**COURSE OUTLINE**

**MS730** Antimicrobial resistance from principles to practice

**Course Credit**

3 units

**OFFERED**

October – April 2019/2020

**PREREQUISITES**

Enrolment in the Braley Scholar’s program and permission of the course co-ordinator

**Course Co-ordinator**

Dr. Dawn Bowdish

**Instructors:**

Various

**OVERVIEW OF THE COURSE**

The WHO describes antimicrobial resistance as a major threat to human health and although rates are skyrocketing, there are virtually no new antibiotics on the horizon. For these reasons the WHO has developed a global action plan to slow the development of AMR that includes five tenets 1) to improve awareness and understanding of antimicrobial resistance, 2) to strengthen knowledge through surveillance and research, 3) to reduce the incidence of infection, 4) to optimize the use of antimicrobial agents; and 5) increase investment in new medicines, diagnostic tools, vaccines and other interventions. The course structure is based on understanding these five tenets and consequently students will learn how AMR is detected, tracked and treated in Canada and globally. Through interactions with Public Health Ontario, they will learn how surveillance studies are performed and how AMR is diagnosed in a medical microbiology lab. Clinicians will describe how AMR alters patient prognosis and how isolation strategies differ based on the type of resistance. Experts in antimicrobial stewardship will explain how stewardship policies are implemented and how novel strategies such as vaccination can reduce AMR. Opportunities for experiential learning (i.e. vising public health and medical/clinical microbiology labs) will facilitate understanding of how AMR is diagnosed and tracked. Assignments and in-class presentations will provide an opportunity to apply course content to an area related to their interest and graduate research project.

**COURSE OBJECTIVES**

1. Investigate how diagnosis of pathogens and AMR occurs.
2. Understand how antibiotics are prescribed in the clinic.
3. Understand how diagnosis with an antibiotic resistant infection impacts clinical decision-making and alters patient prognosis.
4. Understand how public health agencies track antimicrobial resistance
5. Understand how antimicrobial stewardship strategies are developed at the institutional level
6. Understanding how WHO guidelines for antibiotic use are developed and implemented.

**Required texts:**

Canadian Antimicrobial Resistance Surveillance System: Update 2018. Public Health Agency of Canada (to be updated yearly)

https://www.canada.ca/content/dam/phac-aspc/documents/services/publications/drugs-health-products/canadian-antimicrobial-resistance-surveillance-system-2018-report-executive-summary/pub1-eng.pdf

Supplemental Materials:

Case studies from the Department of Medicine Infectious Diseases Residency program.

Relevant readings will be assigned prior to each class.

**EVALUATION**

The students will write a review article or knowledge translation piece that may include an outreach activity on a specific element of AMR, on approval of the course instructor to cement understanding of a topic of relevance to their research or career. The topic will be chosen in discussion with the course co-ordinator

Self- reflection: 5%

In class participation: 5%

Seminar (in class presentation): 40%

Written review or Knowledge Translation piece: 50%

**EVALUATION COMPONENTS**

1. Lead a critical discussion during the weekly learning session, having prepared for the session by

reading and reflecting on the recommended readings and preparatory activities.

2. At the end of each class provide a brief self reflection on participation in class and any obstacles to learning (e.g. foreign vocabulary, lack of background knowledge).

3. Perform an in-class seminar based on a case study from the Department of Medicine Infectious Diseases Residency program. The topic will be chosen in conjunction with the course co-ordinator. The student will work in small groups (2-3) to present the case and diagnosis. Grades will be assigned based on the quality of the presentation, accuracy of the diagnosis, depth of background presented and ability to communicate effectively to a broad audience.

4. Prepare a major paper (no longer than 20 pages, excluding bibliography, figures and tables)

which critically examines a component of AMR to prepare the student for their summer research session. The topic will be chosen with the course co-ordinator. Alternatively, the student may decide to create a knowledge translation piece and will need to identify a target audience and existing knowledge gaps, generate a draft of the KT piece and work collaboratively with the target community to refine the final product. Marks will be assigned based on clarity, utility and accuracy of the knowledge translation piece.

5. In order to pass the course, a passing grade must be obtained on the graded portions of the

course requirements as per the Graduate Handbook.

**Grade Calculation:** Students will be assigned a numeric grade for each of the assignments, self-reflection and in-class participation. The final letter grade will be calculated at the end of the course based on the numeric grades.

**Academic Integrity and Avoidance of Plagiarism**

Students are advised to be familiar with and maintain the policy to maintain academic integrity

and avoid plagiarism. The Academic Integrity Policy is available @

30Thttp://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicIntegrity.pdf30T

Students are encouraged to make use of resources on the Office of Academic Integrity website

for assistance in maintenance of academic integrity and avoidance of plagiarism.

Please note that all assignments must be submitted to the course assignment Dropbox on

Avenue to Learn by the due date and prior to the scheduled class. The Dropbox platform is

linked to a web-based service called Turnitin.com to reveal academic integrity issues.

**Attendance and Participation**

To pass the course, students are expected to attend and actively participate in all seminars as

scheduled. In the case of absence, students are required to notify the course instructor in a

timely fashion and negotiate evidence of engagement with the scheduled topic. It is expected

that students adhere to the McMaster professionalism and graduate student policies at all

times.

**Late Assignments and Papers**

When graded by percentage, the grade on late paper will be reduced by 5% for each day late.

Papers submitted more than two days late will receive a grade of zero.