MASTER COURSE OUTLINE

A. FSCI 1000 Principles of Food Science

B. COURSE DESCRIPTION:

This course is intended for the student interested in learning more about the basics of food preparation and production. This course will include a brief overview of scientific principles applied to food preparation and will cover the chemistry, microbiology, processing and nutritional aspects of food. The course will include both classroom and industry learning environments, and involve a variety of learning activities designed to highlight innovative and diverse ways for the production of safe, nutritious, and delicious food.
(4 Cr – 3 lect, 1 lab)

C. **Core Theme: Critical Thinking

D. RIVERLAND INSTITUTIONAL LEARNING OUTCOMES:

This course addresses the following Riverland Institutional Learning Outcome(s):
☒ ILO 1: critical thinking *(Core Theme Goal 2)*
☐ ILO 2: awareness of the larger global community *(Core Theme Goal 7 or 8)*
☐ ILO 3: ethical, engaged citizenship *(Core Theme Goal 9 or Goal 10)*
☐ ILO 4: communication and collaboration *(Discipline Goal 1 and by any learning outcome(s) involving communication or collaboration)*

E. MAJOR CONTENT AREAS:

Module 1: Principles of science (chemistry and biology)
- Basic food chemistry
- Biological molecules
- Importance of biological molecules in the living cell

Module 2: Principles of food science
- Chemistry of food (carbohydrates, lipids, proteins, and nucleic acids)
- Food characteristics and composition
- Quality factors in foods
- Food deterioration and preservation
- Complex Food Systems

Module 3: The food industry today
- Food industry outlook today

- Degrees in food science and careers in food industry
- Food processing and engineering
- Food product development and sensory evaluation

Module 4: Understanding food safety and security issues

- Food microbiology
- Safety and Sanitation overview
- Food testing and safety in today's world

F. GOAL TYPES, OBJECTIVES, AND OUTCOMES:

GOAL	**OBJECTIVES** **Students will be able to**	**OUTCOMES** **The student will successfully**
**Critical Thinking	gather factual information and apply it to a given problem in a manner that is relevant, clear, comprehensive and conscious of possible bias in the information selected.	1. investigate and complete an analysis of a current global issue or problem related to food science. 2. summarize and explain the context of the findings and the sources of possible bias in the analysis above. 3. design one or more innovative solutions based on the findings that address the current issue or problem.
CS	explain food science principles.	1. demonstrate understanding of fundamental food science principles including chemistry, nutrition, sensory and analytical concepts.
CS	define terminology specific to food science disciplines.	1. define and explain the application of vocabulary terms related to food science.
CS	describe how food composition effects food characteristics.	1. recognize and explain the importance of the nutrient macromolecules, and the ways in which the chemical composition of nutrients impacts characteristics such as flavor, solubility, textures, etc. of foods.
CS	describe the basic concepts of food manufacturing and explain the relationship between food processing and food safety and quality.	1. identify the components of food manufacturing. 2. explain how food processing can impact the safety and quality of food.
CS	explain the relationship between the environment, bacteria, food-borne illness and food safety and quality.	1. explain how the environment (i.e., temperature, pH, etc.) can impact the quality of food by influencing the growth of fungi and bacteria. 2. identify the common foodborne illnesses and their microbial causes.

CS	demonstrate an understanding of the food business.	1. identify important food trends and provide/predict emerging food industry/business scenarios.
CS	explore their interests within the broad aspects of food science, allowing them to match their interests with potential career opportunities in food industry.	1. explain which area of the food industry is most appealing to them. 2. complete a plan for a career path in the food industry.

G. SPECIAL INFORMATION:

This course may require use of the Internet, the submission of electronically prepared documents and the use of a course management software program. Off site visits to local food companies and plants are anticipated. Students who have a disability and need accommodations should contact Accessibility Services at the beginning of the semester. This information will be made available in alternative format, such as Braille, large print, or current media, upon request.

H. COURSE CODING INFORMATION: Course Code C/Class Maximum 48; Letter Grade

Revision date: 04/25/16; 02/07/18; 10/04/22
AASC Approval date: 03/06/18; 10/18/22

***Riverland Community College Disciplines**	**MnTC Goal Number**
Communication (CM)	**1**
Natural Sciences (NS)	**3**
Mathematics/Logical Reasoning (MA)	**4**
History and the Social & Behavioral Sciences (SS)	**5**
Humanities and Fine Arts (HU)	**6**

**Riverland Community College Core Themes	MnTC Goal Number
Critical Thinking (CT)	**2**
Human Diversity (HD)	**7**
Global Perspective (GP)	**8**
Ethical and Civic Responsibility (EC)	**9**
People and the Environment (PE)	**10**

*These five MnTC Goals have been identified as Riverland Community College Disciplines.
** These five MnTC Goals have been identified as Riverland Community College Core Themes. NOTE: The Minnesota Transfer Curriculum "10 Goal Areas of Emphasis" are reflected in the five required discipline areas and five core themes noted in the Riverland Community College program of study guide and/or college catalog.