

# Course Syllabus

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**HON 2015G**

**Course Title:** Applied Microbiology

**Credits:** 3.0

**Course Description:** This course provides a survey of microbiology, covering bacteria, viruses, fungi, and protozoa. Students are introduced to cellular structure, growth, protein synthesis, and replication, and learn the role of microorganisms in human disease, the stages of infection, and diagnosis. The role and action of antibiotics, sterilization, and antimicrobials are also covered.

This course uses current research in midwifery and obstetrics to broaden the student's understanding of the NARM skills and MEAC essential competencies learned under clinical supervision.

## **Learning Objectives**

**Learning objectives** are identified through the linking of MEAC Essential Competencies and the NCM Degree Qualification Profile.

*Upon successful completion of the course, students will be able to:*

- survey important "milestones" in the history of microbiology.
- compare and contrast the structures and functions of macromolecules found as components of microbial agents/microorganisms.
- compare and contrast different types of metabolism/metabolic pathways employed by different types of microbes.
- compare and contrast different types of microbial agents and microorganisms with respect to morphology, physiology, and phylogeny.
- integrate concepts of gene expression, natural selection, and evolution in the context of microbiological organisms.
- demonstrate and operate a microscope to examine microscopic life including bacteria, protozoa, algae, fungi, helminths, and arthropod vectors.
- differentiate bacterial cultures by using staining techniques.
- compare the use of different types of microbial media for isolation and identification of bacteria and fungi.
- classify unknown bacteria by performing metabolic tests.
- incorporate aseptic/sterile techniques in all laboratory experiments.
- compare and explain the effects of physical and chemical factors in controlling microbial growth and perform antibiotic sensitivity tests.
- explain the role of bacteria in biofilm formation and nitrogen cycling as important aspects of prokaryotic ecology.

- explain aspects of host non-specific and specific defenses against microbial pathogens

## **Learning Activities**

Read, listen to, watch assigned lesson materials.

Submit a written summary of current research.

Complete oral and/or written formative didactic assessments with final summative submission.

Identify and cite high-quality sources.

Use articulated reasoning while participating in an oral presentation, facilitated discussions and skills demonstrations.

Participate in a skills demonstration and/or role-playing activity.

Create an infographic, handout, and/or community resource.

Complete a final exam.

*Note: The clinical requirement of NARM /Clinical Skills is completed at any time throughout the ASM apprenticeship during actual clinical practice and is NOT a requirement to complete this academic course. Typical clinical manifestations of knowledge learned in this course are identified in the learning objective document above.*

## **Learning Materials / Resources:**

*Please use textbooks less than 5 years old or most recent edition.*

1. **Great news:** your textbook for this class is available for **free** online!

**Microbiology from OpenStax** [\\_\(https://openstax.org/details/books/microbiology\)\\_](https://openstax.org/details/books/microbiology), ISBN 1-947172-23-9

You have several options to obtain this book:

- **View online** [\\_\(https://cnx.org/contents/e42bd376-624b-4c0f-972f-e0c57998e765\)\\_](https://cnx.org/contents/e42bd376-624b-4c0f-972f-e0c57998e765)
- **Download a PDF** [\\_\(https://d3bxy9euw4e147.cloudfront.net/oscms-prodcms/media/documents/Microbiology-OP.pdf\)\\_](https://d3bxy9euw4e147.cloudfront.net/oscms-prodcms/media/documents/Microbiology-OP.pdf)
- **Download on iBooks** [\\_\(https://itunes.apple.com/us/book/id1195961754\)\\_](https://itunes.apple.com/us/book/id1195961754)

You can use whichever formats you want. Web view is recommended -- the responsive design works seamlessly on any device.

[\\_\(http://www.worldcat.org/title/microbiology/oclc/800860083?referer=br&ht=edition\)\\_](http://www.worldcat.org/title/microbiology/oclc/800860083?referer=br&ht=edition)

2. Microbiology Info Online Website. 2017. [www.microbes.info](http://www.microbes.info) [\\_\(http://www.microbes.info\)\\_](http://www.microbes.info)

3. American Society for Microbiology Website. 2017. [www.asm.org](http://www.asm.org) [\\_\(http://www.asm.org\)\\_](http://www.asm.org)

4. **MEAC Abbreviated NARM Skills Form**

[\\_\(http://www.midwiferycollege.org/AcademicProgram/Downloads/ASM/Clinical/Form-NARMSkills.pdf\)\\_](http://www.midwiferycollege.org/AcademicProgram/Downloads/ASM/Clinical/Form-NARMSkills.pdf)

5. [MEAC Core Competencies for Midwives \(http://meacschools.org/wp-content/uploads/2014/12/Curriculum-Checklist-of-Essential-Competencies-rev-2014.pdf\)](http://meacschools.org/wp-content/uploads/2014/12/Curriculum-Checklist-of-Essential-Competencies-rev-2014.pdf)

6. [Midwives Model of Care® \(http://cfmidwifery.org/mmoc/define.aspx\)](http://cfmidwifery.org/mmoc/define.aspx)

7. Students must find 1 article/study less than 5 years old. Recommended internet links as needed for latest developments in midwifery care:

- [The Cochrane Collaboration \(http://www.cochrane.org/\)](http://www.cochrane.org/)
- [EBSCO \(http://ejournals.ebsco.com/login.asp?bCookiesEnabled=TRUE\)](http://ejournals.ebsco.com/login.asp?bCookiesEnabled=TRUE)
- [National Library of Medicine \(https://www.nlm.nih.gov/\)](https://www.nlm.nih.gov/)
- [PubMed \(https://www.ncbi.nlm.nih.gov/pubmed/\)](https://www.ncbi.nlm.nih.gov/pubmed/)
- [ScienceDirect \(http://www.sciencedirect.com/\)](http://www.sciencedirect.com/)
- [Medscape \(http://www.medscape.com/womenshealth\)](http://www.medscape.com/womenshealth)
- [World Health Organization \(http://www.who.int/en/\)](http://www.who.int/en/)

### **Evaluation Tools / Methods:**

*The minimum passing grade for all courses is a cumulative 70% / C-. Grades are not recorded until both the student and preceptor submit end of trimester evaluations and in the case of general education courses supervision is completed*

*All assignments for this course are evaluated using the following criteria:*

1. Responses to each didactic assessment are evaluated utilizing the NCM rubrics and degree level profile.
2. Answers should reflect a thorough review of the current literature regarding best current practices in midwifery care.
3. Non-plagiarized paraphrased answers from the text which demonstrate appropriate comprehension of the learning objective. (Formative Assessment) Students and preceptors are encouraged to work together until the student masters the information. (Summative Assessment)
4. Random evaluation of cited sources and page numbers for each written assignment.

*Course credit: One Academic credit equals approximately 15 hours of formal time plus 30 hours of additional study or homework. Formal time is defined as the amount of time taken to answer the Learning Objectives to the level of 80% for midwifery courses and 70% for general education courses and to complete any learning activities to the preceptor's satisfaction, including any time spent face to face with the preceptor. Informal time includes any time spent actively reading relevant sources and textbook/s, researching Learning Objectives, and studying for examinations.*

## **Course Summary:**

Date

Details

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[Answer the Check Your Understanding Questions in section 3.3](#)