Comparative Anatomy, Histology and Histochemistry Ph.D. Program Specification

A. Basic Information

Program Title: Comparative Anatomy, Histology and Histochemistry Ph.D. Program
Program Type: Major
Department Responsible: Zoology Department
Coordinator: Dr. Doaa Sabry Ibrahim
Internal Evaluator: Dr. Marwa saad Mohamady Mahmoud
External Evaluator: Prof. Dr. Abdel Aziz Diab
Date of the most recent approval of program specification by the faculty council: 9/12/2015 - No. (390)

B. Professional Information

1. Program Aims

By the end of the Ph.D. in Comparative anatomy, Histology and Histochemistry program graduates must be able to:

1.1. Master different concepts, principles and applications of Comparative anatomy, Histology and Histochemistry.
1.2. Commitment to continuing self learning with work on the addendum to the knowledge in Comparative anatomy, Histology and Histochemistry and transfer of knowledge and expertise to others.
1.3. Application of the analytical method and critic of knowledge in Comparative anatomy, Histology and Histochemistry and related areas.
1.4. Use knowledge in Comparative anatomy, Histology and Histochemistry field combined with related knowledge to find innovative solutions for professional problems.
1.5. Mastery of a wide range of professional skills in Comparative anatomy, Histology and Histochemistry and development of methods and tools, and new techniques in professional practice.
1.6. Communicate effectively and have the ability to lead teams and make decisions in light of available information.
1.7. Show awareness of his/her role in community development and preservation of the environment.
1.8. Behave in a manner reflecting the commitment to integrity and

credibility of the profession and abide by the rules.

2. Intended Learning Outcomes (ILO's)

a. Knowledge and Understanding

By the end of the Ph.D. in Comparative anatomy, Histology and Histochemistry program graduates must be able to know and understand the followings:

a1	Theories and fundamentals and modern knowledge in Comparative anatomy, Histology and Histochemistryand related sciences in Zoology.
a2	The basics and ethics of the scientific research in Comparative .anatomy, Histology and Histochemistry
a3	Legal and ethical principles for professional practice in .Comparative anatomy, Histology and Histochemistry
a4	Principles and fundamentals of quality in professional practice in .Comparative anatomy, Histology and Histochemistry
a5	Knowledge related to the effects of professional practice on the environment and society and ways of development and preservation of the environment.

b. Intellectual Skills

By the end of the Ph.D. in Comparative anatomy, Histology and Histochemistry program graduates must be able to:

b1	Analyze and evaluate the information in Comparative anatomy, Histology and Histochemistryand related sciences in Zoology.
b2	Interpret and correlate data for solve problems in Comparative anatomy, Histology and Histochemistryand related sciences in Zoology.
b3	Develop research study which contributes to add the knowledge in Comparative anatomy, Histology and Histochemistryand related sciences in Zoology.
b4	Formulate scientific research in Comparative anatomy, Histology and Histochemistry.
b5	Evaluate risks during the professional practice in Comparative anatomy, Histology and Histochemistry.
b6	Planning and innovation for the development of performance in Comparative anatomy, Histology and Histochemistry.
b7	Make professional decisions in professional practices in Comparative

b8	anatomy, Histology and Histochemistry. Discussion based on evidences and conclusions in Comparative anatomy, Histology and Histochemistryand related sciences in Zoology.

c. Professional and Practical Skills

By the end of the Ph.D. in Comparative anatomy, Histology and Histochemistry program graduates must be able to:

c1	Mastery of basic, professional and modern skills Comparative anatomy, Histology and Histochemistry.
c2	Writing and evaluation of professional reports in Comparative anatomy, Histology and Histochemistryand related sciences in Zoology.
c3	Label different methodology and techniques in Comparative anatomy, Histology and Histochemistryand related sciences in Zoology.
c4	Use technological means to serve the professional practice in Comparative anatomy, Histology and Histochemistry.
c5	Planning for the development of professional practice and development of the performance of others.

d. General Skills

By the end of the Ph.D. in Comparative anatomy, Histology and Histochemistry program graduates must be able to:

d1	Communicate effectively by using different methods.
d2	Use of information technology to development of professional practice and to obtain information and knowledge.
d3	Teach others and evaluate their performance during laboratory works
d4	Self-evaluation and continuous learning.
d5	Work in a team and lead working groups.
d6	Management of scientific meetings and the ability to manage time.

3. Academic standards of the program

The Academic Reference Standards (ARS) of this program is based upon the Standard Criteria for Postgraduate Programs published by the National Authority of Quality Assurance and Accreditation of Education in (2009). Spe-

cific Academic Reference Standards for Ph.D. in Zoology were approved by the Council of Faculty of Science, Benha University in 13/5/2015 (**Appendices 1, 2, 3, 4, 5 and 6**).

4. Reference indices (Benchmarks)

Not utilized.

5. Program structure and contents

5.1. Program duration: 3-5 years.

5.2. Program structure:

Program structure	Credit hours/week
Optional courses	**12**
Research and preparing the Ph.D. thesis	**48**
Total	**60**

5.3. Program Courses:

5.3.1. Optional courses:

Code No.	Course Title	No. of hours		
		Lectures	Practical	Credit hours
The graduate studies (12 hours)				
701 Z	Functions of blood, the heart and circulatory system	3	-	3
702 Z	Description members of breathing and blood gases	3	-	3
703 Z	Molecular and nano-immunology	3	-	3
704 Z	Cytogenetic and its applications	3	-	3
705 Z	Comparative anatomy and experimental embryos	3	-	3
706 Z	Aquaculture and its economics	3	-	3
707 Z	Egyptian environment and natural reserves	3	-	3
708 Z	Protozoa and invertebrates	3	-	3
709 Z	Molecular biology and genetic engineering	3	-	3
710 Z	Ultra-structure of histology	3	-	3
711 Z	Histological and functional installation	3	-	3

712 Z	Advanced course (the decision of the Department)	3	-	3
48 credit hours for research and preparing the PhD thesis				
799 Z	Doctoral thesis	-	-	48

6. Contents of the Courses

See course specification (**Appendix 7 and 8**)

7. Program admission requirements

١. يشترط لقيد الطالب لنيل درجة دكتوراه الفلسفة في العلوم أن يكون حاصلا على درجة ماجستير في العلوم في نفس التخصص من كلية العلوم جامعة بنها أو أى درجة معادلة لها من معهد علمي أخر معترف به من المجلس الأعلى للجامعات.
٢. المدة اللازمة للحصول على درجة دكتوراه الفلسفة في العلوم ثلاث سنوات على الأقل منذ موافقة الجامعة علي التسجيل، وبحد أقصي خمس سنوات (المدة الأساسية) ويمكن مد التسجيل لمدة استثنائية لا تزيد عن ثلاث سنوات بناءا على التقارير العلمية المقدمة من لجنة الأشرف وموافقة مجلس القسم العلمي المختص ولجنة الدراسات العليا والبحوث ومجلس الكلية ومجلس الدراسات العليا والبحوث بالجامعة.
٣. يشترط لتسجيل الطالب لدرجة دكتوراه الفلسفة في العلوم اجتياز امتحان اتقان اللغة الانجليزية او ما يعادلها بمستوى يحدده مجلس الجامعة وكذلك استيفاء أى شروط أضافية تراها الكلية والجامعة لازمة للقيد والتسجيل للدرجة.

8. Regulations for progression and program completion:

١. أن ينجز الطالب عدد ١٢ ساعة دراسية معتمدة من المقررات الدراسية لمرحلة ما بعد الماجستيرمتزامنة مع التسجيل للرسالة العلمية (تحسب ٤٨ ساعة معتمدة) ويخصص لكل ساعة معتمدة خمسون درجة.
٢. يقوم الطالب باجراء مناقشة علنية لخطة البحث (سيمينار) على أن يوافق عليها مجلس القسم تمهيدا لتسجيله للدرجة.
٣. تعقد امتحانات الدراسة الخاصة بالدكتوراه في نهاية كل فصل دراسي في المواعيد التي يقرها مجلس الكلية بناءً علي اقتراح مجالس الأقسام.
٤. يقوم الطالب باجراء بحث ذا قيمة علمية تمثل إضافة علمية جديدة قائمة علي البحث المبتكر في موضوع يقره مجلس القسم ولجنة الدراسات العليا و مجلس الكلية ومجلس الدراسات العليا بالجامعة على أن يقدم الطالب نتائج بحثه في رسالة تقبلها لجنة الحكم، و يقوم الطالب بعمل سيمينار قبل التقدم بالرسالة بثلاثة اشهر علي الأقل.

٥. يمنح الطالب درجة دكتوراه الفلسفة في العلوم ويذكر في الشهادة التخصص العام والدقيق وعنوان الرسالة.
٦. يرجع للائحة التنفيذية لقانون تنظيم الجامعات فيما لم يرد به نص في هذه اللائحة.

9. Methods and rules of evaluation of graduates enrolled in the program:

9.1. Theoretical courses:

Method of Assessment	Percent
Semester work & mid Term Exam	10%
Oral Exam	10%
Final Term Examination	80%
Total	100%

9.2. Doctorate Thesis evaluation:

- The senior supervisor reports.
- Individual Reports of the Judge Committee
  (Three specialist professors including the senior supervisor).
- The Public Discussion
- The Common Report of the Judge Committee.
- Department, Faculty and University Boards.

• Assessment Recommendations:
-The Judge Committee has to recommend one of the following:
- Accepting the thesis as it is.
- Accept the thesis and recommends awarding after correction performing.
- Delaying awarding for maximum three months to perform corrections.
- Re-displaying the thesis to the judge committee within limited period.
- Rejecting the thesis at all.

10. Teaching and learning strategies used in the program:

10.1. Direct teaching strategy.
10.2. Cooperative learning strategy.
10.3. Brainstorming strategy.
10.4. Problem-solving strategy.
10.5. Effective discussion strategy.
10.6. Independent Study strategy.

11. Methods of program evaluation: (Appendix 9)

Samples	Tool
1- Senior Students	Questionnaire
2- Alumni	Questionnaire
3- External Evaluators	Reports
4- Stakeholders	Questionnaire, workshops, seminars, conferences

Head of the department: Prof. Dr. Salwa Ebrahem Abd-El Hady

Date: **2015 / 2016**

Biotechnology Ph.D. Program Specification

A. Basic Information

Program Title: Biotechnology Ph.D. Program
Program Type: Major
Department Responsible: Zoology Department
Coordinator: Dr. Doaa Sabry Ibrahim
Internal Evaluator: Dr. Marwa saad Mohamady Mahmoud
External Evaluator: Prof. Dr. Abdel Aziz Diab
Date of the most recent approval of program specification by the faculty council:
9/12/2015 - No. (390)

B. Professional Information

1. Program Aims

By the end of the Ph.D. in Biotechnology program graduates must be able to:

1.1. Master different concepts, principles and applications of Biotechnology.
1.2. Commitment to continuing self learning with work on the addendum to the knowledge in Biotechnologyand transfer of knowledge and expertise to others.
1.3. Application of the analytical method and critic of knowledge in Biotechnologyand related areas.
1.4. Use knowledge Biotechnology field combined with related knowledge to find innovative solutions for professional problems.
1.5. Mastery of a wide range of professional skills in Biotechnology and development of methods and tools, and new techniques in professional practice.
1.6. Communicate effectively and have the ability to lead teams and make decisions in light of available information.
1.7. Show awareness of his/her role in community development and preservation of the environment.
1.8. Behave in a manner reflecting the commitment to integrity and credibility of the profession and abide by the rules.

2. Intended Learning Outcomes (ILO's)

a. Knowledge and Understanding

By the end of the Ph.D. in Biotechnology program graduates must be able to know and understand the followings:

a1	Theories and fundamentals and modern knowledge in Biotechnologyand related sciences in Zoology.
a2	The basics and ethics of the scientific research in Biotechnology.
a3	Legal and ethical principles for professional practice in Biotechnology.
a4	Principles and fundamentals of quality in professional practice in Biotechnology.
a5	Knowledge related to the effects of professional practice on the environment and society and ways of development and preservation of the environment.

b. Intellectual Skills

By the end of the Ph.D. in Biotechnology program graduates must be able to:

b1	Analyze and evaluate the information in Biotechnologyand related sciences in Zoology.
b2	Interpret and correlate data for solve problems in Biotechnologyand related sciences in Zoology.
b3	Develop research study which contributes to add the knowledge in Biotechnologyand related sciences in Zoology.
b4	Formulate scientific research in Biotechnology.
b5	Evaluate risks during the professional practice in Biotechnology.
b6	Planning and innovation for the development of performance in Biotechnology.
b7	Make professional decisions in professional practices in Biotechnology.
b8	Discussion based on evidences and conclusions in Biotechnologyand related sciences in Zoology.

c. Professional and Practical Skills

By the end of the Ph.D. in Biotechnology program graduates must be able to:

c1	.Mastery of basic, professional and modern skills Biotechnology
c2	Writing and evaluation of professional reports in Biotechnologyand related sciences in Zoology.
c3	Label different methodology and techniques in Biotechnologyand related sciences in Zoology.
c4	Use technological means to serve the professional practice in .Biotechnology
c5	Planning for the development of professional practice and development of the performance of others.

d. General Skills

By the end of the Ph.D. in Biotechnology program graduates must be able to:

d1	Communicate effectively by using different methods.
d2	Use of information technology to development of professional practice and to obtain information and knowledge.
d3	Teach others and evaluate their performance during laboratory works
d4	Self-evaluation and continuous learning.
d5	Work in a team and lead working groups.
d6	Management of scientific meetings and the ability to manage time.

3. Academic standards of the program

The Academic Reference Standards (ARS) of this program is based upon the Standard Criteria for Postgraduate Programs published by the National Authority of Quality Assurance and Accreditation of Education in (2009). Specific Academic Reference Standards for Ph.D. in Zoology were approved by the Council of Faculty of Science, Benha University in 13/5/2015 (**Appendices 1, 2, 3, 4, 5 and 6**).

4. Reference indices (Benchmarks)

Not utilized.

5. Program structure and contents

5.1. Program duration: 3-5 years.

5.2. Program structure:

Program structure	Credit hours/week
Optional courses	**12**
Research and preparing the Ph.D. thesis	**48**
Total	**60**

5.3. Program Courses:

5.3.1. Optional courses:

Code No.	Course Title	No. of hours		
		Lectures	Practical	Credit hours
The graduate studies (12 hours)				
701 Z	Functions of blood, the heart and circulatory system	3	-	3
702 Z	Description members of breathing and blood gases	3	-	3
703 Z	Molecular and nano-immunology	3	-	3
704 Z	Cytogenetic and its applications	3	-	3
705 Z	Comparative anatomy and experimental embryos	3	-	3
706 Z	Aquaculture and its economics	3	-	3
707 Z	Egyptian environment and natural reserves	3	-	3
708 Z	Protozoa and invertebrates	3	-	3
709 Z	Molecular biology and genetic engineering	3	-	3
710 Z	Ultra-structure of histology	3	-	3
711 Z	Histological and functional installation	3	-	3
712 Z	Advanced course (the decision of the Department)	3	-	3
48 credit hours for research and preparing the PhD thesis				
799 Z	Doctoral thesis	-	-	48

6. Contents of the Courses

See course specification (**Appendix 7 and 8**)

7. Program admission requirements

١. يشترط لقيد الطالب لنيل درجة دكتوراه الفلسفة في العلوم أن يكون حاصلا على درجة ماجستير في العلوم في نفس التخصص من كلية العلوم جامعة بنها أو أى درجة معادلة لها من معهد علمي أخر معترف به من المجلس الأعلى للجامعات.
٢. المدة اللازمة للحصول على درجة دكتوراه الفلسفة في العلوم ثلاث سنوات على الأقل منذ موافقة الجامعة علي التسجيل، وبحد أقصي خمس سنوات (المدة الأساسية) ويمكن مد التسجيل لمدة استثنائية لا تزيد عن ثلاث سنوات بناءا على التقارير العلمية المقدمة من لجنة الأشرف وموافقة مجلس القسم العلمي المختص ولجنة الدراسات العليا والبحوث ومجلس الكلية ومجلس الدراسات العليا والبحوث بالجامعة.
٣. يشترط لتسجيل الطالب لدرجة دكتوراه الفلسفة في العلوم اجتياز امتحان اتقان اللغة الانجليزية او ما يعادلها بمستوى يحدده مجلس الجامعة وكذلك استيفاء أى شروط أضافية تراها الكلية والجامعة لازمة للقيد والتسجيل للدرجة.

8. Regulations for progression and program completion:

١. أن ينجز الطالب عدد ١٢ ساعة دراسية معتمدة من المقررات الدراسية لمرحلة ما بعد الماجستيرمتزامنة مع التسجيل للرسالة العلمية (تحسب ٤٨ ساعة معتمدة) ويخصص لكل ساعة معتمدة خمسون درجة.
٢. يقوم الطالب باجراء مناقشة علنية لخطة البحث (سيمينار) على أن يوافق عليها مجلس القسم تمهيدا لتسجيله للدرجة.
٣. تعقد امتحانات الدراسة الخاصة بالدكتوراه في نهاية كل فصل دراسي في المواعيد التي يقرها مجلس الكلية بناءً علي اقتراح مجالس الأقسام.
٤. يقوم الطالب باجراء بحث ذا قيمة علمية تمثل إضافة علمية جديدة قائمة علي البحث المبتكر في موضوع يقره مجلس القسم ولجنة الدراسات العليا و مجلس الكلية ومجلس الدراسات العليا بالجامعة على أن يقدم الطالب نتائج بحثه في رسالة تقبلها لجنة الحكم، و يقوم الطالب بعمل سيمينار قبل التقدم بالرسالة بثلاثة اشهر علي الأقل.
٥. يمنح الطالب درجة دكتوراه الفلسفة في العلوم ويذكر في الشهادة التخصص العام والدقيق وعنوان الرسالة.
٦. يرجع للائحة التنفيذية لقانون تنظيم الجامعات فيما لم يرد به نص في هذه اللائحة.

9. Methods and rules of evaluation of graduates enrolled in the program:

9.1. Theoretical courses:

Method of Assessment	Percent
Semester work & mid Term Exam	10%
Oral Exam	10%
Final Term Examination	80%
Total	100%

9.2. Doctorate Thesis evaluation:

- The senior supervisor reports.
- Individual Reports of the Judge Committee
  (Three specialist professors including the senior supervisor).
- The Public Discussion
- The Common Report of the Judge Committee.
- Department, Faculty and University Boards.

• Assessment Recommendations:
-The Judge Committee has to recommend one of the following:
- Accepting the thesis as it is.
- Accept the thesis and recommends awarding after correction performing.
- Delaying awarding for maximum three months to perform corrections.
- Re-displaying the thesis to the judge committee within limited period.
- Rejecting the thesis at all.

10. Teaching and learning strategies used in the program:

10.1. Direct teaching strategy.
10.2. Cooperative learning strategy.
10.3. Brainstorming strategy.
10.4. Problem-solving strategy.
10.5. Effective discussion strategy.
10.6. Independent Study strategy.

11. Methods of program evaluation: (Appendix 9)

Samples	Tool
1- Senior Students	Questionnaire
2- Alumni	Questionnaire
3- External Evaluators	Reports
4- Stakeholders	Questionnaire, workshops, seminars, conferences

Head of the department: Prof. Dr. Salwa Ebrahem Abd-El Hady

Date: **2015 / 2016**

Ecology and Aquatic Biology Ph.D. Program Specification

A. Basic Information

Program Title: Ecology and Aquatic Biology Ph.D. Program
Program Type: Major
Department Responsible: Zoology Department
Coordinator: Dr. Doaa Sabry Ibrahim
Internal Evaluator: Dr. Marwa saad Mohamady Mahmoud
External Evaluator: Prof. Dr. Abdel Aziz Diab
Date of the most recent approval of program specification by the faculty council:
9/12/2015 - No. (390)

B. Professional Information

1. Program Aims

By the end of the Ph.D. in Ecology and Aquatic biology program graduates must be able to:

1.1. Master different concepts, principles and applications of Ecology and Aquatic biology.
1.2. Commitment to continuing self learning with work on the addendum to the knowledge in Ecology and Aquatic biologyand transfer of knowledge and expertise to others.
1.3. Application of the analytical method and critic of knowledge in Ecology and Aquatic biologyand related areas.
1.4. Use knowledge in Ecology and Aquatic biology field combined with related knowledge to find innovative solutions for professional problems.
1.5. Mastery of a wide range of professional skills in Ecology and Aquatic biologyand development of methods and tools, and new techniques in professional practice.
1.6. Communicate effectively and have the ability to lead teams and make decisions in light of available information.
1.7. Show awareness of his/her role in community development and preservation of the environment.
1.8. Behave in a manner reflecting the commitment to integrity and credibility of the profession and abide by the rules.

2. Intended Learning Outcomes (ILO's)

a. Knowledge and Understanding

By the end of the Ph.D. in Ecology and Aquatic biology program graduates must be able to know and understand the followings:

a1	Theories and fundamentals and modern knowledge in Ecology and Aquatic biologyand related sciences in Zoology.
a2	The basics and ethics of the scientific research in Ecology and .Aquatic biology
a3	Legal and ethical principles for professional practice in Ecology and .Aquatic biology
a4	Principles and fundamentals of quality in professional practice in .Ecology and Aquatic biology
a5	Knowledge related to the effects of professional practice on the environment and society and ways of development and preservation of the environment.

b. Intellectual Skills

By the end of the Ph.D. in Ecology and Aquatic biology program graduates must be able to:

b1	Analyze and evaluate the information in Ecology and Aquatic biol-ogyand related sciences in Zoology.
b2	Interpret and correlate data for solve problems in Ecology and Aquat-ic biologyand related sciences in Zoology.
b3	Develop research study which contributes to add the knowledge in Ecology and Aquatic biologyand related sciences in Zoology.
b4	.Formulate scientific research in Ecology and Aquatic biology
b5	Evaluate risks during the professional practice in Ecology and .Aquatic biology
b6	Planning and innovation for the development of performance in .Ecology and Aquatic biology
b7	Make professional decisions in professional practices in Ecology and .Aquatic biology
b8	Discussion based on evidences and conclusions in Ecology and Aquatic biologyand related sciences in Zoology.

c. Professional and Practical Skills

By the end of the Ph.D. in Ecology and Aquatic biology program graduates must be able to:

c1	Mastery of basic, professional and modern skills Ecology and .Aquatic biology
c2	Writing and evaluation of professional reports in Ecology and Aquatic biologyand related sciences in Zoology.
c3	Label different methodology and techniques in Ecology and Aquatic biologyand related sciences in Zoology.
c4	Use technological means to serve the professional practice in .Ecology and Aquatic biology
c5	Planning for the development of professional practice and development of the performance of others.

d. General Skills

By the end of the Ph.D. in Ecology and Aquatic biology program graduates must be able to:

d1	Communicate effectively by using different methods.
d2	Use of information technology to development of professional practice and to obtain information and knowledge.
d3	Teach others and evaluate their performance during laboratory works
d4	Self-evaluation and continuous learning.
d5	Work in a team and lead working groups.
d6	Management of scientific meetings and the ability to manage time.

3. Academic standards of the program

The Academic Reference Standards (ARS) of this program is based upon the Standard Criteria for Postgraduate Programs published by the National Authority of Quality Assurance and Accreditation of Education in (2009). Specific Academic Reference Standards for Ph.D. in Zoology were approved by the Council of Faculty of Science, Benha University in 13/5/2015 (**Appendices 1, 2, 3, 4, 5 and 6**).

4. Reference indices (Benchmarks)

Not utilized.

5. Program structure and contents

5.1. Program duration: 3-5 years.

5.2. Program structure:

Program structure	Credit hours/week
Optional courses	**12**
Research and preparing the Ph.D. thesis	**48**
Total	**60**

5.3. Program Courses:

5.3.1. Optional courses:

Code No.	Course Title	No. of hours		
		Lectures	Practical	Credit hours
The graduate studies (12 hours)				
701 Z	Functions of blood, the heart and circulatory system	3	-	3
702 Z	Description members of breathing and blood gases	3	-	3
703 Z	Molecular and nano-immunology	3	-	3
704 Z	Cytogenetic and its applications	3	-	3
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706 Z	Aquaculture and its economics	3	-	3
707 Z	Egyptian environment and natural reserves	3	-	3
708 Z	Protozoa and invertebrates	3	-	3
709 Z	Molecular biology and genetic engineering	3	-	3
710 Z	Ultra-structure of histology	3	-	3
711 Z	Histological and functional installation	3	-	3
712 Z	Advanced course (the decision of the Department)	3	-	3
48 credit hours for research and preparing the PhD thesis				
799 Z	Doctoral thesis	-	-	48

6. Contents of the Courses

See course specification (**Appendix 7 and 8**)

7. Program admission requirements

١. يشترط لقيد الطالب لنيل درجة دكتوراه الفلسفة في العلوم أن يكون حاصلا على درجة ماجستير في العلوم في نفس التخصص من كلية العلوم جامعة بنها أو أى درجة معادلة لها من معهد علمي أخر معترف به من المجلس الأعلى للجامعات.
٢. المدة اللازمة للحصول على درجة دكتوراه الفلسفة في العلوم ثلاث سنوات على الأقل منذ موافقة الجامعة علي التسجيل، وبحد أقصي خمس سنوات (المدة الأساسية) ويمكن مد التسجيل لمدة استثنائية لا تزيد عن ثلاث سنوات بناءا على التقارير العلمية المقدمة من لجنة الأشرف وموافقة مجلس القسم العلمي المختص ولجنة الدراسات العليا والبحوث ومجلس الكلية ومجلس الدراسات العليا والبحوث بالجامعة.
٣. يشترط لتسجيل الطالب لدرجة دكتوراه الفلسفة في العلوم اجتياز امتحان اتقان اللغة الانجليزية او ما يعادلها بمستوى يحدده مجلس الجامعة وكذلك استيفاء أى شروط أضافية تراها الكلية والجامعة لازمة للقيد والتسجيل للدرجة.

8. Regulations for progression and program completion:

١. أن ينجز الطالب عدد ١٢ ساعة دراسية معتمدة من المقررات الدراسية لمرحلة ما بعد الماجستيرمتزامنة مع التسجيل للرسالة العلمية (تحسب ٤٨ ساعة معتمدة) ويخصص لكل ساعة معتمدة خمسون درجة.
٢. يقوم الطالب باجراء مناقشة علنية لخطة البحث (سيمينار) على أن يوافق عليها مجلس القسم تمهيدا لتسجيله للدرجة.
٣. تعقد امتحانات الدراسة الخاصة بالدكتوراه في نهاية كل فصل دراسي في المواعيد التي يقرها مجلس الكلية بناءً علي اقتراح مجالس الأقسام.
٤. يقوم الطالب باجراء بحث ذا قيمة علمية تمثل إضافة علمية جديدة قائمة علي البحث المبتكر في موضوع يقره مجلس القسم ولجنة الدراسات العليا و مجلس الكلية ومجلس الدراسات العليا بالجامعة على أن يقدم الطالب نتائج بحثه في رسالة تقبلها لجنة الحكم، و يقوم الطالب بعمل سيمينار قبل التقدم بالرسالة بثلاثة اشهر علي الأقل.
٥. يمنح الطالب درجة دكتوراه الفلسفة في العلوم ويذكر في الشهادة التخصص العام والدقيق وعنوان الرسالة.
٦. يرجع للائحة التنفيذية لقانون تنظيم الجامعات فيما لم يرد به نص في هذه اللائحة.

9. Methods and rules of evaluation of graduates enrolled in the program:

9.1. Theoretical courses:

Method of Assessment	Percent
Semester work & mid Term Exam	10%
Oral Exam	10%
Final Term Examination	80%
Total	100%

9.2. Doctorate Thesis evaluation:

- The senior supervisor reports.
- Individual Reports of the Judge Committee
  (Three specialist professors including the senior supervisor).
- The Public Discussion
- The Common Report of the Judge Committee.
- Department, Faculty and University Boards.

• Assessment Recommendations:
-The Judge Committee has to recommend one of the following:
- Accepting the thesis as it is.
- Accept the thesis and recommends awarding after correction performing.
- Delaying awarding for maximum three months to perform corrections.
- Re-displaying the thesis to the judge committee within limited period.
- Rejecting the thesis at all.

10. Teaching and learning strategies used in the program:

10.1. Direct teaching strategy.
10.2. Cooperative learning strategy.
10.3. Brainstorming strategy.
10.4. Problem-solving strategy.
10.5. Effective discussion strategy.
10.6. Independent Study strategy.

11. Methods of program evaluation: (Appendix 9)

Samples	Tool
1- Senior Students	Questionnaire
2- Alumni	Questionnaire
3- External Evaluators	Reports
4- Stakeholders	Questionnaire, workshops, seminars, conferences

Head of the department: Prof. Dr. Salwa Ebrahem Abd-El Hady

Date: **2015 / 2016**

Genetics and Genetics Engineering Ph.D. Program Specification

A. Basic Information

Program Title: Genetics and Genetics Engineering Ph.D. Program
Program Type: Major
Department Responsible: Zoology Department
Coordinator: Dr. Doaa Sabry Ibrahim
Internal Evaluator: Dr. Marwa saad Mohamady Mahmoud
External Evaluator: Prof. Dr. Abdel Aziz Diab
Date of the most recent approval of program specification by the faculty council: 9/12/2015 - No. (390)

B. Professional Information

1. Program Aims

By the end of the Ph.D. in Genetics and Genetics engineering program graduates must be able to:

1.1. Master different concepts, principles and applications of Genetics and Genetics engineering.
1.2. Commitment to continuing self learning with work on the addendum to the knowledge in Genetics and Genetics engineeringand transfer of knowledge and expertise to others.
1.3. Application of the analytical method and critic of knowledge in Genetics and Genetics engineeringand related areas.
1.4. Use knowledge in Genetics and Genetics engineering field combined with related knowledge to find innovative solutions for professional problems.
1.5. Mastery of a wide range of professional skills in Genetics and Genetics engineeringand development of methods and tools, and new techniques in professional practice.
1.6. Communicate effectively and have the ability to lead teams and make decisions in light of available information.
1.7. Show awareness of his/her role in community development and preservation of the environment.
1.8. Behave in a manner reflecting the commitment to integrity and credibility of the profession and abide by the rules.

2. Intended Learning Outcomes (ILO's)

a. Knowledge and Understanding

By the end of the Ph.D. in Genetics and Genetics engineering program graduates must be able to know and understand the followings:

a1	Theories and fundamentals and modern knowledge in Genetics and Genetics engineeringand related sciences in Zoology.
a2	The basics and ethics of the scientific research in Genetics and Genetics engineering.
a3	Legal and ethical principles for professional practice in Genetics and Genetics engineering.
a4	Principles and fundamentals of quality in professional practice in Genetics and Genetics engineering.
a5	Knowledge related to the effects of professional practice on the environment and society and ways of development and preservation of the environment.

b. Intellectual Skills

By the end of the Ph.D. in Genetics and Genetics engineering program graduates must be able to:

b1	Analyze and evaluate the information in Genetics and Genetics engineeringand related sciences in Zoology.
b2	Interpret and correlate data for solve problems in Genetics and Genetics engineeringand related sciences in Zoology.
b3	Develop research study which contributes to add the knowledge in Genetics and Genetics engineeringand related sciences in Zoology.
b4	Formulate scientific research in Physiology and Immunology.
b5	Evaluate risks during the professional practice in Genetics and Genetics engineering.
b6	Planning and innovation for the development of performance in Genetics and Genetics engineering.
b7	Make professional decisions in professional practices in Genetics and Genetics engineering
b8	Discussion based on evidences and conclusions in Genetics and Genetics engineeringand related sciences in Zoology.

c. Professional and Practical Skills

By the end of the Ph.D. in Genetics and Genetics engineering program graduates must be able to:

c1	Mastery of basic, professional and modern skills Genetics and Genetics engineering.
c2	Writing and evaluation of professional reports in Genetics and Genetics engineeringand related sciences in Zoology.
c3	Label different methodology and techniques in Genetics and Genetics engineeringand related sciences in Zoology.
c4	Use technological means to serve the professional practice in Physiology and Immunology.
c5	Planning for the development of professional practice and development of the performance of others.

d. General Skills and Transition

By the end of the Ph.D. in Genetics and Genetics engineering program graduates must be able to:

d1	Communicate effectively by using different methods.
d2	Use of information technology to development of professional practice and to obtain information and knowledge.
d3	Teach others and evaluate their performance during laboratory works
d4	Self-evaluation and continuous learning.
d5	Work in a team and lead working groups.
d6	Management of scientific meetings and the ability to manage time.

3. Academic standards of the program

The Academic Reference Standards (ARS) of this program is based upon the Standard Criteria for Postgraduate Programs published by the National Authority of Quality Assurance and Accreditation of Education in (2009). Specific Academic Reference Standards for Ph.D. in Zoology were approved by the Council of Faculty of Science, Benha University in 13/5/2015 (**Appendices 1, 2, 3, 4, 5 and 6**).

4. Reference indices (Benchmarks)

Not utilized.

5. Program structure and contents

5.1. Program duration: 3-5 years.

5.2. Program structure:

Program structure	Credit hours/week
Optional courses	**12**
Research and preparing the Ph.D. thesis	**48**
Total	**60**

5.3. Program Courses:

5.3.1. Optional courses:

Code No.	Course Title	No. of hours		
		Lectures	Practical	Credit hours
The graduate studies (12 hours)				
701 Z	Functions of blood, the heart and circulatory system	3	-	3
702 Z	Description members of breathing and blood gases	3	-	3
703 Z	Molecular and nano-immunology	3	-	3
704 Z	Cytogenetic and its applications	3	-	3
705 Z	Comparative anatomy and experimental embryos	3	-	3
706 Z	Aquaculture and its economics	3	-	3
707 Z	Egyptian environment and natural reserves	3	-	3
708 Z	Protozoa and invertebrates	3	-	3
709 Z	Molecular biology and genetic engineering	3	-	3
710 Z	Ultra-structure of histology	3	-	3
711 Z	Histological and functional installation	3	-	3
712 Z	Advanced course (the decision of the Department)	3	-	3
48 credit hours for research and preparing the PhD thesis				
799 Z	Doctoral thesis	-	-	48

6. Contents of the Courses

See course specification (**Appendix 7 and 8**)

7. Program admission requirements

١. يشترط لقيد الطالب لنيل درجة دكتوراه الفلسفة في العلوم أن يكون حاصلا على درجة ماجستير في العلوم في نفس التخصص من كلية العلوم جامعة بنها أو أى درجة معادلة لها من معهد علمي أخر معترف به من المجلس الأعلى للجامعات.
٢. المدة اللازمة للحصول على درجة دكتوراه الفلسفة في العلوم ثلاث سنوات على الأقل منذ موافقة الجامعة علي التسجيل، وبحد أقصي خمس سنوات (المدة الأساسية) ويمكن مد التسجيل لمدة استثنائية لا تزيد عن ثلاث سنوات بناءا على التقارير العلمية المقدمة من لجنة الأشرف وموافقة مجلس القسم العلمي المختص ولجنة الدراسات العليا والبحوث ومجلس الكلية ومجلس الدراسات العليا والبحوث بالجامعة.
٣. يشترط لتسجيل الطالب لدرجة دكتوراه الفلسفة في العلوم اجتياز امتحان اتقان اللغة الانجليزية او ما يعادلها بمستوى يحدده مجلس الجامعة وكذلك استيفاء أى شروط أضافية تراها الكلية والجامعة لازمة للقيد والتسجيل للدرجة.

8. Regulations for progression and program completion:

١. أن ينجز الطالب عدد ١٢ ساعة دراسية معتمدة من المقررات الدراسية لمرحلة ما بعد الماجستيرمتزامنة مع التسجيل للرسالة العلمية (تحسب ٤٨ ساعة معتمدة) ويخصص لكل ساعة معتمدة خمسون درجة.
٢. يقوم الطالب باجراء مناقشة علنية لخطة البحث (سيمينار) على أن يوافق عليها مجلس القسم تمهيدا لتسجيله للدرجة.
٣. تعقد امتحانات الدراسة الخاصة بالدكتوراه في نهاية كل فصل دراسي في المواعيد التي يقرها مجلس الكلية بناءً علي اقتراح مجالس الأقسام.
٤. يقوم الطالب باجراء بحث ذا قيمة علمية تمثل إضافة علمية جديدة قائمة علي البحث المبتكر في موضوع يقره مجلس القسم ولجنة الدراسات العليا و مجلس الكلية ومجلس الدراسات العليا بالجامعة على أن يقدم الطالب نتائج بحثه في رسالة تقبلها لجنة الحكم، و يقوم الطالب بعمل سيمينار قبل التقدم بالرسالة بثلاثة اشهر علي الأقل.
٥. يمنح الطالب درجة دكتوراه الفلسفة في العلوم ويذكر في الشهادة التخصص العام والدقيق وعنوان الرسالة.
٦. يرجع للائحة التنفيذية لقانون تنظيم الجامعات فيما لم يرد به نص في هذه اللائحة.

9. Methods and rules of evaluation of graduates enrolled in the program:

9.1. Theoretical courses:

Method of Assessment	Percent
Semester work & mid Term Exam	10%
Oral Exam	10%
Final Term Examination	80%
Total	100%

9.2. Doctorate Thesis evaluation:

- The senior supervisor reports.
- Individual Reports of the Judge Committee
  (Three specialist professors including the senior supervisor).
- The Public Discussion
- The Common Report of the Judge Committee.
- Department, Faculty and University Boards.

• Assessment Recommendations:
-The Judge Committee has to recommend one of the following:
- Accepting the thesis as it is.
- Accept the thesis and recommends awarding after correction performing.
- Delaying awarding for maximum three months to perform corrections.
- Re-displaying the thesis to the judge committee within limited period.
- Rejecting the thesis at all.

10. Teaching and learning strategies used in the program:

10.1. Direct teaching strategy.
10.2. Cooperative learning strategy.
10.3. Brainstorming strategy.
10.4. Problem-solving strategy.
10.5. Effective discussion strategy.
10.6. Independent Study strategy.

11. Methods of program evaluation: (Appendix 9)

Samples	Tool
1- Senior Students	Questionnaire
2- Alumni	Questionnaire
3- External Evaluators	Reports
4- Stakeholders	Questionnaire, workshops, seminars, conferences

Head of the department: Prof. Dr. Salwa Ebrahem Abd-El Hady

Date: **2015 / 2016**

Invertebrate and Parasitology Ph.D. Program Specification

A. Basic Information

Program Title: Invertebrate and Parasitology Ph.D. Program
Program Type: Major
Department Responsible: Zoology Department
Coordinator: Dr. Doaa Sabry Ibrahim
Internal Evaluator: Dr. Marwa saad Mohamady Mahmoud
External Evaluator: Prof. Dr. Abdel Aziz Diab
Date of the most recent approval of program specification by the faculty council: 9/12/2015 - No. (390)

B. Professional Information

1. Program Aims

By the end of the Ph.D. in Invertebrate and Parasitology program graduates must be able to:

1.1. Master different concepts, principles and applications of Invertebrate and Parasitology.
1.2. Commitment to continuing self learning with work on the addendum to the knowledge in Invertebrate and Parasitology and transfer of knowledge and expertise to others.
1.3. Application of the analytical method and critic of knowledge in Invertebrate and Parasitology and related areas.
1.4. Use knowledge in Invertebrate and Parasitology field combined with related knowledge to find innovative solutions for professional problems.
1.5. Mastery of a wide range of professional skills in Invertebrate and Parasitology and development of methods and tools, and new techniques in professional practice.
1.6. Communicate effectively and have the ability to lead teams and make decisions in light of available information.
1.7. Show awareness of his/her role in community development and preservation of the environment.
1.8. Behave in a manner reflecting the commitment to integrity and credibility of the profession and abide by the rules.

2. Intended Learning Outcomes (ILO's)

a. Knowledge and Understanding

By the end of the Ph.D. in Invertebrate and Parasitology program graduates must be able to know and understand the followings:

a1	Theories and fundamentals and modern knowledge in Invertebrate and Parasitology and related sciences in Zoology.
a2	The basics and ethics of the scientific research in Invertebrate and Parasitology.
a3	Legal and ethical principles for professional practice in Invertebrate and Parasitology.
a4	Principles and fundamentals of quality in professional practice in Invertebrate and Parasitology.
a5	Knowledge related to the effects of professional practice on the environment and society and ways of development and preservation of the environment.

b. Intellectual Skills

By the end of the Ph.D. in Invertebrate and Parasitology program graduates must be able to:

b1	Analyze and evaluate the information in Invertebrate and Parasitology and related sciences in Zoology.
b2	Interpret and correlate data for solve problems in Invertebrate and Parasitology and related sciences in Zoology.
b3	Develop research study which contributes to add the knowledge in Invertebrate and Parasitology and related sciences in Zoology.
b4	Formulate scientific research in Invertebrate and Parasitology.
b5	Evaluate risks during the professional practice in Invertebrate and Parasitology.
b6	Planning and innovation for the development of performance in Invertebrate and Parasitology.
b7	Make professional decisions in professional practices in Invertebrate and Parasitology.
b8	Discussion based on evidences and conclusions in Invertebrate and Parasitology and related sciences in Zoology.

c. Professional and Practical Skills

By the end of the Ph.D. in Invertebrate and Parasitology program graduates must be able to:

c1	Mastery of basic, professional and modern skills Invertebrate and Parasitology.
c2	Writing and evaluation of professional reports in Invertebrate and Parasitology and related sciences in Zoology.
c3	Label different methodology and techniques in Invertebrate and Parasitology and related sciences in Zoology.
c4	Use technological means to serve the professional practice in Invertebrate and Parasitology.
c5	Planning for the development of professional practice and development of the performance of others.

d. General Skills

By the end of the Ph.D. in Invertebrate and Parasitology program graduates must be able to:

d1	Communicate effectively by using different methods.
d2	Use of information technology to development of professional practice and to obtain information and knowledge.
d3	Teach others and evaluate their performance during laboratory works
d4	Self-evaluation and continuous learning.
d5	Work in a team and lead working groups.
d6	Management of scientific meetings and the ability to manage time.

3. Academic standards of the program

The Academic Reference Standards (ARS) of this program is based upon the Standard Criteria for Postgraduate Programs published by the National Authority of Quality Assurance and Accreditation of Education in (2009). Specific Academic Reference Standards for Ph.D. in Zoology were approved by the Council of Faculty of Science, Benha University in 13/5/2015 (**Appendices 1, 2, 3, 4, 5 and 6**).

4. Reference indices (Benchmarks)

Not utilized.

5. Program structure and contents

5.1. Program duration: 3-5 years.

5.2. Program structure:

Program structure	Credit hours/week
Optional courses	**12**
Research and preparing the Ph.D. thesis	**48**
Total	**60**

5.3. Program Courses:

5.3.1. Optional courses:

Code No.	Course Title	No. of hours		
		Lectures	Practical	Credit hours
The graduate studies (12 hours)				
701 Z	Functions of blood, the heart and circulatory system	3	-	3
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703 Z	Molecular and nano-immunology	3	-	3
704 Z	Cytogenetic and its applications	3	-	3
705 Z	Comparative anatomy and experimental embryos	3	-	3
706 Z	Aquaculture and its economics	3	-	3
707 Z	Egyptian environment and natural reserves	3	-	3
708 Z	Protozoa and invertebrates	3	-	3
709 Z	Molecular biology and genetic engineering	3	-	3
710 Z	Ultra-structure of histology	3	-	3
711 Z	Histological and functional installation	3	-	3
712 Z	Advanced course (the decision of the Department)	3	-	3
48 credit hours for research and preparing the PhD thesis				
799 Z	Doctoral thesis	-	-	48

6. Contents of the Courses

See course specification (**Appendix 7 and 8**)

7. Program admission requirements

١. يشترط لقيد الطالب لنيل درجة دكتوراه الفلسفة في العلوم أن يكون حاصلا على درجة ماجستير في العلوم في نفس التخصص من كلية العلوم جامعة بنها أو أى درجة معادلة لها من معهد علمي أخر معترف به من المجلس الأعلى للجامعات.
٢. المدة اللازمة للحصول على درجة دكتوراه الفلسفة في العلوم ثلاث سنوات على الأقل منذ موافقة الجامعة علي التسجيل، وبحد أقصي خمس سنوات (المدة الأساسية) ويمكن مد التسجيل لمدة استثنائية لا تزيد عن ثلاث سنوات بناءا على التقارير العلمية المقدمة من لجنة الأشرف وموافقة مجلس القسم العلمي المختص ولجنة الدراسات العليا والبحوث ومجلس الكلية ومجلس الدراسات العليا والبحوث بالجامعة.
٣. يشترط لتسجيل الطالب لدرجة دكتوراه الفلسفة في العلوم اجتياز امتحان اتقان اللغة الانجليزية او ما يعادلها بمستوى يحدده مجلس الجامعة وكذلك استيفاء أى شروط أضافية تراها الكلية والجامعة لازمة للقيد والتسجيل للدرجة.

8. Regulations for progression and program completion:

١. أن ينجز الطالب عدد ١٢ ساعة دراسية معتمدة من المقررات الدراسية لمرحلة ما بعد الماجستيرمتزامنة مع التسجيل للرسالة العلمية (تحسب ٤٨ ساعة معتمدة) ويخصص لكل ساعة معتمدة خمسون درجة.
٢. يقوم الطالب باجراء مناقشة علنية لخطة البحث (سيمينار) على أن يوافق عليها مجلس القسم تمهيدا لتسجيله للدرجة.
٣. تعقد امتحانات الدراسة الخاصة بالدكتوراه في نهاية كل فصل دراسي في المواعيد التي يقرها مجلس الكلية بناءً علي اقتراح مجالس الأقسام.
٤. يقوم الطالب باجراء بحث ذا قيمة علمية تمثل إضافة علمية جديدة قائمة علي البحث المبتكر في موضوع يقره مجلس القسم ولجنة الدراسات العليا و مجلس الكلية ومجلس الدراسات العليا بالجامعة على أن يقدم الطالب نتائج بحثه في رسالة تقبلها لجنة الحكم، و يقوم الطالب بعمل سيمينار قبل التقدم بالرسالة بثلاثة اشهر علي الأقل.
٥. يمنح الطالب درجة دكتوراه الفلسفة في العلوم ويذكر في الشهادة التخصص العام والدقيق وعنوان الرسالة.
٦. يرجع للائحة التنفيذية لقانون تنظيم الجامعات فيما لم يرد به نص في هذه اللائحة.

9. Methods and rules of evaluation of graduates enrolled in the program:

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Method of Assessment	Percent
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- Individual Reports of the Judge Committee
  (Three specialist professors including the senior supervisor).
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- The Common Report of the Judge Committee.
- Department, Faculty and University Boards.

• Assessment Recommendations:
-The Judge Committee has to recommend one of the following:
- Accepting the thesis as it is.
- Accept the thesis and recommends awarding after correction performing.
- Delaying awarding for maximum three months to perform corrections.
- Re-displaying the thesis to the judge committee within limited period.
- Rejecting the thesis at all.

10. Teaching and learning strategies used in the program:

10.1. Direct teaching strategy.
10.2. Cooperative learning strategy.
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11. Methods of program evaluation: (Appendix 9)

Samples	Tool
1- Senior Students	Questionnaire
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4- Stakeholders	Questionnaire, workshops, seminars, conferences

Head of the department: Prof. Dr. Salwa Ebrahem Abd-El Hady

Date: **2015 / 2016**