

**Dalhousie University, Faculty of Agriculture**

**AGRI5710 and AGRI5705: Graduate Module Course**

**Module Title:** **Fish Age, growth and population size.** *A series of 3 modules under the Agri5705 banner that will fulfill the requirements for a full course. Students are required to take all 3 modules.*

**Instructor:** Jim Duston (with guest lecturers Dr. E. Halfyard; Dr. R. Bradford)

**Dates module will be offered:** *Each module will be completed in a calendar month. November 2017, January 2018 and March 2018.*

**Frequency of formal classes/meetings:** *Weekly meeting. Duration: 2 hours*

**Module Content and Learning Objectives**

- 1) Theory of body size, growth, scaling and age markers in ectotherms. Review of metabolic rate, temperature effects on metabolism and growth, prey.
- 2) Anthropogenic factors affecting wild stocks: overfishing, climate change, acid rain, habitat alteration, aquaculture.
- 3) Review of methods: Sampling gear, estimating age from scales and otoliths. Back-calculation of body size from scales. Tagging and marking of fish. Estimating population size from mark-recapture models and tagging experiments. Body shape morphology. Image analysis tools. (some practical work included here).
- 4) Case studies: West River Sheet Harbour: Acid Rain mitigation and Atlantic salmon recovery effort. Inner Bay of Fundy Atlantic salmon: Genebank Program and stock specific morphology. Recovery of Striped bass in Miramichi & Shubenacadie: celebrate or despair?

**Method of Evaluation:**

- 1) Assessment of written work: Perception and truth: Case studies. Defining the state of knowledge from speculation. 50%
- 2) Hypothesis building and testing: From data students collect and analyze during the module. 30%
- 3) Oral presentations. 1 per student per module 10%
- 4) Final exam 10%

**Any restrictions on enrollment:** number of students, background preparation or prerequisite courses: n=6 maximum.