Term Information

Effective Term	Autumn 2022
Previous Value	*Autumn 2014*

Course Change Information

What change is being proposed? (If more than one, what changes are being proposed?)

Updates to course description, prerequisites, learning goals, and topics.

What is the rationale for the proposed change(s)?

Alignment with FDSCTE 7536 (crosslisting)

What are the programmatic implications of the proposed change(s)?

(e.g. program requirements to be added or removed, changes to be made in available resources, effect on other programs that use the course)?

none

Is approval of the requrest contingent upon the approval of other course or curricular program request? No

Is this a request to withdraw the course? No

General Information

Course Bulletin Listing/Subject Area	Microbiology
Fiscal Unit/Academic Org	Microbiology - D0350
College/Academic Group	Arts and Sciences
Level/Career	Graduate
Course Number/Catalog	7536
Course Title	Advanced Food Microbiology I
Transcript Abbreviation	Adv Food Micro 1
Course Description	This advanced food microbiology course is designed to help students to build a comprehensive understanding about food-borne microorganisms and gut microbiota and their impact on host health through studying their interactions with the environment and with the host.
Previous Value	*Food borne microbes of significance to health and industrial applications, metabolic pathways enabling these organisms survival in the environment and hosts, approaches for studying food-borne microorganisms.*
Semester Credit Hours/Units	Fixed: 2

Offering Information

Length Of Course	7 Week
Previous Value	*14 Week, 12 Week, 8 Week, 7 Week, 6 Week*
Flexibly Scheduled Course	Never
Does any section of this course have a distance education component?	No
Grading Basis	Letter Grade
Repeatable	No
Course Components	Lecture
Grade Roster Component	Lecture
Credit Available by Exam	No
Admission Condition Course	No
Off Campus	Never
Campus of Offering	Columbus

Prerequisites and Exclusions

Prerequisites/Corequisites	Graduate level standing, OR permission of instructor with approval from the Graduate School.
Previous Value	*Prereq: 5536 (Micrbiol 636.01) or FdScTe 5536 (636.01), and Micrbio 4100 (Micrbiol 520); or permission of instructor.*
Exclusions	Not open to students with credit for FDSCTE 7536
Previous Value	Not open to students with credit for Micrbiol 736 or FdScTe 7536 (736).
Electronically Enforced	No

Cross-Listings

Cross-Listings	Cross-listed in FdScTe.

Subject/CIP Code

Subject/CIP Code	26.0502
Subsidy Level	Doctoral Course
Intended Rank	Masters, Doctoral

Requirement/Elective Designation

The course is an elective (for this or other units) or is a service course for other units

Course Details

Course goals or learning objectives/outcomes

- Understand the general molecular concepts involved in microbial interactions among the microbes, environment and hosts.
- Develop understanding on specific metabolic pathways, molecular mechanisms and other characteristics of representative foodborne microbes and gut microbiota that contribute to events in food safety, fermentation, spoilage and human health.
- Develop skills in critical thinking and strategies to approach & solve food microbiology problems based on systematic understanding of organisms and the surrounding environment and strategies in the development and application of detection methods.
- Be exposed to current advancements in food microbiology and human health and develop skills to present related food microbiology topics to professional audience.

Previous Value

- *Students will understand the microbiological aspects of food preservation; detection of microbiological contaminants, hazards, and microorganisms of public health significance.*

Content Topic List

- Course Introduction, food-borne microorganisms: interactions with the environment and host; taking advantage of the nutrient environment: the proteolytic system of LAB
- Plasmid-encoded traits: carbohydrate fermentation; bacterial phage resistance; inhibition to the competitors: bacteriocin production; horizontal gene transfer.
- Probiotics, gut health. Adapting to the environment: stress responses; forming a microbial community: biofilms and cell-cell communication
- Food, host and environmental microbiota; interaction with the host; microbiome
- Pathogenicity: Listeria monocytogenes; Shiga Toxin

Previous Value

- *Introduction, how to study food microbiology: roles of foodborne bacteria and fungi; Interactions among the microbes, environment, and the hosts; food safety from farm to table*
- *Microbes in the food system: detection advancements and challenges, current platforms, limiting factors, selecting proper methods, proper data interpretation, strategies for developing new methods*
- *Fermentation starter cultures: mechanisms to survive and compete, proteolytic and carbohydrate metabolisms, bacteriocin production and immunity, bacteriophage*
- *Food spoilage: major bacteria and fungi of industrial significance*
- *Foodborne pathogens, probiotics and commensal bacteria: critical mechanisms such as biofilms, stress responses, cell-cell communication, antibiotic resistance, pathogenesis, and maintenance involving these organisms*
- *Risk assessment*
- *Research methods and current issues*

Sought Concurrence

No

Attachments

- FDSCTE 7536 Syllabus course approval_7.23.2021.pdf: updated syllabus

  (Syllabus. Owner: Kwiek,Jesse John)
- 7536 Advanced Microbiology-- old.pdf: current syllabus

  (Syllabus. Owner: Vankeerbergen,Bernadette Chantal)

Comments

- Syllabus has been updated (again). *(by Kwiek,Jesse John on 08/11/2021 02:35 PM)*

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Kwiek,Jesse John	05/19/2021 04:11 PM	Submitted for Approval
Approved	Kwiek,Jesse John	05/19/2021 04:12 PM	Unit Approval
Revision Requested	Vankeerbergen,Bernadette Chantal	06/13/2021 07:12 AM	College Approval
Submitted	Kwiek,Jesse John	07/09/2021 06:47 AM	Submitted for Approval
Approved	Kwiek,Jesse John	07/09/2021 06:52 AM	Unit Approval
Revision Requested	Vankeerbergen,Bernadette Chantal	07/23/2021 03:44 PM	College Approval
Submitted	Kwiek,Jesse John	08/11/2021 02:35 PM	Submitted for Approval
Approved	Kwiek,Jesse John	08/11/2021 02:35 PM	Unit Approval
Approved	Vankeerbergen,Bernadette Chantal	08/18/2021 01:04 PM	College Approval
Pending Approval	Cody,Emily Kathryn Jenkins,Mary Ellen Bigler Hanlin,Deborah Kay Hilty,Michael Vankeerbergen,Bernadette Chantal Steele,Rachel Lea	08/18/2021 01:04 PM	ASCCAO Approval

FDSCTE 7536: Advanced Food Microbiology

Term (Autumn 2022)

Meeting Dates and Location: In Person. M, W, 11:30AM-1:20 PM.

Instructor:

Name: Hua Wang, Department of Food Science and Technology
Email address: Wang.707@osu.edu
Phone number: 614-292-0579
Office hours: Appointment via e-mail request
Location of office: Parker Food Science & Tech Bld room 219
Preferred means of communication:

- My preferred method of communication for questions is email.
- My class-wide communications will be sent through the Announcements tool in CarmenCanvas. Please check your notification preferences (go.osu.edu/canvas-notifications) to be sure you receive these messages

Credit Hours: 2 credit hours

Pace of course activities: The class meets twice per week in person during class hours. Written homework assignments are submitted online. Oral presentation and participation in discussion are live during class hours.

Credit hours and work expectations: This is a graduate-level, **2-credit-hour**, 7-week course (*110 minutes per day, 2 day per week* plus a final exam). According to Ohio State policy, students should expect around 4 hours per week of time spent on direct instruction (instructor content and Carmen activities, for example) in addition to 8 hours of homework (reading and assignment preparation, for example) for proper performance.

Prerequisites:

Graduate level standing, OR instructor permission. Not open to students with credit for Microbiol 7536.

Textbooks/Readings:

No textbook. Research papers covering lecture topics given during the semester.

Useful references:

Doyle MP, Diez-Gonzalez F and Hill C. 2019. *Food Microbiology: Fundamentals and Frontiers*, 5th Ed. 2019 ASM Press, Washington, DC.

Jaykus L, H.H. Wang, and L.S. Schlesinger 2009. Foodborne Microbes: Shaping the Host Ecosystems. ASM Press, Washington, D.C.

Ray, B. 2001. Fundamental Food Microbiology. CRC Press, Boca Raton, FL.

Lewin, B. 2000. Genes VII. Oxford University Press, New York and Cell Press, Cambridge, Mass.

Cotran, R.S., Kumar, Vinay, and Collins, T. 1996. Robbins pathologic basis of disease. W.B. Sounders Company, Philadelphia, Pennsylvania.

Salminen, S. and von Wright, A. (ed.) 1998. Lactic acid bacteria: microbiology and functional aspects. Marcel Dekker, New York.

van Eden, W., Young, D.B. (ed.) 1996. Stress proteins in medicine. Marcel Dekker, New York.
Blasheck H., Wang H., Alge, M. (e.d), 2007. Biofilms in the food environment. Blackwell Publishing, Iowa.

Optional Readings:

Useful molecular biology laboratory technique manuals:
Molecular cloning: a laboratory manual, second edition. 1989. J. Sambrook, E.F. Fritsch, and T. Maniatis. Cold Spring Harbor Laboratory Press, Plainview, NY.
Current protocols: molecular biology (http://www.currentprotocols.com/)

Additional Required Materials: N/A

Other Fees or Requirements: N/A

Course Description:

The study of food microbiology involves three major components: foods, microorganisms and hosts. This advanced food microbiology course is designed to help students to build a comprehensive understanding about food-borne microorganisms and gut microbiota and their impact on host health through studying their interactions with the environment and with the host. Discussions will be focused on critical pathways and mechanisms for microorganisms to survive the environment. Their implication to human health will be addressed. Microorganisms and topics of industrial significance will be emphasized. Genetics and molecular biology approaches important for studying food-borne microorganisms, microbiome, as well as cutting edge techniques in solving industrial food microbial problems will be introduced. The course is offered in the forms of 1) lecturing by the faculty, 2) discussion and research paper presentations by the students.

Goals:

After completing the course, students will

1. Understand the general molecular concepts involved in microbial interactions among the microbes, environment and hosts.
2. Develop understanding on specific metabolic pathways, molecular mechanisms and other characteristics of representative foodborne microbes and gut microbiota that contribute to events of importance to food safety, fermentation, spoilage and human health.

3. Develop skills in critical thinking and strategies to approach & solve food microbiology problems based on systematic understanding of organisms and the surrounding environment and strategies in the development and application of detection methods.
4. Be exposed to current advancements in food microbiology and human health and develop skills to present related food microbiology topics to professional audience.

Learning Outcomes:

Course Learning Outcomes: Successful students will have the ability to

1. Learning Outcome L1: describe microbial interactions among themselves and with the environment and host using proper terms, illustrated by common foodborne microbes;
2. Learning Outcome L2: identify and describe the causes and proper mechanisms involved at the physiological and genetic levels;
3. Learning Outcome L3: independently think and re-interpret literature and common knowledge, including but not limited to statement from public media;
4. Learning Outcome L4: synthesize information, present critical questions to be addressed in the field, discuss and propose potential solutions;
5. Learning Outcome L5: communicate professionally and effectively.

Topic/Week Outcomes: Successful students will have the ability to

1. Week Outcome (W1-6 L1) from L1: describe physiological properties and key mechanisms involved in interactions among food, microbes and hosts, using foodborne beneficial, commensal and pathogens as illustrations;
2. Week Outcome (W1-3, 5, 6, L2) from L2: discuss genetic elements involved;
3. Week Outcome (W2-7, L3) from L3: develop comprehensive understanding on host health and skills to address the food safety and human health problems;
4. Week Outcome (W1-7, L4) from L4: interpret microbial interactions comprehensively, at individual and population levels;
5. Week Outcome (W2-7 L5) from L5: extract and present scientific information, interpretation and ideas effectively through discussion, homework, presentations and research proposal.

Course technology

For help with your password, university e-mail, Carmen, or any other technology issues, questions, or requests, contact the OSU IT Service Desk. Standard support hours are available at OCIO Help Hours, and support for urgent issues is available 24x7.

- **Self-Service and Chat support:** (http://ocio.osu.edu/selfservice)
- **Phone:** 614-688-HELP (4357)
- **Email:** 8help@osu.edu
- **TDD:** 614-688-8743

Baseline technical skills for online courses

- Basic computer and web-browsing skills
- Navigating Carmen: for questions about specific functionality, see the Canvas Student Guide.

Technology skills necessary for this specific course

- Zoom text, audio, and video chat
- Recording a slide presentation with audio narration

Required equipment

- Computer: current Mac (OS X) or PC (Windows 7+) with high-speed internet connection
- Webcam: built-in or external webcam, fully installed and tested
- Microphone: built-in laptop or tablet mic or external microphone

Required software

- Microsoft Office 365: All Ohio State students are now eligible for free Microsoft Office 365 ProPlus through Microsoft's Student Advantage program. Full instructions for downloading and installation is found https://ocio.osu.edu/kb04733.
- Approved browsers:

Carmen Access

You will need to use BuckeyePass multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you take the following steps:

- Register multiple devices in case something happens to your primary device. Visit the BuckeyePass - Adding a Device help article for step-by-step instructions.
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click "Enter a Passcode" and then click the "Text me new codes" button that appears. This will text you ten passcodes good for 365 days that can each be used once.
- Download the Duo Mobile application to all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service.

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at 614-688-4357 (HELP) and the IT support staff will work out a solution with you.

Course Schedule:

INSTRUCTIONAL WEEK	TOPICS, ASSIGNMENTS, DEADLINES, EVENTS, TOPIC OUTCOME	ASSOCIATED COURSE LEARNING OUTCOME(S)	ASSOCIATED WEEK LEARNING OUTCOME(S)
1	Course Introduction, food-borne microorganisms: interactions with the environment and host; taking advantage of the nutrient environment: the proteolytic system of lactic acid bacteria (LAB)	L1, L2, L4	**L1, L2, L4**
2	Plasmid-encoded traits: carbohydrate fermentation; bacterial phage resistance; inhibition to the competitors: bacteriocin production; horizontal gene transfer	L1, L2, L3, L4, L5	**L1, L2, L3, L4, L5**

	Homework #1		
3	Discussion 1: Probiotics, gut health Adapting to the environment: stress responses; forming a microbial community: biofilms and cell-cell communication	L1, L2, L3, L4, L5	**L1, L2, L3, L4, L5**
4	Food, host and environmental microbiota; interaction with the host; microbiome Homework #2 Discussion 2-food, gut microbiome and health	L1, L3, L4, L5	**L1, L3, L4, L5**
5	Pathogenicity: Listeria monocytogenes; Shiga Toxin Proposal writing	L1, L2, L3, L4, L5	**L1, L2, L3, L4, L5**
6	Discussion #3: Pathogenicity Guest lecture TBA	L1, L3, L4, L5	**L1, L2, L3, L4, L5**
7	Research methods: microbial detection; proteomic and genomic approaches; summary Presentation: research proposal	L3, L4, L5	**L3, L4, L5**
8	**FINAL EXAM**		

Instructor's policy on late or make-up work:

Please contact the instructor as soon as possible in the case of emergency/illness or other extenuating circumstance to discuss your situation. Unless with exceptions approved by the instructor (such as illness, out of town on university business, etc.), late work will have 20% of the total points deleted for each day it is late. Five (5) days late you will receive zero (0) points.

Evaluation:

How your grade is calculated

ASSIGNMENT CATEGORY	POINTS
Participation	15
Homework assignments	30
Student presentations	20
Research proposal	20
Final Exam (comprehensive)	15

Total	**100**

Homework will be due one week from the assignment, and proposal will be due the presentation day on Week 7.

Description of Evaluation Activities:

Participation: This course requires live participation during the lecture time, unless with approved emergency exception(s). Students are expected to be involved in sessions, including real-time discussion. Each student will be individually assessed on how they engage throughout the semester in discussion by providing their opinions, bringing in contextually appropriate comments and examples, and supporting the learning environment by asking questions of their peers and guest speakers.

Homework assignments: Students are expected to conduct their literature-review based homework assignments on assigned topics independently. Plagiarism is not allowed. Each homework will be graded based on the following: describe and summarize existing knowledge (20%); discuss physiological and molecular mechanisms involved (20%); identify knowledge gaps and propose solutions (20%); innovative interpretation or ideas (20%); proper presentation and effective communication (20%). Written assignments should avoid grammar and spelling errors and follow a logical flow to present the scientific story. A non-expert reader should be able to follow the information presented, and an expert reader should be able to appreciate the scientific contribution. The deadlines for each homework submission will be given by the instructor. Missing submission deadlines will result in reduction of points, unless with special permission from the instructor due to approved health or other reasons.

Research proposal: Students will write and submit a research proposal on a food safety topic of their choice. The students are expected to conduct their research proposal independently. Plagiarism is not allowed. Each proposal will be graded based on the following: describe and summarize existing knowledge (20%); discuss physiological and molecular mechanisms involved (20%); identify knowledge gaps and propose solutions (20%); innovative interpretation or ideas (20%); proper presentation and effective communication (20%). The proposal should avoid grammar and spelling errors and follow a logical flow to present the scientific story. A non-expert reader should be able to follow the information presented, and an expert reader should be able to appreciate the scientific contribution. The proposal submission deadline is on the last lecture day of Week 7. Missing submission deadlines will result in reduction of points, unless with special permission from the instructor due to approved health or other reasons.

Student presentations: Students will be assigned to give live oral presentation(s) by the instructor during the semester. Each presentation will be graded based on the clarity of the scientific information, the visual organization and presentation of the information, the effectiveness of the presentation, and the interaction with the audience including Q&A. Recorded presentation is only allowed when it is approved by the instructor due to eligible reason(s).

Final Exam: The final exam is comprehensive and will assess students' learning of topics throughout the semester.

Grading Scale:

Percentage	Grade	Percentage	Grade
91-100	A	71-76.9	C
89-90.9	A-	69-70.9	C-
87-88.9	B+	67-68.9	D+

81-86.9	B	60-66.9	D
79-80.9	B-	<60	E
77-78.9	C+		

COURSE POLICIES

Faculty feedback and response time

My primary mode of communication with the class will be by E-mail and meetings by appointments.

I am providing the following list to give you an idea of my intended availability throughout the course. (Remember that you can call **614-688-HELP** at any time if you have a technical problem.)

- **Grading and feedback:** For large weekly assignments, you can generally expect feedback within **7 days**.
- **E-mail:** I normally reply to e-mails within **48 hours on school days**.

Attendance Policy:

Student participation requirements

- This course involves live discussion. Your attendance in person during designated class time is required. In case of emergencies, please be sure to let the instructor know as soon as possible and accommodations will be made with appropriate documentation on a case-by-case basis.
- **Office hours**: ***OPTIONAL AND FLEXIBLE***
  Please email me to schedule meetings.

Discussion and communication guidelines

The following are my expectations for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

- **Participation: attendance and participation in class discussions are important in this course.**
- **Writing style**: scientific writing style with good grammar, spelling, and punctuation is expected.
- **Tone and civility**: a supportive learning community where everyone feels safe and where people can disagree amicably is important.
- **Citing your sources**: please cite your sources to back up your statement, including assignments.
- **Backing up your work**: always compose and save your assignments as a word document in your local computer.

E-Mail Etiquette:

Professional relationships should be maintained when using e-mail for a class. Below I have included guidelines from Bloomsbury's guide on email etiquette that you should follow when drafting your e-mail. I will not respond to e-mails that I consider inappropriate. I will respond to appropriate emails in a timely manner, but do not expect an immediate reply.

<u>DO</u>

- Include a descriptive statement in the subject line.
- Use proper salutations when beginning an e-mail.
- Be concise in the body of the e-mail, use complete sentences and proper grammar.
- Use an appropriate closure at the end of each e-mail followed by your first and last name.
- If replying to an e-mail, reference the original e-mail and its content.
- Be selective of your choice of words. Emotions are difficult to convey in text and without the benefit of facial expressions your sentiment can be lost in the words you choose to write.

DON'T

- Use all capital letters; this conveys a tone of ANGER.
- Use e-mail as a format to criticize other individuals.
- Ask for your grade via e-mail. Grades will not be discussed by e-mail. If you need to discuss a graded item make an appointment to do so in my office.
- E-mail to inquire when grades will be posted. We will work toward submitting grades promptly, however, recognize that grading assignments and exams requires considerable time to ensure uniformity and fairness.
- Send an e-mail out of frustration or anger. Learn to save the e-mail as a draft and review at a later time when emotions are not directing the content.

Exam:

You must complete the final exam yourself, without any external help or communication.

Written assignments:

Your written assignments, including the proposal, should be your own original work. In formal assignments, you should follow **[**MLA**/**APA**/]** style to cite the ideas and words of your research sources. You are encouraged to ask a trusted person to proofread your assignments before you turn them in--but no one else should revise or rewrite your work.

Reusing past work:

In general, you are prohibited in university courses from turning in work from a past class to your current class, even if you modify it. If you want to build on past research or revisit a topic you've explored in previous courses, please discuss the situation with me.

Falsifying research or results:

All research you will conduct in this course is intended to be a learning experience; you should never feel tempted to make your results or your library research look more successful than it was.

Collaboration and informal peer-review*:*

The course includes many opportunities for informal collaboration with your classmates. In addition to live discussions, students working on different topics of research assignments can further help proofread classmates' homework. If you're unsure about a particular situation, please feel free just to ask ahead of time.

Group projects

No group project is planned for this class.

Academic integrity policy

See Descriptions of major course assignments, above, for my specific guidelines about collaboration and academic integrity in the context of this online class.

OHIO STATE'S ACADEMIC INTEGRITY POLICY

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the university's Code of Student Conduct (studentconduct.osu.edu), and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines

established in the university's Code of Student Conduct and this syllabus may constitute "Academic Misconduct."

The Ohio State University's Code of Student Conduct (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the university or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the university's Code of Student Conduct is never considered an excuse for academic misconduct, so I recommend that you review the Code of Student Conduct and, specifically, the sections dealing with academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by university rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the university's Code of Student Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the university. If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- Committee on Academic Misconduct web page (go.osu.edu/coam)
- Ten Suggestions for Preserving Academic Integrity (go.osu.edu/ten-suggestions)
- Eight Cardinal Rules of Academic Integrity (go.osu.edu/cardinal-rules)

Copyright for instructional materials

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

Safe and Healthy Buckeyes:

Health and safety requirements: All students, faculty and staff are required to comply with and stay up to date on all university safety and health guidance (https://safeandhealthy.osu.edu), which includes wearing a face mask in any indoor space and maintaining a safe physical distance at all times. Non-compliance will result in a warning first, and disciplinary actions will be taken for repeated offenses.

Creating an environment free from harassment, discrimination, and sexual misconduct

The Ohio State University is committed to building and maintaining a community to reflect diversity and to improve opportunities for all. All Buckeyes have the right to be free from harassment, discrimination, and sexual misconduct. Ohio State does not discriminate on the basis of age, ancestry, color, disability, ethnicity, gender, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, pregnancy (childbirth, false pregnancy, termination of pregnancy, or recovery therefrom), race, religion, sex, sexual orientation, or protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment. Members of the university community also have the right to be free from all forms of sexual misconduct: sexual harassment, sexual assault, relationship violence, stalking, and sexual exploitation.

To report harassment, discrimination, sexual misconduct, or retaliation and/or seek confidential and non-confidential resources and supportive measures, contact the Office of Institutional Equity:

1. Online reporting form at equity.osu.edu,
2. Call 614-247-5838 or TTY 614-688-8605,

3. Or Email equity@osu.edu

The university is committed to stopping sexual misconduct, preventing its recurrence, eliminating any hostile environment, and remedying its discriminatory effects. All university employees have reporting responsibilities to the Office of Institutional Equity to ensure the university can take appropriate action:

- All university employees, except those exempted by legal privilege of confidentiality or expressly identified as a confidential reporter, have an obligation to report incidents of sexual assault immediately.
- The following employees have an obligation to report all other forms of sexual misconduct as soon as practicable but at most within five workdays of becoming aware of such information: 1. Any human resource professional (HRP); 2. Anyone who supervises faculty, staff, students, or volunteers; 3. Chair/director; and 4. Faculty member.

This course adheres to The Principles of Community adopted by the College of Food, Agricultural, and Environmental Sciences. These principles are located on the Carmen site for this course; and can also be found at https://go.osu.edu/principlesofcommunity. For additional information on Diversity, Equity, and Inclusion in CFAES, contact the CFAES Office for Diversity, Equity, and Inclusion (https://equityandinclusion.cfaes.ohio-state.edu/). If you have been a victim of or a witness to a bias incident, you can report it online and anonymously (if you choose) at https://studentlife.osu.edu/bias/report-a-bias-incident.aspx.

Your mental health

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life Counseling and Consultation Services (CCS) by visiting ccs.osu.edu or calling (614) 292- 5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on-call counselor when CCS is closed at (614) 292-5766 and 24 hour emergency help is also available through the 24/7 National Prevention Hotline at 1-(800)-273-TALK or at suicidepreventionlifeline.org.

David Wirt, wirt.9@osu.edu, is the CFAES embedded mental health counselor. He is available for new consultations and to establish routine care. To schedule with David, please call 614-292-5766. Students should mention their affiliation with CFAES when setting up a phone screening.

ACCESSIBILITY ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Requesting accommodations

The university strives to make all learning experiences as accessible as possible. In light of the current pandemic, students seeking to request COVID-related accommodations may do so through the university's request process, managed by Student Life Disability Services. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register

with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

SYLLABUS

Advanced Food Microbiology

Food Science and Technology/ Microbiology 736

Fall 2013

Aug 21-Oct 10

Time: TBA

Parker Bld. Rm 118

Instructor: Hua Wang

219 Parker Food Science and Tech. Bld.

292-0579 (phone)

wang.707@osu.edu (e-mail)

Office Hour: By appointment, Parker Bld Rm 219

Pre-requisites: Micro 509 (General Microbiology), Micro/FSc&Te 636 (Food Microbiology) or equivalent, or permission from the instructor.

Course description: The study of food microbiology involves three major components: foods, microorganisms and hosts. This advanced food microbiology course is designed to help students to build a comprehensive understanding about food-borne microorganisms through studying their interactions with the environment and with the host. Discussions will be focused on critical pathways and mechanisms for microorganisms to survive the environment. Their implication to human health will be addressed. Microorganisms and topics of industrial significance will be emphasized. Genetics and molecular biology approaches important for studying food-borne microorganisms and cutting edge techniques in solving industrial food microbial problems will be introduced. The course is offered in the forms of 1) lecturing by the faculty, 2) discussion and research paper presentations by the students. The class meets twice a week, 78 minutes for each session.

Objectives:

Students will establish knowledge background and develop problem solving skills in the following areas:

1. proteolytic enzyme system which enable microorganisms to utilize exogenous nutrients, such as those involved in food fermentation;
2. the microbial signals and sensing systems in bacteriosin production, stress responses and biofilm development;
3. the impact of microbial stress responses on food safety;
4. biofilms as the abundant microbial form of living in both natural and host environment;
5. toxins and other pathogenic pathways that cause foodborne diseases;
6. disease as a result of interaction between pathogenic agents and the host;
7. food as an important carrier for toxins and foodborne microorganisms, the effects of food ingredients on microbial activities and host responses;
8. application of cutting-edge molecular biology techniques to solve food industry problems and to promote human health.

Reading Materials:

Research papers covering lecture topics given in the classroom.

Additional references:

Jaykus L, H.H. Wang, and L.S. Schlesinger 2009. **Foodborne Microbes: Shaping the Host Ecosystems**. ASM Press, Washington, D.C.

Doyle, M.P., L.R. Beuchat, and T.J.Montville (eds). 2001. **Food microbiology, fundamentals and frontiers**. 2nd Ed. ASM Press, Washington, D.C.

Ray, B. 2001. Fundamental Food Microbiology. CRC Press, Boca Raton, FL.

Lewin, B. 2000**. Genes VII**. Oxford University Press, New York and Cell Press, Cambridge, Mass.

Cotran, R.S., Kumar, Vinay, and Collins, T. 1996. **Robbins pathologic basis of disease.** W.B. Sounders Company, Philadelphia, Pennsylvania.

Salminen, S. and von Wright, A. (ed.) 1998. **Lactic acid bacteria: microbiology and functional aspects.** Marcel Dekker, New York.

van Eden, W., Young, D.B. (ed.) 1996. **Stress proteins in medicine.** Marcel Dekker, New York.

Blasheck H., Wang H., Alge, M. (e.d), 2007. **Biofilms in the food environment**. Blackwell Publishing, Iowa.

Useful molecular biology laboratory technique manuals:

Molecular cloning: a laboratory manual, second edition. 1989. J. Sambrook, E.F. Fritsch, and T. Maniatis. Cold Spring Harbor Laboratory Press, Plainview, NY.

Current protocols: molecular biology (http://www.currentprotocols.com/)

Grading Criteria:

Participation	100
Homework assignments (three projects)	300
Classroom presentation (three discussions)	300
Mid-term exam	150
Final:	150
Total:	1000

Grades will be assigned by the percentage of the total points earned:

90-100%	A
80-89%	B
70-79%	C
60-69%	D
below 60%	E

The instructor reserves the right to adjust the grading curve if necessary.

Attendance and make-up exams:

Attendance to lectures is encouraged. Students are responsible for all materials covered and announcements made during lecture. No incomplete grades or make-up exam or presentations will be given unless there is a certifiable reason such as illness, family death, etc.

Academic Misconduct:

Academic integrity is the pursuit of scholarly activity free from fraud and deception and is an educational objective of this institution. Academic dishonesty includes, but is not limited to, cheating, plagiarism, fabrication of information or citations, facilitating acts of academic dishonesty by others, unauthorized prior possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students. At the beginning of each course it is the responsibility of the instructor to provide a statement clarifying the application of academic integrity to that course. Any suspected violation of the Code of Student Conduct will be forwarded to the Committee on Academic Misconduct.

7536 Tentative Lecture Schedule
Fall, 2013
T, R, FSc Room

Week One	
Aug 22 (R)	Course Introduction – food-borne microorganisms: interactions with the environment and host; Taking advantage of the nutrient environment (I): the proteolytic system of LAB
Week Two	
Aug 27 (T)	Plasmid-encoded traits: carbohydrate fermentation; bacterial phage resistance
Aug 29 (R)	Inhibition to the competitors: bacteriocin production; Horizontal gene transfer Homework#1: probiotics; antimicrobial resistance; phage
Week Three	
Sept 3 (T)	Discussion 1: Probiotics Adapting to the environment: stress responses;
Sept 5 (R)	Forming a microbial community: biofilms and cell-cell communication Biofilm model system (I &II)
Week Four	
Sept 10 (T)	Mid-term Homework #2 quorum sensing, biofilms
Sept 12 (R)	Biofilms; host microbiota; interaction with the host; pathogenecity
Week Five	
Sept 17 (T)	Discussion 2-student presentation
Sept 19 (R)	Pathogenecity: *Listeria monocytogenes;* Shiga Toxin Homework #3Pathogenecity
Week Six	
Sept 24 (T)	Foodborne viruses
Sept 26 (R)	Pathogenecity: Salmonella, Campylobacter
Week Seven	
Oct 1 (T)	Discussion #3 Pathogenecity (student presentation)
Oct 3 (R)	Research methods: microbial detection; proteomic and genomic approaches; summary
Week Eight	
Oct 9 or 10	Final