OCSC 3000 – AQUACULTURE PRINCIPLES AND PRACTICES
[FALL 2019]

LEAD INSTRUCTORS:

Dr. Kurt Gamperl
Ocean Sciences Centre, Room AX-4013
Office Hours: By appointment
Phone: 864-2692
E-mail: kgamperl@mun.ca

Dr. Jillian Westcott
School of Fisheries (Marine Institute)
Office Hours: By appointment
Phone: 778-0337
E-mail: Jillian.Westcott@mi.mun.ca

OTHER INSTRUCTORS:

Cyr Couturier - Cyr.Couturier@mi.mun.ca
Danny Boyce - dboyce@mun.ca
Dr. Matt Rise - mrise@mun.ca
Jason Nichols - Jason.Nichols@mi.mun.ca
Keith Rideout – Keith.Rideout@mi.mun.ca
Tracy Granter - Tracy.Granter@mi.mun.ca

TEACHING ASSISTANT:

Eric Ignatz – ehignatz@mun.ca

OFFICE HOURS: By arrangement with instructor (please e-mail instructor you wish to meet with). However, please e-mail us anytime with questions and we will respond promptly.

COURSE DESCRIPTION:

This course emphasizes the techniques and methods used to culture finfish and shellfish, with a primary focus on Canadian aquaculture species. Basic aspects of aquaculture will be covered, including the design and maintenance of production systems, culture techniques, and the nutrition, health, physiology and reproduction of finfish and shellfish. The laboratory portion of this course will provide students with practical experience in the maintenance of land-based aquaculture production systems and in the husbandry/culture of aquatic organisms.

Prerequisites: OCSC 2001, or OCSC 1000 and BIOL 1002.

TEXTS / REFERENCE MATERIALS:

***On Reserve at Library*:**

Aquaculture: Principles and Practices, 2nd Ed. ISBN 978-1-4051-0532-3

Supplementary Texts (available at MUN libraries)**:**

Aquaculture: Farming Aquatic Animals and Plants, 2nd Edition (at MI, SH 135.A682 2003)

Aquaculture Production Systems. ISBN 978-0-8138-0126-1 (available on-line)

Finfish Aquaculture Diversification. ISBN 978-1-8459-3494-1 (at QE II, SH 151.F46 2010)

Cold-Water Aquaculture in Atlantic Canada. ISBN 0-88659-033-7 (at QE II, SH 375.A7 C64 1995)

LECTURES AND LABS:

Lectures: Monday, Wednesday and Friday: 10:00 a.m. – 10:50 a.m., Chemistry 4036

Labs: Wednesday 2:00 p.m. – 5:00 p.m. These labs will be held at the Marine Institute and the Ocean Sciences Centre. ***Note:*** Transportation to labs will be provided. The MUN shuttle leaves from main campus at **1:43 p.m.** from behind the new student residence (i.e. from between the new residence and parking lot 15) and will bring the students back to campus for approx. 5:30 p.m.

LECTURE SCHEDULE:

(NOTE: Subject to Change)

DATE(S)	TOPIC	INSTRUCTOR(S)
September 4, 6 and 9	Introduction to Aquaculture	Cyr Couturier
September 11, 13, 16 and 18	Aquaculture Systems, Design and Operations	Jason Nichols and Danny Boyce
September 20, 23, 25, 27 and 30, October 2	Finfish Culture	Kurt Gamperl and Jillian Westcott
October 4 and 7	Cage-Site Production	Jillian Westcott
October 9	Broodstock and Egg Production	Kurt Gamperl
October 11	**MIDTERM EXAM (15%)**	**N/A**
October 14	**NO CLASS - THANKSGIVING**	**N/A**
October 16	Broodstock and Egg Production *(Cont'd)*	Kurt Gamperl
October 18, 21 and 23	Fish Nutrition and Feeding	Keith Rideout / Jillian Westcott
October 25	Live Transport, Harvest and Quality Control	Jillian Westcott
October 28, 30 and November 1	Fish Health	Jillian Westcott
November 4	Aquaculture Biosecurity	Jillian Westcott
November 6 and 8	Shellfish Culture	Cyr Couturier
November 11	**NO CLASS – Remembrance Day**	**N/A**
November 13 and 15	Shellfish Culture *(Cont'd)*	Cyr Couturier
November 18	Introduction to Aquaculture Biotechnology	Matt Rise
November 18	**TERM PAPER DUE (20%)**	**N/A**
November 20, 22, 25 and 27	Aquaculture and the Environment	Kurt Gamperl
November 29	REVIEW CLASS / OPEN SLOT	TBD
TO BE DETERMINED	**FINAL EXAM (25%)**	**N/A**

LAB SCHEDULE

(NOTE: Subject to Change)

DATE	LAB #	TOPIC	LOCATION
September 4	1	JBARB and MI Facility Tours / Intro	Ocean Sciences Centre and Marine Institute
September 11	2	Animal Husbandry (Finfish)	Ocean Sciences Centre
September 18	3	Marine Systems, Design and Operations	Ocean Sciences Centre
September 25		**NO LAB**	
October 2	4	Broodstock, and Egg Production and Quality	Ocean Sciences Centre
October 9	5	First Feeding, Larval Culture, Weaning and Nursery Technology	Ocean Sciences Centre
October 16	6	*****Live Food Technology	Ocean Sciences Centre
October 23	7	Fish Nutrition and Feeding	Marine Institute
October 30	8	*Water Chemistry/Quality and Recirculation Systems	Marine Institute
November 6	9	Salmonid Rearing Technology	Marine Institute or Ocean Sciences Center
November 13	10	Bivalve Culture (Oyster and Mussels)	Marine Institute
November 20	11	Introduction to Aquaculture Biotechnology	Ocean Sciences Centre
November 27	**FINAL LAB EXAM (20)%**		**Marine Institute**

***5% Lab write-up required (details will be provided during the specific labs)**

COURSE EVALUATION

Midterm Exam (up to Cage-Site Production)	**15%**
Term Paper	**20%**
Labs:	
Participation**	**10%**
Lab Write-ups (2 X 5% each)	**10%**
Final Lab Exam	**20%**
Final Exam	**25%**
TOTAL	**100%**

**** Participation mark will be based on lab attendance, involvement in labs and engagement with instructors and TA.**

TERM PAPER

Each student is to select a fish or shellfish species that is cultured in Canada (Atlantic salmon excluded), and provide a **15 page double-spaced** essay (*not including cover page, table of contents, figures, tables and references*) that covers all aspects of its aquaculture [history, size of the industry/production levels (including value), the market, culture techniques (incl. spawning, rearing, nutrition, common diseases and treatments)], and what challenges this industry is facing / must overcome etc. **A term paper rubric can be found on D2L.** The term papers are due on November 18th by 5:00 pm. Late papers will be accepted, but will incur the following penalty: 1) one day late - 10%; 3 days late 25%; 1 week late 50%; over 2 weeks late will result in a grade of zero for the paper.

LAB WRITE UPS:

For two labs (see * in the above schedule) students are required to submit lab reports (each worth 5%). These are due at the start of the following lab, and details on what is required will be provided in the particular lab. Late reports will be accepted, but will incur the following penalty: 1) one day late - 10%; 3 days late 25%; 1 week late 50%; over 2 weeks late will result in a grade of zero for the lab report. A lab report rubric can be found on D2L. Refer to the *"Guidelines for Scientific Report Writing"* document on D2L when writing your lab reports.

MIDTERM AND FINAL EXAMS

Questions on both the midterm and final exams will consist of definitions, problem solving, short answers (incl. fill in the blank, etc.) and short essays. The final exam will **NOT** be cumulative.

FINAL LAB EXAM

The final lab exam will consist of written questions based on the labs, and those based on materials / specimens etc. from the lab that the student had the opportunity to work with, or was introduced to in the lab.

UNIVERSITY POLICIES

Accommodation of Students with Disabilities

Memorial University of Newfoundland is committed to supporting inclusive education based on the principles of equity, accessibility and collaboration. Accommodations are provided within the scope of the University Policies for the Accommodations for Students with Disabilities (www.mun.ca/policy/site/policy.php?id=239). Students who may need an academic accommodation are asked to initiate the request with the Glenn Roy Blundon Centre at the earliest opportunity (www.mun.ca/blundon).

Academic Misconduct / Integrity

Students are expected to adhere to those principles which constitute proper academic conduct. A student has the responsibility to know which actions, as described under Academic Offences in the University Regulations, could be construed as dishonest or improper. Students found guilty of an academic offence may be subject to a number of penalties commensurate with the offence including reprimand, reduction of grade, probation, suspension or expulsion from the University. For more information regarding this policy, students should refer to the University Regulations for Academic Misconduct (Section 6.12) in the University Calendar.