

Tanta University - Faculty of Pharmacy

Program Specification (2011-2012)

A. Basic Information:

Program Title	PhD degree of pharmaceutical sciences (Pharmaceutical Chemistry)
Parent Department	Pharmaceutical Chemistry
Program Nature	Single: <input checked="" type="checkbox"/> Double: <input type="checkbox"/> Multiple: <input type="checkbox"/>
Coordinator	Prof. Dr. Fatma Ibrahim Sonbol (Vice dean of graduate studies and research)
Date of Approval	15/6/2011

B. Professional Information:

1. Program Aims

By the end of this program the graduate should be able to:

- Elaborate the basics of scientific research methodologies.
- Work on enhancing the knowledge in the area of Pharmaceutical/Medicinal Chemistry.
- Apply the critical and analytical approaches to evaluate knowledge in the area of Pharmaceutical/Medicinal Chemistry.
- Integrate specialized knowledge with the relevant knowledge, extracting and enhancing bilateral relations.
- Express deep awareness of the current problems and modern theories in the Pharmaceutical/Medicinal Chemistry.
- Identify professional problems and find innovative solutions.
- Mastering a wide range of professional skills in the field of Pharmaceutical Chemistry.
- Move towards development of new methods and tools for professional practice.
- Employ suitable technological means to serve the professional practice.
- Communicate effectively and lead a team working in various professional contexts.
- Make decisions in the light of available information.
- Effectively employ and develop available resources and work on finding new resources.
- Express awareness of his role in community development and environmental conservation.
- Behave well reflecting a commitment to impartiality, credibility and the roles of the profession.
- Express commitment to self – development and the transfer of knowledge and experience to others.

2. Program Intended Learning outcomes

A. Knowledge and understanding:

By the end of this program, students should be able to:

- a1 Explain the basic theories and principles of Medicinal Chemistry and drug design approaches.
- a2 Explain the legal, ethical and safety principles for experiments using hazardous chemicals and experimental animals.
- a3 Demonstrate a comprehensive understanding of techniques applicable to research or advanced scholarship in Pharmaceutical/Medicinal Chemistry.
- a4 Effectively present scientific data based on knowledge of statistics and biostatistics.
- a5 Point out the legal and ethical principles for practicing the profession of pharmacy based on knowledge of Medicinal Chemistry and Drug design.
- a6 Identify the technical, scientific and regulatory issues by integration of the knowledge gained in the areas of Medicinal Chemistry, Synthetic Organic Chemistry, Analytical Chemistry and Drug design.
- a7 Show understanding of new computer aided drug design techniques, chemical synthesis and biological evaluation of drugs.
- a8 Express knowledge of the quality attributes in professional practice.
- a9 Express knowledge of the environmental effects of professional practice and methods of protecting and maintenance of environment.

B. Intellectual skills:

By the end of this program students should be able to:

- b1 Analyze, evaluate and interpret information in the fields of Medicinal Chemistry, Organic Synthesis and Drug Design.
- b2 Carry out scientific research and contribute to the knowledge in the fields of Medicinal Chemistry and Drug Design.
- b3 Professionally write a scientific paper in the fields of Medicinal Chemistry and Drug Design.
- b4 Assess professional and scientific risks in practicing research.
- b5 Demonstrate creativity and innovative scientific and professional approaches regarding experimental design in the fields of Medicinal Chemistry, Synthetic Organic Chemistry, Analytical Chemistry and Drug Design.
- b6 Perform scientific and professional discussion based on proves and evidences.
- b7 Plan, design and execute self-directed and original research investigations, from the problem-recognition stage to the evaluation and appraisal of results and findings with good ability to select appropriate techniques and procedures.
- b8 Predict feasibility, economics as well as applicability of a research plan in hand.
- b9 Predict drug absorption and bioavailability problems.
- b10 Propose a plausible pathway for drug synthesis and product isolation, purification and characterization.

- b11 Interpret Spectral data imposed by synthetic product identification assays.
- b12 Relate new Drug Design strategies to community health practices.
- b13 Express ability of creativity and innovative thinking.
- b14 Elaborate evidence based argument and discussions.

C. Professional and practical skills:

At the end of this program, students should be able to:

- c1 Carry out a wide range of professional skills in the fields of Medicinal Chemistry, Synthetic Organic Chemistry, Analytical Chemistry and Drug Design.
- c2 Apply the recent practical research skills in the fields of Medicinal Chemistry, Synthetic Organic Chemistry, Analytical Chemistry and Drug Design.
- c3 Write and evaluate professional reports.
- c4 Develop, conduct and evaluate different methodologies in the fields of Medicinal Chemistry, Synthetic Organic Chemistry, Analytical Chemistry and Drug Design.
- c5 Safely handle Chemicals, experimental animals and biological fluids used in research taking into account their physical, chemical or biological properties, including any specific hazards associated with their use.
- c6 Adopt skills required for the conduct of standard pharmaceutical laboratory procedures.
- c7 Use and operate advanced technological research tools and equipments relevant to pharmaceutical research.
- c8 Suggest plans for development of professional practice and enhancement of performance of others.
- c9 Implement Basics of mathematics, statistics and computation, including such aspects as error analysis, order-of-magnitude estimations, correct use of units and modes of data presentation.

D. General and transferable skills:

By the end of this program students should be able to:

- d1 Effectively communicate with other colleagues and health care professionals using a variety of innovative methods and media.
- d2 Effectively Utilize IT in professional development.
- d3 Implement self assessment procedures and evaluate the required professional needs regarding teaching and research.
- d4 Effectively utilize different available information resources relevant to Medicinal Chemistry, Synthetic Organic Chemistry and Drug Design.
- d5 Work in team and apply time management principles effectively.
- d6 Manage a professional team working in pharmaceutical research projects.
- d7 Implement life-long self learning.
- d8 Acquire, transform, interpret and critically evaluate data.

- d9 Analyze and critically evaluate published literature reports.
- d10 Retrieve information in relation to primary and secondary information sources, including information retrieval through online computer searches.
- d11 Teach others and evaluate their performance in the field of Medicinal Chemistry.

3. Program Academic standards

The National Academic Reference Standards (NARS) have been taken as the academic reference standards for this program.

1- Attributes:

The graduate of PhD program should be able to:

- 1.1. Master the basics of scientific and research methodologies.
- 1.2. Work continuously on the addendum to the knowledge in the area of specialization.
- 1.3. Apply the analytical and critic method of knowledge in the area of specialization and related field.
- 1.4. Integrate specialized and relevant knowledge, with contriving and developing the included bilateral relations.
- 1.5. Show deep awareness of the ongoing problems and modern theories in the area of specialization.
- 1.6. Identify professional problems and find innovative solutions
- 1.7. Master a wide range of professional skills in the area of specialization.
- 1.8. Trend towards the development of methods and new tools for professional practice.
- 1.9. Demonstrate Appropriate use of technological means to serve the professional practice.
- 1.10. Communicate effectively and lead a team working in various professional contexts.
- 1.11. Make decisions in the light of available information.
- 1.12. Employ the available recourses efficiently, develop and work on finding new resources.
- 1.13. Show awareness about the role of the graduate in community development and environmental conservation.
- 1.14. Act reflecting a commitment to impartiality, credibility and the rules of the profession.
- 1.15. Demonstrate commitment for self development and transfer of knowledge and experience to others.

2- General reference standards

2.1 Knowledge & Understanding:

On successful completion of the PhD program, the graduate should be able to efficiently demonstrate the knowledge and understanding of:

- 2.1.1. Fundamentals and theories of modern knowledge in the area of specialization and related fields.
- 2.1.2. Fundamentals, methodologies and ethics of scientific research and various tools.
- 2.1.3. Moral and legal principles of professional practice in the area of specialization.
- 2.1.4. Principles and the basics of quality in professional practice in the area of specialization.
- 2.1.5. Knowledge of the effects of professional practice on the environment and development methods and maintenance of the environment.

2.2. Intellectual Skills

On successful completion of the PhD program, the graduate should be able to:

- 2.2.1. Analyze and evaluate the information in the area of specialization, measure and deduction issues from available information.
- 2.2.2. Solve specialized problems based on the available data.
- 2.2.3. Conduct research studies add to knowledge.
- 2.2.4. Draft scientific papers.
- 2.2.5. Assess risks in professional practices.
- 2.2.6. Plane for enhancing the performance in the area of specialization.
- 2.2.7. Take professional decisions in different professional situations.
- 2.2.8. Show innovation and creativity.
- 2.2.9. Debate and discuss based on arguments and evidence.

2.3 Practical and Professional Skills

On successful completion of the PhD program, the graduate should be able to:

- 2.3.1. Master the basic and modern professional skills in the area of specialization.
- 2.3.2. Write and assess professional reports.
- 2.3.3. Evaluate and develop existing methods and tools in the area of specialization.
- 2.3.4. Use technological means to serve the professional practice.
- 2.3.5. Plane for development of professional practice and the performance of others.

2.4. General and Transferable Skills

On successful completion of the PhD program, the graduate should be able to:

- 2.4.1. Communicate Effectively.
- 2.4.2. Effectively Utilize IT in professional development.
- 2.4.3. Teach others and evaluate their performance.
- 2.4.4. Implement self assessment and continuous learning.
- 2.4.5. Effectively utilize different available information resources.
- 2.4.6. Work in a team and be a team leader.
- 2.4.7. Manage scientific meetings and apply time management principles effectively.

3. External references standards (Benchmarks):

None.

4. Comparison of provision to references standards:

National Academic Reference Standards (NARS)	Covering Program ILOs
<i>A- Knowledge and understanding</i>	
2.1.1. Fundamentals and theories of modern knowledge in the area of specialization and related fields.	a1, a3, a6
2.1.2. Fundamentals, methodologies and ethics of scientific research and various tools.	a2, a3, a4, a5, a7
2.1.3. Moral and legal principles of professional practice in area of specialization.	a2, a5
2.1.4. Principles and basics of quality in professional practice in the area of specialization.	a5, a8
2.1.5. Knowledge of the effects of professional practice on the environment and development methods and maintenance of the environment.	a9
<i>B- Intellectual skills</i>	
2.2.1. Analyze and evaluate the information in the area of specialization, measure and deduction issues from available information.	b1
2.2.2. Solve specialized problems based on the available data.	b8, b9, b10, b11
2.2.3. Conduct research studies add to knowledge.	b2
2.2.4. Draft scientific papers.	b3
2.2.5. Assess risks in professional practices.	b4
2.2.6. Plan for enhancing the performance in the area of specialization.	b7, b12
2.2.7. Take professional decisions in different professional situations.	b6
2.2.8. Show innovation and creativity.	b5, b13
2.2.9. Debate and discuss based on arguments and evidence.	b14
<i>C- Practical and professional skills</i>	
2.3.1. Master the basic and modern professional skills in the area of specialization.	c1, c2, c5, c6, c9
2.3.2. Write and assess professional reports.	c3
2.3.3. Evaluate and develop existing methods and tools in the area of specialization.	c4
2.3.4. Use technological means to serve the professional practice.	c7
2.3.5. Plan for development of professional practice and performance of others.	c8
<i>D- General and transferable skills</i>	
2.4.1. Communicate Effectively.	d1, d11
2.4.2. Effectively Utilize IT in professional development.	d2, d10
2.4.3. Teach others and evaluate their performance.	d3, d11
2.4.4. Implement self assessment and continuous learning.	d3, d7
2.4.5. Effectively utilize different available information resources.	d4, d8, d9, d10
2.4.6. Work in a team and be a team leader.	d5, d6
2.4.7. Manage scientific meetings and apply time management principles effectively.	d5, d6

5. Curriculum Structure and contents:

- 5.A Program duration : Minimum 2 years after registration
- 5.B Program structure: The program is based on research and no taught courses

6. Program admission requirements

The candidate should be holding a Master of Science degree in pharmaceutical sciences or Pharm D degree from a University in the Arab Republic of Egypt or an equivalent degree from another scientific institute recognized by the Supreme Council of Universities.

7. Regulations for progression and program completion

- English proficiency certificate with the minimum scores required are : IELTS score of 5 or/ International TOEFL score of 450
- The degree certificate is required when students enrolled in other universities are transferred to Tanta University.
- For overseas students, they are enrolled in the degree after them sign a commitment to obtaining English proficiency certificate within the first year otherwise their admission would be deemed canceled. The requirements of both national and overseas students are the same.
- English proficiency certificate is regarded valid for only two years as of the date of issue.
- The student must conduct research point approved by college council in accordance with the corresponding department proposal. The college council may authorize the student to conduct part of his research in another approved institution, in accordance with supervisor's recommendation and college council' approval.
- The supervisor(s) must provide a semi-annual report on the progress of student to the department council and the Graduate Studies Committee and the graduate should be given a copy of the report. The annual report must be submitted to the college council in October each year.
- If the student failed to finalize his thesis with 5 years from approval of research proposal, the research point will be cancelled unless extension for another year was approved by the college council based on a report from the supervisor(s) and approval from the corresponding department.

8. Methods of intended learning outcomes assessment

The student presents the results of his research work in the form of written thesis which is evaluated by the examination committee before conducting and open viva. The viva involves mainly oral examination but the examination committee has the right to examine the student practically or in writing in subjects relevant to his research area.

9. Evaluation of program

Evaluator	Tool
1. Senior students	questionnaires
2. Alumni	Questionnaires & meetings
3. Stakeholders(Employers)	Questionnaires & meetings
4. External Evaluator(s) (External Examiner(s))	Reports & approval sheets

Name	Signature	Date
<i>Program Coordinator: Prof. Dr. Fatma Ibrahim Sonbol (Vice dean of graduate studies and research)</i>		
<i>Head of Department: Prof. Dr. Tarek F. El-moselhy</i>		
<i>Dean of the Faculty: Prof. Dr. Alaa Eldein El-sisi</i>		