	**75**	**750**

Elective –II (BEIT604T)

1. Computer Graphics (BEIT604T.1)
2. Blockchain (BEIT604T.2)
3. Advances in Computer Networks (BEIT604T.3)

Elective –III (BEIT605T)

1. Cloud Computing (BEIT605T.1)
2. Human Computer Interface (BEIT605T.2)
3. Software Testing & Quality Assurance (BEIT605T.3)

Open Elective – I (BEIT606T)

1. Computer Animation (BEIT606T.1)
2. Internet of Things (BEIT606T.2)
3. Data Science (BEIT606T.3)

R.T.M. NAGPUR UNIVERSITY, NAGPUR
(Revised Curriculum as per AICTE Model Curriculum)
SCHEME OF EXAMINATION FOR

FOUR YEAR BACHELOR OF ENGINEERING (B. E.) DEGREE COURSE

SEMESTER: SEVENTH BRANCH: INFORMATION TECHNOLOGY

Sr. No.	Subject Code	Subject	Workload				Credit				Marks				
											Theory		Practical		Total Marks
			L	P	T	Total Hrs/ Week	L	P	T	Total	Sess.	Univ.	Sess.	Univ.	
1	BEIT701T	Computer System Security	2			2	2			2	30	70			100
2	BEIT701P	Computer System Security		2		2		1		1			25	25	50
3	BEIT702T	Elective-IV	2			2	2			2	30	70			100
4	BEIT703T	Elective-V	2			2	2			2	30	70			100
5	BEIT704T	Elective-VI	2			2	2			2	30	70			100
6	BEIT705T	Elective –VII	2			2	2			2	30	70			100
7	BEIT706T	Open Elective-II	3			3	3			3	30	70			100
8	BEIT707P	Project - II		12		12		06		06			75	75	150
9	BEIT708T	Consumer Affairs	2			2									
		Total	**15**	**14**		**29**	**13**	**7**		**20**	**120**	**480**	**100**	**100**	**800**

Elective –IV (BEIT702T)

1. Data Warehousing & Mining (BEIT702T.1)
2. Real Time Operating Systems (BEIT702T.2)
3. Natural Language Processing (BEIT702T.3)

Elective – V (BEIT703T)

1. Software Architecture (BEIT703T.1)
2. Deep Learning (BEIT703T.2)
3. Embedded Systems (BEIT703T.3)

Elective –VI (BEIT704T)

1. Distributed Systems (BEIT704T.1)
2. Big Data & Business Intelligence (BEIT704T.2)
3. Pattern Recognition (BEIT704T.3)

Elective –VII (BEIT705T)

1. Advances in DBMS (BEIT705T.1)
2. Artificial Neural Network (BEIT705T.2)
3. Cluster & Grid Computing (BEIT705T.3)

Open Elective –II (BEIT706T)

1. Salesforce (BEIT706T.1)
2. Social Media Analysis (BEIT706T.2)
3. Image Processing (BEIT706T.3)

R.T.M. NAGPUR UNIVERSITY, NAGPUR
(Revised Curriculum as per AICTE Model Curriculum)
SCHEME OF EXAMINATION FOR

FOUR YEAR BACHELOR OF ENGINEERING (B. E.) DEGREE COURSE

SEMESTER: EIGHTH BRANCH: INFORMATION TECHNOLOGY

Sr. No.	Subject Code	Subject	Workload				Credit				Marks				
											Theory		Practical		Total Marks
			L	P	T	Total Hrs/ Week	L	P	T	Total	Sess.	Univ.	Sess.	Univ.	
1	BEIT801T	Elective – VIII	2			2	2			2	30	70			100
2	BEIT802T	Open Elective - III	3			3	3			3	30	70			100
3	BEIT803T	Open Elective–IV	3			3	3			3	30	70			100
4	BEIT804P	Project –IV		12		12		6		6			150	150	300
5	BEIT805T	Entrepreneurship Skill Development	2			2									
		Total	**10**	**12**		**22**	**8**	**6**		**14**	**60**	**240**	**150**	**150**	**600**

Elective –VIII (BEIT801T)

1. Digital Forensic (BEIT801T.1)

2. Soft Computing (BEIT801T.2)

3. Parallel Computing (BEIT801T.3)

Open Elective –III (BEIT802T)

1. Java Programming (BEIT802T.1)

2. E-Commerce (BEIT802T.2)

3. Web Technologies (BEIT802T.3)

Open Elective –IV (BEIT803T)

1. Mobile Computing (BEIT803T.1)

2. Cyber Security & Ethical Hacking (BEIT803.2)

3. Multimedia Systems (BEIT803T.3)

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur
Faculty of Engineering & Technology
Course and Examination Scheme of Bachelor of Engineering (Aeronautical Engineering)
III Semester B. E. (Aeronautical Engineering)

	Subject	Teaching Scheme				Examination Scheme								
		Hours per week			No. of Credits	Theory					Practical			
		L	T	P		Duration of Paper (Hrs)	Max Marks University Assessment	Max Marks College Assessment	Total Marks	Min. Passing Marks	Max Marks University Assessment	Max Marks College Assessment	Total Marks	Min. Passing Marks
BEAE 301T	Applied Mathematics -III	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 302T	Aero-Thermodynamics	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 302P	Aero-Thermodynamics	-	-	2	1	-	-	-	-	-	25	25	50	25
BEAE 303T	Fluid Mechanics & Machinery	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 303P	Fluid Mechanics & Machinery	-	-	2	1	-	-	-	-	-	25	25	50	25
BEAE 304T	Avionics –I	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 305P	Computer Programming	-	1	2	2	-	-	-	-	-	25	25	50	25
BEAE 306T	Elements of Aeronautics	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 307T	Aerodynamics-I	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 308T	Essence of Indian Traditional Knowledge	2	-	-	-	**College assessment in Grades as O,A,B,C (Evaluation mentioned in the Syllabus of concern subject)**								
Total		20	1	6	22	-	420	180	600	-	75	75	150	-
Semester Total		**27**			**22**	**Marks 750**								

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur
Faculty of Engineering & Technology
Course and Examination Scheme of Bachelor of Engineering (Aeronautical Engineering)
IV Semester B. E. (Aeronautical Engineering)

Subject Code	Subject	Teaching Scheme				Examination Scheme								
		Hours per week			No. of Credits	Theory					Practical			
		L	T	P		Duration of Paper (Hrs)	Max Marks University Assessment	Max Marks College Assessment	Total Marks	Min. Passing Marks	Max Marks University Assessment	Max Marks College Assessment	Total Marks	Min. Passing Marks
BEAE 401T	Manufacturing Process- I	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 401P	Manufacturing Process Lab.	-	-	2	1	-	-	-	-	-	25	25	50	25
BEAE 402T	Aircraft Structure- I	3	1	-	4	03	70	30	100	40	-	-	-	-
BEAE 402P	Aircraft Structure- I	-	-	2	1	-	-	-	-	-	25	25	50	25
BEAE 403T	Aerodynamics-II	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 403P	Aerodynamics	-	-	2	1	-	-	-	-	-	25	25	50	25
-BEAE 404T	Propulsion- I	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 405T	Aircraft Flight Mechanics	3	1	-	4	03	70	30	100	40	-	-	-	-
BEAE 406T	Professional Ethics	2			2	02	35	15	50	25				
BEAE 407P	Mini Project –I : (Internship/Case Study)	-	-	4	2	-	-	-	-	-	25	25	50	25
BEAE 408T	Environmental Studies	3	-	-	-	**College assessment in Grades as O,A,B,C (Evaluation mentioned in the Syllabus of concern subject)**								
Total		20	2	10	24	-	385	165	550	-	100	100	200	-
Semester Total		**32**			**24**	**Marks 750**								

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur
Faculty of Engineering & Technology
Course and Examination Scheme of Bachelor of Engineering (Aeronautical Engineering)
V Semester B. E. (Aeronautical Engineering)

Subject Code	Subject	Teaching Scheme				Examination Scheme								
		Hours per week			No. of Credits	Theory					Practical			
		L	T	P		Duration of Paper (Hrs)	Max Marks University Assessment	Max Marks College Assessment	Total Marks	Min. Passing Marks	Max Marks University Assessment	Max Marks College Assessment	Total Marks	Min. Passing Marks
BEAE 501T	Propulsion- II	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 501P	Propulsion- II Lab	-	-	2	1	-	-	-	-	-	25	25	50	25
BEAE 502T	Aircraft System & Instrumentation	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 502P	Aircraft Systems & Instrumentation Lab	-	-	2	1	-	-	-	-	-	25	25	50	25
BEAE 503T	Aircraft Structure- II	3	1	-	4	03	70	30	100	40				
BEAE 503P	Aircraft Structure- II	-	-	2	1	-	-	-			25	25	50	25
BEAE 504T(OE)	Open Elective-I	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 505T(E)	Elective-I	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 506T	Constitution of India	2	-	-	-	**College assessment in Grades as O,A,B,C,(Evaluation mentioned in the Syllabus of concern subject)**								
Total		17	1	6	19	-	350	150	500	-	75	75	150	-
Semester Total		**24**			**19**	**Marks 650**								

Open Elective-I		Elective-I	
Course Code	**Course Name**	**Course Code**	**Course Name**
BEAE 504T(OE) - 1	Intellectual property rights	BEAE 505T(E) -1	Heat and Mass Transfer
BEAE 504T(OE) - 2	Gender Sensitization	BEAE 505T(E) -2	Smart materials and Introduction to composites
BEAE 504T(OE) - 3	Industrial Safety and Hazard Analysis	BEAE 505T(E) -3	Airworthiness and Certification
BEAE 504T(OE) - 4	Industrial Economics and Management	BEAE 505T(E) -4	Introduction to Helicopter Dynamics

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur
Faculty of Engineering & Technology
Course and Examination Scheme of Bachelor of Engineering (Aeronautical Engineering)
VI Semester B. E. (Aeronautical Engineering)

Subject Code	Subject	Teaching Scheme				Examination Scheme								
		Hours per week			No. of Credits	Theory					Practical			
		L	T	P		Duration of Paper (Hrs)	Max Marks University Assessment	Max Marks College Assessment	Total Marks	Min. Passing Marks	Max Marks University Assessment	Max Marks College Assessment	Total Marks	Min. Passing Marks
BEAE 601T	Aircraft Design	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 601P	Aircraft Design Laboratory	-	-	2	1	-	-	-	-	-	25	25	50	25
BEAE 602T	Space Technology	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 603T	Open Elective-II	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 604T	Elective-II	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 605P	CAD/CAM Lab	-	-	2	1	-	-	-	-	-	25	25	50	25
BEAE 606P	Non Destructive Inspection Lab	-	-	2	1	-	-	-	-	-	25	25	50	25
BEAE 607T	Functional English	3	-	-	3	02	35	15	50	25	-	-	-	-
BEAE 608P	Mini Project –II : (Internship/Case Study)	-	-	6	3	-	-	-	-	-	50	50	100	50
BEAE 609P	Sports / Yoga / NSS/NCC			3	0	**College assessment in Grades as O,A,B,C,(Evaluation mentioned in the Syllabus of concern subject)**								
Total		**15**	**0**	**15**	**21**		**315**	**135**	**450**		**125**	**125**	**250**	
Semester Total		**30**			**21**	**Marks 700**								

Open Elective-II		Elective-II	
Course Code	**Course Name**	**Course Code**	**Course Name**
BEAE 603T(OE)-1	Design of Machine Elements	BEAE604T(E)-1	Aircraft Mechanisms Analysis and Synthesis
BEAE 603T(OE)-2	Finance And Accounting	BEAE604T(E)-2	Flight Dynamics
BEAE 603T(OE)-3	Renewable Energy Sources	BEAE604T(E)-3	Principles of combustion
		BEAE604T(E)-4	Aerodynamic Design of compressors and turbine

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur
Faculty of Engineering & Technology
Course and Examination Scheme of Bachelor of Engineering (Aeronautical Engineering)
VII Semester B. E. (Aeronautical Engineering)

Subject Code	Subject	Teaching Scheme				Examination Scheme								
		Hours per week			No. of Credits	Theory					Practical			
		L	T	P		Duration of Paper (Hrs)	Max Marks University Assessment	Max Marks College Assessment	Total Marks	Min. Passing Marks	Max Marks University Assessment	Max Marks College Assessment	Total Marks	Min. Passing Marks
BEAE 701T	Air Transportation and Management	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 702T(OE)	Open Elective III	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 703T(OE)	Open Elective- IV	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 704T(E)	Elective III	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 704P(E)	Elective III	-	-	2	1	-	-	-	-	-	25	25	50	25
BEAE 705P(E)	Project Seminar	-	-	2	1	-	-	-	-	-	25	25	50	25
BEAE 705P	Project Work Phase- I	-	-	6	3	-	-	-	-	-	75	75	150	75
BEAE 706T	Human Resource & Organizational Behavior	2	-	-	-	**College assessment in Grades as O,A,B,C,(Evaluation mentioned in the Syllabus of concern subject)**								
Total		14	0	10	17	-	280	120	400	-	125	125	250	-
Semester Total		**24**			**17**	**Marks 650**								

Open Elective-III		Open Elective-IV	
Course Code	**Course Name**	**Course Code**	**Course Name**
BEAE 702T(OE)-1	Introduction to multi-disciplinary design optimization	BEAE 703T(OE) - 1	Reliability centered maintenance
BEAE 702T(OE)-2	Relativity, Cosmology, and the Early Universe	BEAE 703T(OE) -2	Industrial Engineering and Management
BEAE 702T(OE)-3	Theory of Vibrations	BEAE 703T(OE) -3	Fatigue and fracture Mechanics

Elective - III	
Course Code	**Course Name**
BEAE 704T(E)-1	Avionics-II
BEAE 704T(E)-2	Computational Fluid dynamics
BEAE 704T(E)-3	Finite Element Method
BEAE 704T(E)-4	Aircraft Maintenance and Overhaul

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur
Faculty of Engineering & Technology
Course and Examination Scheme of Bachelor of Engineering (Aeronautical Engineering)
VIII Semester B. E. (Aeronautical Engineering)

Subject Code	Subject	Teaching Scheme				Examination Scheme								
		Hours per week			No. of Credits	Theory					Practical			
		L	T	P		Duration of Paper (Hrs)	Max Marks University Assessment	Max Marks College Assessment	Total Marks	Min. Passing Marks	Max Marks University Assessment	Max Marks College Assessment	Total Marks	Min. Passing Marks
BEAE 801T(OE)	Open Elective-V	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 802T(E)	Elective IV	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 803T(E)	Elective V	3	-	-	3	03	70	30	100	40	-	-	-	-
BEAE 804P	Project Work Phase- II	-	-	12	6	-	-	-	-	-	100	100	200	100
Total		9	-	12	15	-	210	90	300	-	100	100	200	
Semester Total		**21**			**15**	**Marks 500**								

Open Elective-V	
Course Code	**Course Name**
BEAE 801T(OE) -1	Introduction to Cryogenics
BEAE 801T(OE)-2	Experimental Stress Analysis
BEAE 801T(OE) -3	Bio-Fluid Dynamics
BEAE 801T(OE) -4	Theory of Plates and Shells

Elective - IV		Elective-V	
Course Code	**Course Name**	**Course Code**	**Course Name**
BEAE 802T(E)-1	UAV Systems design	BEAE 803T(E) -1	Aero Engine Maintenance
BEAE 802T (E)-2	Wind Tunnel techniques	BEAE 803T(E) -2	Theory of Aero elasticity
BEAE 802T (E)-3	Boundary Layer Theory	BEAE 803T(E) -3	Industrial Aerodynamics
BEAE 802T (E)-4	Hypersonic Aerodynamics	BEAE 803T(E) -4	Aviation Logistics and Supply Chain Management

Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
Scheme of Teaching and Examination
I Semester M. Tech. CBCS Industrial Drives and Control (IDC)

Subject Code	Subject	Teaching Scheme			Examination Scheme				
					Theory/ Practical				
		Hours per week		No. of Credits	Duration of Paper (Hrs.)	Max. Marks	Max. Marks	Total Marks	Min. Passing Marks
		L	P			University Assessment	College Assessment		
PGIDC 101T	Advanced Power Electronics	4	-	4	3	70	30	100	50
PGIDC 102T	DC Drives	4	-	4	3	70	30	100	50
PGIDC 103T	Advanced Control Theory	4	-	4	3	70	30	100	50
PGIDC 104T	Elective –I (Core)	4	-	4	3	70	30	100	50
PGOPEN 105T	Elective –II (Open)	4	-	4	3	70	30	100	50
PGIDC 106P	Advanced Power Electronics	-	2	1	-	50	50	100	50
PGIDC 107P	D.C. Drives	-	2	1	-	50	50	100	50
Total		20	4		-	450	250	700	-
Semester Total		24		22	700 Marks				
Elective –I (Core)					1.Analysis of Electrical Machines 2. Application of Microcontroller in Electrical System 3. Micro and Smart Grid				
Elective-II (Open)					List of Open Electives from various discipline is attached				

Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
Scheme of Teaching and Examination
II Semester M. Tech. CBCS Industrial Drives and Control (IDC)

Subject Code	Subject	Teaching Scheme			Examination Scheme				
					Theory/ Practical				
		Hours per week		No. of Credits	Duration of Paper (Hrs.)	Max. Marks	Max. Marks	Total Marks	Min. Passing Marks
		L	P			University Assessment	College Assessment		
PGIDC 201T	Drives System Design	4	-	4	3	70	30	100	50
PGIDC 202T	AC Drives	4	-	4	3	70	30	100	50
PGIDC 203T	Electrical Transportation	4	-	4	3	70	30	100	50
PGIDC 204T	Elective – III (Core)	4	-	4	3	70	30	100	50
PGFD 205T	Research Methodology	4	-	4	3	70	30	100	50
PGIDC 206P	A.C. Drives	-	2	1	-	50	50	100	50
PGIDC 207P	Computer Aided Design	-	2	1	-	50	50	100	50
Total		20	4		-	450	250	700	-
Semester Total		24		22	700 Marks				
Elective –III (Core)					1. Energy Audit and Management 2. Converter for Non Conventional Energy Sources 3. Process control and Instrumentation				

Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
Scheme of Teaching and Examination
III Semester M. Tech. CBCS Industrial Drives and Control (IDC)

Subject Code	Subject	Teaching Scheme			Examination Scheme				
					Theory/ Practical				
		Hours per week		No. of Credits	Duration of Paper (Hrs.)	Max. Marks	Max. Marks	Total Marks	Min. Passing Marks
		L	P			University Assessment	College Assessment		
PGOPEN 301T	Elective –IV (Open)	4	-	4	3	70	30	100	50
PGFD 302T	Project Planning and Management	4	-	4	3	70	30	100	50
PGIDC 303P	Project Seminar	-	8	8	-	--	200	200	100
Total		8	8	16	-	140	260	400	-
Semester Total		16		16	400 Marks				
Elective-IV (Open)					List of Open Electives from various discipline is attached				

Note: For the teaching work load calculation for Project Seminar, work load will be 3 hours per week per project

Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
Scheme of Teaching and Examination
IV Semester M. Tech. CBCS Industrial Drives and Control (IDC)

Subject Code	Subject	Teaching Scheme			Examination Scheme				
					Theory/ Practical				
		Hours per week		No. of Credits	Duration of Paper (Hrs.)	Max. Marks	Max. Marks	Total Marks	Min. Passing Marks
		L	P			University Assessment	College Assessment		
PGIDC 401P	Project	-	16	16	-	400	--	400	200
Semester Total		16		16	400 Marks				

Note: For the teaching work load calculation for project, work load will be 6 hours per week per project

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur
Faculty of Engineering & Technology
Course and Examination Scheme of Master of Technology
Choice Base Credit System(CBCS)

I Semester M. Tech. (VLSI)

Subject Code	Subject	Teaching Scheme			Examination Scheme								
					Theory					Practical			
		Hours per week		No. of Credits	Duration of Paper (Hrs.)	Max. Marks	Max. Marks	Total Marks	Min. Passing Marks	Max. Marks	Max. Marks	Total Marks	Min. Passing Marks
		L	P			University Assessment	College Assessment			University Assessment	College Assessment		
PGVLS101T	VLSI Subsystem Design	4	-	4	3	70	30	100	50	-	-	-	-
PGVLS102T	Advanced Digital Signal Processing	4	-	4	3	70	30	100	50	-	-	-	-
PGVLS103T	VLSI Circuits	4	-	4	3	70	30	100	50	-	-	-	-
PGVLS104T	Elective-I	4	-	4	3	70	30	100	50	-	-	-	-
PGOPEN105T	Elective-II (Open)	4	-	4	3	70	30	100	50	-	-	-	-
PGVLS106P	Laboratory -I Advanced Digital Signal Processing	-	2	1	-	-	-	-	-	50	50	100	50
PGVLS107P	Laboratory -II VLSI Circuits	-	2	1	-	-	-	-	-	50	50	100	50
Total		20	4		-	350	150	500	-	100	100	200	-
Semester Total		24		22	700 Marks								

Elective-I: 1. Mixed Signal Processing [PGVLS104/1T] 2. Low Power VLSI Design [PGVLS104/2T] 3. Embedded Systems [PGVLS104/3T]
Elective-II (Open): List of Open Elective-II [PGOPEN501T] is enclosed.

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur
Faculty of Engineering & Technology
Course and Examination Scheme of Master of Technology
Choice Base Credit System(CBCS)

II Semester M. Tech. (VLSI)

Subject Code	Subject	Teaching Scheme			Examination Scheme								
					Theory					Practical			
		Hours per week		No. of Credits	Duration of Paper (Hrs.)	Max. Marks	Max. Marks	Total Marks	Min. Passing Marks	Max. Marks	Max. Marks	Total Marks	Min. Passing Marks
		L	P			University Assessment	College Assessment			University Assessment	College Assessment		
PGVLS201T	Analog VLSI Design	4	-	4	3	70	30	100	50	-	-	-	-
PGVLS202T	VLSI Testing	4	-	4	3	70	30	100	50	-	-	-	-
PGVLS203T	Modeling of Digital System and Testing	4	-	4	3	70	30	100	50	-	-	-	-
PGVLS204T	Elective-III	4	-	4	3	70	30	100	50	-	-	-	-
PGFD205T	Foundation-I	4	-	4	3	70	30	100	50	-	-	-	-
PGVLS206P	Laboratory -I Analog VLSI Design	-	2	1	-	-	-	-	-	50	50	100	50
PGVLS207P	Laboratory -II Modeling of Digital System and Testing	-	2	1	-	-	-	-	-	50	50	100	50
Total		20	4		-	350	150	500	-	100	100	200	-
Semester Total		24		22	700 Marks								

Elective-III: 1.System on Chip [PGVLS204/1T] 2.Micro Electro Mechanical Switches (MEMS) [PGVLS204/2T] 3. High Speed Semiconductor Devices and Circuits [PGVLS204/3T]
Foundation-I: Research Methodology

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur
Faculty of Engineering & Technology
Course and Examination Scheme of Master of Technology
Choice Base Credit System(CBCS)

III Semester M. Tech. (VLSI)

Subject Code	Subject	Teaching Scheme			Examination Scheme								
					Theory					Practical			
		Hours per week		No. of Credits	Duration of Paper (Hrs.)	Max. Marks	Max. Marks	Total Marks	Min. Passing Marks	Max. Marks	Max. Marks	Total Marks	Min. Passing Marks
		L	P			University Assessment	College Assessment			University Assessment	College Assessment		
PGOPEN301T	Elective-IV (Open)	4	-	4	3	70	30	100	50	-	-	-	-
PGFD302T	Foundation II	4	-	4	3	70	30	100	50	-	-	-	-
PGVLS303P	Project Seminar	-	8	8	-	-	-	-	-	-	200	200	100
Total		8	8		-	140	60	200	-	-	200	200	-
Semester Total		-		16	400 Marks								

Elective-IV (Open): List of Open Elective-IV [PGOPEN301T] is enclosed.
Foundation II: Project Planning and Management

Rashtrasant Tukadoji MaharajNagpur University, Nagpur
Faculty of Engineering & Technology
Course and Examination Scheme for Master of Technology
in
Mechanical Engineering Design (MED)
Choice Base Credit System (CBCS)

I Semester

Subject code	Name of Subject	Teaching Scheme			Examination Scheme				
					Marks				
		Hours per Week		No. of Credits	Duration of Paper (Hrs.)	College Assessment	University Assessment	Total Marks	Minimum Passing Marks
		L	P						
PGMED101T	Advanced Mechanisms	4	-	4	3	30	70	100	50
PGMED102T	Dynamics of Machinery	4	-	4	3	30	70	100	50
PGMED103T	Mechanical Vibrations	4	-	4	3	30	70	100	50
PGMED104T	Elective -I (Discipline)	4	-	4	3	30	70	100	50
PGMED105T	Elective —II (Open)	4	-	4	3	30	70	100	50
PGMED106P	Advanced Mechanisms	-	2	1	-	50	50	100	50
PGMED107P	Mechanical Vibrations	-	2	1	-	50	50	100	50
Total		20	4	-	-	-	-	-	-
Semester Total		24		22				700	

Note:

I) List of Elective-I (Discipline)
1) Computer Aided Mechanical Design
2) Reliability, Maintainability & Wear

II) Elective-II (open) is to be selected from the list attached in Annexure-

Rashtrasant Tukadoji MaharajNagpur University, Nagpur
Faculty of Engineering & Technology
Course and Examination Scheme for Master of Technology
in
Mechanical Engineering Design (MED)
Choice Base Credit System (CBCS)

II Semester

Subject code	Name of Subject	Teaching Scheme			Examination Scheme				
					Marks				
		Hours per Week		No. of Credits	Duration of Paper (Hrs.)	College Assessment	University Assessment	Total Marks	Minimum Passing Marks
		L	P						
PGMED201T	Advanced Mechanical Drives	4	-	4	3	30	70	100	50
PGMED202T	Stress Analysis	4	-	4	3	30	70	100	50
PGMED203T	Design Of Mechanical Handling System	4	-	4	3	30	70	100	50
PGMED204T	Elective —III (Discipline)	4	-	4	3	30	70	100	50
PGMED205T	Foundation Courses -I	4	-	4	3	30	70	100	50
PGMED206P	Stress Analysis	-	2	1	-	50	50	100	50
PGMED207P	Finite Element Analysis	-	2	1	-	50	50	100	50
Total		20	4	-	-	-	-	-	-
Semester Total		24		22				700	

Note:

I) List of Elective-III (Discipline)
1) Tribology And Bearing Design
2) Design Of Hydraulic And Pneumatic System

Rashtrasant Tukadoji MaharajNagpur University, Nagpur
Faculty of Engineering & Technology
Course and Examination Scheme for Master of Technology
in
Mechanical Engineering Design (MED)
Choice Base Credit System (CBCS)

III Semester

Subject code	Name of Subject	Teaching Scheme			Examination Scheme				
					Marks				
		Hours per Week		No. of Credits	Duration of Paper (Hrs.)	College Assessment	University Assessment	Total Marks	Minimum Passing Marks
		L	P						
PGMED301T	Elective -IV (Open)	4	-	4	3	30	70	100	50
PGMED302T	Foundation Courses -II	4	-	4	3	30	70	100	50
PGMED303P	Project Seminar	-	3	8	-	200	-	200	100
Total		8	3	-	-	-	-	-	-
Semester Total		11		16				400	

Note: Elective-IV (open) is to be selected from the list attached in Annexure-

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur
Faculty of Engineering & Technology
Course and Examination Scheme of Master of Technology
Choice Base Credit System(CBCS)

I Semester M. Tech. in Electronics (Communication)

Subject Code	Subject	Teaching Scheme			Examination Scheme								
					Theory					Practical			
		Hours per week		No. of Credits	Duration of Paper (Hrs.)	Max. Marks	Max. Marks	Total Marks	Min. Passing Marks	Max. Marks	Max. Marks	Total Marks	Min. Passing Marks
		L	P			University Assessment	College Assessment			University Assessment	College Assessment		
PGECE101T	Advanced Optical Communication	4	-	4	3	70	30	100	50	-	-	-	-
PGECE102T	Coding Theory and Techniques	4	-	4	3	70	30	100	50	-	-	-	-
PGECE103T	Advanced Digital Communication	4	-	4	3	70	30	100	50	-	-	-	-
PGECE104T	Elective-I	4	-	4	3	70	30	100	50	-	-	-	-
PGOPEN105T	Elective-II (Open)	4	-	4	3	70	30	100	50	-	-	-	-
PGECE106P	Laboratory -I Advanced Optical Communication	-	2	1	-	-	-	-	-	50	50	100	50
PGECE107P	Laboratory -II Advanced Digital Communication	-	2	1	-	-	-	-	-	50	50	100	50
Total		20	4		-	350	150	500	-	100	100	200	-
Semester Total		24		22	700 Marks								

Elective-I: 1. Advanced Antenna [PGECE104/1T] 2. Information Theory and Stochastic Process [PGECE104/2T] 3. Advanced Image Processing [PGECE104/3T]
Elective-II (Open): List of Open Elective-II [PGOPEN105T] is enclosed.

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur
Faculty of Engineering & Technology
Course and Examination Scheme of Master of Technology
Choice Base Credit System(CBCS)

II Semester M. Tech. in Electronics (Communication)

Subject Code	Subject	Teaching Scheme			Examination Scheme								
					Theory					Practical			
		Hours per week		No. of Credits	Duration of Paper (Hrs.)	Max. Marks	Max. Marks	Total Marks	Min. Passing Marks	Max. Marks	Max. Marks	Total Marks	Min. Passing Marks
		L	P			University Assessment	College Assessment			University Assessment	College Assessment		
PGECE201T	Smart Antenna System	4	-	4	3	70	30	100	50	-	-	-	-
PGECE202T	High performance Communication and Networks	4	-	4	3	70	30	100	50	-	-	-	-
PGECE203T	Wireless Communication and Networks	4	-	4	3	70	30	100	50	-	-	-	-
PGECE204T	Elective-III	4	-	4	3	70	30	100	50	-	-	-	-
PGFD205T	Foundation-I	4	-	4	3	70	30	100	50	-	-	-	-
PGECE206P	Laboratory -I High Performance Communication and Networks	-	2	1	-	-	-	-	-	50	50	100	50
PGECE207P	Laboratory -II Wireless Communication and Networks	-	2	1	-	-	-	-	-	50	50	100	50
Total		20	4		-	350	150	500	-	100	100	200	-
Semester Total		24		22	700 Marks								

Elective-III: 1. Advanced Communication Technologies [PGECE204/1T] 2. Mobile Communication [PGECE204/2T]
Foundation-I: Research Methodology

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur
Faculty of Engineering & Technology
Course and Examination Scheme of Master of Technology
Choice Base Credit System(CBCS)

III Semester M. Tech. in Electronics (Communication)

Subject Code	Subject	Teaching Scheme			Examination Scheme								
					Theory					Practical			
		Hours per week		No. of Credits	Duration of Paper (Hrs.)	Max. Marks	Max. Marks	Total Marks	Min. Passing Marks	Max. Marks	Max. Marks	Total Marks	Min. Passing Marks
		L	P			University Assessment	College Assessment			University Assessment	College Assessment		
PGOPEN301T	Elective-IV (Open)	4	-	4	3	70	30	100	50	-	-	-	-
PGFD302T	Foundation-II	4	-	4	3	70	30	100	50	-	-	-	-
PGECE303P	Project Seminar	-	8	8	-	-	-	-	-	-	200	200	100
Total		8	8		-	140	60	200	-	-	200	200	-
Semester Total		-		16	400 Marks								

Elective-IV (Open): List of Open Elective-IV [PGOPEN301T] is enclosed.
Foundation-II: Project Planning and Management