

## Division of Natural Science

<http://natsci.info.yorku.ca/>

## Course Outline

**SC/NATS 1670 (Section A)  
CONCEPTS IN HUMAN HEALTH AND DISEASE (Online)  
Summer 2019****Course Instructor(s) and Contact Information****Course Director**

Dr. Motti Anafi,

**E-Mail:** moanafi@yorku.ca**Office hours:** E-mail to set an appointment**Course Teaching Assistants:****Sending e-mail to the Teaching Assistants and Course Director**

E. mails will be used for communication between the class, course director and teaching assistants.

Your e-mail will be read and answered as soon as possible. However, I will open only e-mails that fulfill the following requirements:

- Your e-mail must be sent from your YorkU formal e-mail account (not from the Moodle, hotmail, gmail etc.) – emails from the Moodle or from other non- yorku.ca e-mail accounts will likely languish in a spam folder that is checked only intermittently.
- Be sure to include your full name and student number in your email text.
- Your e-mail must include “NATS/1670” in the subject line
- Your e-mail must NOT include an attachment.

**Expanded Course Description**

Upon successful completion of this course students should be able to understand important concepts and principles related to susceptibility to diseases: These concepts will consist of variety of health threats from a biological perspective, with a focus on issues that are relevant to the 20-30 age group, approaching immunological, bacterial, viral and genetic diseases from a multi-disciplinary perspective. The course gives students who are not majoring in biology an overview of medical biology, consolidating knowledge on basic and applied biology with social and ethical issues related to human health, in a manner that is applicable and relevant to practical health decisions made by young people.

The course will be given as an online course including approximately three to five hours of recorded lectures per week. The assignments will present students with an opportunity to review material taught in the preceding lectures, along with providing an opportunity for an expanded and more in-depth understanding of the material.

Note: This course is not open to any student who has passed SC/BIOL 1010 6.00 or who have passed or are taking BIO 1000 3.00 or BIO 1001 3.00.

**Disclaimers: The information presented in the lectures is provided for educational purposes only and should not be considered medical advice.**

## Course Learning Outcomes

### GOAL:

Understand the importance of microbes for our health and their abilities to cause diseases.

After completing the materials of this course, you should be able to...

1. evaluate the ability of emerging diseases to affect the health of human population around the globe.
2. compare and contrast bacterial and eukaryotic cell structure and function.
3. describe the central dogma and its applications for human health.
3. understand the importance of vaccination.
4. summarize the effect of viruses on human health.
5. describe the role of HIV in the development of AIDS and the effect of the disease on the society.
6. predict the effect of viruses such as Influenza on the possibility of major pandemics.
7. describe the importance of vaccination in preventing cervical cancer by HPV.

## Evaluation

### Mid-Term Exam 1 (to cover Part 1)

15%

Date: Sunday June 9<sup>th</sup>, 2019

Time: 2:00pm

The duration of the exam is 60 minutes

Location: In-class exam: on the Keele Campus of York University. Specific room TBA.

### 2) Mid-Term Exam 2 (to cover Part 2 + cumulative)

15%

Date: Sunday July 14<sup>th</sup>, 2019

Time: 2:00pm

The duration of the exam is 60 minutes

Location: In-class exam: on the Keele Campus of York University. Specific room TBA.

3) Three assignments (5% each)

15%

4) Four out of five online quizzes (5% each)

20%

### 5) Final Exam (to cover Part 3 + cumulative)

35%

The duration of the exam is 150 minutes

Date and time: will be published by the registrar office.

Location: In-class exam: on the Keele Campus of York University.

#### Please Note:

- This information is subjected to update on the Moodle announcements
- All the exams and tests are cumulative (you need to know all the material from the beginning of the course).
- **All mid-term and final exams: In-class exams: on the Keele Campus of York University.**
- For quizzes: the grade will be calculated out of your best 80% (the best four out of five quizzes). So, for this component of the grade you have 20% buffer. This accounts for a missed quiz (e.g. due to illness, technical issues you might have with the computer or internet, or any other reasons). No justification (doctor note) will be required for a missed quiz.
- For the final exam: It is your responsibility to ensure that you are available to sit for examinations during the entire exam period for the term (July 31-Aug 9). It is strongly recommend that you do not make any travel arrangements prior to the end of the term's examination schedule.

## Course Materials

### Recommended (optional) Readings:

1) If you want to use a hardcopy text, the recommended textbook for the course is: Bauman Microbiology with Disease by body system. In the bookstore you will find the last edition (5th) in a form of loose leaf plus e-text for \$100 (ISBN- 9780134883182). However, any edition is fine. You will also find the text on reserve in Stacie Library.

2) Free online textbook: Microbiology by OpenStax college. This textbook can be used online <https://cnx.org/contents/5CvTdmJL@5.28:rFziotaH@5/Introduction> and offline (as a PDF file, link on the Moodle or go to “downloads” at the bottom of the page).

3) Use the search box in <http://www.ncbi.nlm.nih.gov/sites/entrez?db=Books> with keywords specified in class and in the course Moodle web site.

3) Other possible textbooks:

Any “Microbiology” text you can found in the library (there are quite a few over there) is likely to be a good reference. Two examples:

- Microbiology: A Human Perspective by Nester.
- Microbiology, by Jacquelyn Black Microbiology: Principles and Explorations.

4) Many online resources on the course outline.

## Math Content

No significant background in math is required

## Course Content and Format

### Course Outline (+optional reading)

Recommended reading from the above list is indicated. You are NOT expected to know material in the textbooks and websites that has not been covered in the lectures.

#### Part 1: Introduction

##### Week 1: Emerging infectious diseases

[http://www.learner.org/channel/courses/biology/support/5\\_infect.pdf](http://www.learner.org/channel/courses/biology/support/5_infect.pdf)

<http://emergency.cdc.gov/bioterrorism/>

<http://www.cdc.gov/drugresistance/>

OpenStax: Search the text with keywords

##### Week 2: Cell structure and function

[http://www.ncbi.nlm.nih.gov/About/primer/genetics\\_cell.html](http://www.ncbi.nlm.nih.gov/About/primer/genetics_cell.html)

[http://publications.nigms.nih.gov/insidethecell/pdf/inside\\_the\\_cell.pdf](http://publications.nigms.nih.gov/insidethecell/pdf/inside_the_cell.pdf)

OpenStax chapter 4

##### Week 2: Diversity of life

([http://www.learner.org/channel/courses/biology/support/4\\_microb.pdf](http://www.learner.org/channel/courses/biology/support/4_microb.pdf) )

<http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=cooper.TOC&depth=2> Ch. 1-3

OpenStax chapters 4-5

1st online quiz: The quiz will be open on May 17 -May 20  
You will have 30 minutes to answer all 20 multiple-choice questions.

1st assignment: Bacterial resistance to antibiotics from scientific and socioeconomic perspectives.  
The TurnItIn will be open on May 12 -May 19

##### Week 3: From the DNA to the organism

<http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=cooper.TOC&depth=2> Ch. 4-7

<http://ghr.nlm.nih.gov/handbook>

OpenStax chapters 10-13

##### Week 4: Mutations and cancer

<http://www.cdc.gov/tobacco/>

2nd online quiz: The quiz will be open on May 31 - June 2  
You will have 30 minutes to answer all 20 multiple-choice questions.

2nd assignment: The good and the bad sides of smallpox eradication.  
The TurnItIn will be open on May 31-June 7

First mid-term exam: Sunday June 9, 2019

#### Part 2: The Immune System

(A lot of free material at:

<http://www.ncbi.nlm.nih.gov/bookshelf/picrender.fcgi?book=infdis&blobtype=pdf>

<http://www.merck.com/mmpe/sec14.html>

OpenStax chapters 17-19

### Week 5:

#### Basic concepts in immunology

<http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=imm.TOC&depth=2>

<https://www.merckmanuals.com/professional/immunology-allergic-disorders/biology-of-the-immune-system/overview-of-the-immune-system>

OpenStax chapter 17

### Week 5: The non-specific (innate) immune system

<http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=imm.TOC&depth=2> (Part I)

### Week 6: The specific immune response

<http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=imm.TOC&depth=2> (Part II)

### Week 6-7: Vaccination

<http://www.merck.com/mmpe/sec14/ch169/ch169a.html>

<https://www.merckmanuals.com/professional/infectious-diseases/immunization>

<http://www.cdc.gov/vaccines/>

OpenStax chapter 18

### Week 7: Allergy

<https://www.merckmanuals.com/professional/immunology-allergic-disorders/allergic,-autoimmune,-and-other-hypersensitivity-disorders>

[http://www.merckmanuals.com/professional/immunology\\_allergic\\_disorders.html](http://www.merckmanuals.com/professional/immunology_allergic_disorders.html)

3rd online quiz: The quiz will be open on June 21- June 23 .

You will have 30 minutes to answer all 20 multiple-choice questions.

3rd assignment: The effect of Tobacco advertisement/promotion on our society

The TurnItIn will be open on June 23-June 30

Second mid-term exam: Sunday July 14, 2019

## Part 3: Infectious Diseases

### Week 8: Basic concepts in human virology

<https://www.merckmanuals.com/professional/infectious-diseases/viruses>

4th online quiz: The quiz will be open on July 5 - July 7

You will have 30 minutes to answer all 20 multiple-choice questions.

### Week 9-10: HIV and AIDS: epidemiology, treatment and prevention

[http://www.learner.org/channel/courses/biology/support/6\\_hiv.pdf](http://www.learner.org/channel/courses/biology/support/6_hiv.pdf)

<http://www.cdc.gov/hiv/default.htm>

OpenStax chapter 6, search the rest of the book with specific keywords

### Week 11: HPV and cervical cancer

<http://www.cdc.gov/std/hpv/default.htm>

5th online quiz: The quiz will be open on July 19 - July 21

You will have 30 minutes to answer all 20 multiple-choice questions.

## Week 12: Influenza: epidemiology, treatment and prevention

<http://www.cdc.gov/h1n1flu/>

<http://virology-online.com/general/Outbreak3.htm>

[http://www.cdc.gov/flu/?s\\_cid=internal6](http://www.cdc.gov/flu/?s_cid=internal6)

<http://www.who.int/csr/disease/influenza/en/>

OpenStax chapter 22

### **The Course MOODLE web site**

To access Moodle, please follow the instructions below.

1. Go to: <http://moodle.yorku.ca>
2. Log in with your passport York account.

Here you will find

- Announcements
- An updated course outline
- Grades, will be posted as a PDF file.
- Forum: For you to ask questions relevant to others in the class and to discuss course material.
  
- **Topic 1:**
  - BOOKS: Here I will post the pre-recorded lectures. The prerecorded lectures will be posted every week (or so).
- **Topic 2:**
  - Online quizzes: After the completion of each part, I will post an online quiz. The post and the due dates for each quiz are mentioned below.
- **Topic 3:**
  - Instructions for the assignments: a document to describe the assignments, the way to submit them (by TurnItIn) and the due date for each assignment. Please read this document carefully.
  - TurnItIn: for submitting the assignments
- **Topic 4:**
  - Students Wiki: This wiki is a collaboration area to summarize course material. By this activity you can create summaries to help each other's to be better prepared for the exams

Please note that my announcements on the Moodle take precedent over any other information posted on the course Moodle web site.

### **The Course Wiki**

In general, in all my courses, the wiki serves as a great tool for the class to function as a community. The wiki enables documents to be written collaboratively. Students are invited to add/ combine their lecture notes and related material. Lecture notes is not just about the words I put as a summery on my slides. The most important part is the discussion of concepts and ideas expressed in class including questions/ answers we have in class. You can make the wiki into a multimedia document by linking/embedding relevant videos, figures, relevant articles or anything else you think can help your peers. You can also act as an "editor", and arrange the material posted by others to reduce redundancies and to put the material in an appropriate order. You can also try to make the material to look better (appropriate font, color, titles etc.).

## Course Policies

### Tips on studying for this course:

- For the exams, you must know and understand the material presented in the lectures.
- You are NOT expected to know material from the online resources and textbooks which has not been covered in the recorded lectures.
- The online resources and textbooks can help students consolidate and expand their understanding of the material. However, much of the online resources and textbooks will not be covered in the recorded lectures, and other material that will be covered on the lectures will not be discussed in the above reading material. Hence, it is important to study the recorded lectures carefully, and, in addition, to read the readings related to each topic as it is covered in the course.
- Use the texts as auxiliaries to the lecture material.
- The material presented in the recorded lectures and other components of the course such as tests and exam have been developed from large variety of resources, including web sites, textbook supplements and the material mentioned above.

### Tests and Exams:

Attendance for all exams is mandatory. Exams missed on the ground of medical circumstances must be supported by an Attending Physician's Statement, which can be downloaded from the registrar's office web site or a statement by a psychologist or counselor. The documentation must be dated on the same day as the exam or earlier, or it will not be accepted. The Course Director must be notified by email within 24 hours in the case of a missed test or exam. Appropriate documentation must be submitted to the Course Director within one week after the test or exam. **No opportunities to make up missed mid-term exams will be offered. However, after acceptable justification for a missed exam has been received, the percentage value of the missed mid-term will be added to the final exam.** If the final exam is missed, the student must petition the Registrar for permission to write the final exam. Deferred exams are similar to the original exam in terms of material covered and level of difficulty, However, the format is not likely to be identical to the original exam. Accordingly, all approved deferred exams will be consisting of short-answer questions (no multiple-choice).

Students which are interested to view their exams are requested to set an appointment with the course TAs (E. mail TBA) by three weeks after the exam.

### Technical quality of the pre-recorded lectures

I am trying to bring you the lectures at their best quality. However, as I am using quite a lot of multimedia (animations, figures and videos) as part of the lecture, the size of the lecture files is getting quite large. In few places, especially when I am using heavy animations I have made for you, or when I bring up an heavy figure or video, the volume of my voice is reduced in response to this activity. I believe that in these cases even my strong computer and the video editing software have some difficulties with the load during the lecture recording. So, it is not the microphone (I am using a professional microphone), but my attempt to give you a clear audio-visual multimedia lectures. As the animations and the figures are very important for the lectures and since you can still get the lecture information even when the volume of my voice is reduced for a second or two (that's the choppiness you hear in my voice in few cases), this is the best balance I can make for you. (Yes, I did quite a lot of experiments on this including recording each lecture several times under different conditions).

So how to get the best quality? Most importantly, use good headphones when you are listening to my lectures. By doing so you would be able to hear my voice even when the volume is reduced or chopped to some level. The quality of the videos would be better if you use a strong computer and a fast internet. Use a regular PC or laptop. Do not watch them on cellphone or other weaker devices.

Periodically, when many students are watching the same file, the servers (You Tube and the Moodle) are getting slow. Over all, it is about a balance: And I hope I created the best balance for you.

## University Policies

### Important Sessional Dates

Important Dates: For updates check <https://registrar.yorku.ca/enrol/dates/su19>

SUMMER 2019 SESSIONAL DATES			
	SU	S1	S2
Course start date	April 29	April 29	June 17
Last date to add a course without permission of instructor	May 12	May 3	June 21
Last date to add a course with permission of instructor	May 27	May 10	June 28
Last date to drop course without receiving a grade	June 28	May 27	July 15
Reading Week	June 11-14	N/A	N/A
Study days	July 30	June 11	July 30
Course end date	July 29	June 10	July 29
Examinations	July 31- Aug. 9	June 12-14	July 31- Aug. 9

### Academic Honesty and Integrity

Academic honesty requires that persons do not falsely claim credit for the ideas, writing or other intellectual property of others, either by presenting such works as their own or through impersonation. Similarly, academic honesty requires that persons do not cheat (attempt to gain an improper advantage in an academic evaluation), nor attempt or actually alter, suppress, falsify or fabricate any research data or results, official academic record, application or document. Finally, academic honesty requires that persons do not aid or abet others to commit an offence of academic dishonesty, including intentional acts to disrupt academic activities.

Suspected breaches of academic honesty will be investigated and charges shall be laid if reasonable and probable grounds exist.

### Academic Honesty and electronic devices during assessments (e.g. exams)

- Internet capable and personal storage devices of all kinds must be turned off, including vibrators. These and any other unauthorized material must be placed under the student's chair and should not be accessed at any point during the exam. Failure to comply with directive may be considered a break of academic honesty.
- See <http://registrar.yorku.ca/exams/tipsheet>



Please familiarize yourself with the full Senate Policy on Academic Honesty, found at <http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/>

Please also familiarize yourself with the SPARK Academic Honesty tutorial found at <https://spark.library.yorku.ca/academic-integrity-what-is-academic-integrity/>

### **Academic Accommodation for Students with Disabilities**

York University shall make reasonable and appropriate accommodations and adaptations in order to promote the ability of students with disabilities to fulfill the academic requirements of their programs.

The nature and extent of accommodations shall be consistent with and supportive of the integrity of the curriculum and of the academic standards of programs or courses.

Please familiarize yourself with the full Senate Policy on Academic Accommodations for Students with Disabilities, found at <http://secretariat-policies.info.yorku.ca/policies/academic-accommodation-for-students-with-disabilities-policy/>

**Note: Students should submit accommodation letters from Counseling and Disability Services (CDS) to the course instructor within the first two weeks of the course or as soon as issued.**

Counseling and Disability Services - <http://cds.info.yorku.ca/>

York Accessibility Hub - <http://accessibilityhub.info.yorku.ca/>

**Note: A student registered with CDS, and choosing to write with Alternate Exams, is responsible for making the appropriate writing arrangements within the timeframes outlined by Alternate Exams.**

Alternate Exams - <http://altexams.students.yorku.ca/>

### **Religious Observance Accommodation**

York University is committed to respecting the religious beliefs and practices of all members of the community, and making accommodations for observances of special significance to adherents.

<https://w2prod.sis.yorku.ca/Apps/WebObjects/cdm.woa/15/wo/kmHGekTpzKLX6XYKBXYc8M/0.3.4.62.0>

**Note: Students who will have an academic conflict as a result of a religious observance, at any point in the term, should make the instructor aware of such at least three weeks prior to the conflict.**

For conflicts occurring during an official examination period, please complete the Examination Accommodation Form available at [http://www.registrar.yorku.ca/pdf/exam\\_accommodation.pdf](http://www.registrar.yorku.ca/pdf/exam_accommodation.pdf) and submit to your instructor at least three weeks prior to the final exam.

### **Student Conduct in Academic Situations**

Students and instructors are expected to maintain a professional relationship characterized by courtesy and mutual respect and to refrain from actions disruptive to such a relationship. Moreover, it is the responsibility of the instructor to maintain an appropriate academic atmosphere in the classroom and the responsibility of the student to cooperate in that endeavour. Further, the instructor is the best person to decide, in the first instance, whether such an atmosphere is present in the class. A statement of the policy and procedures regarding disruptive and/or harassing behaviour by students in academic situations is available on the website of the University Secretariat (<http://secretariat.info.yorku.ca/>).

## Division of Natural Science Resources

### **NATS-AID**

Free peer tutoring for students enrolled in Natural Science Courses.

See <http://natsci.info.yorku.ca/nats-aid/>

### **M-AID in NATS (Math Aid)**

Free math help for students enrolled in Natural Science Courses (TA tutors)

See <http://natsci.info.yorku.ca/m-aid-in-nats/>

## Other Resources

### **Learning Commons**

The Learning Commons brings together key supports for your learning: writing, research, learning skills and career services. <http://www.library.yorku.ca/cms/learning-commons/>

### **goSAFE**

goSAFE is a complimentary service provided to the York Community. At the Keele campus, goSAFE has two routes: North Route & South Route which will safely transport community members by vehicle from one specified hub to another on campus. goSAFE operates seven days a week, all year round, including University closures (with the exception at Glendon during the Christmas holiday closure).

Call the goSAFE office at 416-736-5454 or extension 55454 during hours of operation. Please give your name, location and destination. <http://www.yorku.ca/goSAFE/>

### **Mental Health and Wellness at York University**

Outlines a variety of resources available to support mental health and wellness

<http://mhw.info.yorku.ca/resources/resources-at-york/students/>

### **Good2Talk**

Post-Secondary Student 24 hour Helpline

<http://www.good2talk.ca/> 1-866-925-5454