Course Specification

University: Menoufiya Faculty: Science

Course Specifications:

Programme (s) on which the Course is given: Zoology, Vertebrates, Comparative Anatomy & Embryology.

Major or Minor Element of Programmes: Major.

Department offering the Program: Zoology.

Department offering the Course: Zoology.

Qualifying course for M.SC. Students

Date of Specification Approval: 2012

A- Basic Information

Title: Vertebrate Embryology Code: Z645

Credit Hours: 3 Lecture: 2

Tutorial: 0 Practical: 2

Total: 3

B- Professional Information

1- Overall Aims of the Course: By the end of this course, the student should be able to:

* Develop an understanding of embryogenesis.

* Stand upon the miraculous processes of embryogenesis.

* Explore, in a comparative way, how vertebrate embryos are developmentally different.

* Develop the skills practically by examining the specimens.

2- Intended Learning Outcomes of Course (ILOs):

a Knowledge and Understanding:

Student should acquire knowledge and understanding of:

a1- The main differences among vertebrate embryos.

a2- The related basic scientific facts, concepts, principles and techniques.

a3- Recognize different phases of embryogenesis.

a4- Define different aspects of organogenesis in vertebrates.

a5- The processes and mechanisms supporting the structure and function of the specific topics.

a6- The related terminology, nomenclature and classification systems.

a7-The developmental progress of the program-related knowledge.

a8- The relation between the studied topics and environment.

b- Intellectual Skills:

Student should be able to:

b1- Identify the points of similarities and differences among vertebrate embryos.

b2- Deduce the superiority of the holy creator.

b3- Interpret qualitatively and quantitatively science relevant data.

b4- Differentiate between subject-related theories and assess their concepts and principles.
b5- Develop lines of argument and appropriate judgments in accordance with scientific theories and concepts.
b6- Construct several related integrated information to confirm, make evidence and test hypotheses.

c- Professional and Practical Skills:

Student should be able to:

c1- Distinguish the different phases of embryogenesis.

c2- Apply techniques and tools considering scientific ethics.

c3- Write notes on embryonic development.

c4- Make clear, labeled drawings for slides.

c5- Be familiar with investigating the embryonic development.

c6- Solve problems using a range of formats and approaches.

c7- Plan, design, process and report on the investigated data, using appropriate techniques and considering scientific guidance.

c8- Identify and criticize the different methods used in addressing subject related issues.

d- General and transferable Skills:

Student should be able to:

d1- Enhancing the writing ability.

d2- Use effectively information and communication technology.

d3- Development of scientific writing skills.

d4- Exhibit the sense of beauty and neatness.

d5- Think independently, set tasks and solve problems on scientific basis.

d6- Identify roles and responsibilities, and their performing manner.

d7- Work in group effectively; manage time, collaborate and communicate with others positively.

d8- Consider community linked problems, ethics and traditions.

d9- Acquire self- and long life–learning.

d10- Apply effectively scientific models, systems, and tools.

d11- Deal with scientific patents considering property right.

3- Contents

Topic	**No. of Hours**	**Lecture**	**Tutorial / Practical**
Vertebrate organogenesis	6	2	2
Extra-embryonic membranes of vertebrate embryos	6	2	2
Polarity establishment in vertebrate embryos	3	1	1
Effect of drugs on the embryonic	6	2	2

development			
Intercellular communication during embryonic development	6	2	2
Gene expression during the vertebrate embryonic development	6	2	2
Determinate growth of vertebrates	6	2	2
Conclusion	2	1	-

4- Teaching and Learning methods

4.1- Lectures

4.2- Practical sessions.

4.3- Writing essays.

4.4- Oral presentation.

4.5- Research assignment.

5- Student assessment methods

1-Essays to assess ability of writing

2- Oral exam to assess the degree of understanding

3- Mid-term to assess the degree of follow up.

4- Final exam to assess the whole performance.

5- Reports to assess collection of course material

Asessment schedule

Assessment 1 Essay	1essay/term
Assessment 2 Oral exam	Twice/ term
Assessment 3 midterm	Week 7
Assessment 4 final exam	Week 15

Weighting of assessments

Mid-term examination	20%
Final-term examination	40%
Oral examination	10%
Practical examination	20%
Semester work	10%
Other type of assessment	00%
Total	100%

6- List of references

6.1- Course notes

*Internet and library material.

* number of handouts to be given separately.

6.2- Essential books (text books)

*****An introduction to Embryology.

* Chordate Embryology.

*Text book of Embryology

6.3- Recommended books

*****Developmental Biology.

*Molecular Embryology.

6.4- Periodicals, Web sites, …. Etc

*Anatomy and Embryology

*Development

*Experimental Embryology..

7- Facilities required for teaching and learning

* Dark room equipped with overhead and LCD projector.

*Slide projector

* Data show projector

*Slides and Models.

* Lecture room provided with a white board.

* Student laboratory provided oven, hot plate, incubator, microtome, other related laboratory facilities.

Course coordinator: Dr. Gamal M Badawy

Head of Department: Prof. Dr. Saber Sakr