

## To Institutes M.Tech. by Research in IIT-Allahabad

### Ordinances for M.Tech. by Research

#### Preamble:

1. M.Tech by Research is analogous and dual to conventional M.Tech. While conventional M.Tech. is mainly course work based, with project work towards its partial fulfillment, the M.Tech by Research is mainly research based and course work is supportive to the proposed research work. Hence, as is the practice with M.Tech., it is necessary that M.Tech. by Research should also be a 4 term (semester) course of minimum 2 years.
2. By the nature of its content and the way it is conducted, the proposed M.Tech by Research in a) Information Technology (IT), b) Electronics and Communication Engineering (ECE), c) Bioinformatics (BI), d) Biomedical Engineering (BME) and e) Applied Science shall be identical to M.Sc. - Engg. by research of I.I.Sc., M.S. by Research of IITs and being dual to conventional M Tech/ME in India and MS abroad, this course is equivalent to M.Tech./M.E./M.S.
3. It is a post BE/post MSc. Program as per the norms of similar programs like M Tech/ME. Since it is a post MSc. Program also, its scope is higher than that of M.Phil. since it is a program of minimum 2 years duration while M Phil is a one year duration program.
4. This program being a research oriented Master's Degree program (post BE/post MSc.) enhances the research culture and encourages employed Scientists/ Engineers/ Technocrats/ Teachers to improve their qualification.

## Ordinances Governing the Award of Degree M.Tech. by Research

### 1. Title and Commencement:

1.1 These ordinances shall be called the ordinances governing the award of the degree of M.Tech By Research of Indian Institute of Information Technology-Allahabad

1.2 These ordinances shall come into force from the date of notification by the institute.

### 2. Definition:

**In these ordinances unless the context otherwise requires or specifically defined:**

- i) DPGC means the Departmental Post Graduate Committee.
- ii) Degree means the Degree of M.Tech by Research.
- iii) IITA means Indian Institute of Information Technology, Allahabad.

### 3. Eligibility *(NOTE: The respective DPGC shall decide the subject in which the candidate should have acquired his qualifying degree)*

**3.1** Candidates who satisfy the following two conditions are eligible to seek provisional registration for M.Tech by Research in **(a)** Information Technology (IT), **(b)** Electronics and Communication Engineering(ECE), **(c)** Bioinformatics, **(d)** Bio-Medical and **(e)** Applied Science.

(i) The candidate should have employment and his/her area of proposed research should correspond to that of his/her profession (job).

**OR** The candidate should have been hired by a research investigator as a full-time project assistant/research assistant/JRF/SRF on a research project of at least 18 to 24 month duration. Such a candidate should get a suitable fellowship or salary or honorarium.

**OR** The candidate should get a sponsorship or a fellowship by any external agency or a self-supporting arrangement and should work on the research problem as a full time research scholar for a duration of at least 24 months.

**OR** A regularly employed/Self-employed person who can afford to spare only part time towards research has to put in at least 30 months towards the course.

*(Such a candidate can be from abroad and he/she is treated as an International Candidate)*

(ii) A candidate should have M.Sc. degree B.E. / B.Tech. / B.S. (4 years) in the concerned or any other degree recognized as equivalent thereto with an overall minimum of 60% of marks (CGPA of 6.5 in 10 point scale).

**NOTE:**

For instance,

*For the candidate to register for M.Tech by Research in Information Technology, he/she should have obtained in any of the following degrees of the institute with an overall minimum of 60% or (CGPA of 6.5 in 10 point scale):*

M.Sc. (Computer-Science / Information Science / Software and related courses), M.Sc. (Electronics), M.C.A. / B.E. / B.Tech. / BS (4 years) in Electrical Science/ Computer Science / Information Science / Electronics / Communication / Instrumentation / Control Engineering.

M Sc. (Physics), M Sc. Mathematics), M Sc. (Statistics), BE / B.Tech , BS ( in any other branch of Engineering.), provided such candidates have worked on computers at least for two full years in their professional career in recognized R & D institutions, industries, educational institutions dealing purely with Computer Science / Information Technology and Applications.

3.2 Part Time candidates referred above have to put in a minimum of 15 days attendance per every half year in the Department concerned.

**4 Requirements:**

4.1 The candidate formally registers for the degree.

4.2 The candidate conducts research under the supervision of a recognized supervisor in the Institute (co-opting a joint supervisor as in section 6.4), for a period of at least 24 months from the date of registration. The minimum period shall be 30 months for part time candidates.

4.3 The candidate shall submit the report on the progress of research duly certified by the supervisor(s) once every half year. If two successive reports are not submitted the registration stands cancelled automatically.

4.4 The candidate takes examination in four parts, as given in the following table

Part	Prerequisite	Nature of Assessment	Maximum Marks
I	i) Registration ii) First six months	Assessment in three courses. Each course is evaluated as per C <sub>1</sub> + C <sub>2</sub> + C <sub>3</sub> structure vide the ordinance applicable to M.Tech. programs.  The quantum of work for each paper will be of 06 credits of 0:1:5 in L:T:P structure vide the ordinance applicable to M.Tech. programs. (Total 18 credits)	100 x 3= 300
II	Second six months	Dropped courses of Part-1 and three more courses of part 2. (Total 18 credits)	100 x 3= 300
III	Third six months	Dropped courses of Part-2, And evaluation of progress and detailed mid-term report of research work (through presentation of candidate) by supervisor and/or joint-supervisor (if any) and another expert from the institute, as per C <sub>1</sub> + C <sub>2</sub> + C <sub>3</sub> structure vide the ordinance applicable to M. Tech. programs. (Total 10 credits)	100
IV	At the end of fourth six months	Continuous evaluation of the thesis/research work and the final evaluation of the thesis. The evaluation will be as per the structure of C <sub>1</sub> + C <sub>2</sub> + C <sub>3</sub> . C <sub>1</sub> and C <sub>2</sub> will be evaluated by the research supervisor and joint-supervisor (if any) together with an internal supervisor from the institute. C <sub>3</sub> will be evaluated by a panel of 03 examiners  i) Supervisor and Joint-Supervisor (if any) ii) An internal expert of the institute. iii)An external expert outside the institute.  C <sub>1</sub> will be for a maximum 50 marks; C <sub>2</sub> will be for a maximum 50 marks. The final viva-will be conducted by the supervisor and the internal expert. These two will translate the reports of the examiners and performance in final viva-voce examination into quantifiable marks for a maximum. of 200 (Total 18 credits).	300
		<b>Total Marks - (Total credits :64)</b>	<b>1000</b>

The submission of thesis /dissertation as part 4 and successful completion of both part-1 and 2 should have a clear separation of at least 06 months in addition to condition stated in section 4.2

[Note: A candidate can avail at the most two attempts to complete the course work in part 1 and part 2 as said above]

4.5 The individual marks/grade sheets for part 1 and part 2 will not be issued. The institute shall just intimate the marks/grade statements to let know the candidate, the status of his/her results in the paper he/she has taken for examinations. The final marks/grade card will be as follows:

Indian Institute of Information technology											
M.Tech by Research in.....											
Name:					Reg. No.:						
Title of the Thesis:.....											
Part	Month and Year of Completion	Titles	Lec. Tut. Prac.			Max. Marks			Min. Marks	Marks Obtained	Grade Point Index (GPI)
			L	T	P	C1	C2	C3	C1+C2+C3		
1.		Course 1.1	0	1	5	30	30	40	50		
		Course 1.2	0	1	5	30	30	40	50		
		Course 1.3	0	1	5	30	30	40	50		
2.		Course 2.1	0	1	5	30	30	40	50		
		Course 2.2	0	1	5	30	30	40	50		
		Course 2.3	0	1	5	30	30	40	50		
3.		Mid Term evaluation	10 credits			30	30	40	50		
4.		Final Thesis Evaluation & Viva-Voce				50	50	200	150		
		TOTAL				1000			500		
Classification of Results:											

Each course mentioned in the table above will have a mentor expert faculty from the institute who would set and evaluate C1, C2 and C3. The mentor for the course will also navigate the candidate through his study.

The student will study, solve assignments and do implementation as instructed by the mentor through remote monitoring/offline or online modes.

The C1 and C2 evaluation will be conducted by the mentor through assignments which the student will submit through remote interaction/email submission online presentation and discussion.

For C3 the student will have to appear in the examination on campus or designated venues.

Part 3 evaluation will be through presentations, and thus could be through online or on site.

$$GPI \text{ is } \frac{(C_1 + C_2 + C_3) \text{ Expressed in Percentage}}{10};$$

$$DGPI = \frac{(\text{Total Marks Obtained}) \times 10}{1000}$$

## 5 **Registration:**

5.1 The candidate should identify a supervisor/mentor for his study, identify a research topic, identify a relevant field of research from his profession and propose a plan of study.

With this pre-preparation the candidate should apply for registration.

5.2 Registration shall be based on the recommendation of the DPGC concerned and with the approval of the Chairman Senate/ Director.

5.3 Provisional registration maybe recommended by circulation of application amongst the DPGC members. In such a case the process should not take more than 30 days.

5.4 The DPGC is competent to suggest changes if necessary in the title/ scope/methodology of the topic selected for research in consultation with the supervisor.

5.5 At the time of submission of application form, the supervisor of the candidate should suggest 6 courses (3 for part 1 and 3 for part 2) along with the proposed syllabus, as per the semester pattern, for part 1 and part 2 assessments. These courses should be at higher level, relevant and supportive to proposed research work to be submitted as part 3 and part 4. Further the supervisor should ensure that all six courses are very high level as said in section 4.4. above and are supportive to the research work proposed. However, the DPGC is competent to suggest courses and syllabus other than those recommended in consultation with the supervisor. A course on Research Methodology could be included as one of the courses in Part1 or Part 2.

5.6 The registration is valid for three years. This can be extended by one more year on the basis of the request by the candidate and with the specific recommendation of the supervisor and the approval of the Chairman Senate and on the payment of the prescribed

fees, provided there is no change in the topic of research. If the candidate fails to submit the thesis even after four years as mentioned above, the registration will become invalid automatically. However, the candidate may be permitted to re-register and submit the dissertation for Part 4 within one year from the date of re-registration, on payment of the prescribed fee provided the candidate has completed Part 1, Part 2 and Part 3 successfully.

## **6 Recognition of supervisors for M Tech by Research:**

- 6.1 All regular faculty members of the institute are eligible to supervise students enrolled in M. Tech by Research on the recommendation of the DPGC.
- 6.2 A supervisor may be allowed to supervise the work of a maximum of 4 candidates towards M.Tech by Research at a time (this shall be in addition to the number of PhD Candidates being supervised by the supervisor).
- 6.3 If the recognized supervisor leaves the institute he/she shall not be permitted to register the fresh students. However, for his existing students, the DPGC in consultation with the student/ supervisor will assign him/her a co- supervisor/administrative supervisor depending upon the quantum of work remaining to be completed.
- 6.4 Since the scope of M. Tech. by research is to bring the industries/research organisations/ educational institutes of repute into closer proximity of IITA, the candidate may be allowed to identify an expert from his/her place of work to supervise and mentor his study/progress and research locally. Such a qualified expert will be identified as a Joint supervisor. However a joint supervisor has got to be recognized by DPGC.

## **7. Written examination (Part1 and Part 2)**

The candidate shall take C<sub>3</sub> examinations in the three theory courses each for part 1 and part 2. The written examination in these courses shall be conducted along with the other PG examinations of the institute. The candidate shall take the written examination of Part 1 at most within one year (two semester period) from the date of registration and the candidate shall complete the next part 2 and part 3 within the next one and two subsequent 6 months. Candidate is allowed a maximum of two chances to complete part 1 & part 2, else the registration is deemed to be cancelled.

The minimum requirement for a pass in each subject is 50%. The minimum requirement for C<sub>1</sub> + C<sub>2</sub> and for C<sub>3</sub> as in ordinance applicable to M. Tech. will not be applicable to M. Tech. by research. The Dean AAA of the Institute shall conduct these examinations.

## **8. Dissertation (Part 3 and Part 4):**

Evaluation of Part 3 is as explained in table given in section 4.4 and the following details are with reference to Part 4

The candidate is eligible to submit the thesis only after at least one successful publication or acceptance in a refereed Journal / Conference.

The dissertation shall be the report of the research work conducted by the candidate on the title accepted by DPGC. The candidate can submit the dissertation subject to the conditions specified in section 4.2 and 4.4. The candidate shall submit the final synopsis on the research work carried out. 3 copies of the dissertation should be submitted within 45 days after the submission of the synopsis.

### **EVALUATION:**

The dissertation shall be evaluated by a jury of examiners consisting of three examiners- the supervisor, an internal examiner from the institute and the other external examiner from outside the institute, chosen from a panel of 5 examiners, that is proposed by the supervisor which consists of names of supervisor (other examiner in case he/she is related to the candidate), two internal and two external examiners. The examiners will be chosen by the Senate chairman. The synopsis shall be sent to the examiners for their acceptance to work as adjudicators. The dissertation is sent after the acceptance is received.

The assessment of the dissertation shall be given by each member in the form of a report.

The report shall indicate:

- i) Whether the dissertation is accepted or rejected
- ii) Whether the candidate be allowed to resubmit the dissertation after revision.
- iii) Whether the dissertation can be recommended for the award for the degree
- iv) Clarifications if any sought by the candidate during the viva-voce.

The supervisor is the ex-officio chairman of the Board of Examiners for part 4. The reports shall be sent to the Office of AAA. The chairman sends the consolidated report along with his recommendations to the Office of AAA. The dissertation shall not be accepted if more than one examiner dissent. The dissertation has to go for a second evaluation after necessary revision. If the dissertation is not accepted in the second evaluation also by more than one examiner the candidate shall not be awarded the degree. If more than one examiner accepts the dissertation, the candidate shall be asked to incorporate the modification suggested by the examiners, if any, and the revised thesis can be placed for open Viva-voce. The candidate has to make a detailed presentation of



his work, provide clarifications to the questions asked by the defense examination committee, which is a committee of two members namely supervisor and/or joint supervisor (if any) and the other internal expert. The supervisor shall be the chairman of the committee. The committee shall send a consolidated report to the Office of AAA indicating the recommendations clearly and the quantification in terms of marks for a maximum of 200 as C<sub>3</sub>.

**9. Change of supervisors titles for methodology:**

9.1 A candidate may be permitted to change the title, scope, methodology of research on the recommendation of the supervisor and the approval by the DPGC. However the area of research cannot be changed if Part 1 assessment is completed. Change in area of research can also be considered if the candidate is yet to take part 1 assessment or the candidate withdraws the results of part 1 and part 2 assessments without claiming any exemption in any paper. A suitable fee will be prescribed by the Institute.

9.2 Change of supervisor may be permitted on approval by DPGC.

**10. Modalities:** Any issue not covered by the foregoing shall be governed by the decision of the Chairman Senate.