Minnesota State University Moorhead

BIOL 365: Developmental Biology

A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 3

Lab Hours/Week: 3

OJT Hours/Week: *.*

Prerequisites:
BIOL 341 - Genetics AND BIOL 115 - Organismal Biology

Corequisites: None

MnTC Goals: None

A study of the mechanisms of development in a variety of biological systems, with analyses of changes from conception through aging. With lab.

B. COURSE EFFECTIVE DATES: 04/30/2000 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Historical Embryology
2. Developmental Anatomy
3. Developmental Genetics
4. Cell Communication in Development
5. Fertilization
6. Early Invertebrate Development
7. Development of Fish and Amphibians
8. Development of Birds and Mammals.
9. Ectoderm--Differentiation and Lineage
10. Ectoderm--Neuronal Development and Axonal Specificity
11. Mesoderm--Differentiation and Lineage
12. Mesoderm--Somite Specification
13. Limb Development
14. Sex Determination
15. Germ Cell Differentiation and Development
16. Medical Aspects of Developmental Biology
17. Environmental Effects and impacts Developmental Pathways
18. Evolution and Development--Historical Background
19. Evolution and Development--Mechanism of Evolutionary Change
20. Evolution and Development--Molecular Aspects

D. LEARNING OUTCOMES (General)

1. Understand historical contributions from embryology, anatomy, cell biology, genetics and biochemistry.
2. Master cell signaling pathways required for cell specification and determination.
3. Master molecular interactions required for cell specification and determination.
4. Master biochemical approaches used to identify control of development in key model organisms.
5. Master key stages of development and understand the cellular and molecular events that drive embryos through the stages.
6. Understand how environment and disease can impact development.
7. Understand the molecular aspects that illustrate evolutionary conservation.
8. Understand the molecular aspects that illustrate evolutionary divergence.
9. Master lab techniques in embryology, genetics, molecular biology necessary for the study of Developmental Biology.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted