



**SOUTH DAKOTA BOARD OF REGENTS
ACADEMIC AFFAIRS FORMS**

Substantive Program Modification Program

| | |
|-------------------------------|---|
| UNIVERSITY: | SDSU |
| CURRENT PROGRAM TITLE: | Food Science (B.S.) |
| CIP CODE: | 01.1001 |
| UNIVERSITY DEPARTMENT: | Dairy & Food Science |
| UNIVERSITY DIVISION: | Agriculture, Food & Environmental Sciences |

University Approval

To the Board of Regents and the Executive Director: I certify that I have read this proposal, that I believe it to be accurate, and that it has been evaluated and approved as provided by university policy.

Dennis D. Hedge

10/23/2019

Vice President of Academic Affairs or
President of the University

Date

1. This modification addresses a change in:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Total credits required within the discipline | <input type="checkbox"/> Total credits of supportive course work |
| <input checked="" type="checkbox"/> Total credits of elective course work | <input type="checkbox"/> Total credits required for program |
| <input type="checkbox"/> Program name | <input type="checkbox"/> Existing specialization |
| <input type="checkbox"/> CIP Code | <input type="checkbox"/> Other (explain below) |

2. Effective date of change: 2020-2021 Academic Year

3. Program Degree Level: Associate Bachelor's Master's Doctoral

4. Category: Certificate Specialization Minor Major

5. If a name change is proposed, the change will occur:

- On the effective date for all students
- On the effective date for students new to the program (enrolled students will graduate from existing program)

Proposed new name:

6. Primary Aspects of the Modification:

Existing Curriculum

Proposed Curriculum (Highlight Changes)

| Pre | Num | Title | Cr Hrs | Pre | Num | Title | Cr Hrs |
|--|-----------|-------------------------------------|--------|--|-----------|---|--------|
| System General Education Requirements | | | | System General Education Requirements | | | |
| | 32 | | | | 32 | | |
| ENGL | 101 | Composition I (SGR #1) | 3 | ENGL | 101 | Composition I (SGR #1) | 3 |
| ENGL | 201 | Composition II (SGR #1) | 3 | ENGL | 201 | Composition II (SGR #1) | 3 |
| SPCM | 101 | Fundamentals of Speech (SGR #2) | 3 | SPCM | 101 | Fundamentals of Speech (SGR #2) | 3 |
| ECON | 201 | Microeconomics (3) (SGR #3) | 3 | ECON | 201 | Microeconomics (3) (recommended) (SGR #3) | 3 |
| OR | | | | OR | | | |
| ECON | 202 | Macroeconomics (3) (SGR #3) | | ECON | 202 | Macroeconomics (3) (SGR #3) | |
| ABS | 203 | Global Food Systems (SGR #3) | 3 | ABS | 203 | Global Food Systems (SGR #3) | 3 |
| | | SGR #4 | 3 | | | SGR #4 | 3 |
| | | SGR #4 | 3 | | | SGR #4 | 3 |
| STAT | 281 | Introduction to Statistics (SGR #5) | 3 | STAT | 281 | Introduction to Statistics (SGR #5) | 3 |
| CHEM | 112-112L | General Chemistry I & Lab (SGR #6) | 4 | CHEM | 112-112L | General Chemistry I & Lab (SGR #6) | 4 |

Existing Curriculum

Proposed Curriculum (Highlight Changes)

| Pre | Num | Title | Cr Hrs | Pre | Num | Title | Cr Hrs |
|--|-----------------|---|--------------|--|-----------------|---|--------------|
| CHEM | 114-114L | General Chemistry II & Lab (SGR #6) | 4 | CHEM | 114-114L | General Chemistry II & Lab (SGR #6) | 4 |
| College Requirements | | | 11 | College Requirements | | | 11 |
| Group 1 Courses from College of Agriculture and Biological Sciences | | | 11 | Group 1 Courses from College of Agriculture and Biological Sciences | | | 11 |
| ABS | 203 | Global Food Systems (SGR 3) (3) | - | ABS | 203 | Global Food Systems (SGR 3) (3) | - |
| AS OR DS | 241-241L 231 | Introduction to Meat Science & Lab (Major) Dairy Foods (Major) (3) | - | AS OR DS | 241-241L 231 | Introduction to Meat Science & Lab (Major) Dairy Foods (Major) (3) | - |
| FS | 101 | Introduction to Food Science (Major) (3) | - | FS | 101 | Introduction to Food Science (Major) (3) | - |
| FS | 251 | Food Safety Management Systems (Major) (3) | - | FS | 251 | Food Safety Management Systems (Major) (3) | - |
| Major Requirements | | | 43 | Major Requirements | | | 51 |
| AGEC | 366 | Food Law | 3 | AGEC | 366 | Food Law | 3 |
| AS OR DS | 241-241L 231 | Introduction to Meat Science & Lab (3) Dairy Foods (Major) (3) | 3 | AS OR DS | 241-241L 231 | Introduction to Meat Science & Lab (3) Dairy Foods (Major) (3) | 3 |
| AST | 443-443L | Food Processing & Engineering Fundamentals & Lab | 3 | AST | 443-443L | Food Processing & Engineering Fundamentals & Lab | 3 |
| DS | 119 | First Year Seminar – Dairy and Food Science | 2 | DS | 119 | First Year Seminar – Dairy and Food Science | 2 |
| | | | | DS | 421-421L | Dairy Plant Management & Lab | 4 |
| DS | 490 | Seminar | 1 | DS | 490 | Seminar | 1 |
| | | | | DS | 496 | Field Experience | 3 |
| FS | 101 | Introduction to Food Science | 3 | FS | 101 | Introduction to Food Science | 3 |
| FS | 251 | Food Safety Management Systems | 3 | FS | 251 | Food Safety Management Systems | 3 |
| FS | 341-341L | Advanced Food Science & Lab | 4 | FS | 341-341L | Advanced Food Science & Lab | 4 |
| FS | 351-351L | Principles of Food Processing & Lab | 3 | FS | 351-351L | Principles of Food Processing & Lab | 3 |
| FS | 360 | Food Chemistry | 3 | FS | 360 | Food Chemistry | 3 |
| | | | | FS | 400-400L | Food Chemistry and Analysis & Lab | 5 |
| FS | 450-450L | Food Analysis & Lab | 4 | FS | 450-450L | Food Analysis & Lab | 4 |
| FS | 451-451L | New Food Product Development & Lab | 4 | FS | 451-451L | New Food Product Development & Lab | 4 |
| | | | | FS | 494 or 498 | Internship or Undergraduate Research | 3 |
| MICR | 311-311L | Food Microbiology & Lab | 4 | MICR | 311-311L | Food Microbiology & Lab | 4 |
| NUTR | 315 | Human Nutrition | 3 | NUTR | 315 | Human Nutrition | 3 |
| Supporting Coursework | | | 35-36 | Supporting Coursework | | | 35-36 |
| BIOL | 151-151L | General Biology I & Lab | 4 | BIOL | 151-151L | General Biology I & Lab | 4 |
| BIOL | 153-151L | General Biology II & Lab | 4 | BIOL | 153-151L | General Biology II & Lab | 4 |
| BIOL | 383 | Bioethics | 4 | BIOL | 383 | Bioethics | 4 |
| CHEM | 326-326L | Organic Chemistry I & Lab | 4 | CHEM | 326-326L | Organic Chemistry I & Lab | 4 |
| CHEM | 328-328L | Organic Chemistry II & Lab | 4 | CHEM | 328-328L | Organic Chemistry II & Lab | 4 |
| CHEM | 464 | Biochemistry I | 3 | CHEM | 464 | Biochemistry I | 3 |
| MATH OR MATH | 121-121L 123 | Survey of Calculus & Lab (5) Calculus I (4) | 4-5 | MATH OR MATH | 121-121L 123 | Survey of Calculus & Lab (5) Calculus I (4) | 4-5 |
| MICR | 231-231L | General Microbiology & Lab | 4 | MICR | 231-231L | General Microbiology & Lab | 4 |
| PHYS | 111-111L | Introduction to Physics I & Lab | 4 | PHYS | 111-111L | Introduction to Physics I & Lab | 4 |
| | | | | PHYS | 113-133L | Introduction to Physics II & Lab | 4 |
| STAT | 281 | Introduction to Statistics (3) (SGR 5) | - | STAT | 281 | Introduction to Statistics (3) (SGR 5) | - |
| Electives | | | 9-10 | Electives | | | 1-2 |
| Summary of Credits Food Science (B.S.) | | | | | | | |
| System General Education Requirements | | | 32 | System General Education Requirements | | | 32 |
| College Requirements (Additional required credits of coursework beyond SGRs, Major, and Support Courses) | | | 0 | College Requirements (Additional required credits of coursework beyond SGRs, Major, and Support Courses) | | | 0 |
| Major Requirements | | | 43 | Major Requirements | | | 51 |

| <i>Existing Curriculum</i> | | | | <i>Proposed Curriculum (Highlight Changes)</i> | | | |
|---|-----|-------|--------------|--|-----|-------|--------------|
| Pre | Num | Title | Cr Hrs | Pre | Num | Title | Cr Hrs |
| Supporting Coursework | | | 35-36 | Supporting Coursework | | | 35-36 |
| Electives | | | 9-10 | Electives | | | 1-2 |
| Total number of hours required for major | | | 43 | Total number of hours required for major | | | 51 |
| Total number of hours required for degree | | | 120 | Total number of hours required for degree | | | 120 |

7. Explanation of the Change:

These curriculum changes reflect the revised Food Science curricula recommended by the certifying body - The Higher Education Review Board of the Institute of Food Technologists.

The addition of PHYS 113-113L will close the gap on the expected foundational content topics to be covered in and through Physics and will strengthen the overall exposure of the students to baseline topics in the physical sciences.

BIOL 383 Bioethics (4 cr.) was previously required in part to satisfy the IGR requirements. When these requirements were eliminated, this course was moved to the role of a supporting course. The certifying body does recommend some coverage of ethics but this four-credit course has a greater emphasis on medical issues and the certifying group desired greater emphasis on food and nutrition and how ethics might be applied to the management decisions within a food processing facility. BIOL 383 will be replaced by DS 421-421L Dairy Plant Management & Lab (4 cr.). This change will also strengthen the exposure of the Food Science students to additional management issues and topics not previously available with the current curriculum plan.

Currently, Food Science students are strongly encouraged to work within SDSU's campus pilot processing facility. They are also encouraged, though not required, to formally undertake an internship experience. Since the Department is revising much of the overall curriculum, this requirement is being formalized to have students engage in two focused experiential learning opportunities. Students will complete DS 496 Field Experience for 3 credits and either FS 494 Internship or FS 498 Undergraduate Research for an additional 3 credits. This will enable additional exposure for the students to a regulated food processing setting, strengthen their leadership development, and opportunities to practice their "soft skills" and increase their employment options.

FS 360 Food Chemistry (3 cr.) and FS 450-450L Food Analysis & Lab (4 cr.) will be combined into a single course FS 400-400L Food Chemistry and Analysis & Lab (5 cr.) to enable delivery synergies and minimize existing redundancy between the two courses.