Ph.D. Course Work

Purpose, Syllabus & Assessment Methods

Purpose of Ph.D. Course Work

- As per latest UGC Guidelines, after being admitted into the PhD programmes each scholar must take a minimum of one semester (six months) of pre-PhD courses.
- The purpose of Ph.D. course is to identify and apply appropriate research methodology in order to plan, conduct and evaluate basic research.
- The Course work enables scholars to develop the foundation for research skills at appropriate levels.
- PhD Coursework gives scholars a thorough grasp of their subject topic and the ability to perform independent research.

Ph.D. Course Work
Science and Technology (Environmental Science)

Title	Credits	Assessment
Paper-I : Research Methodology **Statistics -**Quantitative methods, **Computer applications**: MS office **Writing skills**- Scientific writing – Research Proposal, Paper writing and Thesis writing **Literature Review -**Review of published research in the relevant field, **Environment Monitoring –** methods & data interpretation **IPR –** Concept, types and methods of filing **Field work-** Training and report	4 (60 Hrs)	1. 50% Assessment in the form of 2 home assignments, 2. 25% Assessment in the form of Presentation on Research Design & 3. 25% Assessment in the form of MCQs on entier syllabus **(Total : 100 Marks)**

Ph.D. Course Work
Science and Technology (Environmental Science)

Title	Credits	Assessment
Paper-II : **Scientific writing** (A) Writing a Research Proposal for obtaining Financial assistance	1 (15 Hrs)	1. Drafted Research Proposal 2. Presentation of proposal to research Advisory Committee and submission to the identified funding agency **(Proposal Submission Letter)**
Paper-II: Scientific writing **(B) Writing of Review**	1 (15 Hrs)	(ONE) Book review and (ONE)Research Paper based on Review of Literature to be Published in UGC CARE / SCOPUS JOURNAL (Research Scholar as the first author and Research Guide as the second author)

Ph.D. Course Work
Science and Technology (Environmental Science)

Title	Credits	Assessment
Paper-II : Scientific Writing **(C) Seminars and Assignments**	2 (30 Hrs)	**(TWO) papers presented to the committee (**Including two external experts and Internal expert other than guide) OR **(TWO) Research Papers** to be presented at **National / International** Seminars. **(TWO) Assignments** - Home / Filed Assignments

(Note: Reviews, seminars, presentations, home assignments, field assignments, etc. will be assessed by at-least 2 external experts excluding research supervisor. External experts will be suggested by Head of the Department. These will be organised by respective research guide and report will be submitted to course coordinator)

Ph.D. Course Work
Science and Technology (Environmental Science)
Subject Specific advanced Level courses

Title	Credits	Assessment
Paper-III : Recent Advances in Environmental Science (1) (GIS & Remote Sensing, (2) Restoration Ecology, (3) Integrated Watershed management, (4) Environmental laws, Climate change, (5) Techniques of Wastewater treatment, (6) Episodes & Disaster management	8 (120 Hrs)	**Internal assessment :** Consists of two assignments of 20 marks per credit **The final examination:** 80 marks per credit. (20 M- MCQ, 60 M- SAQ)
Paper-IV : Research & Publication Ethics . (RPE 01 to RPE 06) - Syllabus as defined by UGC5	2 (30 Hrs)	Scholars need to complete with Cenrtre of Publication Ethics – Savitribai Phule Pune University, Pune

Ph.D. Course Work
Science and Technology (Botany)

Title	Credits	Assessment
Paper-I: Research Methodology ▪ **Research** Methodology-Literature review, defining problem, approach and methodology, Observations ▪ **Manuscript Preparation** ▪ **Bio-Statistics:** Quantitative methods & data interpretation ▪ **Computer applications-** (MS office) ▪ **Tools & Techniques** : Biophysical and Biochemical Techniques, Microscopy ▪ Analytical Instruments : working & Principles ▪ Pharmacognosy techniques ▪ Field Visit	4 (60 Hrs)	1. 50% Assessment in the form of 2 home assignments, 2. 25% Assessment in the form of Presentation on Research Design & 3. 25% Assessment in the form of MCQs on entier syllabus **(Total : 100 Marks)**

Ph.D. Course Work
Science and Technology (Botany)

Title	Credits	Assessment
Paper-II : **Scientific Writing** (A) **Proposal writing** Writing a Research Proposal for obtaining Financial assistance and applying to National funding agencies	1 (15 Hrs)	1. Drafted Research Proposal 2. Presentation of proposal to research Advisory Committee and submission to an identified funding agency **(Proposal Submission Letter)**
Paper -II: Scientific Writing **(B) Writing of Review**	1 (15 Hrs)	(ONE) Research Paper based on Review of Literature to be Published in UGC CARE / SCOPUS Journal (Research Scholar as the first author and Research Guide as the second author)
Paper-II :Scientific Writing **(C) Seminars**	2 (30 Hrs)	**(TWO) Research Papers** to be presented at **National / International** Seminars/Conferences (Research Scholar as the first author and Research Guide as the second author)

Ph.D. Course Work
Science and Technology (Botany)
Subject Specific advanced Level courses

Title	Credits	Assessment
Paper-III : **Advances in Botany (I)** 1. Plant-animal and plants-microbes interaction 2. Biodiversity: genetic, species, molecular diversity and taxonomy, DNA bar coding, 3. population genetics, conservation of biodiversity and endangered species, Evolution. 4. Climate change and carbon sequestration 5. Algal Biofuels 6. Remediation of degraded/contaminated ecosystem by plants & microbes 7. Recent nomenclature of Plants	4 (60 Hrs)	**Internal assessment :** Consists of two assignments of 20 marks per credit **The final examination:** 80 marks per credit. (20 M- MCQ, 60 M- SAQ)

Ph.D. Course Work
Science and Technology (Botany)
Subject Specific advanced Level courses

Title	Credits	Assessment
Paper-III : **Advances in Botany (II)** 1. Advanced in plant science w.r.t. secondary metabolite production 2. Genetically modified plants for improved tolerance to biotic abiotic stress 3. Molecular genetics of plant development 4. Mechanism of plant hormone action 5. Signal transduction in plants	4 (60 Hrs)	**Internal assessment :** Consists of two assignments of 20 marks per credit **The final examination:** 80 marks per credit. (20 M- MCQ, 60 M- SAQ)

Ph.D. Course Work
Science and Technology (Botany)

Title	Credits	Assessment
Paper-IV **Research & Publication Ethics** (RPE 01 to RPE 06) - Syllabus as defined by UGC5	2 (30 Hrs)	Scholars need to complete with Cenrtre of Publication Ethics – Savitribai Phule Pune University, Pune

Note:

1. Concerned coordinator/supervisor will assign the topics for review and seminar
2. Ph.D. student will have to submit the review and the seminar write-up to course Coordinator trough HoD.
3. Two external expert will assess review and seminar topics. After assessment by external experts Ph.D. student will make presentation, which will be assessed by group of teachers.

Ph.D. Coursework Examination

Internal Examination

- Assignments as prescribed in syllabus
- Proposal writing- Research Proposal for grants
- Paper Presentation in Seminars/Conferences
- Paper Publication – UGC CARE/SCOPUS Journals
- Filed Visit/ Excursions/ Filed Surveys

External Examination

- Assessment based on (i) MCQ & (ii) SAQ
- Evaluation based on (i) presentation of proposal to Research committee and (ii) Seminars to Expert Committee