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## Appendix

### Academic Standards for Graduate Studies Faculty of Engineering - Alexandria University

#### Firstly: Graduate Studies Diploma

##### 1) Attributes of the Graduate from Diploma Programs

###### The Graduate should be able to:

- Apply knowledge gained from practice.
- Identify the problems associated with professional work.
- Master professional skills and use appropriate technological means in the exercise of his work.
- Communicate and lead teams.
- Assist in decision making in the light of available information.
- Employ available resources.
- Be aware of his/her role in society development and the preservation of the environment.
- Be committed to integrity and credibility and the ethics of the profession and accept rules and regulations.
- Recognize the need to develop himself/herself professionally and scientifically.

##### 2) Intended Learning Outcomes (ILO's)

###### A. Knowledge and Understanding

By the end of study for the postgraduate studies Diploma, the candidate should be capable of understanding and assimilating the following:

- a1. Theories, basics and specialized knowledge in the field of learning, as well as the subjects that affect his/her professional practice.
- a2. Ethical and legal principles of professional practice in the field of specialization.
- a3. Basics and principles of quality in professional practice in the field of specialization.
- a4. Working towards conservation and preservation of the environment



### **B. Intellectual Skills**

By the end of study for the postgraduate studies Diploma, the candidate should be capable of doing the following :

- b1. Define and analyze problems in the field of specialization and sort them according to priorities.
- b2. Solve specialized problems in the field of practice.
- b3. Analytically read research work and subjects relevant to the field of specialization.
- b4. Assess risks in professional practice.
- b5. Take professional decisions in the light of available information.

### **C. Professional and Practical Skills**

By the end of study for the postgraduate studies Diploma, the candidate should be capable of doing the following :

- c1. Apply professional skills in the field of specialization.
- c2. Write technical reports.

### **D. General and Transferable skills**

By the end of study for the postgraduate studies Diploma, the candidate should be capable of doing the following :

- d1. Communicate effectively.
- d2. Use IT to enhance professional practice.
- d3. Apply self evaluation and define personal educational needs.
- d4. Use different sources to obtain knowledge and information.
- d5. Work in a team and individually.
- d6. Lead a team and manage time.
- d7. Apply self and continuous learning.

## **Secondly: Master Programs**

### **1) Attributes of the Graduate from Master Programs**

- Proficiency in the application of the basics and methodologies of scientific research and the use of various scientific tools.
- Application of the analytical methods in the field of specialization.



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- Application of specialized knowledge and integrating them with relevant knowledge in research studies.
  - Awareness of current problems and modern visions in the area of specialization.
  - Identification of research problems and finding solutions.
  - Mastering a range of appropriate professional skills, and using of appropriate technological means to serve the research studies.
  - Communicating effectively and the ability to lead a work team.
  - Developing proposals in accordance with the conditions of the problems.
  - Taking into account available resources, leading to the highest benefit from these resources in practice.
  - Demonstrating awareness of his/her role in community development and conservation of the environment.
  - Acting in such a way to reflect commitment to integrity, credibility and sticking to the rules of scientific research.
  - Personal development in academics and research and ability for continuing education.

## **2) Intended Learning Outcomes (ILO's)**

### **A. Knowledge and Understanding**

By the end of study for the Master program, the candidate should be capable of understanding and assimilating the following:

- a1. Theories, basics and specialized knowledge in the field of learning, as well as other related subjects.
- a2. Effect of research studies on the environment on the Environment.
- a3. Scientific development in the field of specialization.
- a4. Ethical and legal principles of scientific research in the field of specialization.
- a5. Basics and principles of quality in research in the field of specialization.
- a6. Basics and ethics of scientific research.

### **B. Intellectual Skills**

By the end of study for the Master program, the candidate should be able to do the following :

- b1. Define and analyze information in the field of specialization, and rely on them to solve problems.
- b2. Solve specialization problems with missing parameters and variables.
- b3. Link diverse knowledge to solve professional problems.



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- b4. Perform a research study and/or write a scientific thesis about a research problem.
  - b5. Assess risks in professional practice in the field of specialization.
  - b6. Plan for performance development in the field of practice.
  - b7. Make professional decisions in different practical contexts.

### **C. Professional and Practical Skills**

By the end of study for the Master program, the candidate should be able to do the following :

- c1. Master the basic as well as the latest professional skills in the field of specialization.
- c2. Write and evaluate technical and professional reports.
- c3. Evaluate methods and tools for problem solving and research.

### **D. General and Transferable skills**

By the end of study for the Master program, the candidate should be able to do the following:

- d1. Communicate effectively.
- d2. Use IT to enhance research practice.
- d3. Apply self evaluation and define personal educational needs.
- d4. Use different sources to obtain knowledge and information.
- d5. Set rules for research and suitable performance indices.
- d6. Work in a team and lead a team.
- d7. Efficiently manage time.
- d8. Apply self and continuous learning.

## **Thirdly: PhD Programs**

### **1) Attributes of the Graduate from the Ph.D. Program**

**The Graduate should be able to:**

- Master the basics and methodologies of scientific research.
- Work continuously towards the addition of knowledge in the field of specialization.
- Apply critical analytical and experimental methodology in the field of specialization and related areas.
- Combine specialized knowledge with related knowledge, deducing and developing



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relationships between them.

- Demonstrate profound awareness of current problems and modern theories in the field of specialization.
- Identify practical problems and find innovative solutions to solve them.
- Master scientific skills in the field of specialization.
- Orient himself/herself towards developing procedures, tools and new methods to be applied in the field of specialization.
- Use of appropriate technological means to pursue his/her profession.
- Communicate effectively and lead a team to work in different professional contexts.
- Suggest ways to make decisions in light of available information.
- Employ available resources efficiently, while developing them and working on finding new resources when proposing solutions.
- Be aware of his role in community development and environmental conservation.
- Act to reflect the commitment to integrity, credibility, and the rules of scientific research.
- Commit to development and transfer of knowledge and experience to others.

## **2) Intended Learning Outcomes (ILO's)**

### **A. Knowledge and Understanding**

By the end of study for the PhD program, the candidate should have knowledge and understanding of the following:

- a1. Theories, basics and recent knowledge in the field of learning, as well as other related subjects.
- a2. Basics, methodologies and ethics of scientific research and its different tools.
- a3. Ethical and legal principles of scientific research in the field of specialization.
- a4. Basics and principles of quality in studies and research in the field of specialization.
- a5. Knowledge related to environmental studies and research, and methods of conserving and preserving the environment.

### **B. Intellectual Skills**

By the end of study for the PhD program the candidate should be able to do the following:

- b1. Define and analyze information in the field of specialization, and rely on them to solve problems and deduce from them.



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- b2. Propose solutions for specialization problems based on the available information.
  - b3. Carry out research studies adding to the available knowledge.
  - b4. Write research papers.
  - b5. Assess risks in research.
  - b6. Plan for performance development in the field of practice.
  - b7. Support practical decisions in the field of specialization.
  - b8. Be creative and innovative.
  - b9. Carry out discussions and dialogue based on evidence and proof.

### **C. Professional and Practical Skills**

By the end of study for the PhD program, the candidate should be able to do the following:

- c1. Master the basic as well as the latest professional skills in the field of specialization.
- c2. Write and evaluate technical and professional reports.
- c3. Evaluate methods and tools available in the field of practice.
- c4. Use technology to benefit specialized research studies.
- c5. Plan for performance and research development.

### **D. General and Transferable skills**

By the end of the study for the PhD program, the candidate should be able to do the following:

- d1. Communicate effectively.
- d2. Use IT to enhance specialized research.
- d3. Transfer knowledge and evaluate information and performance.
- d4. Continuously learn and self-evaluate.
- d5. Use different sources to obtain knowledge and information.
- d6. Work in a team and act as a team leader.
- d7. Manage scientific meetings and apply time management.