

THE DEGREE OF DOCTOR OF PHILOSOPHY (Ph.D.)
In the Faculty of Engineering and the Faculty of General Science
(With effect from 30-06-2006)

PHD 1 SHORT TITLE AND COMMENCEMENT

PHD 1.1 These Regulations shall be called Visvesvaraya Technological University Degree of Doctor of Philosophy of the Faculty of Engineering and the Faculty of General Science Regulations.

PHD 1.2 These shall come into force from the date of their notification by the University and be applicable for the students who seek registration for Ph.D. in the Faculty of Engineering and the Faculty of General Science.

PHD 2 DEFINITIONS

In these Regulations unless the context otherwise requires:

- a) Ph.D. Registration Committee means the specialist body appointed by the Vice Chancellor in the disciplines concerned.
- b) Degree means the Degree of Doctor of Philosophy (abbreviated as Ph.D.)
- c) University / VTU means Visvesvaraya Technological University.
- d) NRI/FN/PIO (Non Resident Indians / Foreign Nationals/Persons of Indian Origin) means a candidate under these categories as defined by AICTE/UGC/MHRD.

PHD 3 ELIGIBILITY FOR REGISTRATION

PHD 3.1 There shall be provision for three categories of registration to the candidates for Ph. D.

- i. Full Time Registration: Students who are desirous to pursue research studies on Full Time basis.
- ii. Part Time Registration: In-service candidates, either faculty members working in any Engineering College, Polytechnic / University in India (recognized / accredited by appropriate bodies) or candidates working in any public/ private/ Govt. sector organizations who are desirous to pursue research on Part Time basis.
- iii. Full Time/Part Time (Special) NRI/FN/PIO: Candidates under these groups shall be eligible for either Full Time as indicated in 3.1(i) or on Part Time (as indicated in 3.1 (ii) basis. However, the Candidates shall have passed UG or PG programmes with the medium of instruction in English or qualified in TOFEL/ELTS. The Candidates shall be able to Communicate and submit the thesis in English language only.

PHD 3.2 i) Ph.D. in Engineering Faculty

- a) The candidates shall possess a Master's Degree in Engineering/Technology of VTU or any other University, recognized by VTU or any other Degree which is equivalent to the Master's Degree in Engineering/Technology. However, a candidate possessing Bachelor's Degree in Engineering subject and working in National Laboratories, R&D Laboratories attached to Industries or such other Research Institutions or Industries can directly seek registration for Ph.D. programmes if he / she has published a work of outstanding merit or a work recognised for Patent rights.
- b) Candidates with Master of Computer Applications Degree are eligible for registration under Computer Science Board.

	<p>ii) Ph.D. in General Science Faculty Candidates with M.Sc. Degree in Physics, Chemistry, Mathematics, and such other allied subjects shall also be eligible for registration, provided their degrees are from recognized Universities and they are either working in Colleges affiliated to VTU or they are desirous of working under the guidance of recognized faculty of colleges affiliated to VTU.</p>
PHD 3.3	<p>(i) A Candidate shall have obtained minimum of 60% or equivalent Grade in either at Bachelor's or Master's Degree examinations as considered for the declaration of Class/Grade by the concerned University. However, a relaxation to the extent of 10% shall be allowed for</p> <ul style="list-style-type: none">a) Candidates belonging to SC/ST and any other category as notified by the Government of Karnataka from time to time.b) Candidates with a minimum of five years experience either in teaching or research, subject to the provisions of these Regulations. <p>(ii) In addition to the above, the candidate shall have qualified in the University Level Research Aptitude test, the results of which shall be valid for a period two years. (Amended and approved in 83rd EC resolution no. 2.3.1, dated 08.12.2009)</p>
PHD 4	REGISTRATION
PHD 4.1	<p>A candidate satisfying regulation PHD 3.3 shall submit his/her application for registration to the University in the prescribed form along with other necessary documents; viz, degree certificate, marks cards of all examinations, employers certificate if employed, consent of the Guide, and such other documents as may be prescribed, through the Head of the Institution where candidate intends to do research.</p> <p>The Head of the institution shall forward the application of the candidate along with the Bio-data of the Guide, his/her degree certificates, and the list of Research Publications. In case of employed candidates, no objection certificate from the employers for pursuing research shall be necessary. In case of Full Time/Part Time (Special) Candidates he/she shall possess valid passport & MHRD clearance letter.</p>
PHD 4.2	<p>At the time of registration the candidate shall indicate the topic of research, scope of research and the related branch of Engineering / Technology or allied fields. The candidate can register in only such branch of Engineering for which the department is recognized as a Research Centre by VTU.</p>
PHD 4.3	<p>There shall be a Ph.D./ M.Sc. (Engineering) by Research Registration Committee constituted by the Vice Chancellor for each major discipline in Faculties of Engineering and General Sciences, namely, Mechanical Engineering Sciences, Electrical Engineering Sciences, Computer Sciences, Civil Engineering Sciences and General Sciences consisting of:</p> <ul style="list-style-type: none">a) Chairmen of Boards of Studies in the concerned faculty/facultiesb) Two subject expertsc) Registrar as the <i>ex officio</i> Member and Convener <p>The Vice Chancellor shall nominate one from among the Chairmen of Boards of Studies in the faculty as Chairman of the Committee.</p>
PHD 4.4	<p>The University shall call for Applications for registration in the months of January and July of every year. The Ph.D. Registration Committee shall meet in the months of February and August of every year to consider applications of the candidates for</p>

registration and the eligibility and recognitions of the Guides.

The Committee may invite the Guides for the meeting if necessary. In exceptional cases, subject to the approval of the Vice-Chancellor, it shall be open to the Chairman of the Committee to invite other specialists, wherever necessary, by recording the reasons in writing for such an invitation.

The Committee shall send its recommendations regarding the provisional registration to the University immediately after the meeting.

The Process shall normally be completed by March and September respectively of the same year, and soon thereafter the University shall communicate the decision to the candidate, the Guide and the concerned Head of the Institution.

PHD 4.5 The Provisional Registration of the candidate shall be confirmed on successful completion of the course work and comprehensive *viva voce*.

PHD 5 PART-I: COURSE WORK

PHD 5.1 For candidates registering in Engineering faculty, the Guide shall specify four courses out of the subjects listed by the University for study relating to the area of research proposed by the candidate along with the candidate's application for registration.

Candidates with only Bachelor's Degree qualification from R&D Lab/Industry applying for registration shall have to specify, in addition to the four courses specified earlier, four courses prescribed for Master Degree proposed by the Guide and approved by the Ph.D. Registration Committee.

Candidates with MCA qualification registered under Engineering faculty have to select six subjects from the list specified for Research Course work by the Engineering Faculty for their course work.

Subjects for the Course work in Engineering faculty shall be selected from different groups in such a way that there shall be a minimum of one subject but not more than two subjects from any group.

Further, candidates with M.Sc. with M.Phil. qualifications registered for General Science faculty shall study four courses proposed by the Guide and approved by the Ph.D. Registration Committee. However, the candidates with only M.Sc. qualification shall study six courses proposed by the Guide and approved by the Ph.D. Registration Committee.

The Ph.D. Registration Committee shall scrutinize and approve the courses proposed by the Guide and with or without the necessary modifications. New courses shall be added to or obsolete courses deleted from the existing list of courses on the recommendations of the Board of Studies from time to time.

PHD 5.2 All candidates whose provisional registration has been approved shall submit the application for the examination in the subjects of course work (PART-I) in response to the notification issued by the University in this respect along with prescribed fees.

The written examinations for the subjects of the course work (PART-I) shall be conducted normally along with the M.Tech. Examinations of the VTU.

PHD 5.3 The candidates shall be permitted to apply and appear for one or more subjects at a time in a given examination.

- PHD 5.4** Question papers shall be set jointly by the examiners appointed for that purpose by the University from the panel recommended by the Board of Studies of the concerned PG branches. In the case of General Sciences, Ph.D. Registration Committee shall recommend the panel of examiners.
- PHD 5.5** Answer papers shall be valued independently by two examiners.
- PHD 5.6** If the difference between the marks awarded by the two examiners is not more than 15, the marks awarded to the candidate shall be the average of the two evaluations.
- PHD 5.7** If the difference between the marks awarded by the two examiners is more than 15, a third examiner shall evaluate the script. The average of the marks of the nearest two evaluations shall be considered as marks secured by the candidate. However, if one of the three marks falls exactly midway between the other two, then the higher two marks shall be taken for averaging.
- PHD 5.8**
- For PART-I courses the candidate shall obtain a minimum of 50% of the maximum marks in the University Examination for each subject.
 - Letter Grades shall be allotted to the candidates declared eligible as follows:
76-100 Marks : A Grade
61-75 Marks : B Grade
50-60 Marks : C Grade
- PHD 5.9** A candidate can take a maximum of two attempts to pass in a subject of PART-I. However, the course shall be completed within two years from the date of provisional registration. Registration of a candidate, who fails to fulfill this requirement, shall stand cancelled. However, the candidate may apply for fresh registration.
- PHD 6** **PART-II: COMPREHENSIVE VIVA VOCE**
- PHD 6.1**
- Such of the candidates who have successfully completed PART-I shall have to take a comprehensive *viva voce* within one year of completing PART-I. Provided that, the University may allow a further period of six months, on receipt of request from the candidate with recommendations from the Guide and the Head of the Institution.
 - Comprehensive *viva voce* shall be a closed room viva-voce consisting of only the examiners and the candidate.
- PHD 6.2** Comprehensive *viva voce* shall consist of a presentation by the candidate on the topic of his/her research, which shall include the work done by him/her till date and the work proposed. The *viva voce* shall be conducted by a Committee consisting of Guide/s and two experts in the field appointed by the University from amongst a panel of six examiners recommended by the Chairman of concerned BOS in consultation with the Guide. The Vice Chancellor shall appoint one of the experts as the Chairman of the Committee.
- PHD 6.3** The University shall fix the date of comprehensive *viva voce* which shall be normally within 8 weeks of intimation from the Guide on readiness of the candidate.
- PHD 6.4** After the completion of the *viva voce* the Committee shall communicate the result. If the committee so recommends, the candidate shall continue his research work. In other cases the Committee shall indicate the specific areas in which the candidate needs strengthening of his knowledge and the candidate shall appear for the

comprehensive *viva voce* once again before the same Committee within six months of his taking the first *viva voce*. If the Committee does not recommend the continuation of research by the candidate at the second attempt also, the provisional registration of the candidate shall stand cancelled.

PHD 7 ELIGIBILITY FOR SUBMISSION OF THE THESIS

- PHD 7.1** a) A Full Time candidate shall be eligible for submission of the thesis after a minimum period of three years from the date of provisional registration, subject to fulfillment of all other prescribed requirements.
- b) The candidate shall present two open seminars related to his research, at the research centre where he is registered and also prepare a research paper for each seminar in standard research paper format. A Departmental Committee consisting of senior faculty shall evaluate the research paper. The candidate shall qualify if the committee approves the same. If not qualified, the candidate shall present one more seminar within 15 days and the Candidate may be deemed to have been qualified.
- PHD 7.2** The maximum period for submission of the thesis for Full Time students shall be six years from the date of provisional registration.
- PHD 7.3** A Part Time candidate shall put in a minimum of six months of residence at the Institution through which he has registered, in not more than 3 phases, before submitting the thesis.
- PHD 7.4** A Part Time candidate shall be eligible for submission of the thesis after a minimum period of three years from the date of provisional registration at the University.
- PHD 7.5** The maximum period for the submission of the thesis for Part Time candidates shall be six years.
- PHD 7.6** In either case, a request for extension of the maximum period for the submission of thesis may be made by the candidate to the University through the Institution not less than one month prior to the completion of the stipulated maximum period. The Vice Chancellor may extend the maximum period for submission of thesis by a period of one year on the specific recommendations of the Guide, the Head of the Department and the Head of the Institution. Decision of the Vice Chancellor in this regard shall be final.
- PHD 7.7** Each Candidate shall submit a report of the progress of his work to the University through the concerned guide and the Head of the Institution at the end of every six months which shall be reviewed by the Ph.D. Registration Committee. If two consecutive progress reports are not satisfactory or the candidate has failed to submit two consecutive progress reports, the registration shall stand cancelled. However, the candidate may apply to the Vice Chancellor through the guide and the Head of the Institution, for revocation of the cancellation order with sufficient reasons. The decision of the Vice Chancellor in this behalf shall be final.
- PHD 7.8** A candidate may apply for a change in the topic of Research for consideration to the Ph.D. Registration Committee not less than nine months prior to the submission of the synopsis as per regulation PHD 8.1, through the Guide and Head of the Institution.

PHD 7.9	A candidate may apply for the change of Guide under exceptional circumstances by giving reasons for the same and endorsed by the Head of the Department, which shall be permitted on the recommendation of the Ph. D. Registration Committee in consultation with the present Guide and the proposed Guide. Decision of the Ph. D. Registration Committee in this regard shall be final.
PHD 7.10	No candidate shall be permitted to keep terms simultaneously for any other examination of VTU or any other University.
PHD 8	PART III -EVALUATION OF THE THESIS
PHD 8.1	<p>Prior to the submission of the thesis, the candidate shall submit a synopsis of the thesis.</p> <p>The candidate shall submit six copies of the synopsis in the prescribed format to the Head of the Institution along with:</p> <ol style="list-style-type: none">Application for adjudication of the thesis.Certificate from Guide stating that<ol style="list-style-type: none">Seminar/Comprehensive <i>viva voce</i> and all other academic requirements are fulfilled andThere is <i>prima facie</i> case for consideration of the thesis and the thesis does not contain any work, which has been previously, submitted for the award of any degree anywhere.Certificate from the Head of the Institution that there are no arrears of dues up to the date of submission of synopsis.
PHD 8.2	<p>The Head of the Institution shall arrange to send four copies of the synopsis to the Registrar (Evaluation).</p> <ol style="list-style-type: none">A copy of the synopsis shall be sent by the institution to the concerned Chairman of the Board of Studies who shall, in consultation with the Guide, propose a panel of twelve experts, of whom six experts shall be from abroad, for adjudication of the thesis, and the same shall be communicated to the Registrar (Evaluation).The University shall arrange to send the synopsis to the referees identified as per Ph.D. 8.4 and obtain, by the time the thesis is submitted, their concurrence to evaluate the thesis.
PHD 8.3	The candidate shall submit six hard copies of the thesis of the research work along with a soft copy to the Head of the Institution within three months from submission of the synopsis. The Head of the institution shall make arrangements to send five of these copies to the Registrar (Evaluation). In case the candidate fails to submit his thesis within three months from the date of submission of synopsis, he may seek extension of time from the Registrar (Evaluation), supported by the recommendations of the Guide and the Head of the Institution.
PHD 8.4	The University shall arrange for the thesis to be evaluated by three referees, namely, the Guide, and two other experts appointed by the Vice Chancellor from the panel as per PHD 8.2.
PHD 8.5	The University shall send a copy of the thesis to each referee for evaluation.
PHD 8.6	All the referees shall evaluate the thesis normally within a period of three months from the date of receipt and send their reports independently to the Registrar

(Evaluation). The reports shall include:

- a) A critical analysis of the work of the candidate as embodied in the thesis.
- b) List of questions to be asked or points to be clarified at the *viva voce*.
- c) A definite recommendation as to whether the thesis attains the standard for the award of Ph.D. or not.

The referees shall make any one of the following recommendations:

- i) That the Ph.D. degree may be awarded.
- ii) That the Ph.D. degree may be awarded with clarification at the time of the *viva voce*.
- iii) That the Ph.D. degree may be awarded with modification / additional work (to be clearly specified by the examiner) and specifying whether re-submission of the thesis is required or not.
- iv) That the Ph.D. degree may not be awarded (Specific reasons to be clearly mentioned).

PHD 8.7 On receiving favourable recommendations from all the referees, the Registrar (Evaluation) shall convey the same to the guide along with copies of the adjudication report of the thesis, and request to conduct the final *viva voce* examination of the candidate. The committee for the final *viva voce* shall consist of the Guide as the chairman, co-guide, if any, and the Indian examiner. In case the Indian examiner informs in writing his/her inability to be present at the *viva voce* examination, the guide shall intimate the same to the Registrar (Evaluation), who shall appoint another Indian examiner from the panel of examiners. The candidate shall provide suitable clarification to all the queries which may be put to him at the time of *viva voce*.

PHD 8.8 If two of the referees do not recommend for the award of the degree, the thesis shall be rejected. However, it shall be open for the candidate to seek registration afresh with the University.

PHD 8.9 The thesis shall not be accepted for awarding the degree if any one of the referees finds that the research work is not up to the expected standard. The referee shall give detailed reasons for the same. In such cases, the thesis shall be sent to a fourth referee appointed by the University from the panel. If the fourth referee gives a favourable report, the Registrar (Evaluation) shall initiate further steps as per Ph.D. 8.7. If the fourth referee also does not approve, then the thesis shall be rejected. However, it shall be open for the candidate to seek registration afresh with the University.

PHD 8.10

The final *viva voce* shall be conducted at a centre approved by the University, which shall, normally be the institution in which the research work was carried out or the regional centre of VTU or the institution where the Guide is working. The procedure for the conduct of the final *viva voce* shall be as follows:

- (a) The Guide shall appoint a date for *viva voce* in consultation with the referee selected by Vice Chancellor and shall inform the date to the candidate and the Registrar (Evaluation) in advance.
- (b) The Guide shall invite the Registrar (Evaluation), the Head of the institution, members of the teaching staff and research scholars to attend the *viva voce* as observers.
- (c) The candidate shall make the presentation of the research work carried out by him, highlighting the important findings/conclusions in about 30 to 45 minutes. After the presentation, the committee shall examine the candidate to test the understanding of the candidate on the subject matter of the thesis and also his replies to the written queries of the referees in their Thesis Evaluation Reports. The candidate shall produce all documents, data and analysis in support of the research work presented in the thesis. After the completion of the *viva voce*, the Guide shall give opportunity to the invitees to seek clarifications from the candidate.
- (d) On completing the *viva voce*, the Committee shall submit a Report to the Registrar (Evaluation) indicating clearly whether the performance of the candidate was satisfactory and if so, giving specific recommendation for the award of Ph.D. degree by the University. In case the performance of the candidate is not satisfactory, the Committee may report accordingly, recommending another *viva-voce* to be conducted after three months. The University shall arrange another *viva voce* with the same Committee.

PHD 8.11

After successful completion of the *viva voce*, the Guide shall send the consolidated report to the University and the University with the approval of its Executive Council shall award the Ph. D. degree to the Candidate.

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