

# FERMENTED FOODS AND BEVERAGES, CERTIFICATE

## REQUIREMENTS

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Code	Title	Credits
<b>Certificate Requirements</b>		
Core		5
Experiential Learning		1-2
Electives		6
<b>Total Credits</b>		<b>12-13</b>

### CORE

Complete the following courses:

Code	Title	Credits
FOOD SCI 150	Fermented Food and Beverages: Science, Art and Health	3
FOOD SCI 550	Fermented Foods and Beverages	2

### EXPERIENTIAL LEARNING

Complete one of the following courses:

Code	Title	Credits
FOOD SCI 551	Food Fermentation Laboratory	1
FOOD SCI 378	Precision Fermentation for Sustainable Foods and Products	2

### ELECTIVES

Complete at least 6 credits from one of the following two thematic areas:

#### Business Theme

Code	Title	Credits
A A E 246	Climate Change Economics and Policy	3
A A E/C&E SOC/ SOC 340	Issues in Food Systems	3-4
A A E/ECON/ ENVIR ST 343	Environmental Economics	3-4
A A E 335	Introduction to Data Analysis using Spreadsheets	2
FOOD SCI/ AN SCI 321	Food Laws and Regulations	1
SOC/C&E SOC 222	Food, Culture, and Society	3
A A E 101	Introduction to Agricultural and Applied Economics	4
SOC/C&E SOC 365	Data Management for Social Science Research	3-4
A A E 320	Agricultural Systems Management	3
A A E 322	Commodity Markets	4

LSC 270	Marketing Communication for the Sciences	3
LSC 435	Brand Strategy for the Sciences	3
A A E 419	Agricultural Finance	3
A A E 422	Food Systems and Supply Chains	3
A A E/ECON 421	Economic Decision Analysis	4

#### Science Theme

Code	Title	Credits
FOOD SCI/ MICROBIO 325	Food Microbiology	3
FOOD SCI 410	Food Chemistry	3
FOOD SCI 301	Introduction to the Science and Technology of Food	3
MICROBIO 101	General Microbiology	3
MICROBIO 303	Biology of Microorganisms	3
MICROBIO 450	Diversity, Ecology and Evolution of Microorganisms	3
MICROBIO 526	Physiology of Microorganisms	3
BIOCHEM 301	Survey of Biochemistry	3
BIOCHEM 501	Introduction to Biochemistry	3
BIOCHEM 507	General Biochemistry I	3
BIOCHEM 508	General Biochemistry II	3-4
BIOLOGY/BOTANY/ ZOOLOGY 151	Introductory Biology	5
ZOOLOGY/ BIOLOGY/ BOTANY 152	Introductory Biology	5
ZOOLOGY 153	Introductory Biology	3
HORT 330	Wines and Vines of the World	2
HORT/AGRONOMY/ BOTANY 340	Plant Cell Culture and Genetic Engineering	3
SOIL SCI 211	Soils and Climate Change	2
AGRONOMY 377	Global Food Production and Health	3
AGRONOMY/ DY SCI 471	Food Production Systems and Sustainability	3
MICROBIO/AN SCI/ BOTANY 335	The Microbiome of Plants, Animals, and Humans	3
AN SCI 366	Concepts in Genomics	3
AN SCI 420	Microbiomes of Animal Systems	3
DY SCI/ AGRONOMY 471	Food Production Systems and Sustainability	3
BSE 249	Engineering Principles for Biological Systems	3
BSE 460	Biorefining: Energy and Products from Renewable Resources	3
M E 331	Computer-Aided Engineering	3
M E 361	Thermodynamics	3
M E 363	Fluid Dynamics	3
M E 364	Elementary Heat Transfer	3
CBE 250	Process Synthesis	3
CBE 310	Chemical Process Thermodynamics	3
CBE 426	Mass Transfer Operations	3

COMP SCI 540	Introduction to Artificial Intelligence	3
COMP SCI 571	Building User Interfaces	3

**Additional Requirements:**

- 2.000 GPA in certificate courses.
- At least 50% of certificate courses taken in-residence (i.e. at UW-Madison or through a UW-Madison sponsored study abroad program.)
- Courses taken on a pass/fail (satisfactory/unsatisfactory) basis will not count toward the certificate.

## **CERTIFICATE COMPLETION REQUIREMENT**

This undergraduate certificate must be completed concurrently with the student's undergraduate degree. Students cannot delay degree completion to complete the certificate.