Post Graduate Manual

iMTech Programme

Applicable Batches

iMTech 2015 onwards

INTERNATIONAL INSTITUTE OF INFORMATION TECHNOLOGY, BANGALORE

Document Control

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2.0	April 15, 2015	Incorporation of changes for iMTech (CSE) and iMTech (ECE) approved in the 44th and 45th Meeting of the Senate of IIITB, held on Feb 11, 2015 and April 8, 2015, respectively
2.1	July 27, 2016	Updated document with changes approved in the in 52nd Meeting of the Senate of IIITB, held on July 27, 2016

Contents

1 INTRODUCTION

The goal of post graduate programs at IIITB is to develop professionals of the high quality to cater to the needs of industry and academia. Such education is based on a broad grasp of the fundamental principles of the sciences and scientific methods, a deep understanding of specific area of specialization, an ability to solve new problems, and a capacity to learn continually and interact with multidisciplinary groups. Above all, IIITB aims at developing in its students a capacity for free and objective enquiry, courage and integrity, and awareness and sensitivity to the needs and aspirations of society.

The postgraduate programs are designed with the above goals in view. They include courses of study, seminars, project work, internships, and research leading to a thesis.

The procedures documented in this manual embody the philosophy of the postgraduate education and ensure a high standard of performance at the Institute. Within this general framework, and subject to the approval of the Academic Senate, hereinafter called the Senate, additional requirements may be stipulated.

The Institute offers the following post graduate programs

1. Integrated Master of Technology - dual degree (M.Tech. and B.Tech)

2. Master of Technology

3. Master of Science by Research (MS)

4. Doctor of Philosophy (PhD)

5. Master of Science (Digital Society)

6. Other programs as may be approved by the Senate from time to time

This manual provides details about the Integrated Master of Technology (iMTech) program. The iMTech is a ten semester program. The first eight semesters of the program constitute academic course work. During the ninth and tenth semester, a student takes up Masters Project, six months of which can be optionally done in the industry. The details of the program are provided next.

2 Academic Session and Registration

2.1 Academic Session

The academic session of the Institute is divided into three parts: two regular semesters and a summer term. The first semester will usually commence in the first week of August every year and ends in the first week of December, and the second semester commences in the first week of January and ends in the first week of May. The summer term will run during May and July. The exact calendar for each year will be announced at the beginning of that year.

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3.1 Regular Registration

1. Every student is required to register at the beginning of each semester for the courses that he or she intends to pursue in that semester. The registration process involves:

    a.　　　Payment of fees for that semester and clearance of any outstanding dues, and

b. Signing the registration (including the online process) roll.

2. A new entrant to the iMTech program who is awaiting the results of the qualifying examination may be allowed to register "provisionally". Provisional candidates are required to complete all the requirements for graduation to the qualifying certificate no later than the end of the first semester, failing which their admission may be cancelled.

3. All students who are not on authorized leave must continue to register in every semester till they finish their program.

4. Late Registration

   1. If for any compelling reason like serious illness, a student is unable to register on the day of registration, he/she may be allowed to register on the day of late registration specified in the academic calendar (which is about one week from the date of registration). Any student registering late shall be required to pay the specified late registration fee. No late registration is permitted for the summer term.

   2. In exceptional cases, the Senate may consider registration beyond the date of late registration.

3.2 Thesis Advising

A student registering for thesis credits must have a thesis supervisor assigned to him /her.

3.3 Semester Load Requirements

For a full time student a semester load shall be no less than 16 credits and no more than 24 credits. Credits for each course is calculated based on the number of instructions hours, and hours spent in the laboratory per week and is notified in the course manual. However the Senate may permit a student to register for a maximum of 24 credits or a minimum of 12 credits. This stipulation does not apply to summer term where every student is expected to register for all the courses specified for that summer term.

3.4 Summer Term Registration

Students may register in the summer term for up to a maximum of 9 credits. Registration during the summer term is optional.

3.5 Adding/Dropping of Courses and Withdrawing from Courses

1. Adding and dropping of courses after registration is permitted and the last dates are specified in the calendar.

2. A student may be required to drop a course at any stage if it is determined by the Senate or Senate sub Committee that he/she does not fulfil the prerequisites for the course, or if a timetable clash exists which does not permit him/her to attend all the meetings of the course, or any rule in this manual which forbids him/her to take the course(s) that he/she has registered for.

3. LEAVE RULES

Students may be granted leave on application to the Registrar, as per the leave rules approved by the Senate. Leave rules as approved by the senate is at annexure 1.

4 PERMISSION TO PROCEED FOR ACADEMIC WORK OUTSIDE IIITB

Provision to proceed to other academic and research institutions in India or abroad as visiting students is available. An iMTech student who has completed two years and who has obtained a minimum CGPA of 2.4 and who have not obtained 'X' or 'F' grade in any subject may proceed to another academic institution in India or abroad with prior permission of the Senate. In case the student would like the work carried out by him in the other institution be counted towards his/her credit requirement, he may submit a written application to the Senate, giving complete details of the work carried out, and assessment reports if any. The decision of the Senate is final and binding.

5 ACADEMIC REQUIREMENTS

5.1 Minimum Residence, Maximum Duration and Academic Requirements

The following table lists the minimum residence and the maximum duration allowed in the iMTech Program and credit requirements for graduation:

To satisfy the "Minimum Residence" requirements, registration must be over consecutive semesters; exception shall be made only if the student is on authorized leave. "Maximum Duration" is counted from the student's first registration date. SGPA (Semester Grade Point Average) / CGPA (Cumulative Grade Point Average) shall be calculated on the basis of all courses taken by the student.

Program	Minimum Total Credits	Credits Through Course Work (Minimum)	Credits Through Masters Project (Minimum)	Minimum Residence	Maximum Duration
iMTech	200	160	32*	10 Semesters	7 Years

* Includes minimum 20 credits obtained through Thesis registration where applicable

Table 5.1.1

Category-wise Course List

This section contains the course list organized as per the course categories given earlier. **Error! Reference source not found.** and Table contain a summary of the overall distribution of courses across the various categories.

Computer Science and Engineering			
Course Categories	**Number of Courses**	**Total Credits**	**Percent**
Basic Engineering Science / Skills	4	16	8%
CSE Core	9	26	13%
Elective	13	52	26%
Engineering Core	7	18	9%
HSS/M Core	2	8	4%
HSS/M Elective	2	8	4%
Masters Project	2	40	20%
Mathematics and Basic Sciences	10	28	14%
Others	4	4	2%
Grand Total	**53**	**200**	

Table 5.1.2: CSE Course Distribution

Electronics and Communication Engineering			
Course Categories	**Number of Courses**	**Total Credits**	**Percent**
Basic Engineering Science / Skills	4	16	8%
ECE Core	15	34	17%
Elective	11	44	22%
Engineering Core	7	18	9%
HSS/M Core	2	8	4%
HSS/M Elective	2	8	4%
Masters Project	2	40	20%
Mathematics and Basic Sciences	10	28	14%
Others	4	4	2%

Grand Total	57	200

Table 5.1.3: ECE Course Distribution

All the courses declared as "core courses" by the Senate are mandatory

iMTech students can earn specialization in specified areas within the branch provided they do 5 electives in those areas. Specialization is optional for the students and is determined at the time of graduation based on the concentration of the electives chosen by the student during the programme. The students' specialization is recorded only in the transcript issued to the student.

Based on the electives that are being offered currently, following are the specializations that are available to the students belonging to the ECE stream:

•   Microelectronics and VLSI

•   Networking and Communication

•   Signal and Data Processing (will work across ECE and CSE streams)

Based on the electives that are being offered currently, following are the specializations that are available to the students belonging to the CSE stream:

•   Computer Science and Engineering

•   Data Science

•   •   Networking Communication and Signals

• Master Project or Masters Thesis is compulsory as per the stipulated credit requirements

• The overall programme structure shall be as per the Course Manual approved by the Senate and being in force on the date of first registration.

5.2 Academic Performance Measurements and Requirements

1. Grading Scheme

    a. The Institute follows a 4-point System. A student is awarded a letter grade in each course he/she is registered for, indicating his/her overall performance in that course. There are twelve letter grades: A, A-, B+, B, B-, C+, C, D, F, S, X and I. The correspondence between grades and points (on a 4-point scale) is given below:

Letter Grade	A	A-	B+	B	B-	C+	C	D	F
Grade Points	4.0	3.7	3.4	3.0	2.7	2.4	2.0	1.0	0.0
Description in transcript	Excellent		Good			Satisfactory		Poor	Failure

The grades S, X and I do not carry any grade points and are interpreted as follows:
S: Satisfactory X: Unsatisfactory I: Incomplete

    b. However, an instructor / supervisor need not use all the available letter grades while grading and may choose a sub set of letter grades. Thus three grading

systems are in use. , i.e., (i) 9-letter grades: A,A-,B+,B,B-,C+,C,D,F; (ii) 5-letter grades: A,B,C,D,F; (iii) 2-letter grades: S,X..

    c. If a student does not complete all the requirements for a course for a genuine reason, the instructor may award the grade I (Incomplete). An I grade must be converted by the instructor to a regular letter grade by the last date for such conversion specified in the Academic Calendar, failing which it is automatically converted to an F grade.

    d. When a student fails a course (i.e., obtains F grade), whether from their chosen area of specialization or from another, (s) he must make it up by taking an improvement exam or repeating the same course again or replacing it with another course in the same category a course from the same area of specialization (even if it is not the same course) as applicable.

2. Attendance Requirements:

    a. Minimum of 80% attendance for core courses is required.

    b. A student is not eligible to write the final exam of the course if his/her attendance in the course is less than 80%. An F grade will be awarded to the student for the course for that semester.

    c. Students will be notified of any issues pertaining to ineligibility the day after exam timetable is announced.

    d. Students failing to meet the minimum attendance requirement need to repeat the course in one of the subsequent semesters, within time for meeting their graduation requirements. They are not eligible to write the Grade Improvement exam for that course.

    e. Those who are interested in participating external competitions etc. must ensure their attendance requirements are not impacted. No separate attendance waiver is available for students for this.

    f. The minimum attendance requirement can be waived by the programme co-ordinator for medical reasons, with appropriate documentation, in consultation with the course instructor.

3. Grade Improvement Process:

    a. Students who, at any point of time during their study at IIITB, have obtained CGPA less than 2.40 and thus determined to be deficient may be allowed to improve their CGPA through an Grade Imrpovement Exam

    b. The student must apply in writing using the prescribed form within one week of the announcement of grades for the previous semester

    c. A student is eligible for taking the grade improvement exam in a given course if ALL the following conditions are satisfied:

        i. CGPA is less than 2.4

        ii. Attendance is at least 80% in that course (for core courses). For electives, minimum attendance for this is determined and announced by the course instructor at the beginning of the course

        iii. Grade obtained in the course is C or below

    d. The Course instructor will determine the assignments, examinations, laboratory work, projects or research papers that they have to undertake.

This in turn will determine the extent grade improvement possible in the course. The decision of the instructor is final in this matter.

e. If the grade thus obtained by the student is better than the grade obtained earlier, the grade obtained shall be substituted and the new CGPA calculated. The earlier grade obtained shall be indicated in the grade sheet, with a remark about the grade improvement examination.

f. In case the grade obtained is same or lower than the grade obtained earlier, the earlier grade will stand.

g. In case the course instructor is not available, the Senate Chairman, upon a specific written application from the student, allow the student with the concurrence of the new course instructor to undertake new courses from the list of courses approved by the senate, provided, where applicable, the new course must be from the student's chosen stream of specialization ("Stream Elective").The Course instructor will determine the assignments, examinations, laboratory work, projects or research papers that they have to undertake and the time period over which the deficient student have to complete the tasks as assigned by the course instructor. Based on the work and an examination of student's performance the course instructor will assign him/her a letter grade at the end of the study period. If the grade thus obtained by the student is better than the grade obtained in the earlier course, the course shall be substituted and grade obtained shall be indicated and the new CGPA calculated. The earlier course and the grade obtained shall be indicated in the grade sheet, with a remark that this course was substituted with another course and grade improved. The courses declared as core or mandatory cannot be substituted

h. This facility for improving grades shall be available only to those students whose CGPA is less than 2.40 at some time during their study, and may be availed for a maximum of twelve courses in all and for no more than two courses in any one semester.

i. The deficient students, who have improved their grades in the aforesaid manner, will not be considered for award of any medal, certificate, honour, or fellowship of institute

j. Failing grade improvement:

k. In the case of students who are writing the grade improvement exam due to F grade in the course, failing in the exam again requires the student to repeat the course in the next offering or on time before graduation. In the rare case of the core course not being offered in subsequent semesters, students can consult the programme co-ordinator and register for an appropriate alternative course. For electives, the same rule applies. If a particular elective is not offered, students need to take another elective.

4. Probation:

a. Students with CGPA less than 2.4 are under probation. Probation status will be determined at the end of each semester after the end of the grade improvement exam

b. Students have to repeat the most recent academic year under the following conditions:

i. If students enter into probation for any 4 semesters during the entire duration of the programme

ii. The CGPA at the end of any academic year falls below 2.0

5. Grades for Masters Project / Thesis

a. The grade S or X shall be awarded for iMTech Masters Project / thesis.

6. Exam Rules

a. No late entry will be allowed.

b. Question paper and answer sheets will be distributed at the scheduled beginning time after all students are seated.

c. Students are not permitted to leave the exam room without handing over their answer sheets. Once they leave, they are not permitted to enter again.

d. Mobile phones, tablets or any other storage / communication / computation devices are strictly not permitted in the exam hall. If any student is found to possess such a device, an F grade will be awarded to the student for that course.

e. No make-up exam will be allowed for the Mid-Term and End-Term examinations. Exceptions, if any, will be granted by the programme co-ordinator in consultation with the course instructor, Wardens and/or Deans as applicable.

f. No exemption for exam will be provided for students attending external events (e.g., competitions, hackathons) during the Mid-Term and End-Term examinations

5.2.1 Computation of SGPA and CGPA

The **SGPA** (**Semester Grade Point Average)** is an indicator of the overall academic performance of a student in all the courses he/she has registered in during a given semester. It is computed as follows: If the grade points awarded to a student are G1, G2, etc in courses with corresponding credits U1, U2, etc, the SGPA is given by

SGPA = (U1G1 + U2G2 + ...) / (U1 + U2 +…)

In the above computation, courses with S and X grades are ignored. Similarly, the **CGPA (Cumulative Grade Point Average)** indicates the cumulative academic performance in all the courses taken up to the time of computation.

1.

6   MASTERS PROJECT, THESIS AND THESIS EXAMINATION

6.1 Masters Project

A student is mandated to carry out a Masters project work as part of the curriculum. The project work may be carried out in the industry or within the institute or as a combination of both. If the project work is carried out in the industry, it shall be done in the 10th Semester of the programme. When the project is done in the industry, the organization hosting an intern shall appoint a supervisor to supervise the work of the student. The supervisor will provide feedback on the progress of the student. The organization will provide a certificate,

in a format as specified by the Senate, on the satisfactory completion of the internship. In addition the student will submit to the institute a report in a format specified by the senate.

The student may choose to present the Masters project in the form of a formal Masters Thesis. When the student chooses to do a Masters thesis, the formal processes pertaining to thesis as document below needs to be adhered to.

6.2 Appointment of Thesis Supervisors

1. An iMTech student shall not normally have more than two supervisors at any given time.

2. Thesis supervisor(s) of a student will normally be appointed from amongst the faculty members at IIITB.

3. Under exceptional circumstances, experts from outside can be appointed as co-supervisors of students with the approval of the Senate. One such co-supervisor can be appointed to only one student at a time.

4. If a student's supervisor proceeds on long leave, the Senate shall appoint a supervisor or a co-supervisor in consultation with the supervisor and the student. In this case the number of supervisors may be more than two if an external supervisor already exists.

5. If all research work and related analysis is complete except writing of the thesis, and the supervisor proposes to go on leave, the SENATE may appoint a program coordinator

6. In case a supervisor resigns/retires or otherwise ceases to be a faculty member of the institute, the Senate will appoint a new supervisor or co-supervisor.

6.3 iMTech Thesis Oral Examination Committee

1. The thesis shall be examined by an oral examination committee formed by the thesis supervisor (s) / programme coordinator.

2. The committee shall consist of the thesis supervisor(s)/ program coordinator and two other members of the faculty. The thesis supervisor/program coordinator will act as the Convener of the Committee.

6.4 Submission of Thesis

After the oral examination committee has been constituted, unbound copies of the thesis, one for each examiner of the oral examination committee, prepared according to the format prescribed in the pamphlet entitled: ***Specification and Information Regarding the Preparation of Thesis***, shall be submitted at least two weeks before the probable date of oral examination. Two copies of the abstract (approximately 250 words) should also be submitted along with the thesis report.

6.5 Processing of Thesis

6.5.1 Oral Examination

1. Oral examination shall be conducted at the earliest but not later than one month from the date of submission of the thesis. If a student does not appear in the oral examination within this time period, his/her program would be deemed to have been

terminated. Request for reinstatement in the program by such a student should be addressed to the Chairman, Senate. The request may be considered by the Senate and in case the Senate grants the request it shall specify the requirements that the student must fulfil for the award of the degree.

2. The thesis supervisor/program coordinator will intimate the date of the oral examination.

3. The oral examination committee will evaluate the thesis, conduct the oral examination and send a report of the examination to the Chairman of Senate.

4. A thesis shall be considered to have been accepted if all members of the oral examination committee recommend its acceptance. A thesis, which is not accepted, shall be considered to have been rejected.

5. If a thesis is rejected along with a recommendation for resubmission after incorporating any modification/correction suggested by the oral examination committee, oral examination of the re-submitted thesis shall be conducted by the original committee unless a different committee is approved by the Chairman, Senate. If the re-submitted thesis is rejected, the matter shall be reported to the Senate for appropriate action.

6. Acceptance of thesis shall be reported to the Senate for approval.

7 GRADUATION REQUIREMENTS

A student shall be deemed to have completed the graduation requirements, if the student has

- passed all the prescribed courses

- attained the minimum required CGPA

- Satisfied the minimum academic and residence requirements

- Completed Masters project with a satisfactory grade

- In case of thesis, his/her thesis has been accepted by the oral examination committee

- Satisfied all the requirements specified by the Senate and the Ordinances

- Satisfied the attendance requirements as specified by the Senate.

In addition, the student should have paid all the dues to the Institute and, should have no pending case of indiscipline.

8 Award of Degrees

The names of the students who have completed all the graduation requirements shall be submitted to a Senate Meeting to be held preceding to the Convocation. The Senate will recommend to the Governing Body of the Institute admission of such students who have been found suitable to the degrees of Bachelor of Technology (Information Technology) and Master of Technology (Information Technology) of the Institute. On such recommendation the Institute will issue provisional certificates to the student, mentioning admission of the

student to the respective degrees. The student shall be formally admitted to the degrees (B.Tech. and M.Tech.) at the Convocation to be held after the Senate meeting in which admission of the student to the said degrees was recommended.