A- Basic Information

Programme(s) on which the course is given:	MSc of Fish Biology and Aquatic Ecology
Depaetment responsible for offering the course:	Zoology
Depaetment responsible for teaching the course:	Zoology
Academic year:	2012-2013
Course title and code:	**Vertebrate Embryology Z6414**
Contact hours (credit hours):	Lecture: 2 hrs Practical: 2hrs Total: 3 hrs
Course coordinator:	Dr. Gamal Badawy

B- Professional Information

The course aim and intended learning outcomes are based on that mentioned in the programme specifications, with more course-related specific details.

1- Overall Aims of 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 embryo are developmentally different.
* Develop the skill practically by examining the specimens.

2- Intended Learning Outcomes of Course (ILOs):

a- Knowledge and Understanding:

a1- outline the differences among vertebrate embryos.

a2- Recognize different phases of embryogenesis.

a3-Define different aspects of organogenesis.

b- Intellectual Skills:

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

b2- Deduce the superiority of the holy creator.

c- Professional and Practical Skills:

c1- Distinguish the different phases of embryogenesis.

c2- Write notes on embryonic development.

c3- Make clear, labeled drawings for slides.

C4- BE familiar with investigating the embryonic development

d- General and Transferable Skills:

d1- Enhance the writing ability.

d2- Enhance the oral communication ability during presentation.

d3- Develop the scientific writing skills.

3- Course Contents

Topic	No. of hours	Tutorial/ Practical	Lecture
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 development.	**6**	**2**	**2**
Intercellular communication during embryonic development.	**6**	**2**	**2**
Gene expression during vertebrate embryonic development.	**6**	**2**	**2**
Determine growth of vertebrates.	**6**	**2**	**2**
Conclusion	**2**	**1**	**1**

4- Teaching and Learning Methods

- Lectures.
- Practical sessions.
- Writing essays.
- Oral presentation.
- Research assignment

5- Student Assessment Methods

- Essays
- Oral exms
- Mid-term exams.
- Final exams.

- Quizzes.

Assessment schedule

Assessment 1	Essay	Week 1 essay/term
Assessment 2	Oral exam	Twice/term
Assessment 3	Mid-term exams	Week 7
Assessment 4	Semester Work Exam	Week 10
Assessment 5	Final term exam	Week 14

Weighting of assessments

Mid-term examination	20%
Final-term examination	40%
Oral examination	10%
Practical examination	20%
Semester work	10%
Total	100%

6- List of references

1. **Course Notes**

   1- Internet and library material.
   2- Handouts given separately during the course span.

2. **Essential Books (Text books):**
   1- An introduction to embryology
   2- Chordate embryology
   3- Text book of embryology
3. **Recommended Books**
   1- Developmental Biology
   2- Molecular embryology
4. **Periodicals, web sites,…,etc**
   1- Anatomy and embryology
   2- Development
   3- Experimental embryology

7- Facilities required for teaching and learning

* Dark room equipped with overhead and LCD projector.
* Laboratory slides and models.
* Librarian facilities.

* Data show projector**.**

Course coordinator: Dr. Gamal Badawy

Head of Department: Prof. Saber Sakr