



**Nova Southeastern University
Oceanographic Center
Laboratory Course Syllabus**

COURSE PREFIX, NUMBER, AND TITLE: OCMB, MEVS, BMMC 6001 OD1
Laboratory q-PCR and Culture Techniques

COURSE DATES: April 7, 2016 to April 17, 2016

FACULTY CONTACT:

Name: Donald S. McCorquodale Jr., PhD mccorq@nova.edu. 954-258-4630
George Duncan, PhD. gduncan@nova.edu. 954-648-2102

Office Hours: By arrangement Schure #108
Laboratory Schure # 109 Lecture Schure Conference Room
Website:

If a student is unable to contact their instructor regarding an important matter, please inform the distance education office at the Oceanographic Center, by telephone to 1 800 541 6682 Ext. 23621 (954 262-3621), or by email to online@nova.edu.

Once term has started, it is preferred that course related communication takes place within the web-based course management system. Please remember that any official NSU communication outside of the course should be sent from, and will be sent to, the student's NSU SharkLink email address (e.g. xxxxxxx@nova.edu).

COURSE DESCRIPTION

The first week of the course will be training in the classical culture techniques for determination of fecal pollution in surface waters as is used in all water quality laboratories. This will involve membrane filtration for bacterial indicators and plaque formation for viral indicators.

During the second week newly developed real time PCR methods will be performed and evaluated. The use of q-PCR has been implemented in microbiology studies to quantify abundance and expression of taxonomic and functional gene markers that pose contamination threats to drinking, recreational, marine, and fresh waters. Its use allows viable results for the indication of microbial presence associated with human pollution that supersedes the abilities of culture based fecal coliform and enterococci studies. The use of PCR chemistries is a more advanced, precise and sensitive method for estimating microbial species in environments. Within PCR chemistries, q-PCR allows for

expedient results coupled with greater accuracy to determine if human pollution is contaminating a water source and in what amounts quantitatively.

Learning Outcome

1. Understand the significance of indicator microorganism to fecal water pollution studies.
2. Become familiar with classical culture procedures for determination of fecal coliform and enterococci and the interpretation of their significance.
3. Become familiar with q-PCR procedures to determine the same indicator species as done with culture methods.
4. Run actual water samples using culture methods and q-PCR methods.
5. Establish advantages and disadvantages of both techniques and relative specificity to human waste.

Prerequisite/s: Students should have some familiarity with general chemistry and biology.

REQUIRED MATERIALS

No textbook required. Posted citations available on line.

WRITING STYLE AND CITATIONS: Capstone reviews must follow the writing and citation guidelines of the *Chicago Manual of Style*. Therefore, it is suggested that students follow the *Chicago Manual of Style* in writing and referencing written assignment work. Guidelines are available online at: <http://www.chicagomanualofstyle.org/home.html>

CALENDAR OF Daily REQUIREMENTS

This is a **2-week course**:

Day	DATE	Activities & Assignments
1	<i>April 7 6:30 - 9:30 pm</i>	Understand the significance of indicator microorganism to fecal water pollution studies. Become familiar with classical culture procedures for determination of fecal coliform, enterococci and coliphage and the interpretation of their significance. Conference Room Schure Blvd.

2	<i>April 9 9:00 am - 4:00 pm</i>	Laboratory exercise on determination of fecal coliform, enterococci and coliphage. Florida Spectrum Environmental Services 1460 W McNab Rd Fort Lauderdale, Fl
3	<i>April 10 9:00 am -4:00 pm</i>	Analysis of previous days cultures. FSES
4	<i>April 14 6:30b- 9:30 pm</i>	Introduction of q-PCR techniques and associated skills. Schure Blvd
5	<i>April 16 9:00 am - 4:00 pm</i>	Analysis of indicator organisms using real time PCR methods Schure 109
6	<i>April 17 9:00 am -4:00 pm</i>	Analysis of indicator organisms using real time PCR methods Schure 109

Course Evaluation

Students are evaluated on the basis of their discussion and laboratory technique

CLASS POLICIES & RESOURCES

Students should familiarize themselves with the policies and procedures of the Oceanographic Center as described in the catalog found at:

<http://www.nova.edu/ocean/academics/course-catalog/index.html>

Attendance: Students are expected to actively participate from the first day of class until the end of term. If a student anticipates that they may be unable to attend course for any day, they should notify the instructor in advance to make alternate arrangements for any missed coursework. Similarly if an unanticipated event such as illness or an emergency takes them away from coursework, they should inform their instructor.

Academic honesty/Plagiarism: Please read **Section 5.0 Student Conduct** of the [catalog](#) for details. The essential points are:

- Assignments such as exams, tests, projects, term papers, etc., must be the original work of the student.

- All academic work submitted for credit or as partial fulfillment of course requirements must adhere to the specific accepted reference manuals and rules of documentation (e.g. Chicago Manual of Style). It is plagiarism to represent another person's work, words, or ideas as one's own without use of a center-recognized method of citation.
- Giving or allowing one's work to be copied, giving out exam questions or answers, or releasing or selling term papers is prohibited.
- Violations of academic responsibility include, but are not limited to:
 - plagiarism
 - any form of cheating
 - conspiracy to commit academic dishonesty
 - misrepresentation
 - bribery in an attempt to gain an academic advantage
 - forging or altering documents or credentials
 - knowingly furnishing false information to the institution
 - falsifying excuses for missing attendance

For clarification on plagiarism and copyright, students are referred to the online overview provided by the library at: <http://www.nova.edu/library/dils/lessons/plagiarism/>

Faculty members at the Oceanographic Center have access to comprehensive web-based *Turnitin.com* plagiarism prevention software. Registered students may request to submit their papers to *Turnitin.com*, prior to assignment submission, as a learning tool.

The institution reserves the right to require a student to withdraw at any time for misconduct as described above. It also reserves the right to impose probation or suspension on a student whose conduct is determined to be unsatisfactory.

For technical help: If you encounter technical problems, please contact the NSU Help Desk at: <http://www.nova.edu/help/index.html>. Call: (954) 262-HELP (4357)
Toll Free: (800) 541-NOVA (6682) x24357.

For library and study support: The Oceanographic Center is fortunate to have its own dedicated library and librarians on site to assist in-house and distance students. Please explore the learning resources, including the extensive full-text journals, and don't hesitate to email or telephone to speak with a librarian. You can find details at: <http://nova.campusguides.com/oclibrary>.

GRADING CRITERIA

The following system is used to grade academic performance:

GRADE DESCRIPTION

A Excellent

B	Satisfactory
C	Marginal Pass
D	Poor
F	Failure
W	Withdrawal: Given after the third class week or termination by the instructor for non-completion of the course by the student.
I	Incomplete: Given when most (80 percent), but not all, work has been completed.
Au	Audit
P	Pass

Professors may use + or – in grading. However, the grading scale ranges from A to D-, no A+ or F+ is awarded.

A grade of incomplete (I) must be requested from the instructor, have the Director's approval, and be accompanied by a completed contract specifying outstanding course requirements and completion dates. Completion of the course graded incomplete must occur within one term (or 3 months) of the end of the course and the incomplete be changed to a different grade. If the course is not completed in 3 months, or the student has not withdrawn and received a W, the incomplete will automatically be converted to a grade of F. Under unusual circumstances students may request a time-extension to complete the course. Such requests must be submitted to, and approved by, the Director of Academic Programs prior to the end of the 3-month time limit. There are no exceptions to this rule. Securing the completed and signed incomplete contract forms is the responsibility of the student.