**Syllabus / Course Outline Template**

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| **Course Name: Food Microbiology and Safety**  |
| **Course Code: BIOL 415** | **Course Type (elective)** | **Course Credits: 4** |
| **Class Timings:**M,W,F 10.00 AM-10.50 AM (S321)**Lab Timings**:F 2.00 PM-3.50 PM (S321) | **Section: A** | **Student Meeting Hours/ Office Hours:**Monday & Friday 12 pm – 1pm or by appointment |
| **Instructor Name: Dr. Muhammad Bilal Sadiq** |
| **A Note from the Instructor:**My name is Dr. Muhammad Bilal Sadiq and I will be the instructor for BIOL 415. I am looking forward to a interact with you all and teach this interesting course.I will be using Moodle system for this course management. The course contents, assignment instructions and submissions will be made through Moodle only. I will use synchronous mode for delivering lectures, students on campus and off campus would be able to participate in classes via live streaming. The lectures will be recorded and shared via Moodle. |
| **Instructor Contact Details** Email: bilalsadiq@fccollege.edu.pkOffice Hours (face to face and/ or online): Monday & Friday 12 pm – 1pm or by appointmentGuidelines for contacting instructor: For face to face and/ or online contact make an appointment before visiting via email. |
| **TA Name and Contact Details (if applicable):**N/A  |
| **Course Description**:Pre-requisites if any: BIOL 315Mode of Instruction (Asynchronous/Synchronous): Synchronous[If applicable] Mode of peer-to-peer Contact Among Students: N/A |
| **Main Mode of Instruction:** *Zoom (Whenever required), In Person contact, whiteboard***Technology Requirements:** *Learn the basics of zoom to attend lectures and familiarize yourself with Moodle* **Technology Etiquettes:*** It is recommended to log in at least 10 minutes before the start of the session
* Please stay muted when not speaking
* Remember to think before you respond to make your thoughts and ideas clear and coherent to the other participants.
* Please be mindful of the time, keep your contributions brief and to the point
* Allow other participants/students time and opportunities to contribute to the discussion and share their ideas with the group.
* Be respectful of others’ opinion
* While online participation keep your “Complete Name” as a display title.

**Considerations for Students with Limited Internet/Technology Access:** The recorded lectures will be uploaded on Moodle. |
| **Lab Resources (if relevant**): The students will work in lab as per lab schedule and complete the day to day assigned task. The experiments related to food microbiology such as plate streaking, microbial isolation, basic identification, study of antimicrobial potential of various microbial metabolites, probiotics isolation and developing fermented product, study of fungal diversity and method to control the fungi in food samples. The handouts will be provided for each experiment to perform the task. |
| **[OPTIONAL]: Program Objectives Addressed** (which goals of the academic program/department does this course address?)* Concept of food microbiology and its influence
* Role of microorganisms in food production, modification and preservation
* Microbial growth, emergence and control of microbial contaminations in food
* Microbial metabolism and importance of metabolites in food systems
* Microbial threats related to food safety and epidemiology of different food borne illness
* International microbial limits for safe foods, toxicological aspect of foods and their impact.
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| **Course Objectives or** [**Student Learning Outcomes**](https://docs.google.com/document/d/1me9vpl8iKR_zNX9gIODm7gkVFY9VkuSKpUJe1VyI57M/edit) **(SLOs)**1. To understand different microbial threats related to food safety and epidemiology of different food borne illness
2. Understand the international microbial limits for safe foods, toxicological aspect of foods and their impact.
3. Microbial processes involved in food processing and preservation
4. Role of microorganisms in food production and health benefits of good microbes.
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**Course Content, Learning Material & Activities Schedule**

The schedule is tentative because it is not possible to anticipate exactly how much time each topic will require. Pl check out the online resources and alternate options for instructional tasks as linked below.

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| **Wk**  | **Topic/ Title**  | [**Teaching-Learning Activities**](https://docs.google.com/document/d/1jY2UWb3QuOogkiSMdPvZd33eKe2kRpfzsTm2LSrnLko/edit#heading=h.4dy4q49omahn) | [**Assessment**](https://docs.google.com/document/d/1Z4W_utaHpwMJP6B2jJlb9ofxFHmcagrWWOT5cUM9lj4/edit?usp=sharing)**&** [**Rubrics**](https://docs.google.com/document/d/1IdFfZ8WRSRKSceBYC4jfAyKEYdb1M6Z4GSSLueP8HD0/edit)(with the due date) |
| **Synchronous****(Simultaneously conducted)***Presentation / Lecture* *Live Video-Audio**Small-Group Discussion/ Breakout Rooms**In-class quiz**Q&A/ Live Chat* | **Asynchronous**(postal/ Moodle/ email)*Discussion blogs* *WhatsApp**Readings**Moodle Quizzes**Assignment Submission* *Online Content/ Recordings**Lecture notes/ Annotated PPT**Experiential learning* |
| In-Person | Online | Off-campus and offline |
| 1 | Introduction to food microbiology and microbial lab safety | *Presentation / Lecture* *Small-Group Discussion/* *Q&A/ Live Chat* | *Presentation / Lecture* *Live Video-Audio**Small-Group Discussion/* *In-class quiz**Q&A/ Live Chat* | *Readings**Moodle based**Assignment Submission* *Online Content/ Recordings* |  |
| - Microbial lab hazards and biosafety levels- Microbial spoilage of food | *Presentation / Lecture* *Small-Group Discussion/* *Q&A/ Live Chat* | *Presentation / Lecture* *Live Video-Audio**Small-Group Discussion/* *In-class quiz**Q&A/ Live Chat* | *Readings**Moodle based**Assignment Submission* *Online Content/ Recordings* |  |
| 2 | Foodborne disease outbreaks | *Presentation / Lecture* *Small-Group Discussion/* *Q&A/ Live Chat* | *Presentation / Lecture* *Live Video-Audio**Small-Group Discussion/* *In-class quiz**Q&A/ Live Chat* | *Readings**Moodle based**Assignment Submission* *Online Content/ Recordings* |  |
| - Structure and function of microbial cells- Methods of studying microorganisms in different food samples | *Presentation / Lecture* *Small-Group Discussion/* *Q&A/ Live Chat* | *Presentation / Lecture* *Live Video-Audio**Small-Group Discussion/* *In-class quiz**Q&A/ Live Chat* | *Readings**Moodle based**Assignment Submission* *Online Content/ Recordings* |  |
| 3 | Bacterial growth curve and kinetics\*Assignment 1 will be given via Moodle  | *Presentation / Lecture* *Small-Group Discussion/* *Q&A/ Live Chat* | *Presentation / Lecture* *Live Video-Audio**Small-Group Discussion/* *In-class quiz**Q&A/ Live Chat* | *Readings**Moodle based**Assignment Submission* *Online Content/ Recordings* |  |
| 4 | Microbial metabolism | *Presentation / Lecture* *Small-Group Discussion/* *Q&A/ Live Chat* | *Presentation / Lecture* *Live Video-Audio**Small-Group Discussion/* *In-class quiz**Q&A/ Live Chat* | *Readings**Moodle based**Assignment Submission* *Online Content/ Recordings* |  |
| - Microbial nutrition and transport of nutrients - Microbial fermentation and its importance in food industry | *Presentation / Lecture* *Small-Group Discussion/* *Q&A/ Live Chat* | *Presentation / Lecture* *Live Video-Audio**Small-Group Discussion/* *In-class quiz**Q&A/ Live Chat* | *Readings**Moodle based**Assignment Submission* *Online Content/ Recordings* |  |
| 5 | Applications of different microbial metabolites in food | *Presentation / Lecture* *Small-Group Discussion/* *Q&A/ Live Chat* | *Presentation / Lecture* *Live Video-Audio**Small-Group Discussion/* *In-class quiz**Q&A/ Live Chat* | *Readings**Moodle based**Assignment Submission* *Online Content/ Recordings* |  |
| 6 | Probiotics\*Assignment 1 will be due | *Presentation / Lecture* *Small-Group Discussion/* *Q&A/ Live Chat* | *Presentation / Lecture* *Live Video-Audio**Small-Group Discussion/* *In-class quiz**Q&A/ Live Chat* | *Readings**Moodle based**Assignment Submission* *Online Content/ Recordings* | Assignment will be evaluated by the defined criteria as communicated via Moodle |
| Different types of probiotics and their role in human health | *Presentation / Lecture* *Small-Group Discussion/* *Q&A/ Live Chat* | *Presentation / Lecture* *Live Video-Audio**Small-Group Discussion/* *In-class quiz**Q&A/ Live Chat* | *Readings**Moodle based**Assignment Submission* *Online Content/ Recordings* |  |
| 7 | Isolation and identification of probiotics | *Presentation / Lecture* *Small-Group Discussion/* *Q&A/ Live Chat* | *Presentation / Lecture* *Live Video-Audio**Small-Group Discussion/* *In-class quiz**Q&A/ Live Chat* | *Readings**Moodle based**Assignment Submission* *Online Content/ Recordings* |  |
| 8 | Traditional probiotic based products | *Presentation / Lecture* *Small-Group Discussion/* *Q&A/ Live Chat* | *Presentation / Lecture* *Live Video-Audio**Small-Group Discussion/* *In-class quiz**Q&A/ Live Chat* | *Readings**Moodle based**Assignment Submission* *Online Content/ Recordings* |  |
| Prebiotics and their importance in maintaining gut microbiota | *Presentation / Lecture* *Small-Group Discussion/* *Q&A/ Live Chat* | *Presentation / Lecture* *Live Video-Audio**Small-Group Discussion/* *In-class quiz**Q&A/ Live Chat* | *Readings**Moodle based**Assignment Submission* *Online Content/ Recordings* |  |
|  **MIDTERMS if applicable****MCQS, short questions, and comprehensive concept evaluation-based midterm exam will be conducted.** |  |
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| 9 | Microbial aspects of food preservation\*Assignment 2 will be given via Moodle | *Presentation / Lecture* *Small-Group Discussion/* *Q&A/ Live Chat* | *Presentation / Lecture* *Live Video-Audio**Small-Group Discussion/* *In-class quiz**Q&A/ Live Chat* | *Readings**Moodle based**Assignment Submission* *Online Content/ Recordings* |  |
| Food preservation techniques | *Presentation / Lecture* *Small-Group Discussion/* *Q&A/ Live Chat* | *Presentation / Lecture* *Live Video-Audio**Small-Group Discussion/* *In-class quiz**Q&A/ Live Chat* | *Readings**Moodle based**Assignment Submission* *Online Content/ Recordings* |  |
| 10 | - Hurdle technologies for food preservation- Maximum allowable limits of microorganisms for different food products | *Presentation / Lecture* *Small-Group Discussion/* *Q&A/ Live Chat* | *Presentation / Lecture* *Live Video-Audio**Small-Group Discussion/* *In-class quiz**Q&A/ Live Chat* | *Readings**Moodle based**Assignment Submission* *Online Content/ Recordings* |  |
| Role of microorganisms in food safety and quality | *Presentation / Lecture* *Small-Group Discussion/* *Q&A/ Live Chat* | *Presentation / Lecture* *Live Video-Audio**Small-Group Discussion/* *In-class quiz**Q&A/ Live Chat* | *Readings**Moodle based**Assignment Submission* *Online Content/ Recordings* |  |
| 11 | Principles of hazard analysis and critical control point (HACCP) | *Presentation / Lecture* *Small-Group Discussion/* *Q&A/ Live Chat* | *Presentation / Lecture* *Live Video-Audio**Small-Group Discussion/* *In-class quiz**Q&A/ Live Chat* | *Readings**Moodle based**Assignment Submission* *Online Content/ Recordings* |  |
| 12 | Microbial influence on sensory analysis of food samples | *Presentation / Lecture* *Small-Group Discussion/* *Q&A/ Live Chat* | *Presentation / Lecture* *Live Video-Audio**Small-Group Discussion/* *In-class quiz**Q&A/ Live Chat* | *Readings**Moodle based**Assignment Submission* *Online Content/ Recordings* |  |
| 13 | Food Quality Assurance and total quality management\*Assignment 2 will be due | *Presentation / Lecture* *Small-Group Discussion/* *Q&A/ Live Chat* | *Presentation / Lecture* *Live Video-Audio**Small-Group Discussion/* *In-class quiz**Q&A/ Live Chat* | *Readings**Moodle based**Assignment Submission* *Online Content/ Recordings* | Assignment 2 will be evaluated by the defined criteria as communicated via Moodle |
| 14 | Fermented Foods | *Presentation / Lecture* *Small-Group Discussion/* *Q&A/ Live Chat* | *Presentation / Lecture* *Live Video-Audio**Small-Group Discussion/* *In-class quiz**Q&A/ Live Chat* | *Readings**Moodle based**Assignment Submission* *Online Content/ Recordings* |  |
| **Revision** |  |  |  |  |
| 15 | **CULMINATING PROJECT**  |  |

**‘Out-of-class’ Study Required (across all 3 categories of students -- those attending in-person, online, or asynchronously)**

*- The assignments should be submitted via Moodle by the due date.* *Exams will also be conducted in person at campus.*

*For maximizing your learning best practices include attending study sessions regularly and taking good notes, spend 2.5 hours a week for this course theory part and 2 hours for practical work.*

*Come prepared to participate. Questions will be posed to stimulate discussion. Diagrams or illustrations will simplify difficult concepts when possible. To get the most out of this course, spend time thinking about the information presented in lectures, readings, and discussions.*

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### **Textbooks, Materials, Supplies, and other Resources**

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1-Erkmen, O., & Bozoglu, T. F. (2016). Food Microbiology, Volume 1: Principles Into Practice. John Wiley & Sons.

2- International Commission on Microbiological Specifications for Food (2018). Microorganisms in Foods 7: Microbiological Testing in Food Safety Management. Editorial Committee Chair: Robert L. Buchanan, 2nd Edition. Springer.

**Course Requirements:**

*Describe each graded component in enough detail that students will have a general understanding of the amount of and type of work required. Include information about the assignment’s purpose and rubric for assessment as applicable*

**Class Participation**

### Participation in the class will be gauged only by the attendance and participation in class discussions (online or on campus). This will be worth 5% of the total marks

### **Assignment 1**

### Assignment 1 (worth 10% of the total marks) will be given. The rubrics for assignment assessment are presentation of data, comprehensive understanding of assigned topic.

### **Assignment 2**

### Assignment 2 (worth 10% of the total marks) will be given. The rubrics for assignment assessment are presentation of data, comprehensive understanding of assigned topic.

### **Tests & Quizzes**

### Quizzes, Midterm and Final exams will be MCQs and short question based and will be conducted on campus.

The breakup is as follows:

**Class Participation** 5%

**Assignments:** 20%

**Quizzes:**  10%

**Midterm exam**: 20%

**Lab exam:** 15%

**Final term exam:**  30%

**TOTAL 100%**

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### **[OPTIONAL] Missed Assignments/ Make-Ups/ Extra Credit**

Missed exam can only be retaken in case of genuine reason*.* However, makeup exam will be result in deduction of 5% of the total marks of the missed exam.

The late submission of the assignment will result in deduction of marks. After the expiry of 1st deadline, a second deadline will be given which will result in deduction of 25% of the marks of assignment, upon expiry of the 2nd deadline a 3rd deadline will be give failure to submit by the 3rd deadline will result in deduction of 50% of the marks of assignment.

Students can receive extra credit of up to 0.5 points if their grade improves. This will only be added when the final grade is calculated.

**Attendance Policy:**

**If a student fails to attend 40% of the lectures and 40% of the laboratory work, s(he) will not be allowed to appear in the Final Examination.** Excused absence on account of family emergency and/or participation in university activities will not count towards class attendance. The weightage of the attendance will be 5% of the total grade if the attendance of the student will be **80% or above, below 80% there will be no score for attendance**.

**Classroom Participation:**

**Come prepared** to participate. Questions will be posed to stimulate discussion. Diagrams or illustrations will simplify difficult concepts when possible. To get the most out of this course, spend time thinking about the information presented in lectures, readings, and discussions.

**Grade Determination & Course Assessment as per FCC Policy:**

*-* *Total grade will be compiled by the merger of student participation, comprehensive understanding of the subject, oral and online exames.*

**Grading Legend**

Below is the grading legend of FCCU (published in all catalogues and available on the FCCU website) as approved by the Academic Council

|  |  |  |  |
| --- | --- | --- | --- |
| **Grade** | **Point Value** | **Numerical Value** | **Meaning** |
| A | 4.00 | 93-100 | Superior |
| A- | 3.70 | 90-92 |
| B+ | 3.30 | 87-89 | Good |
| B | 3.00 | 83-86 |
| B- | 2.70 | 80-82 |
| C+ | 2.30 | 77-79 | Satisfactory |
| C | 2.00 | 73-76 |
| C- | 1.70 | 70-72 |
| D+ | 1.30 | 67-69 | Passing |
| D | 1.00 | 60-66 |
| F | 0.00 | 59 or below | Failing |

**Student Conduct & Other Issues:**

* It is recommended to log in at least 10 minutes before the start of the session
* Please stay muted when not speaking
* If allowed to speak, be mindful of your tone and expressions during the session. This is not an anonymous session. Your voice and video are viewed by all who are participating in the session
* Remember you are on camera and live. The advantage of video conferencing is that you can take advantage of facial expressions, inflection, and tone of voice.
* Remember to think before you respond to make your thoughts and ideas clear and coherent to the other participants.
* Please be mindful of the time, keep your contributions brief and to the point
* Allow other participants/students time and opportunities to contribute to the discussion and share their ideas with the group.

Be respectful of others’ opinion

- If any student faces any issues or has any concerns regarding the classroom climate and interactions, please feel free to contact VR office \_\_\_ gloriacalib@fccollege.edu.pk

**Changes to the Syllabus:**

This syllabus was designed to convey course information and requirements as accurately as possible. It is important to note however that it **may** be subject to change during the course depending on the needs of the class and other situational factors. Such changes would be for your benefit and you will be notified of them as soon as possible.

**Student Support Services**

[Student Counseling Services](https://www.fccollege.edu.pk/ccc/campus-counseling-center/).Students can contact the [Campus Counseling Center](https://www.fccollege.edu.pk/ccc/campus-counseling-center/) at 0331-444-1518 or email ccc@fccollege.edu.pk.

[Writing Center](https://www.fccollege.edu.pk/faculty-of-humanities/writing-center/)

[Mercy Health Center](https://www.fccollege.edu.pk/mercy-health-center/)

**Other Useful FCCU Policy Documents:**

[Sexual Harassment Policy](https://www.fccollege.edu.pk/wp-content/uploads/2018/05/Doc1.pdf)

[Anti-Corruption Policy](https://www.fccollege.edu.pk/wp-content/uploads/2018/05/Anti-corruption.pdf)

[Academic integrity](https://www.fccollege.edu.pk/policy-on-academic-integrity/)

[Plagiarism Policy](https://www.fccollege.edu.pk/wp-content/uploads/2018/05/FCCU-Plagiarism-Policy.pdf)

 [Academic Calendar](https://www.fccollege.edu.pk/academic-calendar/)

**Additional Communication** for students that you might add to your course outline or email:

1. Honor FCC Core Values:

*I expect that you will strictly follow the core values of FCCU and put your entire efforts to learn as per the course requirements, attend classes, read the textbook(s)/other assigned reading material and do the assignments in the stipulated time period*

1. Clarify Expectations for Teacher Response to students, for example,:

Following the signature, in emails, you can add: *"I generally respond to emails between the hours of 9 AM and 9 PM. If I do not respond within 48 hours, feel free to send a follow-up email."*

Or you can also include something like this in the course outline: *"This class is available 24/7 but the instructor is not. I will respond to an email Monday through Friday (until 3 pm) unless it is a holiday or extenuating circumstances intervene. During the workweek, you can expect a response within 24 hours, and I expect the same courtesy from my students.*"

1. For Prior Reading of Text before the Synchronous Class, [be clear in your communication of what you expect](https://gauchocast.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=2015a564-2f81-46ee-922d-ab8f0121fda2)

**Developed by CLT (2020) from:**

<https://www.aascu.org/>

<https://blended.online.ucf.edu/>

[Syllabus Checklist](https://ctaar.rutgers.edu/teaching/syllabus/)

[How to Create a Syllabus](https://www.chronicle.com/article/how-to-create-a-syllabus/?utm_source=Iterable&utm_medium=email&utm_campaign=campaign_1411850_nl_Academe-Today_date_20200804&cid=at&source=ams&sourceId=30292&cid2=gen_login_refresh)

**Note:**

Pl also see

 <https://unitguides.mq.edu.au/> for additional options.

Macquarie University has all their syllabus online (called Unit Guides and are publicly viewable)

[Syllabus and How to Use It](https://docs.google.com/document/d/1aSAgK-1a4kfXB3HjAQKrC-TtKoUiYqXCJnNQNvXShyU/edit)

For your teaching philosophy to the syllabus see podcast on [Revisiting our Teaching Philosophies](https://magnapublications.lt.emlnk1.com/Prod/link-tracker?redirectUrl=aHR0cHMlM0ElMkYlMkZ3d3cuYnV6enNwcm91dC5jb20lMkYxNTUyMDE4JTJGODM3MTM3NC1lc3RhYmxpc2hpbmctYW5kLXJldmlzaXRpbmctb3VyLXRlYWNoaW5nLXBoaWxvc29waGllcy1hbmQtdGVhY2hpbmctcGVyc29uYXMubXAzJTNGYmxvYl9pZCUzRDM4MDkxNjk3JTI2ZG93bmxvYWQlM0R0cnVlJTI2dXRtX3NvdXJjZSUzREFjdGl2ZUNhbXBhaWduJTI2dXRtX21lZGl1bSUzRGVtYWlsJTI2dXRtX2NvbnRlbnQlM0QlMjVGMCUyNTlGJTI1OEUlMjVBNyUyQkVzdGFibGlzaGluZyUyQmFuZCUyQlJldmlzaXRpbmclMkJPdXIlMkJUZWFjaGluZyUyQlBoaWxvc29waGllcyUyQmFuZCUyQlRlYWNoaW5nJTJCUGVyc29uYXMlMjZ1dG1fY2FtcGFpZ24lM0RGRnBvZGNhc3QyMTA0MjE=&a=223603823&account=magnapublications%2Eactivehosted%2Ecom&email=bbDt3ZrXJIcVh6z9t3EAwYS0tfFqXVz6OXmDNY8o9M4%3D&s=cc4b746d17dc2d665d03cf6c6cb76213&i=2452A2739A23A77250)

[Course Outline Template](https://www.yorku.ca/laps/faculty-staff/instructor-resources/going-digital/course-outline-templates/)s for more clarity if required- modify for FCCU requirements

Please also consider [High Impact Practices](https://www.aacu.org/node/4084) for your classes

**Updated on:** 20-07-2022