



AMRITA
VISHWA VIDYAPEETHAM
UNIVERSITY
[Estd. u/s 3 of the UGC Act 1956]
Amritanagar, Coimbatore - 641112

Amr ita/UO/ACM25.5.5/2016

February 25, 2016

OFFICE ORDER

The Academic Council of the University at its 25th meeting held on 29-01-2016 resolved to start Integrated Ph.D. programmes in Engineering from the academic year 2016 and accepted the policies and procedures for these programmes which are given as an annexure to this order

Registrar

Encl.: Annexure - The Policies and Procedures for Integrated Ph.D. programme in Engineering.

To

Dean (Engineering)
Dean (PG Programmes)
Dean (Research)
Dean, Biotechnology
Asso. Dean, ASE Bangalore
Principal, ASE Amritapuri
Associate Dean, Amritapuri
Principal, ASAS Amritapuri
Director, ASAS Kochi

Copy to: Pro Chanceloor
Vice Chancellor
Associate Dean (Admn)
Controller of Examinations
AUMS Coordinator

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AMRITA VISHWA VIDYAPEETHAM

**Ph.D. Program
(Doctor of Philosophy)**

**Policies and Procedures (Integrated
Ph.D. Programs)**

Engineering

January2016

1. PREAMBLE

1.1 The name “Amrita Vishwa Vidyapeetham” will be abbreviated as “the University” in this document.

1.2. For the purpose of this document, Centres shall be considered as equivalent to Departments, and Centre Heads as equivalent to Department Chairs.

1.3. The PGP (Post-graduate Programs) Dean or Chair of the University-level PGP Committee, has primary responsibility over all Ph.D. Programs in the University. The PGP Dean reports to the Vice Chancellor and works closely with the Medical Director, Dean of Research, Associate/ Assistant Deans of Research, Chairs of School level PGP, Deans of Schools/Campuses and Principals to ensure the smooth functioning of all Ph.D. Programs.

1.4. A Campus/School Dean, Principal of a School, or Senior Professor may be appointed as a PGP Chair. A campus may have more than one PGP Chair. The PGP Chairs for a campus collectively have the responsibility for the Ph.D Programmes in that campus.

1.5 A School/Department/Centre that wishes to offer a Ph.D. Program should submit an application to the PGP Dean through PGP Chair. The PGP Dean will forward the application along with a recommendation to the Vice Chancellor for approval.

1.6 The award of the Ph.D. degree shall be in accordance with the Policies and Procedures as outlined in this document, as well as other Ordinances, Rules, and Regulations of the University.

1.7 A Ph.D student may appeal to the PGP Chair through the Thesis Advisor/Department Chair for a waiver/substitution of any requirement. The appeal should be in writing and supported by proper justification. If the appeal is denied, it may be escalated to the PGP Dean and the Vice Chancellor, whose decision shall be final and binding.

1.8. Amendments to the policies and procedures outlined in this document may be made with the approval of the Vice Chancellor and subsequently ratified by the Academic Council, Executive Council, and Board of Management.

1.9 Wherever applicable, regulations prescribed by the regulatory bodies such as UGC, AICTE, etc. take precedence and priority over university rules. All students are required to fully satisfy, and not violate any of the requirements of the respective regulatory bodies while registering for any of the integrated Ph.D. programs.

2. Registration

Registration is initial expression of interest in pursuing a Ph.D. program, and the fulfillment of admission/advancement to candidacy is when the research proposal is accepted at the Qualifying Examination.

2.1 Eligibility

The eligibility criteria are as follows:

Only exceptional candidates who are pursuing the following degrees at Amrita:

- MTech

- MSc
- BTech
- All applicants are expected to have strong academic record, preferably distinction, or a first class.

2.2 Procedure

Applications for the Integrated Ph.D. Program will be solicited through a special communication to students in the above mentioned programs.

The PGP Chair shall authorize a Department/Centre or a group of Departments/Centres to form a *Selection Committee* taking into account the number of available openings, the number of applications received and the research interests of the applicants. The Selection Committee will conduct a test/interview (as per UGC requirements) to examine the applicant's interests, aptitude, and background. The Selection Committee may request additional evidence, such as copies of claimed publications. Based upon the student's performance, and prior academic record, the Committee shall give its recommendation to the PGP Chair who will notify the selected applicants of the date of registration.

All prospective Thesis Advisors are invited to participate in the selection process and their consent obtained before being appointed as Thesis Advisor for any applicant.

3. Advisors and Committees

3.1 Thesis Advisor

Soon upon registration to the Ph.D. Program, every student shall be assigned a *Thesis Advisor* and a *Doctoral Committee* by the PGP Chair taking into account the student's interests and available faculty.

The Thesis Advisor must be a regular or emeritus faculty member of the University with a Ph.D. degree and an established research record. The Thesis Advisor is primarily responsible for guiding the doctoral student's research and ensuring that the student makes satisfactory and timely progress towards the Ph.D. degree.

A Thesis Advisor may not advise more than five doctoral students at a time, and, in exceptional cases, not more than eight students at a time. Junior faculty of the university, especially first-time advisors, may serve as Thesis Advisor provided a senior faculty member is associated as a *Co-Advisor*. Adjunct faculty members of the University may serve only as Co-Advisors.

3.2 Doctoral Committee

The Doctoral Committee consists of the Thesis Advisor, the Co-Advisor (where applicable), and two to three experts from within the University in the candidate's research area. The doctoral committee shall have a total of four to five members. (In Schools with a small number of PhD-holding faculty, the Doctoral Committee may have three members.) Each member of the Doctoral Committee must have a Ph.D. The Doctoral Committee is responsible for all academic matters connected with the doctoral student, including prescribing the course-work, monitoring research progress, and conducting appropriate examinations. PGP chair is an ex-officio member of every Doctoral Committee and his or her approval is required for Doctoral Committee decisions. The PGP chair may effect any changes in the Doctoral Committee as and when required.

3.3 Inter-disciplinary & International

To encourage interdisciplinary research between students in different schools, two students working on a common interdisciplinary project can both be granted interdisciplinary PhD degrees. Each of these students will need to have an advisor from one school and a co-advisor from the other school, and students can take course-work from across the schools.

A faculty member from one campus of the University may serve as Thesis Advisor for a doctoral student in another campus. In order to encourage inter-disciplinary research, a student may have a Thesis Advisor and a Co-Advisor from two different departments, schools, or even campuses of Amrita. In order to promote international collaboration, a student may have a faculty member from a collaborating international university as Co-Advisor, in which case, the PGP Chair shall recommend to the Vice chancellor through the PGP Dean that the international expert be appointed as an Adjunct faculty of the University, and, subsequent to that appointment, shall appoint him or her to the Doctoral Committee.

4. Ph.D. Degree Requirements

4.1 Ph.D. Course Work

The course-work for a doctoral student is proposed by the Thesis Advisor taking into account the student's background and preparation. The proposed course-work must be endorsed by the Doctoral Committee and approved by the PGP Chair.

- All students registering during master's degrees - MTech, are required to complete a minimum of 6 credits in addition to the course credits required for the master's degree.
- All students registering during master's degree - MSc are required to complete at least a total of 12 course credits in addition to the course credits required for the master's degree.
- All students registering during BTech are required to complete at least a total of 21 course credits in addition to the course credits required for the bachelor's degree.

The student is expected to maintain an average CGPA of 8.0 across all courses. In addition to regular courses offered by the University, three additional types of courses are permitted for PhD courses: *transfer courses*, *on-line courses*, and *independent-study courses*.

- A *transfer course* is one that the student has completed in the recent past as an exchange student at another reputed institution. A course completed as a requirement for the award of degree at another university or institution is *not* eligible for transfer.
- An *on-line course* is one that is offered in distance-learning mode by another educational institution through MOOCs such as Coursera.
- An *independent-study course* is developed specifically for the Ph.D. student and may involve a combination of self-study and one-to-one instruction by a professor. A student taking an independent-study course is required to submit a publishable Scopus indexed conference or journal paper as an outcome of the course.

Up to 50% of a student's course-work may consist of the above three types of courses.

In addition, each student is required to complete a one credit research methodology course and a one credit equivalent of math foundation course, both of which are best specialized and offered by the student's department/center. These two one-credit course requirements may be offered separately or combined.

4.2 Comprehensive Examination

Comprehensive Examination is waived for integrated Ph.D. program students.

4.3 Qualifying Examination and Thesis Proposal

The Qualifying Examination generally serves as the entry point and fulfillment of admission to doctoral research (termed as the advancement of candidacy). Doctoral students must complete a *Qualifying Examination* in one of two ways:

- Doctoral students registered in the following integrated programs: MTech/Ph.D can combine their final project/thesis presentation for MTech with the Ph.D. Qualifying Examination.
- Doctoral students registered in the BTech /Ph.D. are required to take a separate Qualifying Examination, after their final examinations in BTech.

In preparation for the Qualifying Examination, a doctoral student must submit a written *Thesis Proposal* to the Doctoral Committee. After approval by the committee, the student may take the Qualifying Examination, wherein he or she presents and defends the proposal.

The Qualifying Examination is an oral examination administered by a Qualifying Examination Committee consisting of the Doctoral Committee together with an external expert from a reputed academic or R&D institution. The PGP Chair will convene the Qualifying Examination.

The Thesis Proposal is a 12-15 page document outlining the doctoral student's plan of research. It should include:

- (a) the research problem and its significance;
- (b) background and related literature;
- (c) objectives, approach, and results obtained to date;
- (d) remaining research and timeline for completion;
- (e) expected contributions to the field;
- (f) references cited

If a doctoral student fails the Qualifying Examination in the first attempt, he or she will be given a second and final chance to take the examination after a period of time as stipulated by the Doctoral Committee and approved by the PGP Chair. A student who passes the Qualifying Examination is formally "admitted to Ph.D. candidacy"; otherwise, the student is required to leave the Program.

4.4 Thesis Work

In addition to course-work, the doctoral student is expected to carry out creative and scholarly research leading up to the completion of a written Ph.D. Thesis. Doctoral research must result in original and substantial contributions to the chosen specialized field of study. This requires mastery of the literature in the specialized field, and critical thinking and judgment. The student should also relate the field of study to the broader discipline within which the research falls.

Ph.D. thesis work requires 60 research credits. Doctoral students may register for 10-15 research credits per semester. The credits earned for the project work during the bachelor's or master's degree of the integrated program can be counted towards the Ph.D. research credits. Satisfactory progress will be judged by the Doctoral Committee on the basis of semester wise progress reports submitted by the doctoral student and/or the completion of publishable papers. A student shall not obtain 'F' grades in two consecutive semesters.

4.5 Publications

Before submission of the Thesis Synopsis, every doctoral student is also expected to have at least one paper accepted for publication in a Scopus-indexed *journal* on the topic of the thesis research.

As a pre-requisite to the award of the Ph.D. degree, every doctoral student is expected to publish a total of at least three refereed papers (journal or international conference), and they should be Scopus-indexed. This requirement is inclusive of any publications arising out of the master's or bachelor's degree component of the integrated program that the student is registered in.

Prior to the submission of a paper to any conference or journal, a written consent should be obtained from the Chair of the Department in which the student is registered.

All publications based upon the thesis research should list the name of the Thesis Advisor and Co-Advisor, with their consent, in addition to the doctoral student's name. The format for writing one's affiliation in conference/journal papers is as follows:

Names of Authors
Name of Department/Centre/School
Name of Campus
Amrita Vishwa Vidyapeetham

Amrita University

Conference publications should appear in the proceedings produced by reputed international professional bodies. The PGP Chair, in consultation with the experts in the area, will decide whether the publications are of the required quality.

4.6 Mid-Term Exit with Bachelor's or Master's, and MS (by Research)

If the student wishes to exit the integrated programme after completing all the requirements of the bachelor's or the master's degree, the student becomes eligible for the award of the respective bachelor's or master's degree.

If the student completes all the requirements of the bachelor's or the master's degree while completing the requirements for the award of the Ph.D. degree, the student becomes eligible for the award of the respective bachelor's or master's degree or both together with the Ph.D. degree.

In addition to satisfying the bachelor's or master's degree requirements of the integrated program, if the student has passed the Ph.D. Qualifying Examination and has received acceptance of publication of one scopus-indexed paper, as well as completed 30 Ph.D. credits (sum total of coursework credits and research credits counted for Ph.D. degree), the student becomes eligible for the award of a MS (by Research) degree.

4.7 Open Seminars

All doctoral candidates are required to present one research seminar, attended by the Thesis Advisor and Doctoral committee, and open to all who are interested to attend. Feedback and comments on the research obtained from these seminars may be suitably incorporated in the thesis.

4.8 Thesis Synopsis

Once the Thesis Advisor and Doctoral Committee are satisfied that the doctoral candidate has completed the required research for the award of the Ph.D. degree and the candidate has published (or has an acceptance of) a refereed Scopus-indexed journal paper and has also given the Research Seminar (see section 4.7), the candidate is required to submit a written *Synopsis* to the Doctoral Committee for approval. The Synopsis should include the motivation, significance and main objectives of the research, along with a brief literature survey and a detailed report on the thesis research. The main conclusions and results should be highlighted, and important figures and references should be provided. The Synopsis should be about 12 pages; the exact format of the Synopsis may be obtained from the Office of the PGP Chair.

The Thesis Advisor should forward to the PGP Chair an electronic and hardcopy of the Synopsis along with the name, designation, area of interest, email ids and communication address of at least eight experts who are qualified to evaluate the Thesis. Four of these experts should be from leading academic/R&D institutions in India and four from leading academic/R&D institutions from outside the country. From this list as well as other experts qualified to evaluate the thesis, the PGP Chair should obtain the consent of one expert from India and one expert from outside the country who will evaluate the thesis.

4.9 Thesis Submission and Evaluation

The doctoral candidate should submit the *Ph.D. Thesis* to the Doctoral Committee normally within six weeks from the date of submission of the Synopsis. The exact format of the thesis may be obtained from the Office of the PGP Chair. After approval by the Doctoral Committee, the Thesis Advisor forwards an electronic and hardcopy of the Ph.D. Thesis to the PGP Chair who will send it to the external examiners. The Thesis Advisor and Co-Advisor are also invited to provide a formal evaluation of the thesis. All examiners will be given eight weeks to provide their evaluation.

Each examiner can give one of three recommendations: (i) Accept, (ii) Accept with Modifications, or (iii) Reject. If neither of the external examiners recommends a Reject, the candidate is permitted to proceed to the Thesis Defense. If both external examiners recommend a Reject, the thesis is rejected and the candidate is required to leave the Ph.D Program. If only one of the external examiners recommends a Reject, the thesis is

sent to a third external examiner whose evaluation decides whether or not the candidate is permitted to proceed with the Thesis Defense. Prior to the Defense, the candidate must submit a revised Thesis taking into account the comments and suggestions made by all examiners.

4.10 Thesis Defense and Final Recommendation

The *Thesis Defense* is a public presentation made by the doctoral candidate on the research reported in the thesis. The date, time, venue and title of the defense should be announced widely and well in advance to enable all interested parties to attend. The Thesis Defense Committee, which includes at least one external examiner and the doctoral committee members, must be present at the defense.

If none of the external examiners can be present, the PGP Chair may nominate a substitute examiner.

The public defense will be followed by an *in-camera* (closed-door) oral examination during which the candidate is required to answer queries raised by the thesis examiners. For this purpose, all examiners' reports will be made available to all members of the Thesis Defense Committee, who may cover the general background of the subject in the light of the requirements for the thesis. Where part of the work has been undertaken jointly with others, the examiners should satisfy themselves as to the adequacy of the candidate's own contribution.

A pass in the in-camera oral examination is compulsory. If a candidate fails this examination in the first instance, he/she may be allowed a second and final chance after a lapse of three months, but not later than six months from the date of first appearance.

If the candidate passes the oral examination, the Thesis Defense Committee shall consolidate the recommendation for the award of the PhD Degree based on the report of the examiners who evaluated the thesis as well as an evaluation of the candidate's performance in the oral examination. The PGP Chair forwards the consolidated recommendation to the PGP Dean with the required enclosures. The PGP Dean forwards the final recommendation to the Vice Chancellor for his approval. After the Vice Chancellor's approval, the PGP Dean issues the Provisional Certificate.

4.11 Progress Reports

The doctoral student shall submit half-yearly reports to the Doctoral Committee who in turn will forward these reports along with their evaluation to the PGP Chair. The Office of the PGP Chair will maintain the progress reports.

The PGP Chair may conduct periodic reviews of all doctoral students, especially those who are not making satisfactory progress, in a meeting with their Thesis Advisors and selected additional members present. Continued unsatisfactory progress, as determined by the PGP Chair, may be sufficient grounds for discontinuation of any fellowship or assistantship that has been previously awarded to the student and also dismissal from the Ph.D. Program.

5.Duration of Ph.D.

Due to the variability of time needed for research, there are no set time-lines that applies to all students. However, students who have registered for the integrated Ph.D. programs may begin taking additional courses for credits and earn research credits by participating in research projects as soon as possible and permissible, while maintaining a good standing in their bachelor's or master's degree as the case may be. Generally the qualifying examination may be taken after they have completed their bachelor's or master's degree of the integrated degree program, and thereafter, students may complete in one to three years. In order to facilitate such a timeline, it is recommended that:

- Students of M.Tech can register as early as the beginning of their first year.
- Students of MSc can register as early as the beginning of their second year.
- Students of BTech can register as early as the beginning of their fourth year.

There is a residency requirement of one year. The maximum period of validity of a Ph.D. registration is 10 years.

6.Award of Ph.D. Degree

If all the requirements of the bachelor's or master's degree of the integrated program, as well as all the requirements of the Ph.D. degree as detailed in above sections, are met, upon approval by the Vice Chancellor and subsequent ratification by the Academic Council and the Board of Management of the University, the doctoral student will be presented to the Chancellor for award of the Ph.D. Degree at the next Convocation of the University.

A doctoral student receives a PhD in the Faculty of Engineering. In the case of an interdisciplinary doctoral student, the choice of which Faculty/School affiliation to be named in the degree certificate, may be given to the student.