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Course Syllabus

FOOD AND ENVIRONMENTAL VIROLOGY

FOS 6224

Fall semester 2020 (online)

Instructor	Naim Montazeri, Ph.D. Assistant Professor
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Institution	University of Florida
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Office hours	T,R | 10 am – 11 am (through Zoom)
Announcements	Through Canvas

Prerequisite	FOS6224: Basic familiarity with microbiology or biochemistry FOS4223: MCB2000/L, MCB3020/L, or FOS4222
Course delivery	Through Zoom
Course material	Through Canvas
Class hours	T,R | Period 2 (8:30 am - 9:20 am)
Credits	2
Teaching assistant	Siman Liu (liu.siman@ufl.edu)

COURSE DESCRIPTION

Food virology is an emerging topic within the field of food microbiology. This course explores the ecology of viruses mainly on their roles as human pathogens; transmission to food, water, and contact surfaces; risk-assessment and prevention strategies. Through this course, students can develop a competency framework within their discipline.

COURSE GOALS

By the end of this course the students will be able to:

1. Recognize important foodborne and waterborne pathogenic viruses and distinguish the occurrence of viral infections from a global perspective while illustrating the incidences of the viral infections in low-income vs. high-income countries, or in confined settings such as health-care facilities, restaurants, food processing plants, farms, and aquaculture facilities
2. Critically relate and illustrate specific molecular mechanisms under which viruses persist in the

environment, and the evolutionary pathways contributing to the emergence of new and potentially more virulent strains

3. Explain methods for the isolation, purification, and detection of viruses in environmental samples including their advantages and disadvantages, and rationally determine the appropriate methodologies based on the downstream applications
4. Assess and critically analyze potential routes of contamination of food, water, and contact surfaces with foodborne and waterborne viruses, and logically recommend proper control and prevention strategies in accordance with each specific route such as food handlers, wastewater, severe weather conditions, floods, and runoff waters.

COURSE STRUCTURE

According to the Bloom's taxonomy, the content of this course is intended to help students understand, apply, and analyze (draw connection among ideas) the issues in food and environmental virology as its relevance to food-borne and water-borne illnesses. This was originally in-class course but due to COVID-19 it will be delivered on-line. Class materials are composed of lecture slides, handouts, reading materials, and videos. Both undergraduate and graduate students will receive the same presentation slides every session. Further reading materials such as book chapters will be provided for a deeper understanding of the core concepts. All the further reading materials will be included in the exams. The students will complete and turn in two assignments (each 1 to 2-page long) on topics selected by the instructor. The mid-term exams (50 min) and final exam (90 min) will be closed book.

DELIVERY OF THE LECTURES

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

REQUIRED READING MATERIAL (GRADUATE AND UNDERGRADUATES)

- Mainly consist of book chapters.

RECOMMENDED READING MATERIALS

- Cook N. 2013. *Viruses in Food and Water - Risks, Surveillance and Control*. Woodhead Publishing, England

- Koopmans M. *et al.* 2008. *Food-Borne Viruses - Progress and Challenges*. American Society for Microbiology Press, Washington, DC, USA
- Knipe D. M. & Howley P. M. 2007. *Fields Virology*. 5th Edition. Lippincott Williams & Wilkins. Philadelphia, PA, USA
- Carter J. & Saunders V. 2013. *Virology: Principles & Applications*. 2nd Edition. John Wiley & Sons Ltd. England
- Peer-reviewed articles published in prestigious journals such as the Journal of Virology, Food and Environmental Virology, Food and Environmental Microbiology, and Journal of Food Protection
- University of Florida libraries and online sources such as e-books, ILL, and Knovel App.
- *Week in Virology,* by Dr. V. Racaniello: http://www.microbe.tv/

REQUIREMENTS FOR THE GRADUATE STUDENTS

1) In-class presentation: discuss a peer-reviewed article of a relevant topic, selected by the help of the instructor, and deliver through a 20-min oral presentation. In-class presentations will be offered using PowerPoint slide sets. The slide sets must be submitted to the instructor by 5 p.m. of three calendar days prior the date of presentation. Students are encouraged to communicate with the instructor in advance to ensure the outlines and format of their presentation. The slide sets will be uploaded to Canvas and used as course material for the exams.
2) Extra reading materials: selected peer-reviewed articles, including but not limited to the following titles. The extra reading materials will be included in the final exam. Extra questions will be provided to graduate students. Questions will carry different points for graduate and undergraduate students to compensate for the extra questions for the graduate students (see grading scheme).

    - Santiana *et al.* 2018. Vesicle-cloaked virus clusters are optimal units for inter-organismal viral transmission. *Cell Host Microbe,* 24(2): 208-220.
    - Chmielewski and Swayne. 2011. Avian influenza: public health and food safety concerns. *Annu Rev Food Sci Technol*. 2:37-57.
    - Torres-Barceló *et al.* 2016. Evolutionary Rationale for Phages as Complements of Antibiotics. *Trends Microbiol.* 24(4): 249-256.
    - Wigginton and Kon. 2012. Virus disinfection mechanisms: the role of virus composition, structure, and function. *Curr Opin Virol*. 2: 84-89.
    - Graaf *et al.* 2016. Human norovirus transmission and evolution in a changing world. *Nat Rev Microbiol*. 14: 421-433.

ONLINE COURSE EVALUATION

Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at

https://evaluations.ufl.edu. Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results.

COURSE WEBSITE

The course is available via through the UF e-learning website (Canvas); go to http://elearning.ufl.edu/ and click on the Canvas Login button. It requires Gator Link username/password. The course site will be used to course relevant announcements, reading, lecture materials, links, assignments, etc. It is recommended to adjust the setting for announcement alerts. FAQs: http://elearning.ufl.edu/e-learning-basics/uf-e-learning-faqs/; Tutorials: http://elearning.ufl.edu/e-learning-basics/uf-e-learning-tutorials/.

ATTENDANCE AND MAKE-UP POLICY

Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx.

GRADING

Grades will not be curved and not negotiable.

	FOS6224	FOS4223
Mid-term exams	30%	30%
Assignments	30%	30%
Presentation	10%	-
Final exam	30%	40%
TOTAL	**100%**	**100%**

Grades will be calculated based on the following scheme:

Letter grade	Range (%)
A	94 to 100
A-	90 to 93.9
B+	87 to 89.9
B	84 to 86.9
B-	80 to 83.9
C+	77 to 79.9
C	74 to 76.9
C-	70 to 73.9
D+	67 to 69.9
D	64 to 66.9
D-	61 to 63.9
E	<60

For further information on UF's Grading Policy, consult:
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

SOFTWARE USE

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements

governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

ACADEMIC HONESTY

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: "*We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity*." You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: "*On my honor, I have neither given nor received unauthorized aid in doing this assignment*."

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code.

STUDENT PRIVACY

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html.

SERVICES FOR STUDENTS WITH DISABILITIES

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation:
0001 Reid Hall, 352-392-8565, **www.dso.ufl.edu/drc/**

CAMPUS HELPING RESOURCES

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having

personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- *University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575,* www.counseling.ufl.edu
  Counseling Services; Groups and Workshops; Outreach and Consultation; Self-Help Library; Wellness Coaching
- U Matter We Care, www.umatter.ufl.edu/
- Disability Resource Center: https://disability.ufl.edu/
- Career Resource Center, First Floor JWRU, 392-1601, www.crc.ufl.edu/next-level

STUDENTS COMPLAINTS AND CONFLICT RESOLUTION

- Policies Residential Course: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf
- Online Course: http://www.distance.ufl.edu/student-complaint-process

OTHER INFORMATION

Lecture material and information are the property of the University of Florida and the course instructor and may not be used for any commercial purpose. Students found in violation may be subject to disciplinary action under the University's Student Conduct Code. Only students formally registered for the course are permitted to attend lectures and take quizzes/tests.

Food and Environmental Virology

Class Schedule (subject to change)

FOS4223 & FOS6224

Week	Day	Date	Topic area/activity	
Module 1: Intro to virology and global health				
1	T	Sep 1	Pre-assessment and intro	Online pre-assessment
	R	Sep 3	Basic virology – 1	Quiz 1
2	T	Sep 8	Basic virology – 2	
	R	Sep 10	Foodborne viruses and global health 1	
3	T	Sep 15	Foodborne viruses and global health 2	
Module 2: Enteric viruses				
	R	Sep 17	Enteric viruses (hepatitis viruses)	Quiz 2 (module 1)
4	T	Sep 22	Enteric viruses (human norovirus)	Assignment 1 due
	R	Sep 24	Enteroviruses and emerging viruses	
5	T	Sep 29	Review for the exam 1	
	R	Oct 1	**Exam 1 (modules 1 and 2)**	
Module 3: Bacteriophages and their applications				
6	T	Oct 6	Utilization of surrogates	
	R	Oct 8	Bacteriophages	
7	T	Oct 13	Applications of bacteriophages	
Module 4: Isolation and detection of viruses				
	R	Oct 15	Isolation and purification of viruses	
8	T	Oct 20	Detection and quantification of viruses	Quiz 3 (module 3)
	R	Oct 22	Lab demo - online	Assignment 2 due
9	T	Oct 27	Career opportunities for food virologists	
	R	Oct 29	Review for the exam 2	
10	T	Nov 3	**Exam 2 (modules 3 and 4)**	
Module 5: Environmental transmission of pathogenic viruses				
	R	Nov 5	Domestic sewage/wastewater	
11	T	Nov 10	Environmental water and sediment	
	R	Nov 12	Meat and seafood	
12	T	Nov 17	Fresh produce	
	R	Nov 19	Review for the exam 3	
13	T	Nov 24	**Exam 3 (modules 5)**	
	R	Nov 26	**No class (Thanksgiving)**	Assignment 3 due
Module 6: Inactivation of viruses in food and on contact surfaces				
14	T	Dec 1	Virus inactivation - principles and practices	

	R	Dec 3	Virus inactivation - surface decontamination	
15	T	Dec 8	Review for the final exam	
	R	Dec 15	**FINAL EXAM (modules 5 and 6)**	