

# **Graduate Module Outline**

**Title:** Avian Embryology

**Instructor:** Bruce Rathgeber

**Timing:** Summer (2016)

**Description:** Information to be presented will focus on commercial poultry incubation and avian embryo development. Emphasis will be placed on application of the fundamentals of developmental biology to commercial practice.

**Format:** The module will consist of lectures given by both the instructor and the students participating in the course. (A small project will be performed. This project will be written up in scientific journal format and presented as an oral report.)

**Method of Evaluation:**

Two 40 min lectures presented to a group on a topic selected from a predetermined list. (40%)

Paper in journal format on poultry project (20%)

Oral presentation on project (20%)

Examination at the end of the module (20%)

**Prerequisites:** Students should have background in introductory animal science

## **Lecture Topics:**

1. The impact of broiler breeder age on hatching success
2. Comparison of single stage incubation to two stage incubation
3. Hatching in barn and holding chicks in incubation facilities for extended periods.
4. How to manage long term storage of hatching eggs
5. The role of carbon dioxide in incubation success
6. Transgenerational effects on hatch characteristics
7. Management of breeder nutrition for hatching egg quality
8. In ovo techniques to improve poultry health (feeding/vaccination)
9. In ovo gender selection

## **Project Topics:**

1. Relationship of egg size with chick size (Timing of hatch?)
2. Success of hatch for eggs set large end down
3. Relationship of genetic background with chick asymmetry
4. Chick body length and the relationship with yolk free body weight
5. Variation in egg shell proteins from eggs of different genetic background
6. Comparison of transponders inserted into air cells and shell surface thermocouples for measuring embryo temperature