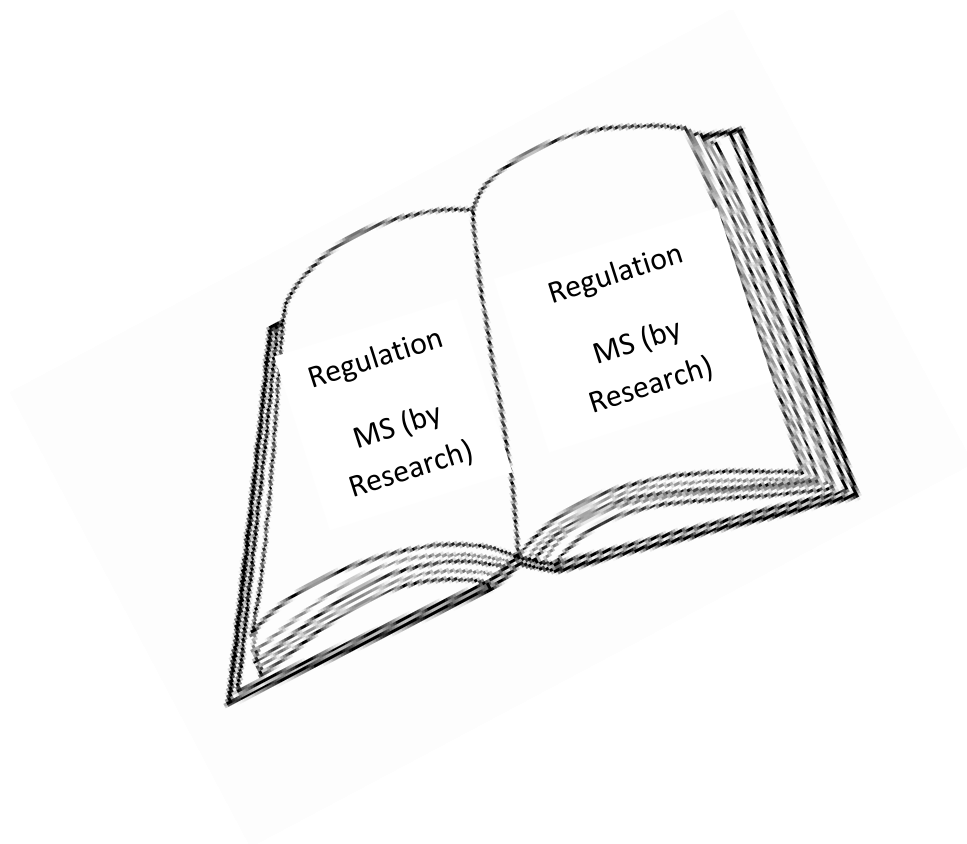


Regulations leading to Master of Science (by Research) Programme

Duration: Two-and-half academic years (5 – Semesters)



भारतीय प्रौद्योगिकी संस्थान भुवनेश्वर
INDIAN INSTITUTE OF TECHNOLOGY BHUBANESWAR

REGULATIONS FOR MASTER OF SCIENCE (BY RESEARCH) PROGRAMME

1. GENERAL

The Institute will provide instructions in prescribed discipline(s) at post-graduate level with more emphasis on research content, leading to the degree of “MS (by Research)” or “MS.R” in short.

2. DURATION OF PROGRAM

The minimum duration of the M.S program from the date of registration to the date of submission of thesis shall be one-and-half years. M.S scholars shall submit the thesis within two-and-half years from the date of registration. The M-SAC (defined in Section 6.2 below) may extend this period up to 1 year.

3. ELIGIBILITY CRITERIA FOR ADMISSION

The candidates meeting any one of the eligibility criteria, as listed below in Sections 3.1, 3.2, 3.3 and 3.4, are eligible to apply for MS.R programme.

3.1 The eligibility of a candidate is based on the academic qualification at the time of application, as given below:

- B.Tech./B.E. or equivalent degree in an appropriate discipline with minimum 60% marks or 6.5 CGPA (in a 10-point scale). The candidate must be GATE qualified in an appropriate discipline.

OR

Master of Science or equivalent degree in an appropriate discipline with minimum 60% marks or 6.5 CGPA (in a 10-point scale), **and** minimum 60% marks or 6.5 CGPA (in a 10-point scale) in Bachelor of Science/Arts/Commerce or equivalent degree, from a recognized University / Institution. The candidate must be GATE or CSIR-UGC NET (LS) qualified in an appropriate discipline.

- Minimum 60% marks or 6.5 CGPA (in a 10-point scale) required in all other examinations from class 10 onwards. A single relaxation of 5% marks in either 10th or equivalent or 12th level examination or equivalent is permitted.
- An additional relaxation of up to 5% marks in all academic examination levels is permitted for SC/ST/PwD candidates.

3.2 Persons who possess the minimum qualifications as prescribed in **Section 3.1** and are already working in a sponsored project of the Institute as JRF/SRF/equivalent shall also be eligible for applying to the MS.R program. These candidates must be GATE/CSIR-UGC NET (LS) qualified while applying for MS.R program. For these candidates, the followings also apply:

- a. They will receive assistantship from the fund available in the project under the personnel/manpower budget head (to be referred as Project Fund now onwards) and the

fellowship amount is at least equal to that of an M.Tech. student of the Institute.

- b. The remaining period of the project fund (in a single project) as well as the remaining tenure of the same project should be at least one year from the date of admission in the MS.R program in the Autumn/Spring Semester as per the academic calendar (if selected).
- c. The investigator(s)-in-charge of the concerned project/scheme is satisfied that the students joining the MS.R program will not deter him from carrying out his duties in the project/scheme.

3.3 Students with B. Tech. degree from Centrally Funded Technical Institutes (CFTIs): Such applicants with a CGPA greater than or equal to 8.0 are eligible to apply without GATE.

3.4 Institute Staff Category / Sponsored: Permanent staff members of the Institute or sponsored by other recognized organizations with minimum qualification of B.Tech./B.E. or equivalent degree in an appropriate discipline with minimum 70% marks or 7.5 CGPA (in a 10-point scale) are eligible to apply for MS.R program, they need not be GATE/CSIR-UGC NET (LS) qualified (**OR** B.Tech./B.E. or equivalent degree in an appropriate discipline with minimum 60% marks or 6.5 CGPA with GATE/CSIR-UGC NET (LS) qualified).

The candidates of this category must have minimum 3 years of experience and be employed in industry/organization at the time of applying. Such candidates need to produce No Objection Certificate (NOC) from the employer while applying.

4. ADMISSION

4.1 MS.R admission shall be carried out twice a year: once in the Autumn and once in the Spring semester along with the regular Ph.D. admission.

4.2 Candidates applying for admission to the program must submit their online applications in the prescribed format together with self-attested copies of relevant testimonials and prescribed fees by such date as notified by the Institute.

4.3 Shortlisting Criteria:

- a) For candidates under Category 3.1:

Shortlisting of candidates satisfying the minimum eligibility criteria as mentioned in **Section 3.1** will be done based on GATE/CSIR-UGC NET (LS) score only. Fixing of cut-off for these scores for a specialization is the decision of the school. The fixing of cut-off scores for candidates in different categories shall be as per the norms defined in Table-1 below.

Table-1: Assignment and calculation of cut-off marks for various categories

Category	Cut-off Score
Unreserved/General	X
EWS	X
OBC (NCL)	0.9 X
SC/ST/PwD	0.67 X
X = Cut-off score for unreserved category (to be decided by the school)	

In the following, the **cut-off marks/score** (in GATE/CSIR-UGC NET (LS), written test and interview) wherever necessary, shall be specified for the general/unreserved category only. The assignment and calculation of cut-off marks for reserved categories of candidates as given in Table-1 above will be used in all cases described hereinafter, wherever applicable.

- b) For candidates under Category 3.2:

Candidates must satisfy the minimum eligibility criteria as mentioned in **Section 3.1**. However, School can raise the minimum criterion for shortlisting. The candidates under this category must be GATE/CSIR-UGC NET (LS) qualified in order to be shortlisted.

- c) For candidates under Category 3.3:

These candidates shall be directly shortlisted for the selection process.

- d) For candidates under Category 3.4:

Candidates must satisfy the minimum eligibility criteria as mentioned in **Section 3.4**.

4.4 Selection Procedure:

- a) For candidates under Categories 3.1, 3.2, 3.3 and 3.4:

Shortlisted candidates will have to appear for written test and interview. Selection to be based on 40% weightage in written test and 60% weightage in interview. The final selection will be based on combined performances in the written test and interview. The schools can fix cut-offs for written test and/or interview based upon the requirements.

- b) The selection process will be regulated by the respective schools.

- 4.5** Dean (PGRP) shall approve the recommendation of the Selection Committee of the school to issue the offer of admission to the student in the MS.R program. The students will be required to join the program at the School on the date of registration.

- 4.6** Selected students shall be enrolled for the program only after they have been found medically fit and have paid all prescribed fees.

- 4.7** MS.R student's enrolment status (while working in a project of the institute) is related to the project/scheme. Under no circumstances, the student can leave/resign from the project/scheme and continue to be an MS.R student. In such a case, the student's enrolment stands cancelled.

5. RESIDENCE, ATTENDANCE AND DISCIPLINE

- 5.1** The MS.R students shall normally be required to reside in an Institute hostel to which they are assigned at the time of admission. For the sponsored category students, the minimum residential requirement is one semester provided they have completed course work and research proposal seminar.

- 5.2** Attendance in all classes is compulsory. If the attendance of any student is considered to be unsatisfactory he/she will not be permitted to appear at the examination. A student with poor attendance record may be asked to discontinue his/her studies. MS.R students can avail leave, as applicable to PhD students.

- 5.3** Students shall conduct themselves within and outside the precincts of the Institute in a manner befitting the students of an institution of national importance. The students will be subject to all rules regarding conduct and discipline as is applicable to M. Tech. students.

6. M-SAC:– MS.R Advisory Committee

- 6.1** Immediately after student's joining, supervisor(s) will be allotted to the student. For a student working in a project/scheme, the concerned Principal Investigator(s) will be the Supervisor(s).

However:

- a. Under exceptional circumstances such as a multi-institutional project or the research problem requiring expertise that cannot be found inside the Institute, a student may be permitted to have a joint supervisor from an outside institution of repute with the recommendation of M-SAC (defined in Section 6.2 below) and approval of the Dean (PGRP).
- b. Under no circumstances a student will have more than two Supervisors even if the project/scheme has more than two PI(s)/co-PI(s) or any other case as may be.
- c. Other regulations pertaining to supervisor and/or co-supervisor appointment will be as per the PhD regulations.

6.2 An M-SAC – “MS.R Advisory Committee” is to be constituted to monitor the progress of each student. The constitution of the M-SAC is as follows:

- | | |
|--|---------------|
| (i) HoS (or his/her nominated faculty) | - Chairperson |
| (ii) Supervisor(s) | - Member(s) |
| (iii) An expert faculty member of the School | - Member |

6.3 The M-SAC will assign coursework and assess performance of the seminars/synopsis of a student and will be the authority on matters relating to the progress of the student.

6.4 The Institute may consider granting financial support for presenting paper in National or International Conference / Seminar as per the Institute rules. The rules for award of this support will be as provided in the guidelines for Ph.D. program. *The “DAC” will be replaced by “M-SAC” while applying related Ph.D. regulations to the MS.R students. This facility is to be given only once during the entire enrolment period. The Dean (PGRP) will monitor and approve all such cases.*

7. COURSE STRUCTURE

7.1 The MS.R program shall comprise of the following two parts, viz.

Part-1:– Prescribed Course Work, and

Part-2:– Project Work and Thesis

Students have to undergo coursework assigned by the M-SAC. A student is required to complete at least 4 courses (13-16 Credits), out of those 3 are technical courses, the structure is given below:

Course Work (Total)	...	12 – 15 credits
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- (i) Introduction to Research and Entrepreneurship (3 credits)
- (ii) Technical Subjects (9-12 credits)

7.2 A student may be assigned maximum one additional course in addition to the prescribed credit courses.

7.3 The M-SAC will decide the Subjects under Part-1 vide 7.1 within one week of the student joining the program.

7.4 Prescribed coursework must be completed within one year (i.e., two consecutive semesters) of joining the program. Normally the student should not be allowed to register for more than 10 credits in each semester.

7.5 A student will have to obtain a minimum grade of 'C' in each of the courses as per the grading system given in Table 2.

Table 2: Guideline for the Distribution of Grade of Larger/Medium/Small Classes

1. The following guidelines of cut-off for different grades in respect of large classes of size more than 50.

Grade	From (cut-off)	To (<)	Approximate % of Students in the range
Ex	$\geq \mu + 1.65 \sigma$		5
A	$\mu + 0.85 \sigma$	$\mu + 1.65 \sigma$	15
B	$\mu + 0.12 \sigma$	$\mu + 0.85 \sigma$	25
C	$\mu - 0.65 \sigma$	$\mu + 0.12 \sigma$	30
D	$\mu - 1.3 \sigma$	$\mu - 0.65 \sigma$	15
P & F	-	$\mu - 1.3 \sigma$	10
μ - Mean mark of the class σ - Standard deviation of the mark of the class			

2. The following guidelines of cut-off for different grades in respect of medium classes of size between 20 and 50.

Grade	Approximate % of Students in the range
Ex, A	Top 30%
B, C, D	Next 60%
P, F	Next 10%

3. There is no specific guideline is recommended for small classes (less than 20).

Note: The proposed grading process provides the good initial guess. The faculties can tweak the grades slightly to take care of the proper distribution of the grades. The actual cut-off marks may be slightly adjusted so as to fall in the gaps in the actual spread of marks in the class, if possible.

- 7.6** If the grade obtained by a student in a Part 1 course is below 'C', the student is required to either repeat that course or register for the course in Summer Quarter if the course is offered and clear it with a grade not lower than 'C'. Should the student fail to clear the course work after 2nd attempt, the M-SAC may review the performance of the student and recommend a change of course work. If the student fails to get minimum 'C' grade in the adjusted coursework in one attempt, no further adjustment will be allowed and the student will need to leave the program.
- 7.7** Thesis work progress is to be evaluated every semester by M-SAC. A scholar is required to enroll every semester, until the submission of the thesis. If progress is not satisfactory in consecutive two semesters, then the Enrolment will be cancelled (i.e., student has to leave the program).

7.12 Research work for Thesis:

- a. The supervisor(s) will assign the topic on which the student will carry out research for his/her thesis. The topic of the thesis shall be related to the project / scheme (in case of a project staff).
- b. If there is a joint supervisor for the student outside the Institute, the student is permitted to carry out part of his / her research work at the institution of the joint supervisor, subject to permission from the Institute.
- c. The **research proposal seminar** for the thesis work shall be done before completion of one year from the date of enrollment and the research work thereon may be carried out simultaneously with the course work. At end of every semester, the student is required to deliver a progress seminar before the M-SAC.

7.13 The rules pertaining to Synopsis, Thesis and Final Viva Examination are given in 8, 9 and 10, respectively.

8. SYNOPSIS

- 8.1** The student shall deliver a “synopsis seminar” on the research work he/she has done to an open audience with the M-SAC being present. The student shall be allowed to submit his/her thesis for the MS.R degree only when the M-SAC is satisfied with the work. If the M-SAC is not satisfied with quality of the work or the general preparation of the student, the student will have to appear again for the synopsis seminar within a maximum period of two months. The thesis must be submitted within 2 months after the M-SAC approves the submission on the basis of synopsis seminar.
- 8.2** A student shall submit a synopsis report of the work (2 hard copies and a soft copy). The M-SAC will, if it finds the synopsis in order, forward it to the Dean (PGRP) together with a list of four external examiners (“external” means out-side the Institute and within the country). Dean (PGRP) will appoint two examiners from the list. The thesis shall be forwarded to the examiners who shall report separately on the thesis.
- 8.3** If thesis has one reputed journal publication, then thesis will be sent to one examiner only based on M-SAC recommendation. In such cases M-SAC will provide list of panel consist of two “external” examiners.

9. THESIS

9.1 A thesis must contain:

- a. a certificate from the Supervisor(s) to the effect that (i) the work has been carried out under his/her/their supervision, (ii) the student has fulfilled all the prescribed curricular requirements, and (iii) the thesis is based on the student’s own work and that it has not been submitted elsewhere for any other diploma/degree,
- b. a brief bio-data (name, age, educational qualification, experience and permanent home address) of the student, and

9.2 The thesis should be neatly typed or printed and preferably softbound. The required number of hard copies (2 copies) of the thesis and a soft copy should be submitted through the Head of the School.

9.3 Assessment of Thesis:

- 9.3.1. The names of internal and external examiners will be kept confidential.
- 9.3.2. The thesis shall be forwarded to all the examiners who shall report separately on the thesis and forward their recommendation to the Dean (PGRP).
- 9.3.2 The Dean (PGRP) will examine the reports of the examiners and send it to the M-SAC for necessary action. The Dean (PGRP) will direct the student to appear for a viva voce based on the evaluation and recommendation of examiners.
- 9.3.3 If one or both the examiners desire revision/clarification of some points before making the assessment, the student is to clarify the points and revise the thesis, as the case may be. The revised thesis or the points clarified (if asked by the examiners) will be sent to the examiner(s) for evaluation.
- 9.3.4 In case one of examiners reject the thesis, the Dean (PGRP) may on the recommendation of M-SAC refer the revised thesis (based on examiner's report) to another examiner from the existing panel whose assessment will be taken as final and binding.
- 9.3.5 In the event of a thesis being rejected by both examiners, the Dean (PGRP), on the recommendation of the M-SAC and RPEC, permits the submission of a revised thesis on an additional payment of the prescribed fee within six months of the date of recommendation by M-SAC. The observations and comments of the examiners may be copied and given to the student and supervisor(s) for revision of the thesis upon request without divulging the details of the examiners. Under no circumstances should the resubmission of the thesis without modification along the lines of criticism made by the earlier examiners be allowed. The revised thesis shall be referred for assessment to a different set of examiners selected from the original two panels of examiners recommended by M-SAC. If any of the panels is exhausted, a fresh panel may be recommended by the M-SAC. The decision of the second group of examiners shall be final. In case either or both the examiners reject the revised thesis, the thesis will stand rejected.

10. FINAL VIVA VOCE EXAMINATION

Once the reports of both the examiners have been found to be satisfactory, the student will have to defend his/her thesis in an open seminar before a viva voce board. The M-SAC along with the internal and external examiners will adjudicate the viva voce. The M-SAC shall recommend to the Senate the award of the MS.R degree if the viva voce is "Satisfactory" and all other requirements have been fulfilled. If the student's performance at the viva voce is adjudged "Unsatisfactory", the student must appear at another viva voce examination within the next two months.

11. AWARD OF DEGREE

- 11.1 A student who has completed satisfactorily all prescribed curricular requirements shall be eligible for the award of MS (by Research) degree of the Institute.
- 11.2 The degree shall mention "Master of Sciences (by Research) in the *Name of Specialization/Topic of Research* from the *Name of School, Indian Institute of Technology Bhubaneswar*" from where the student has passed and shall be awarded at the annual Convocation for the academic session in which the student completes the requirements

satisfactorily.

12. FELLOWSHIP

12.1 Students joined under MS.R program will get fellowship at par with M. Tech. students. The total duration of the fellowship shall not exceed two-and-half years from the date of enrollment in the MS.R program. Students under Category-3.4 (i.e., Institute Staff Category /Sponsored) are not eligible to get the fellowship.

12.2 In the case of the candidates who join the MS.R program from a project, the fellowship amount will be governed by the R&D regulations and the fund availability of the project till the end of the project or the project fund is completely exhausted.

For these candidates, once the fund is completely exhausted, the student shall apply for conversion from the Project Fund to the Institute fund category. Once converted, based on the recommendation by an evaluation committee of the school and approved by Dean (PGRP), the fellowship amount will be fixed as that of the M. Tech. student irrespective of the salary (fellowship) that the candidate might have drawn from the project. The total duration of the fellowship (from project and Institute, **combined**) shall not exceed two and half years from the date of enrollment in the MS.R program.

13. TEMPORARY WITHDRAWAL TO TAKE UP THE EMPLOYMENT

- A regular MS-R scholar who has a job offer can obtain relief from the program upon recommendation by the M-SAC, if (s)he has completed the minimum residential requirement of 2 years subjected to completion of coursework and the research proposal seminar.
- This is not related to Campus Placement.
- The scholar should keep his/her registration alive by paying the requisite fee every semester. Renewal of the registration each semester is subject to the M-SAC finding the scholar's progress satisfactory.

14. UPGRADATION OF A STUDENT FROM MS.R TO PH.D. PROGRAMME

14.1 Student registered for MS.R are eligible for upgradation to Ph.D. program in the same School with the following conditions:

- Students should have a minimum CGPA of 8.0 in the prescribed courses.
- Student must complete minimum 1½ years of residential period.
- Student must have given **research proposal seminar** successfully.

14.2 The transfer request should be submitted to the Dean (PGRP) recommended by M-SAC and HoS.

14.3 Students who intend to upgrade to the Ph.D. Program should have at least one same supervisor as in MS-R.

14.4 Student upgraded in PhD will be called as "provisionally enrolled in PhD" and after successfully completing requirements of MS-R will be called as "enrolled in PhD" (these definitions are just for understanding purpose about timeline and fellowship of PhD).

14.5 PhD roll no. will be assigned to the student after "provisionally enrolled in PhD" (along with existing MS-R roll no.).

- 14.6** A DAC will be constituted, as per PhD regulations.
- 14.7** The student, upon getting approval for upgradation to PhD program by Dean (PGRP), will have to complete coursework and Q-Exam requirements (as applicable to the PhD scholars).
- 14.8** The courses which a student has undergone during MS-R studies need not be repeated. Additional technical course may be assigned to the student based on recommendation of DAC. The course work requirement towards PhD must be completed along with MS-R thesis work.
- 14.9** On successful completion of Q-exam, the student will be eligible for the Registration Seminar. The Registration Seminar should preferably be completed within one year from upgradation to Ph.D. Program.
- 14.10** On successful completion of the Registration Seminar, the student shall be registered into the PhD Program.
- 14.11** Both MS-R and Ph.D. degrees will be awarded to the students after successful completion of requirements for both MS-R and PhD programmes. As exit option from Ph.D. thesis, students will be awarded the MS-R degree provided s(he) fulfils the requirements for MS-R.
- 14.12** The students continuing with upgraded Ph.D. programme shall submit two dissertations, one for MS-R (before 'maximum duration mentioned in vide 2.2', i.e., 3½ years from the date enrolled to MS-R program) and the other for Ph. D (before completing 8 years from the date provisionally enrolled in PhD, '*as per PhD regulation*')
- 14.13** All time-line and regulation related to PhD programme will be applicable for these students from the date they are "provisionally enrolled in PhD".
- 14.14** Minimum duration for PhD thesis submission will be two years from the date of "enrolled in PhD".
- 14.15** The semester registration fees will be as per MS-R regulation until the completion of requirements for MS-R. However, the semester registration fees will be as per PhD regulation from the date of "enrolled in PhD".
- 14.16 Fellowship:**
- Students will be eligible to get fellowship of PhD from the date of "provisionally enrolled in PhD". However, students will continue to get MS-R assistantship until the end of successful completion of requirements for MS-R. The additional assistantship will be paid retrospectively after completion of the PhD registration seminar.
 - Once, students are "enrolled in PhD", the regular PhD fellowship will be applicable.

15. CAMPUS PLACEMENT FACILITY

Students (except from institute staff, sponsored categories) are eligible to avail campus placement facility of the Institute when they are on the verge of submission of thesis (as similar to PhD students).