Academic Requirements for the Ph D Program

in

Engineering in ICT disciplines
Science and Mathematics

(Effective from Autumn 2019-20)

Doctor of Philosophy: Ph D: duration - typically a 4 to 6 years program. The program will be governed by these rules, subject to amendments, from time to time, as per the needs and requirements. These rules deal only with the post-admission academic activities of the program. Eligibility for admission, admission procedures etc., for the program are outside the purview of this document.

The Dean (Academic Programs)/Registrar may, from time to time, issue such instructions or directions as may be necessary to give effect to and carry out the provisions of these rules. Director, as Chairman of the Academic Council, may relax/exempt some provision(s) of the rules in exceptional situations and all such cases shall be reported to the Academic Council in the immediate next meeting.

Important terms/expressions used in the document have been defined in the GLOSSARY at the end of this document.

1. REGISTRATION

1.1 Categories of Registration:

a) A student may register in a given semester in three possible categories: Regular (Full-time) registration, Sponsored (Part-time) registration, and External (Part-time) registration. Only resident registration will count towards the residence requirement for a Degree. A foreign student on student visa will not be allowed to register as an external student.

b) To qualify for regular (resident) category registration, the student must be residential, a minimum of 3 years from the time of first semester registration for a duly approved course programme and pay the prescribed tuition and other fees, including any outstanding dues. The student must carry his/her course work and research work at the Institute.

c) To qualify for sponsored (part-time) and external (part-time) category registration, a student must register for a duly approved research programme, and pay the prescribed tuition and other fees, including any outstanding dues. The student requires to do the course work followed by comprehensive examination as prescribed.

d) A student is required to register in the semester in which the final PhD thesis is submitted for evaluation and pay the prescribed tuition and other fees, including any outstanding dues.

1.2 New entrants to the program, who are awaiting the results of the qualifying examination may be allowed 'provisional' registration. Latest by the date given in the Academic Calendar (usually about 8 weeks from the date of registration) such candidates will be required to submit, for verification, the Certificates of having passed the qualifying examination. Original certificates will be returned to the students and a self- attested copy will be kept for records.

1.3 Late Registration.

a) If for any compelling reason like illness, a student is unable to register on the day of registration, he/she will be allowed to register during the late registration period as specified in the Academic Calendar (which is about one week from the date of registration). Any student registering late will be required to pay the specified late registration fee

b) In exceptional cases, the Dean (Academic Programs) on the recommendation of the Post Graduate Committee (PGC) may consider registration beyond the date of late registration. In such a case, the student will be allowed to register for thesis credits only

1.4 Academic Advising:

a) A student will be advised in the selection of courses by the faculty adviser appointed by Dean (Academic Programs) in consultation with the PGC. The students will be assigned a thesis supervisor after fulfilling the course work and passing the comprehensive examination (details given in section 4).

b) A prospective supervisor/mentor in the relevant research area will be formed by the Dean(AP)'s office for the student as early as possible, preferably by the end of First semester of his/her registration OR after completion of his/her comprehensive examination, as applicable based on the merits and research experience of the applicant.

c) A student may be permitted to repeat or substitute courses in which he/she has obtained 'DD', 'DE' or 'F' grades. Permission to repeat/substitute a course will be governed by the guidelines laid down in section 2.4.

1.5 Semester Load Requirements:

a) A semester load is defined equivalent of 12 credits. A student registered for a full semester load solely by course work would typically take 4 courses. Depending on the merits of the case, the PGC may permit a student to register for a maximum of 15 credits or a minimum of 9 credits at the beginning of the semester.

b) A student in the external registration program, when registering for research only, can register for a maximum of 12 credits or a minimum of 3 credits during the regular semester.

1.6 Adding/Dropping of Courses and Withdrawal from a Semester

a) Adding and dropping of courses is permitted, during the Add/Drop period, only if the student's request is endorsed by the instructor of the course and the Convener PGC. The last dates of applying for adding and dropping of courses are specified in the Academic Calendar.

b) A student who wishes to withdraw prior to registration for a semester must obtain a formal approval from the Dean (Academic Programs) before the prescribed last date for late registration for the concerned semester. Withdrawal after registration for a semester is permitted only on medical grounds or for other exceptional reasons and formal approval for such withdrawal must be obtained from the Dean (Academic Programs) before the date of commencement of the end-semester examination for the concerned semester. Withdrawal from a semester, either prior to registration or after registration, is permitted for only one semester at a time. If a student does not register for a regular semester or does not withdraw with permission from the Dean (Academic Programs) as indicated above, his/her name is liable to be struck off from the rolls of the Institute.

c) A student who registers for a semester after having withdrawn in previous semester(s) can register for the available courses as prescribed in the curriculum for that particular semester subject to pre-requisites, if any.

d) The transcript of a student who has 'withdrawn' status would show the appropriate status for the concerned semester(s). The transcript of a student who is suspended for an academic or disciplinary reason would also show 'withdrawn' status.
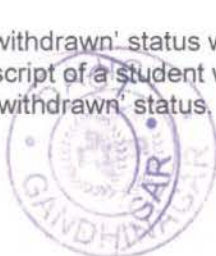
e) The maximum period for completion of the program as given in the appropriate subsection of Section 2 includes any semester in which the student has 'withdrawn' status.

2. ACADEMIC REQUIREMENTS

2.1 Ph D Program:

Category	Minimum Total Credits	Minimum Course Credits	Minimum Research Credits	Duration (Years)
Regular (Full-time) – MTech/ME/MS/MPhil	72	12	48	4-5
Regular (Full-time) – MSc	80	20	48	5-6
Regular (Full-time) – MA	80	21 to 24	48	5-6
Regular (Full-time) – BTech/BE/MCA	80	24	48	5-6
Sponsored/External (Part-time) – MTech/ME/MS/MPhil	72	12	48	4-5
Sponsored/External (Part-time) – MSc	80	20	48	5-6
Sponsored/External (Part-time) – MA	80	21 to 24	48	5-6
Sponsored/External (Part-time) – BTech/BE/MCA	80	24	48	5-6

Table 1: Course work requirement for the PhD program

2.1.1 A student depending on the category needs to take a certain number of minimum course credits, as mentioned in Table-1. The prospective supervisor/mentor of the student will advise the student to take necessary courses based on the broad domain of the area of interest.

2.1.2 Research credits (Example: PC801 Research-1 (3 credit)) are advisable for the student once he/she successfully clears comprehensive examination. The number of research credits a student can register in a semester is same as course credits (i.e., min. 9 credits and max. 15 credits). The students are required to register the Synopsis as one Research Unit (3 credits).

2.1.3 Undergraduate course of level 3 and 4 may be open to PhD student for course credit, and extra academic components could be added to such undergraduate courses, to elevate them at par with the PhD level course work. Such permissible course should have a different course identity for the PhD student's registration.

2.1.4 A student earns 3-credits for every self-study course taken. Maximum number of allowed Self-study courses is three with no more than one in a single semester before appearing the comprehensive examinations. For taking a self-study course, student should apply to the Dean(AP) with
(i)   the detailed course contents.
(ii) expected outcome of the course.
(iii) consent from the supervisor/mentor with whom the self-study course is taken.

The student's performance on his/her self-study course would be evaluated by the course instructor/mentor with whom the student is doing self-study course. A letter grade would be awarded by the instructor/mentor of the student based on the student's performance in self-study course.

2.1.5 Professional research experience in relevant area more than 5 years in R&D organizations, industry/research Labs, Universities may be considered for counting 6 credits in respective domain expertise based on the recommendations of the faculty supervisor/mentor and approval of the Dean (AP).

2.1 6 Research courses before clearing the comprehensive examination. A student can take research credits before clearing the comprehensive exam if it is allowed by Dean (AP)/PGC/Supervisor/Mentor. However, not more than 3 of such research courses are allowed. To take research credits before passing the comprehensive examination

- ➢ student should get approval from Dean(AP)/PGC
- ➢ supervisor/mentor should give consent for the same to PhD coordinator
- ➢ supervisor/mentor should award the grades at the end of the semester and communicate the same to PhD coordinator.

2.1.7 Transfer of credits, as applicable. at postgraduate level course in reputed organization may be considered based on the production of valid certificate or weightage of the course(s) and on the recommendations of the faculty supervisor/mentor and approval of the Dean (AP)

NOTE: *Transfer of credits for courses done outside: Students may be permitted to do courses in places of repute outside DA-IICT. Based on their performance and the content/nature of the course, the PGC may consider them equivalent to some course credits and waive credit requirements for required course work credits at DA-IICT. Any such waivers/transfer is permitted only if the courses being considered have not been counted for any other degree/diploma requirement.*

2.2 Audit Courses:

The students are permitted to audit courses. They will be given a 'P' grade, which will be entered in their grade card if they satisfy the requirements placed by the course instructor. If they do not meet the requirements. then they will not get any grade and no entry will be made in the grade-card/transcript for that course.

2.3 Registration for B Tech first and second year core Courses

The PhD Students may be permitted to register for B Tech first and second year core courses with the prior approval of the Dean (Academic Programs) during their course work period. For courses registered, the students should obtain a minimum Grade of 'C' to be eligible to appear for Comprehensive Examination.

2.4 Grades, Semester and Cumulative Performance Index:

A student is awarded a letter grade in each course he/she is registered for, indicating his/her overall performance in that course. These letter grades are assigned points on a 10-point scale as described in the table below:

Letter Grade	Grade Points	Explanation
AA	10	
AB	9	
BB	8	
BC	7	
CC	6	
CD	5	
DD	4	
DE	3	
F	0	Fail
I	-	Incomplete
P*	-	Pass

*For Pass/Fail and Audit Courses only.

a) If a student does not complete all the requirements for a course for a genuine reason, the instructor may award 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.

b. The grade 'S' or 'X' will be awarded for Ph.D research credits as follows.
At the end of the semester the thesis supervisor(s) will assess the student's progress towards the research work during the semester and will award the grade 'S' for each set of 3 credits if the work is satisfactory and 'X' for every unsatisfactory set of 3 credits.

c. A student getting an 'F' grade in a core course must repeat it. An elective course must be either repeated or substituted as suggested by PGC. In a particular semester if a student receives an 'X' grade in one or more of the research courses then he/she should take the course again in the next semester.

d. A student getting a 'DD' or 'DE' grade in a course may substitute it by another course, provided his/her CPI is less than the prescribed minimum for getting the Degree and the student is allowed to continue in the program. For PhD students, replacement/substitution by another course is allowed, subject to his/her CPI is less than the prescribed minimum requirement for PhD comprehensive examination.

e) In case a course is repeated or substituted, the old grade will also appear on the transcript although it will not be taken into account while computing the CPI.

f) If a student is on leave for a part of the semester or submits his/her thesis in the middle of a semester, the PGC may reduce his/her research credits appropriately.

2.5 Sponsored (Part-Time) / External (Part-Time) Category (Ph D):

Apart from the general eligibility criteria prescribed by the Institute, sponsored/external candidates require to fulfill the following additional requirements:

a) Candidates must be sponsored by their employers for pursuing PhD studies in the Institute.

b) Candidates require to do course work followed by comprehensive examination as prescribed in Academic Requirement of the PhD program of the Institute.

c) After fulfilling the course work and comprehensive requirement of the PhD program, the candidate will be allowed to register for PhD with a Supervisor at the Institute.

d) A prospective supervisor/mentor in the relevant research area will be formed by the Dean(AP)'s office for the candidate as early as possible, preferably by the end of First semester of his/her registration OR after completion of his/her comprehensive examination, as applicable based on the merits and research experience of the applicant.

e) Sponsorship letter should be submitted in the prescribed format at the time of the PhD admissions. The Sponsorship Certificate (and a NO OBJECTION CERTIFICATE for the candidates sponsored by College/University) from the organization in which he/she is employed should provide an undertaking that the candidate will be released to fulfill the course work requirement and comprehensive examination.

f) The Sponsorship Certificate should mention that the candidate's services shall be retained with the employer after fulfilling the course work and comprehensive requirement at the Institute and the candidate will be allowed to go back to his/her parent organization where he/she will be doing the research work.

g) Sponsored/external candidate should possess a minimum of three years job experience in an organization of repute.

h) The competence of sponsored/external candidates will be assessed along with the regular candidates.

i) Sponsored/external candidate will not receive any stipend/scholarship from the Institute and the candidate will not be assigned any teaching assistantship.

NOTE:

1. *Sponsored candidates from the organizations with whom DA-IICT has MoU may be exempted from appearing the entrance test of the PhD admissions, but require to face the interview of the PhD admissions.*
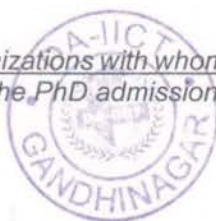
2. *Sponsored candidates from the organizations with whom DA-IICT does not have MoU require to clear the entrance test followed by the interview of the PhD admissions.*

Requirement	Sponsored / External Ph D
Guidance	Guide from DA-IICT, Co-Guide from sponsoring agency. However, Co-Guide from sponsoring agency is optional and subject to mutual acceptance between Guide and Co-Guide.
Infrastructure (Research & Course)	DA-IICT and sponsoring agency respectively for the part in which student stays at DA-IICT and at the sponsoring agency.
Financial Support (TA/RA)	Not Applicable unless indicated in the agreement
Intellectual Property Rights	DA-IICT jointly with sponsoring agency as specified in the agreement.

2.6 Residency requirement

Residency during a semester implies that student is available in the campus of the Institute for course work and research activities during all working days of the semester.

- Students enrolled under Regular category should fulfil residency requirement during course work credits and research credits, both.
- Students enrolled under Sponsored and External category should fulfil residency requirement during course work credits.

Under certain special circumstances the residential requirement for the sponsored and external candidates may be relaxed or waived, who may be permitted to complete their course work requirements through recognized web based on-line courses (e.g. MOOCs) or to earn course credits from an organization of repute on the basis of the recommendations of the faculty supervisor/mentor and approval of the Dean (AP).

2.7 PhD Synopsis

A PhD student is expected to successfully complete PhD Synopsis examination by the stipulated maximum duration, as indicated in Table 1.

- Student should obtain consent of his/her supervisor/RPC for synopsis registration.
- Student needs to register for synopsis in the beginning of the semester.
- The Synopsis Committee for the candidate will be constituted by Dean (AP).

After successfully completing PhD Synopsis exam
- Student should submit PhD thesis to Dean (AP) within a maximum time of 6 months.

3. ACADEMIC PERFORMANCE REQUIREMENT

3.1 Semester Performance Index (SPI) and Cumulative Performance Index (CPI):

The SPI is an indicator of the academic performance of a student in all the courses he/she has registered during a given semester. It is computed by taking the weighted average of the grades obtained in that semester. The CPI indicates the cumulative academic performance in all the courses taken including those taken in the current semester. CPI is computed by taking the cumulative weighted average of the grades earned till that semester. The SPI and CPI is calculated up to two decimal places. Courses with 'S' and 'X' will not be taken into account in the above computations.

3.2 Minimum CPI requirements for graduation in the program:

Program	CPI for Graduation

| PhD	7.0

3.3 Academic Probation and Dismissal:

A student whose CPI falls below the minimum required for graduation at the end of any semester will be placed on Academic Probation for the next semester with written intimation. A student in the Ph D program will be placed on Academic Probation if he/she obtains an X in a research course. For every student placed on Academic Probation for a semester, the PGC will prescribe a specified course load in the concerned semester and may also prescribe a minimum SPI the student must attain in the semester. The PGC will keep a watch on the progress of every student placed on probation and if the performance of a student is poor so that he/she is not likely to benefit from continuing in the program any further, will recommend to the Director that he/she should leave the Institute. A student who obtains more than 5 unsatisfactory (X) grades shall be discontinued from the program. If a student's continuation in the program is terminated, the appropriate authority will issue the letter of termination.

4. FELLOWSHIPS/TEACHING ASSISTANTSHIPS

4.1 Student admitted under Regular (full-time) category will be eligible for financial support (stipend) in the form of Teaching Assistantship (TA) / Research Assistantship (RA). The stipend is for a **maximum duration of four years after passing the comprehensive examination** or clearing of Synopsis, whichever is earlier. The responsibilities associated with the teaching / research assistantship includes conducting laboratory courses and tutorials for undergraduate/postgraduate students, assisting in teaching, research projects, and academic administration. The PhD stipend amount is announced in Admissions Policy (and available in website) of the Institute. Student can clarify stipend related doubts with Dean (AP)/PGC.

4.2 The stipend would be decreased by 50% for the following semester in case a student obtains more than one unsatisfactory (X) grade in any semester or the CPI falls below 7/10.

5. COMPREHENSIVE EXAMINATION

5.1 Students registered in the program must pass a comprehensive examination designed to test the overall comprehension of the student in the relevant subjects.

5.2 The comprehensive examination consists of two parts: **(i) Written or qualifiers and (ii) Proposal defense**. The **qualifier** examination will test candidate's competency in the broad discipline, in which the candidate plan to pursue his/her PhD study. The syllabus of comprehensive examination should be based on the foundation subjects of candidate's area of interest. The **proposal** defense consists of a research proposal which must be presented to Comprehensive committee no later than two months of a candidate clearing the qualifier exam. The PGC will be responsible for organizing the comprehensive examination for all eligible students every semester.

5.3 Students admitted with **MTech/ME/MS** degree may appear for the qualifier examination **earliest after completing first semester but must pass it before starting the third semester** after their first registration. Students admitted with **MSc/BTech/BE/MCA** degree may appear for the qualifier examination **earliest after completing second semester but must pass it before starting the fourth semester** after their first registration. The above time limits are exclusive of the period of sanctioned withdrawal, if any. The Dean (AP) may relax this requirement for sponsored category of students. The students working in sponsored research projects of DA-IICT shall be permitted to defer comprehensive examination by one semester over and the above the stipulated number of semesters.

5.4 Students should have a minimum CPI of 7.0/10 in order to be eligible for appearing in the comprehensive examination.

5.5 Dean (Academic Programs) will, in consultation with the PGC and the concerned Faculty Advisor, constitute the comprehensive examination board, which can evaluate the
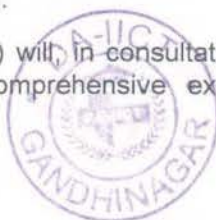
candidate's qualifier and proposal defense. The board will consist of at least three but not more than five faculty members. The board will meet as soon as possible after it is constituted and will submit its recommendations to the Dean (Academic Programs)

5.6 The maximum number of attempts for the comprehensive exam is **two**. A student can appear for only one PhD Comprehensive examination in a given semester.

5.7 When a student has not passed the comprehensive examination in his/her first attempt, a second comprehensive examination will be conducted by the same board that was constituted earlier unless decided otherwise by the Dean (Academic Programs). Both the attempts should be within the stipulated period as indicated in Rule 5.3. In case the duration between the first examination and the desired second one is considered to be short. he/she may not be allowed to appear for the second examination.

5.8 A student will have to discontinue the program. if he/she fails to pass the comprehensive examination even in the second attempt.

5.9 A student enrolled in the program is formally admitted to the candidacy for the Ph D Degree after he/she has passed the comprehensive examination.

6. Supervisor Selection and RPC Formation

Supervisor or faculty mentor for a student enrolled in the PhD program can be identified by the student as early as possible, preferably by the end of the first semester. Once a prospective supervisor or faculty mentor is identified. Dean (AP) can formally assign the student with the supervisor/mentor. After successful completion of comprehensive examination of a student, a formal consent of the supervisor(s) will be obtained by the office of Dean (AP), who will act as the supervisor(s) for the student.

Research Progress Committee (RPC) comprising a prospective supervisor and two faculty members in the relevant research area will be formed by the Dean(AP)'s office for the candidate after completion of the student's comprehensive examination.

7. Research Progress Seminar

Research Progress Seminar (RPS) is held twice a year, (typically once in November (for Autumn Semester), and once in April (for Winter Semester) for the students who have cleared their comprehensive examination.
- RPC of the student will assess the student's research progress.
- RPC may invite an external expert during the student's RPS. The supervisor of the student requires a formal approval of the Dean(AP) for involving an external expert in his/her student's RPS.
- Grades of the student will be decided by the supervisor in consultations with the RPC members.

8. MIGRATION RULES

8.1 **Eligibility for M Tech Degree:** A Ph D student who fails to pass the Ph D comprehensive examination within the specified duration, whether admitted directly or via internal migration, is eligible to receive the M Tech degree under the following conditions:
- The student fulfils the eligibility criteria for M Tech program
- The student fulfils the criteria for continuation in the M Tech program
- The student submits an M Tech thesis which fulfils the requirements for such within a maximum of two semesters. This duration would commence from the semester immediately following the semester in which the student failed the Ph D comprehensive examination. Furthermore, the student would not be eligible for financial support during this period.
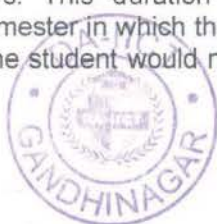
8.2 Ph D to M Tech Migration: Students in the Ph D program are eligible to migrate to the M Tech program provided they submit an application to the Dean (Academic Programs). Such an application can be accepted only when a student has completed a minimum of two semesters of Ph D and fulfils the following criteria:

- Student should have entered the program with a BTech/BE degree or equivalent.
- An appropriate M Tech program should be available in the Institute.
- At least 18 course credits completed.
- Student should have a minimum CPI of 6.5/10.0.

8.3 Completion of Requirements for M Tech Program: A student who migrates to the M Tech program from the Ph D program must complete all requirements for the M Tech Degree within two years (four semesters) from the time of migration. However, credits earned as a Ph D student would be carried over to the M Tech program.

9. Termination of a student's PhD Admission

- More than 5 unsatisfactory(X) grade in research courses during the entire PhD program would lead to a termination.
- Student who has not defended his/her PhD Synopsis successfully before the 'Max Duration (Years)' allowed then admission of that student will be terminated from PhD program. Such a student may request for fresh admission to PhD program by submitting an application to the Admission Committee. If the Admission Committee approves his/her admission, the candidate can be registered as a fresh PhD student and he/she will require completing academic requirements.
- If the student fails to pass the comprehensive examination even in the second attempt, then his/her PhD admission will get terminated.

10. GLOSSARY

Academic Probation: Academic Probation indicates that a student's academic performance is not up to the expected level. Over and above the academic consequences described in section 3.3, a student who has been placed on probation at any time may be subjected to other restrictions related to financial support, award of medals and prizes, etc.

Cumulative Performance Index (CPI): CPI indicates the cumulative academic performance in all the courses taken including those taken in the current semester. CPI is computed by taking the cumulative weighted average of the grades earned till that semester.

Grade Points: Product of the credits and points of a letter grade awarded to the course.

Postgraduate Committee (PGC): Committee of the Institute responsible for Policy Guidelines and Implementation Strategies covering the Postgraduate Programs.

Semester: Approximately 16 weeks duration each, the first one (Autumn Semester) extending from July to November and the second (Winter Semester) from December/ January to April.

Semester Credits: The sum of credits of courses registered by the student in a semester.

Semester Grade Points: The sum of the products of credits and points for each course registered by a student in a semester.

Semester Performance Index (SPI): SPI is an indicator of the academic performance of a student in all the courses he/she has registered during a given semester. It is computed by taking the weighted average of the grades obtained in that semester.

DA-IICT, Gandhinagar
23 October 2019.

Executive Registrar
DA-IICT, Gandhinagar