🛡 GONDWANA UNIVERSITY GADCHIROLI
Ordinance No. 84 of 2017

Examinations leading to the Degree of Master of Technology (Two Years Semester Pattern Post Graduate Programme with Choice Based Credit System) in the Faculty of Engineering and Technology, Ordinance, 2017.

Whereas , it is expedient to prepare an ordinance in respect of Examinations leading to the Degree of Master of Technology(Two years semester pattern Post Graduate program with choice based credit system in the Faculty of Engineering and Technology, for the purpose hereinafter appearing, the Management Council is hereby pleased to make the following Ordinance:-

1. This Ordinance shall be called **"Examinations leading to the Degree of Master of Technology (Two Years Semester Pattern Post Graduate Programme with 'Choice Based Credit System'), in the Faculty of Engineering and Technology,** Ordinance ,**2017."**

2. **This** Ordinance **shall come into force with effect from the date of its making by the Management Council.**

3. The preliminary definitions for various terms shall be as mentioned below   :-

    a. 'Programme' means Degree programme like M.E., M. Tech. etc.
    b. 'Specialization' means a discipline of the Post Graduate (Nomenclature P for Pg and U for UG) program like Energy Management Systems, CAD/ CAM, Structural Engineering, Electrical Power System, Computer Science Engineering, Electronics Engineering etc.
    c. 'Course' means a Theory or a Practical subject that is to be studies by a student in a Semester.
    d. 'Board' means Board of Studies at the University level, as per provisions of the M.U. Act, 1994.

4. The structure of every M. Tech (PG) program shall be as described below, as far as possible   :
    Every Post Graduate Program in the Faculty of Engineering & Technology shall have a
    Scheme where the Subjects in a particular Course may be categorized as follows :-

    - Foundation Courses (F)   :   This may include basic courses with relevant syllabus required for that particular specialization like Mathematics and so on.
    - Professional Core Courses (C)   :   This shall include the core course relevant to a particular specialization and shall be compulsory for all the concerned students.
    - Professional Elective (P)   :   This will be in the form of POOL of subjects offered to the students so as to suite their CHOICE. This may belong to the same BOARD or the other BOARD, however, in the same FACULTY of Engineering & Technology.
    - Employability Enhancement Courses (E)   :   This will include Project Work/ Internship/ Seminar/ Professional Practices/ Case Study/ Industrial or Practical Training.

5. The M. Tech. Programmes governed by this Ordinance & the corresponding Board of Studies shall be as detailed in the **Table 1** given below   :

Table 1: M. Tech. Programs (CBCS) with Specializations

S. N.	Specializations offered	Affiliate Board of Studies	Appendix
1	CAD/CAM	Mechanical Engineering	A
2	Computer Science and Engineering	Computer Technology/Computer Science and Engineering	B
3	Energy Management Systems	Electrical Engineering	C
4	Heat Power Engineering	Mechanical Engineering	D
5	Structural Engineering and Construction	Civil Engineering	E
6	Electrical Power System	Electrical Engineering	F
7	Electronics & Communication Engineering	Electronics Engineering	G

6. 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 end semester examination shall be conducted at the end of each semester namely, the first, second, third and fourth semester at such places and on such dates as may be decided by the university.

7. The period of Academic Session shall be such as may be notified by the University.

8. The written End Semester Examination (ESE) of first and third semester shall be held by the Affiliating University in winter & supplementary examination in summer every year. Further the second and fourth semester ESE will be held in summer & the supplementary examination in winter every year.

9. Subject to his compliance with the provisions of this Ordinance, and other relevant ordinances , 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, namely :-

a) M. Tech. (First Semester)

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

   ii) Subject to the conditions prescribed for admission to the First Semester M. Tech., the candidate shall be considered eligible if he/she possesses a Bachelor's degree or equivalent in the relevant field of engineering with percentage of marks as specified by the apex governing council, AICTE, New Delhi from time to time.

   iii) The discipline wise eligibility for admission to the respective post graduate program shall be as mentioned in **Table 2** given below.

   iv) The candidate should have prosecuted a regular course of study in a college affiliated to the University to conduct the course or a university

department/center for not less than one semester in the subjects in which he/she offers for examination.

Table 2: Eligibility Criteria for Admission to M Tech Courses

S. N.	M Tech Specializations	Eligibility Qualification shall be B.E./ B. Tech of the Affiliating University or of any other Statutory University recognized equivalent thereto by the UGC/AIU OR AMIE in following Disciplines with minimum 50% marks in qualifying degree
1	CAD/CAM	Mechanical/ Production/ Industrial Engineering/ Automobile Engineering
2	Computer Science and Engineering	CT/CS/CE/EDT/Electronics/EXTC/Electrical/ E & P/PE/IT/MCA
3	Energy Management Systems	Electrical/ Mechanical/ Power Engineering / Electronics/ Production/ Computer/ Instrumentation/ Industrial Electronics / Power Electronics
4	Heat Power Engineering	Mechanical / Automobile / Power Engineering/ Production
5	Structural Engineering & Construction	Civil Engineering/Structural Engineering/Construction Technology.
6	Electrical Power System	Electrical Engineering / Electronics & Power(E&))/ Electrical & Electrical Engineering (EEE)/ Power Engineering/ Power Electronics Engineering/ Electrical (Electronics & Power) Engineering
7	Electronics & Communication Engineering	Electronics Engineering / Electronics & Telecommunication Engineering / Electronics & Communication Engineering/ EDT

v) M. Tech. (Second Semester) - A student, who after passing the M. Tech (First Semester) examination, has prosecuted a regular course of study in a college affiliated to the university to conduct 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. Tech (Third Semester) - A student who has after passing the M. Tech (Second Semester) examination has 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.

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

10. The scope of the subject shall be as indicated in the syllabus and may be changed from time to time, to cope up with the changing technologies.

11. The fees for each of the examinations shall be such as may be prescribed by the Affiliating University from time to time.

12. The student shall register for and shall secure all the credits offered in the respective Program.

13. The number of Theory and Laboratory Courses, Internal Assessment, Dissertation and Pre-submission seminar, Viva-Voce if any, maximum marks assigned to each of them, and the minimum marks to pass the examination shall be as indicated in the respective scheme of examination appended/ revised from time to time with this Ordinance.

14. The internal and external assessment of the students performance provides an appropriate evaluation scheme based on their performance in different methodological tests/examinations .

For Theory Courses:- continuous assessment shall have various components of evaluation as given below   .

a) **Mid Semester Examination (MSE)** will be carrying 10% weightage and shall be conducted independently by each of the college. The weightage for MSE in each subject shall be a maximum of 10 (ten) marks only. Usually one or two such MSEs should be conducted for the given theory course.

b) **Internal Evaluation (IE)** will be carrying 20% weightage and shall be monitored based on following parameters. The weightage for IE in each subject shall be limited to maximum of 20 (twenty) marks only. It is broken further as given below :-

Response in classes (CR) -	05 marks
Attendance -	05 marks
Assignments/Tutorials -	10 marks

These two components i.e. MSE and IE put together will form the internal assessment component carrying a weightage subject to a maximum of 30 (thirty) marks only.

c) **End Semester Examination (ESE)** carrying 70% weightage shall be conducted for each of the theory course/subject by the institute through Affiliating University, as per its Regulations/Direction subject to maximum marks as specified in the designed curriculum.

Pattern of End Semester Examination (Theory Course) –

i) The ESE shall be conducted by the Affiliating University, as per the schedule notified by the Board of Examinations.

ii) The pattern of examination shall be as decided by the University so as to follow the guidelines of apical Bodies like AICTE and/ or UGC

For Laboratory Courses, continuous assessment shall have various components of evaluation as given below :-

a) **Term Work (TW)** as internal assessment carrying 50% weightage shall comprise of number of experiments/practical's to be performed by each of the student as per the prescribed syllabus of the given course and a written test/viva voce. The weightage for TW for each of the laboratory course shall be of 50 (Fifty) marks, as far as possible, and are distributed as follows   :-

Performance of experiments and journal submission –	20 marks
One Written test on practical topics/viva voce -	20 marks
Attendance (Theory and practical both) -	10 marks

The final certification and acceptance of the term work ensures the satisfactory performance in the given laboratory course and minimum passing in the term work.

b) **Performance and Oral Examination (POE) -** External laboratory examination will be assessed based on POE carrying 50% weightage. Herein

every examinee has to perform one experiment/practical. This experiment/practical shall be only from the aforesaid list, which the examinee is deemed to have performed during his/her term work. Wherein the performance of experiment is not possible, a written examination shall be conducted. The oral questions i.e. viva-voce shall also be from the related topics. The weightage for POE in each subject shall be limited to a maximum of 50 (Fifty) marks only and the break-up shall be as follows:

Performance of experiment/written test:30 marks

Oral examination/Viva-voce: 20 marks

15. (i) The subject of the Dissertation Study shall be communicated to the candidate by the head of the institution/Department at the beginning of the Third Semester on approval of the Research and Recognition Committee of the concerned Board of Studies.

(ii) An examinee shall carry out his/ her dissertation work beginning from third semester up to the end of fourth semester under the supervision of:

a) a recognized Post-Graduate Teacher of the college or institute.

OR

b) a person from industry or research institute possessing Master's degree in the appropriate branch of Engineering / Technology and has not less than 5 years of experience in the industry or research institution in the suitable capacity.

(iii) The examinee shall submit his dissertation study to the university through the Head of   the institute or college not later than 31st July / 31st January, duly certified by the supervisor.

(iv) The Defense Examination of the dissertation study shall be conducted by the Board of examiners consisting of an external examiner appointed by the university and internal examiner. The external examiner shall not be associated with the examination of more
than two examinees simultaneously.

v) One copy of the dissertation study shall be sent to the external examiner by the college as early as possible, but not
less than ten days before the Defense Examination.

iii) An examinee of the fourth semester examination, who fails to submit his thesis within   the prescribed date or fails to present oneself for the defense may, subject to other provisions of this Ordinance 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.

c) He/She submits his dissertation on the same subject two weeks prior to the examination date.

16. The A.T.K.T. rules shall be as indicated under TABLE - 3 for admission to the respective semesters of the program with Theory and Laboratory courses considered as separate heads of passing :-

Table 3: ATKT Rules for M. Tech Programs

Name of the Examination of M. Tech.	Students should have passed in all the subjects/courses of the following examination/s	Candidate should have passed in all heads of following examinations of the university	Candidate should have passed in all heads except in *TWO* passing heads of the following examinations taken together
I Semester	**B.E./B. Tech. or equivalent***	------	------

II Semester	-------	------	I Semester
III Semester	------	I Semester	II Semester
IV Semester	-------	II Semester	III Semester

***As specified in Table '2' of this** Ordinance

Provided,

   (a) that an examinee who has secured pass grade in any course/subject (theory or laboratory) or courses/subjects shall, at his option, be exempted from appearing in that course/subject at the subsequent examination.

   'Examination' means the Theory Course and the Laboratory Course with their respective institutional evaluation/assessment being considered as separate head of passing (though of the same course/subject), an examinee passing under any one of these, but failing in another, shall at his option, be entitled to get "Exemption" in that part of the course/subject (either theory or laboratory), in which he has secured the pass grade.

17. The fees for the examination shall be as prescribed by the University from time to time and whenever any change is made in the fees prescribed for any particular examination that shall be notified through a notification for information to the examinees concerned.

18. As per the adopted Model Credit Grade System (CGS), the computation of Semester Grade Point Score (SGPS) and Cumulative Grade Point Score (CGPS) of an examinee shall follow the steps as given below :-

The marks shall be granted in all the examinations which shall comprise of internal college assessment and University assessment marks. The total marks thus obtained for each Theory / Laboratory course shall be converted into Grades as per **Table 4** given below.

SGPS shall be calculated based on Grade Points corresponding to Grade as given in **Table 4** below and the Credits allotted to respective Theory / Laboratory shall be as shown in the program scheme for respective semester.

$$SGPS = \frac{(C_I \times GP_I + C_{II} \times GP_{II} + \underline{\hspace{1cm}} + C_n \times GP_n)}{C_I + C_{II} + \underline{\hspace{1cm}} + C_n}$$

Where, $C_{1...n}$ – No of Credits of individual course
    $GP_{1...n}$ – Grade Points obtained in the respective course.

Cumulative Grade Point Score (CGPS) is indicative of the overall academic performance of a student in the given program, Bachelor of Engineering (B.E.). It shall be computed as cumulative total of the products of actual grade point scored and its weightage in terms credits of I, II, III and IV [th] semester divided by total No of credits of I, II, III and IV [th] semester.

$$CGPS = \frac{(SGPS_I \times C_I + SGPS_{II} \times C_{II} + SGPS_{III} \times C_{III} + SGPS_{IV} \times C_{IV})}{(C_I + C_{II} + C_{III} + C_{IV})}$$

Where, $SGPS_{I \text{ to } IV}$ – Corresponding grade point scores obtained in I,II,III & IV [th] Semester $C_{I \text{ to } IV}$ – Total no of Credits of I,II,III & IV Semester

19. (i) The theory and laboratory courses in which an examinee is to be examined, the maximum grade for these and the minimum grade which an examinee must

obtain in order to secure exemption in the aforesaid course(s) and the examination are detailed in **Table 4**.

Table 4: Conversion of Marks to Grades in Choice Based Credit System (CBCS)
(For Theory & Laboratory Courses)

% SCORE (x) in Theory	% SCORE (x) in Practical	Grade	Grade Points (on 10 point scale)	Grade
$80 \leq x \leq 100$	$85 \leq x \leq 100$	A+	10	OUTSTANDING
$70 \leq x \leq 79$	$80 \leq x \leq 84$	A	9	EXCELLENT
$60 \leq x \leq 69$	$75 \leq x \leq 79$	B+	8	VERY GOOD
$55 \leq x \leq 59$	$70 \leq x \leq 74$	B	7	GOOD
$50 \leq x \leq 54$	$65 \leq x \leq 69$	C+	6	FAIR
$45 \leq x \leq 49$	$60 \leq x \leq 64$	C	5	AVERAGE
$40 \leq x \leq 44$	$50 \leq x \leq 59$	D	4	PASS
$00 \leq x \leq 39$	$00 \leq x \leq 49$	**F**	**0**	**FAIL**
Absent in Examination	**Absent in Examination**	**Z**	**-**	**ABSENT**

(ii) The minimum grade required to be secured for passing at the I/II/III/IV th semester examinations shall be **'D'**, AS MENTIONED IN Table '4' ABOVE.

(iii) The internal and external component of evaluation for a given theory/laboratory course are not considered as separate passing heads instead they together form a single passing head i.e. the qualifying marks to be secured by a student in the given course, either theory or laboratory, are sum of internal and external components of its evaluation.

20. (i) The scope of the subjects shall be as indicated in the syllabus, with medium of instructions & examinations as English only.

(ii) The CGPA to percentage conversion shall be as per applicable Direction/ Notification of the University.

21. Provisions of Ordinance to provide grace marks for passing in a particular head and improvement of Division (Higher Class) and getting Distinction in the given course/subject and Condonation of Deficiency of Marks in a course in the faculty of Engineering and Technology shall apply to each examination under this Ordinance.

22. An examinee who does not pass, or who fails to present himself/herself for the examination shall be eligible for 'Readmission' to the same examination, on payment of a fresh fee and such other fees as may be prescribed from time to time.

23. An unsuccessful examinee, at any of the above examination, shall have an option to carry his/her internal assessment/term work marks for

theory/laboratory examination to his/her successive attempt at the examination. **The examinee, however can forego his/her internal assessment/term work marks in a subject or subjects, in which case he/she shall be examined for a total of marks comprising the ESE/POE examination and MSE & IE/TW together to form the 'Grade', at his/her successive attempts at the examination. Such an option may be availed by the examinee by indicating the same in his/her "Application Form for Examination" and the option once exercised, it shall be "Final and Binding" on the concerned examinee.**

24. As soon as possible after the examinations, the Board of Examinations shall publish a list of successful examinees. The result of all examinations shall be classified on the basis of Semester Grade Point Score **'SGPS'** evaluated as specified in the adopted model of Choice Based Credit System and shall be notified in accordance to the provisions specified in the relevant Ordinance/Direction.

25. Notwithstanding anything to the contrary in this Ordinance, no one shall be admitted to an examination under this Ordinance, if he/she has already passed the same examination or an equivalent examination hitherto of this or of any other Statutory University.

26. (i) The examinees who have secured pass grade in all the 'Subjects' prescribed for all the "Examinations" shall be eligible for the award of the **Post Graduate Degree of Master of Technology in the respective specialization** and branch of engineering.

(ii) The classification of 'Grade' of Examinees for the award of the Post Graduate Degree of Master of Technology shall be on the basis of CGPS Interval as shown in the Table '4' above wherein Cumulative Grade Point Score **'CGPS'** shall be evaluated by accounting **SGPS** of **I, II, III and IV** th **Semester**, as explained in paragraph 18 of this Ordinance.

(iii) The Degree, in the prescribed form shall be signed by the Vice-Chancellor.

27. The students of M. Tech who are presently pursuing their program in Semester Based Credit System (SBCS) shall be provided with last chance to pass their examinations in SBCS pattern as mentioned below :

Last Chance to pass First Semester M. Tech (SBCS) : Winter, 2017

Last Chance to pass Second Semester M. Tech (SBCS) : Summer, 2018

Last Chance to pass Third Semester M. Tech (SBCS) : Winter, 2018

Last Chance to pass Fourth Semester M. Tech (SBCS) : Summer, 2019

However, after their last chance, the left over students, if any, shall be absorbed into the Choice Based Credit System (CBCS), as per absorption scheme approved by the University.

(Statement of object and Reasons)

The Vice chancellor had issued Direction No. 212 of 2016 dated 19/09/2016 in respect of "Examinations leading to the Degree of Master of Technology(Two years semester pattern Post Graduate program with choice based credit system) in the Faculty of Engineering and Technology,Direction,2016".

The above mentioned Direction is required to be converted into an Ordinance as per provision made under the Maharashtra universities Act, 1994, hence this Draft Ordinance is prepared for its consideration by the Academic Council and the Management Council of the Gondwana University, Gadchiroli.

MASTER OF TECHNOLOGY IN CAD/CAM
(TWO YEARS COURSE IN THE FACULTY OF ENGINEERING & TECHNOLOGY)
TEACHING AND EXAMINATION SCHEME WITH CHOICE BASED CREDIT SYSTEM
I – SEMESTER

Unique Subject Code (USC)	Course type	Subject	Teaching Scheme			No. of Credits	Examination Scheme										
			Hours per week				Theory						Practical				
			L	Field Work/ Assignment/ Tutorial	P		Duration of Paper (Hrs)	Max. Marks	Max. Marks			Total	Min. Passing Marks	Max. Marks	Max. Marks	Total	Min. Passing Marks
									Sessional								
								ESE	MSE	IE			TW	PEE		
PCDS11	C	Data Structure & Algorithms	3	2	-	4	3	70	10	20	**100**	50	-	-	-	-
PCDS12	C	CNC & Robotics	3	2	-	4	3	70	10	20	**100**	50	-	-	-	-
PCDS13	C	Computer Graphics for CAD/CAM	3	2	-	4	3	70	10	20	**100**	50	-	-	-	-
PCDS14 x	P	Elective - I	3	2	-	4	3	70	10	20	**100**	50	-	-	-	-
Laboratories/ Practical																
PCDS15	C	CAM Lab	-	-	2	1	3	-	-	-	-	-	25	25	**50**	25
PCDS16	E	Seminar - I	-	-	2	1	-	-	-	-	-	-	50	-	**50**	25
		TOTAL	12	08	4	18	-	**400**					**100**			
	SEMESTER TOTAL		**24**			**18**	**500**									

Elective – I (x) : (A) **Mechatronics** (B) **Total Quality Systems & Engineering**   (C) **Artificial Intelligence**

Appendix - A

MASTER OF TECHNOLOGY IN CAD/CAM
(TWO YEARS COURSE IN THE FACULTY OF ENGINEERING & TECHNOLOGY)
TEACHING AND EXAMINATION SCHEME WITH CHOICE BASED CREDIT SYSTEM
II – SEMESTER

Unique Subject Code (USC)	Course type	Subject	Teaching Scheme				Examination Scheme									
			Hours per week			No. of Credits	Theory						Practical			
			L	Field Work/ Assignment/ Tutorial	P		Duration of Paper (Hrs.)	Max. Marks	Max. Marks		Total	Min. Passing Marks	Max. Marks	Max. Marks	Total	Min. Passing Marks
									Sessional							
								ESE	MSE	IE			TW	PEE		
PCDS21	C	Computer Integrated Manufacturing System	3	2	-	4	3	70	10	20	**100**	50	-	-	-	-
PCDS22	C	Product Data Management	3	2	-	4	3	70	10	20	**100**	50	-	-	-	-
PCDS23	C	Finite Element Method	3	2	-	4	3	70	10	20	**100**	50	-	-	-	-
PCDS24x	P	Elective – II (x)	3	2	-	4	3	70	10	20	**100**	50	-	-	-	-
Laboratories/ Practical																
PCDS25	C	CAD Lab	-	-	2	1	-	-	-	-	-	-	25	25	**50**	25
PCDS26	E	Seminar - II	-	-	2	1	-	-	-	-	-	-	50	-	**50**	25
		TOTAL	12	08	4	18	-	400					100			
		SEMESTER TOTAL	24		18			500								

Elective –II (x) : **(A) Computational Fluid Dynamics (B) Product Design & Development (C) Computer Aided Tool Design**

MASTER OF TECHNOLOGY IN CAD/CAM
(TWO YEARS COURSE IN THE FACULTY OF ENGINEERING & TECHNOLOGY)
TEACHING AND EXAMINATION SCHEME WITH CHOICE BASED CREDIT SYSTEM
III – SEMESTER

Unique Subject Code (USC)	Course type	Subject	Teaching Scheme				Examination Scheme										
			Hours per week			No. of Credits	Theory						Practical				
			L	Field Work/ Assignment/ Tutorial	P		Duration of Paper (Hrs.)	Max. Marks	Max. Marks		Total	Min. Passing Marks	Max. Marks	Max. Marks	Total	Min. Passing Marks
									Sessional							
								ESE	MSE	IE			TW	PEE		
PCDS31	C	Self Study Course	3	2	-	4	3	70	10	20	**100**	50	-	-	-	-
PCDS32x	P	Elective - III	3	2	-	4	3	70	10	20	**100**	50	-	-	-	-
Laboratories/ Practical																
PCDS33x	E	Grand Seminar / Industrial Training	-	10	-	5	-	-	-	-	-	-	100	-	**100**	50
PCDS34	E	Pre-Dissertation	-	10	-	5	-	-	-	-	-	-	200	-	**200**	100
		TOTAL	6	24	-	18	-		**200**					**300**		
		SEMESTER TOTAL		30		18					**500**					

Elective – III (x) : A) Pattern Recognition (BOS of Computer Science/Tech/Engg) B) Modeling and Simulation C) Soft Computing (BOS of Computer Science/Tech/Engg)

Appendix - A

MASTER OF TECHNOLOGY IN CAD/CAM
(TWO YEARS COURSE IN THE FACULTY OF ENGINEERING & TECHNOLOGY)
TEACHING AND EXAMINATION SCHEME WITH CHOICE BASED CREDIT SYSTEM
IV – SEMESTER

Unique Subject Code (USC)	Course type	Subject	Teaching Scheme			No. of Credits	Examination Scheme									
			Hours per week				Theory					Practical				
			L	Field Work/ Assignment/ Tutorial	P		Duration of Paper (Hrs.)	MaxMarks	Max. Marks	Total	Min. Passing Marks	Max. Marks	Max. Marks	Total	Min. Passing Marks
									Sessional							
								ESE	MSE	IE			TW	PEE		
PCDS41	E	Final Dissertation	-	24		18	-						250	250	500	250
		TOTAL		24		18	-								**550**	
		SEMESTER TOTAL		24		18				**500**						

Appendix - B

TEACHING AND EXAMINATION SCHEME (SEMESTER PATTERN CHOICE BASED CREDIT SYSTEM)

PROGRAM   :   MASTER OF TECHNOLOGY IN COMPUTER SCIENCE & ENGINEERING

I– SEMESTER

Unique Subject Code (USC)	Course type	Subject	Teaching Scheme				Examination Scheme									
			Hours per week			No. of Credits	Theory					Practical				
			L	Field Work / Assignment/ Tutorial	P		Duration of Paper (Hrs.)	Max.Marks	Max. Marks Sessional		Total	Min. Passing Marks	Max. Marks	Max. Marks	Total	Min. Passing Marks
								ESE	MSE	IE			TW	PEE		
PCSS11	C	Advanced Computer Architecture	3	2	-	3+1	3	70	10	20	**100**	50	-	-	-	-
PCSS12	C	Advances in Operating System Design	3	2	-	3+1	3	70	10	20	**100**	50	-	-	-	-
PCSS13	C	Object Oriented Software Engineering	3	2	-	3+1	3	70	10	20	**100**	50	-	-	-	-
PCSS14 x	P	Elective – I	3	2	-	3+1	3	70	10	20	**100**	50	-	-	-	-
Laboratories/ Practical																
PCSS15	C	ComputerSystem Lab – I	-	-	2	1	-	-	-	-	-	-	50	50	**100**	50
PCSS16	E	Seminar	-	-	2	1							50	-	**50**	25
		TOTAL	12	08	4	18	-	**400**					**150**			
		SEMESTER TOTAL	**24**			**18**	**550**									

Elective – I (x)   : (A)   Data Warehousing and Data Mining   (B)   Information Retrieval

(C)   Soft Computing

Appendix - B
TEACHING AND EXAMINATION SCHEME (SEMESTERPATTERN CHOICE BASED CREDIT SYSTEM)

PROGRAM : MASTER OF TECHNOLOGY IN COMPUTER SCIENCE & ENGINEERING

II – SEMESTER

Unique Subject Code (USC)	Course type	Subject	Teaching Scheme — Hours per week — L	Field Work/ Assignment/ Tutorial	P	No. of Credits	Theory — Duration of Paper (Hrs.)	Max. Marks — ESE	Session al — MSE	Session al — IE	Total	Min. Passing Marks	Practical — Max. Marks — TW	Practical — Max. Marks — PEE	Total	Min. Passing Marks
PCSS 21	C	Advances in Algorithms	3	2	-	3+1	3	70	10	20	**100**	50	-	-	-	-
PCSS 22	C	Advanced Databases	3	2	-	3+1	3	70	10	20	**100**	50	-	-	-	-
PCSS 23	C	Advanced Digital Image Processing	3	2	-	3+1	3	70	10	20	**100**	50	-	-	-	-
PCSS 24x	P	Elective – II	3	2	-	3+1	3	70	10	20	**100**	50	-	-	-	-
Laboratories/ Practical																
PCSS 25	C	Computer System Lab – II	-	-	2	1	-	-	-	-	-	-	50	50	**100**	50
PCSS 26	E	Seminar	-	-	2	1							50	-	**50**	25
		TOTAL	12	08	4	18	-		**400**					**150**		
		SEMESTER TOTAL		**24**		**18**				**550**						

Elective – II (x) :(A) Pattern Recognition (B) Statistical Machine Learning (C) Network Security & Cryptography

Appendix - B
TEACHING AND EXAMINATION SCHEME (SEMESTER PATTERN CHOICE BASED CREDIT SYSTEM)

PROGRAM   :   MASTER OF TECHNOLOGY IN COMPUTER SCIENCE & ENGINEERING

SEMESTER - III

Unique Subject Code (USC)	Course type	Subject	Teaching Scheme				Examination Scheme									
			Hours per week			No. of Credits	Theory						Practical			
			L	Field Work/ Assignment/ Tutorial	P		Duration of Paper (Hrs.)	Max. Marks	Max. Marks		Total	Min. Passing Marks	Max. Marks	Max. Marks	Total	Min. Passing Marks
									Sessional							
								ESE	MSE	IE			TW	PEE		
PCSS31x	P	Elective-III	3	2	-	3+1	3	70	10	20	**100**	50				
PCSS32	E	Study of Soft Computing and Data Analysis Tools	-	8	-	5				100	**100**	50	-	-	-	-
PCSS33	E	Grand Seminar	-	6	-	4				100	**100**	50	-	-	-	-
Laboratories/ Practical																
PCSS34	E	Pre-Dissertation	-	8	-	5							150	-	**150**	75
		TOTAL	-	24	-	18	-		**300**					**150**		
		SEMESTER TOTAL		**24**		**18**				**450**						

Elective – III (x)   :(A)Wireless Sensor Networks   (B)VLSI Technology (C) CNC & Robotics

(D) Total Quality Systems & Engineering

TEACHING AND EXAMINATION SCHEME (SEMESTERPATTERN CHOICE BASED CREDIT SYSTEM)

PROGRAM : MASTER OF TECHNOLOGY IN COMPUTER SCIENCE & ENGINEERING

IV– SEMESTER

Unique Subject Code (USC)	Course type	Subject	Teaching Scheme				Examination Scheme									
			Hours per week			No. of Credits	Theory						Practical			
			L	Field Work/ Assignment/ Tutorial	P		Duration of Paper (Hrs.)	Max. Marks	Max. Marks		Total	Min. Passing Marks	Max. Marks	Max. Marks	Total	Min. Passing Marks
									Sessional							
								ESE	MSE	IE			TW	PEE		
PCSS 41	E	Final Dissertation	-	24	-	18	-	-	-	-			200	250	**450**	225
SEMESTER TOTAL			24		18		450									

TEACHING AND EXAMINATION SCHEME (SEMESTERPATTERN CHOICE BASED CREDIT SYSTEM)

PROGRAM : MASTER OF TECHNOLOGY IN ENERGY MANAGEMENT SYSTEMS

I – SEMESTER

Unique Subject Code (USC)	Course type	Subject	Teaching Scheme				Examination Scheme									
			Hours per week			No. of Credits	Theory						Practical			
			L	Field Work/ Assignment/ Tutorial	P		Duration of Paper (Hrs.)	Max. Marks	Max. Marks		Total	Min. Passing Marks	Max. Marks	Max. Marks	Total	Min. Passing Marks
									Sessional							
								ESE	MSE	IE			TW	PEE		
PEMS11	C	Energy Scenario & Policies	3	2	-	3+1	3	70	10	20	**100**	50	-	-	-	-
PEMS12	C	Alternate Energy Systems – I	3	2	-	3+1	3	70	10	20	**100**	50	-	-	-	-
PEMS13	C	Alternate Energy Systems – II	3	2	-	3+1	3	70	10	20	**100**	50	-	-	-	-
PEMS14x	P	Elective – I	3	2	-	3+1	3	70	10	20	**100**	50	-	-	-	-
Laboratories/ Practical																
PEMS15	C	Energy Lab – I	-	-	2	1	-	-	-	-	-	-	50	50	**100**	50
PEMS16	E	Seminar	-	-	2	1							50	-	**50**	25
		TOTAL	12	08	4	18	-	**400**					**150**			
		SEMESTER TOTAL	**24**			**18**		**550**								

Elective – I (x): (a) Energy Conservation (b) Batteries and Fuel Cells (c) MHD Power Generation

Appendix - C

TEACHING AND EXAMINATION SCHEME (SEMESTERPATTERN CHOICE BASED CREDIT SYSTEM)

Unique Subject Code (USC)	Course type	Subject	Teaching Scheme			No. of Credits	Examination Scheme										
			Hours per week				Theory						Practical				
			L	Field Work/ Assignment/ Tutorial	P		Duration of Paper (Hrs.)	Max. Marks	Max. Marks Sessional		Total	Min. Passing Marks	Max. Marks	Max. Marks	Total	Min. Passing Marks
									ESE	MSE	IE			TW	PEE		
PEMS 21	C	Integrated Energy Systems	3	2	-	3+1	3	70	10	20	**100**	50	-	-	-	-
PEMS 22	C	Energy Modeling & Project Management	3	2	-	3+1	3	70	10	20	**100**	50	-	-	-	-
PEMS 23	C	Energy Audit & Management	3	2	-	3+1	3	70	10	20	**100**	50	-	-	-	-
PEMS 24x	P	Elective – II	3	2	-	3+1	3	70	10	20	**100**	50	-	-	-	-
Laboratories/ Practical																	
PEMS 25	C	Energy Lab – II	-	-	2	1	-	-	-	-	-	-	50	50	**100**	50
PEMS 26	E	Seminar	-	-	2	1							50	-	**50**	25
		TOTAL	12	08	4	18	-		**400**					**150**			
		SEMESTER TOTAL		**24**		**18**					**550**						

Elective – II (x): (a) Project, Planning & Design of Renewable Energy Systems (b) Environmental Science & Engineering (c) Energy Analysis

Appendix - C

TEACHING AND EXAMINATION SCHEME (SEMESTERPATTERN CHOICE BASED CREDIT SYSTEM)

PROGRAM   :   MASTER OF TECHNOLOGY IN ENERGY MANAGEMENT SYSTEMS

III – SEMESTER

Unique Subject Code (USC)	Course type	Subject	L	Field Work/ Assignment/ Tutorial	P	No. of Credits	Duration of Paper (Hrs.)	Max. Marks ESE	Sessional MSE	IE	Total	Min. Passing Marks	TW	PEE	Total	Min. Passing Marks
PEMS31	C	Self Study Course	-	2	-	4	3	70	10	20	**100**	50	-	-	-	-
PEMS32x	P	Elective – III	3	2	-	3+1	3	70	10	20	**100**	50	-	-	-	-
Laboratories/ Practical																
PEMS33	E	Industrial Training	-	5	-	5	-	-	-	-	-	-	150	50	**200**	100
PEMS34	E	Pre Dissertation	-	6	-	5							100	50	**150**	75
		TOTAL	3	15	-	18	-		**200**					**350**		
	SEMESTER TOTAL			18		18			**550**							

Elective – III (x):   (a) Advance Power Electronics   (b) Energy Efficient Building   (c) Data Analysis   (d) Thermal Storage System   (e) Neural Network & Fuzzy Logic

Appendix - C

TEACHING AND EXAMINATION SCHEME (SEMESTERPATTERN CHOICE BASED CREDIT SYSTEM)

PROGRAM : MASTER OF TECHNOLOGY IN ENERGY MANAGEMENT SYSTEMS

IV – SEMESTER

Unique Subject Code (USC)	Course type	Subject	Teaching Scheme			No. of Credits	Examination Scheme										
			Hours per week				Theory										
			L	Field Work/ Assignment/ Tutorial	P		Duration of Paper (Hrs.)	Max. Marks	Max. Marks		Total	Min. Passing Marks	Max. Marks	Practical	Total	Min. Passing Marks
									Sessional							
								ESE	MSE	IE			TW	PEE		
PEMS 41	E	Final Dissertation	-	10	-	18	-	-	-	-			150	200	350	175
SEMESTER TOTAL				1o		18	350									

Appendix - D

MASTER OF TECHNOLOGY IN HEAT POWER ENGINEERING
(TWO YEARS COURSE IN FACULTY OF ENGINEERING & TECHNOLOGY)
COURSE AND EXAMINATION SCHEME WITH CHOICE BASED CREDIT SYSTEM
I – SEMESTER

Unique Subject Code (USC)	Course type	Subject	Teaching Scheme — Hours per week — L	Field Work/ Assignment/ Tutorial	P	No. of Credits	Theory — Duration of Paper (Hrs.)	Max. Marks — ESE	Max. Marks Sessional — MSE	IE	Total	Min. Passing Marks	Practical — Max. Marks — TW	Max. Marks — PEE	Total	Min. Passing Marks
PHPS 11	C	Advanced Heat and Mass Transfer	3	2	-	4	3	70	10	20	100	50	-	-	-	-
PHPS 12	C	Advanced Thermodynamics	3	2	-	4	3	70	10	20	100	50	-	-	-	-
PHPS 13	C	Thermal Engineering -I	3	2	-	4	3	70	10	20	100	50	-	-	-	-
PHPS 14x	P	Elective-I	3	2	-	4	3	70	10	20	100	50	-	-	-	-
Laboratories/ Practical																
PHPS 15	C	Heat Power Engineering Lab – I	-	-	2	1	3	-	-	-	-	-	25	25	50	25
PHPS 16	E	Seminar-I			2	1	3						50	50	50	25
		TOTAL	12	08	4	18	-		400					100		
		SEMESTER TOTAL		24		18				500						

Elective-I(X): (A) Advanced power Plant Engineering. (B): Cryogenic Engineering. (C): Computer Aided Design.

Appendix - D

MASTER OF TECHNOLOGY IN HEAT POWER ENGINEERING
(TWO YEARS COURSE IN FACULTY OF ENGINEERING & TECHNOLOGY)
COURSE AND EXAMINATION SCHEME WITH CHOICE BASED CREDIT SYSTEM
II – SEMESTER

Unique Subject Code (USC)	Course type	Subject	Teaching Scheme				Examination Scheme									
			Hours per week			No. of Credits	Theory						Practical			
			L	Field Work/ Assignment/ Tutorial	P		Duration of Paper (Hrs.)	Max. Marks	Max. Marks Sessional		Total	Min. Passing Marks	Max. Marks	Max. Marks	Total	Min. Passing Marks
								ESE	MSE	IE			TW	PEE		
PHPS 21	C	Fluid Dynamics	3	2	-	4	3	70	10	20	100	50	-	-	-	-
PHPS 22	C	Advanced Refrigeration and Air Conditioning	3	2	-	4	3	70	10	20	100	50	-	-	-	-
PHPS 23	C	Thermal Engineering -II	3	2	-	4	3	70	10	20	100	50	-	-	-	-
PHPS 24x	P	Elective – II (x)	3	2	-	4	3	70	10	20	100	50	-	-	-	-
Laboratories/ Practical																
PHPS 25	C	Heat Power Engineering Lab –II	-	-	2	1	3	-	-	-	-	-	25	25	50	25
PHPS 26	E	Seminar-II			2	1	3						50	50	50	25
		TOTAL	12	08	4	18	-	400					100			
		SEMESTER TOTAL	24		18						500					

Elective – II (x) : *(A) Design of Heat Transfer Equipments (B) Design of I.C. Engine Components and Subsystems. (C)Thermal Storage Systems*

Appendix - D
MASTER OF TECHNOLOGY IN HEAT POWER ENGINEERING
(TWO YEARS COURSE IN FACULTY OF ENGINEERING & TECHNOLOGY)
COURSE AND EXAMINATION SCHEME WITH CHOICE BASED CREDIT SYSTEM
III – SEMESTER

Unique Subject Code (USC)	Course type	Subject	Teaching Scheme - L	Teaching Scheme - Field Work/ Assignment/ Tutorial	Teaching Scheme - P	No. of Credits	Duration of Paper (Hrs.)	Theory Max. Marks ESE	Theory Max. Marks Sessional MSE	Theory Max. Marks Sessional IE	Theory Total	Theory Min. Passing Marks	Practical Max. Marks TW	Practical Max. Marks PEE	Practical Total	Practical Min. Passing Marks
PHPS 31	C	Solar and Wind Energy Utilization	3	2	-	4	3	70	10	20	100	50	-	-	-	-
PHPS 32x	P	Elective – III (x)	3	2	-	4	3	70	10	20	100	50	-	-	-	-
Laboratories/ Practical																
PHPS 33	E	Grand Seminar? Industrial Training		10		5	3						100	-	100	50
PHPS 34	E	Pre-Dissertation	-	10		5	3	-	-	-	-	-	200	-	200	100
		TOTAL	6	24		18	-		200					300		
		SEMESTER TOTAL		30		18					500					

Appendix - D
MASTER OF TECHNOLOGY IN HEAT POWER ENGINEERING
(TWO YEARS COURSE IN FACULTY OF ENGINEERING & TECHNOLOGY)
COURSE AND EXAMINATION SCHEME WITH CHOICE BASED CREDIT SYSTEM
IV – SEMESTER

Unique Subject Code (USC)	Course type	Subject	Teaching Scheme			No. of Credits	Examination Scheme									
			Hours per week				Theory					Practical				
			L	Field Work/ Assignment/ Tutorial	P		Duration of Paper (Hrs.)	MaxMarks	Max. Marks		Total	Min. Passing Marks	Max. Marks	Max. Marks	Total	Min. Passing Marks
								ESE	Sessional				TW	PEE		
									MSE	IE						
PHPS 41	E	Final Dissertation	-	24		18	3						250	250	500	250
		TOTAL		24		18	-							500		
		SEMESTER TOTAL		24		18				500						

Unique Subject Code (USC)	Course type	Subject	Teaching Scheme				Examination Scheme									
			Hours per week			No. of Credits	Theory						Practical			
			L	Field Work/ Assignment/ Tutorial	P		Duration of Paper (Hrs.)	Max. Marks	Max. Marks		Total	Min. Passing Marks	Max. Marks	Max. Marks	Total	Min. Passing Marks
									Sessional							
								ESE	MSE	IE			TW	PEE		
PSES11	C	Matrix analysis of structures	3	1	-	3+1	4	70	10	20	**100**	50	-	-	-	-
PSES12	C	Advanced concrete structures	3	1	-	3+1	4	70	10	20	**100**	50	-	-	-	-
PSES13	C	New construction materials	2	1	-	2+1	3	70	10	20	**100**	50	-	-	-	-
PSES14	C	Building services	2	1	-	2	3	70	10	20	**100**	50	-	-	-	-
PSES15x	P	Elective – I	3	1	-	3+1		70	10	20	**100**	50				
Laboratories/ Practical																
PSES16	C	Matrix analysis of structures	-	-	2	1	-	-	-	-	-	-	50	50	**100**	50
		TOTAL	13	05	2	18	-	**500**					**100**			

TEACHING AND EXAMINATION SCHEME (SEMESTER PATTERN CHOICE BASED CREDIT SYSTEM)
PROGRAM : MASTER OF TECHNOLOGY IN Structural Engineering and Construction
I – SEMESTER

SEMESTER TOTAL	20	18	600

Elective-I(x)—a. Structural instrumentation and material science   b. Computational Techniques c. Optimization Techniques in Structural Engineering

TEACHING AND EXAMINATION SCHEME (SEMESTER PATTERN CHOICE BASED CREDIT SYSTEM)
PROGRAM   :   MASTER OF TECHNOLOGY IN Structural Engineering and Construction
II – SEMESTER

Elective II(x) a. Computer Aided Design in Structural Engineering (CAD)   b. advanced design of

Unique Subject Code (USC)	Course type	Subject	Teaching Scheme				Examination Scheme										
			Hours per week			No. of Credits	Theory						Practical				
			L	Field Work/ Assignment/ Tutorial	P		Duration of Paper (Hrs.)	Max. Marks	Max. Marks Sessional		Total	Min. Passing Marks	Max. Marks	Max. Marks	Total	Min. Passing Marks
								ESE	MSE	IE			TW	PEE		
PSES21	C	Finite Element Method	3	1	-	3+1	4	70	10	20	**100**	50	-	-	-	-
PSES22	C	Structural dynamics	3	1	-	3+1	3	70	10	20	**100**	50	-	-	-	-
PSES23	C	Design of substructures	2	1	-	2	3	70	10	20	**100**	50	-	-	-	-
PSES24	C	Advanced construction management & Technology	2	1	-	2	3	70	10	20	**100**	50	-	-	-	-
PSES25x	P	Elective – II	3	1	-	3+1	3	70	10	20	**100**	50				
Laboratories/ Practical																
PSES26	C	Structural dynamics and instrumentation lab	-	-	2	1	-	-	-	-	-	-	25	25	**50**	25
PSES27	E	Seminar*	-	-	2	1							50	-	**50**	25
		TOTAL	13	05	4	18	-	**500**					**100**			
		SEMESTER TOTAL	**22**		**18**		**600**									

steel structures   **c. Plastic Analysis and Design**.

*Spiral binded copy of seminar delivered on advanced topic related to this course, must be submitted to the department

TEACHING AND EXAMINATION SCHEME (SEMESTER PATTERN CHOICE BASED CREDIT SYSTEM)
PROGRAM   :   MASTER OF TECHNOLOGY IN Structural Engineering and Construction

IDCS-I(x) : a. Quality and safety in construction   b. Data structure and algorithm

c. Neuro network and fuzzy logic   d. Research Methodology

Unique Subject Code (USC)	Course type	Subject	Teaching Scheme				Examination Scheme										
			Hours per week			No. of Credits	Theory						Practical				
			L	Field Work/ Assignment/ Tutorial	P		Duration of Paper (Hrs.)	Max. Marks	Max. Marks Sessional		Total	Min. Passing Marks	Max. Marks	Max. Marks	Total	Min. Passing Marks
								ESE	MSE	IE			TW	PEE		
PSES31	C	Design of Earthquake resisting RCC Structures	4	2	-	4+1	4	70	10	20	**100**	50	-	-	-	-
PSES32(x)	P	IDCS	4	2	-	4+1	3	70	10	20	**100**	50	-	-	-	-
Laboratories/ Practical																
PSES33	C	Computer aided analysis-lab	-	-	4	2	-	-	-	-	-	-	50	50	**100**	50
PSES34	E	Project Phase I and Seminar	-	-	12	6							50	50	**100**	50
	TOTAL		8	4	12	18	-	**200**					**200**			
	SEMESTER TOTAL		24		18		**400**									

Note: for PSES34- Student should carry out following work for Phase-I of Project

1. Extensive literature survey and finalization of topic
2. Submission of Synopsis in the form of spiral binding
3. Data collection and analysis (partial)
4. Final submission seminar on PPT for Internal and External both. Total work carried in Phase-I must be submitted in Hard copy.

Student has to submit the report and deliver the seminar based on Dissertation topic. It is to be evaluated by three member's panel of examiners headed by HOD; wherein guide should be one of the members of the panel. Last date of submission of report shall be one week before the end of semester.

TEACHING AND EXAMINATION SCHEME (SEMESTER PATTERN CHOICE BASED CREDIT SYSTEM)

Unique Subject Code (USC)	Course type	Subject	Teaching Scheme			No. of Credits	Examination Scheme									
			Hours per week				Theory						Practical			
			L	Field Work/ Assignment/ Tutorial	P		Duration of Paper (Hrs.)	Max. Marks	Max. Marks Sessional		Total	Min. Passing Marks	Max. Marks	Max. Marks	Total	Min. Passing Marks
								ESE	MSE	IE			TW	PEE		
Laboratories/ Practical																
PSES41	E	Project Phase-II and Dissertation	-	-	24	18	-	-	-	-	-	-	200	200	**400**	200
		TOTAL		-	24	18	-								**400**	
		SEMESTER TOTAL		**24**		**18**				400						

Note:

i) Dissertation work should be carried out on any recent topic decided in project phase-I, which has not been carried out earlier by any alumni. If it is found at any stage then it will be rejected without any clarification.

ii) At least one research paper should be published in research journal having ISSN number and impact factor more than 0.75.

iii) Those candidates completing the dissertation without publishing research paper, will be evaluated from total marks out of 320 (160 TW + 160 PEE) only.