School of Chemistry
University of Hyderabad

Ph.D. Course Work : Manual

General Guidelines for Students

Every student admitted to the Ph.D. program in the School of Chemistry has to undertake course work adding up to a total credit of 12. As per the UGC stipulations, the student can formally register for the Ph.D. programme, only on satisfactory completion of the course work requirements.

1. The course work is to be started in the Semester following the one during which the student was admitted, and should be completed in **two semesters**. For example, a student admitted to the Ph.D. program after July 2017 admission test has to start the course work in the Monsoon semester (July-December) of 2017 and complete the course work in Winter semester (January-June) of 2018. Similarly a student admitted in December 2017 has to start the course work in the Winter semester (January-June) of 2018 and complete the course work in the Monsoon semester (July-December) of 2018.

2. The student has to complete a minimum of 12 credits for satisfactory completion of the course work. Out of the 12 credits, 8 would be from two mandatory courses. The courses for the remaining 4 credits will be prescribed by the Doctoral Committee of the student, taking into account the background, interest and needs of the student.

3. The student should obtain a minimum of 55% marks to pass a course.

4. The official course certificate will indicate only Pass/Fail and not marks or grades for each course. However a course grade sheet will be provided by the School.

5. Mandatory credits (8)

   A. **CY-801. Research proposal** [4 credits]

   The student will prepare and defend a research proposal based on self study. The defense may involve presentation in a seminar and *viva voce* examination by the Doctoral Committee.

   B. *One of the following two courses*:
   CY-805 Instrumental Methods A (Analytical Techniques) [4 credits]
   CY-806 Instrumental Methods B (Physical Measurements) [4 credits]

Each of the above courses is expected to provide training in the use of various instruments and computer software. The student will work as an apprentice for short periods with instrument operators or senior students. The courses may include special lectures by the faculty as well as performing some assignments. Each course will have a faculty-in-charge who will evaluate and award grade based on input from the various instrument-in-charges and performance in assignments.

A: NMR, Mass spectrometry, Absorption fluorescence / CD spectroscopy, Polarimetry, Computer software.

B: Diffraction techniques, Microscopy, Calorimetry, Electrochemistry, Magnetic measurements, Computer software.

The Doctoral Committee may recommend additional techniques available in the central instrumentation or computational facilities of the University or substitution of one technique in a group by one from the other group.

It is expected that CY-801 and CY-805/CY-806 will provide effective training in research methodology to the Ph. D. student.

6. Elective credits (4)

Any combination of the following courses (some of the courses may have a credit different from 4; however, the total credits earned from this combination should not be less than 4).

A. **CY-802 Chemistry Pedagogy** [3 credits] - The student will work as a Teaching Assistant (TA) or Tutor for any chemistry course including 100/200/300 level ones (preference will be given for laboratory and 100 – 300 level courses). The course instructor will closely monitor the work of the Ph. D. student, provide mentoring, finally evaluate him for his pedagogic skills and knowledge of the subject and award a grade. Like any other course, CY-802 cannot be repeated, if already passed once.

B. One or more of the **400 - 800 level course**s, including the CY-805/CY-806, not already taken by the student. Students who did their M. Sc. in the School of Chemistry can take a 400/500 level course only if they have obtained a grade less than C in the same course during their M.Sc.

CY-801 Research Proposal [4 credits]

The student will prepare and defend a research proposal based on self study. The defense may involve presentation in a seminar and *viva voce* examination by the Doctoral Committee. This course has to be taken as part of the mandatory requirement of the Ph.D. course work.

CY-802 Chemistry Pedagogy [3 credits]

The student will work as a Teaching Assistant (TA) or Tutor for any chemistry course including 100/200/300 level ones. The course instructor closely monitors the work of the Ph. D. student, provides mentoring and finally evaluates him for his pedagogic skills and knowledge of the subject and awards a grade.

CY-805 Instrumental Methods A (Analytical Techniques) [4 credits]

The course is expected to provide training in the use of various instruments and software. The student will work as apprentice for short periods with instrument operators or senior students. The courses may include special lectures by the faculty as well as performing some assignments. Each course will have a faculty-in-charge who will evaluate and award grade based on input from the various instrument-in-charges and performance in assignments. One of the two courses, CY-805 / CY-806 has to be taken as part of the mandatory requirement of the Ph.D. course work.

Recommended modules (can be modified based on requirements/equipment availability):

NMR, Mass spectrometry, Absorption / Fluorescence / CD spectroscopy, Polarimetry, Computer software.

The parallel course: CY-806. Instrumental Methods B (Physical Measurements)

Recommended modules: Diffraction techniques, Microscopy, Calorimetry, Electrochemistry, Magnetic measurements, Computer software.

CY-806 Instrumental Methods B (Physical Measurements) [4 credits]

The course is expected to provide training in the use of various instruments and software. The student will work as apprentice for short periods with instrument operators or senior students. The courses may include special lectures by the faculty as well as performing some assignments. Each course will have a faculty-in-charge who will evaluate and award grade based on input from the various instrument-in-charges and performance in assignments. One of the two courses, CY-805 / CY-806 has to be taken as part of the mandatory requirement of the Ph.D. course work.

Recommended modules (can be modified based on requirements/equipment availability):

Diffraction techniques, Microscopy, Calorimetry, Electrochemistry, Magnetic measurements, Computer software.

The parallel course: CY-805. Instrumental Methods A (Analytical Techniques)

Recommended modules: NMR, Mass spectrometry, Absorption / Fluorescence / CD spectroscopy, Polarimetry, Computer software.