

Food Biology Fundamentals,
16:400:514, 3 credits, MW 5:35-6:55

Prerequisites: Suitable Microbiology and Biochemistry courses

Course Description: An intensive overview of principles and practices involved in biological aspects of food quality, safety, preservation, deterioration and nutrition. In depth consideration of food's biological attributes including post-harvest changes, safety, and nutrition through the integration of chemical, biochemical, physical, nutritional, biological, and microbiological sciences with food science.

This course will:

- a.) Introduce active learning activities and decrease the reliance on lectures as the primary medium of information transfer.
- b.) Provide students with multiple mechanisms for demonstrating their competence in food biology
- c.) Provide an opportunity for writing, revising, and evaluating technical material.

Student Performance Objectives:

- Students will obtain foundational factual knowledge in food microbiology, nutrition, biotechnology and post-harvest physiology from reading, lectures, and in-class and at home exercises.

-Through the use of simulations, case studies, group discussions and exams, students will begin to integrate facts and develop sufficient critical thinking skills to allow for intelligent debate of controversial biological issues in the food industry.

- Students will obtain the mechanistic understanding of the chemical, biological, and physical methods of food preservation required for their appropriate application in food processing.

Student Evaluation:

Exams: Exams will test factual knowledge, the ability to integrate knowledge, and the ability to solve problems using the knowledge obtained in class. Students may request re-evaluation of an exam within 2 weeks of receiving a grade. No grades will be changed after 2 weeks.

Proposal: Scientists frequently write (3 pages, single space, 1" margins) proposals when seeking funds from granting agencies. The proposal will be used to demonstrate that students

ability to develop research hypothesis and objectives, articulate research need and outcome, construct a logical approach to test the stated hypothesis. A budget is also required and students will be evaluated on appropriateness of the budget - personnel, supplies, and other expenditures. Budget not included in page limit. Students working in groups (no more than 2 persons) will write a proposal for *original* research in an area of *food microbiology*. It **may not** be taken directly from their current research or work assignment. Details will be given in class.

ACADEMIC INTEGRITY

All exams, quizzes, and short written assignments should represent your exclusive effort. Books and reference material may be consulted for the take-home exam, but students may not discuss exam questions, work together on the exam, or receive any other assistance. Do not copy material from books or internet directly to answer a question.

The proposals should be original works of scholarship based on your reading, digestion, and synthesis of primary literature. Failure to indicate direct quotes, inadequately citing others work, and presentation of another's work as one's own are all varying degrees of plagiarism, the theft of intellectual property. Plagiarism and other ethical breeches are not tolerated at Rutgers University. Students should consult and be familiar with the full policy on academic integrity published in the Graduate School Handbook. If you do not understand the distinctions therein, *please* see me for explanations and clarification. Academic dishonesty will be severely penalized, with punishment up to and including dismissal from Rutgers University.

Participation: Students are expected to participate in class. There is no specific reward (grade) attributed to participation. However, the difference between an A grade and a B+ grade may be decided based on participation. For example, a numerical grade of 89.4 may be rounded to a numerical grade of 90, and therefore a letter grade of A, based on participation.

Final course grade will be based on:		Approximate grading cut-offs:
		90-100 A = outstanding, does it all
First Exam	35%	85-89 B+
Second Exam	25%	80-84 B = excellent in most areas
Third Exam	20%	75-79 C+
Proposal	20%	70-74 C = satisfactory factual knowledge
		< 70 F = unsatisfactory

Students are expected to learn a significant amount of factual information on their own by reading. Unfortunately, no "one source" covers all or contains all of the factual information required by this course. The following resources may be beneficial:

1. Food Microbiology: Fundamentals and Frontiers, 2007 [Third edition], edited by Doyle and Beuchat. ISBN-13 978-1-55581-407-6.

2. Food Microbiology: An Introduction, 2012, [Third edition], edited by Montville, Matthews and Kniel. ISBN 1-55581-308-9
3. Reference material is copied and distributed to the class where allowed by copyright law.

Course Lectures:

Course materials will be posted on ecompanion at the lecturers discretion.

Faculty:

Dr. Karl Matthews *	Food Sci. Bldg.	Rm. 203	Matthews@aesop.rutgers.edu	932-5404
Dr. Chaim Frenkel	Foran Hall	Rm. 380	frenkel@aesop.rutgers.edu	932-6236
Dr. Mikhail Chikindas	Food Sci. Bldg.	Rm. 203	tchikindas@aesop.rutgers.edu	932-5405
Dr. Beverly Tepper	Food Sci. Bldg	Rm. 207	tepper@aesop.rutgers.edu	932-5417

*Course coordinator; please refer administrative matters to him.
E-mail to matthews@aesop.rutgers.edu

Office Hours: The faculty of this course will be happy to meet with you individually and encourage you to call and schedule an appointment. You may also call on the phone to discuss your questions if it is difficult for you to come in person.