

**Office of the President  
California State University, Chico**



**Executive Memorandum 17-007**

**September 5, 2017**

**From:** Gayle E. Hutchinson, President

**Subject:** New Minor in Food Science

Upon the recommendation of the Academic Senate and the concurrence of the Provost, I approve the addition of a New Minor in Food Science in the Department of Nutrition and Food Science within the College of Natural Sciences. The total number of units required for the minor will be 18-19 and it will be effective Fall 2018.

<b>Policy Title:</b>	EM 17-007 New Minor in Food Science
<b>Contact:</b>	Department of Nutrition and Food Science
<b>Supersedes:</b>	
<b>Revision:</b>	
<b>Enabling Legislation or Executive Order:</b>	

# New Minor Signature Form

**Minor Name: Food Science**

**Department Contact(s) w/phone #(s):**

Dr. Maria  
Giovanni x4023  
Dr. Kathryn  
Silliman x6245

## Required Signatures

Nutrition and Food Science  
**The Department of \_\_\_\_\_**  
**has reviewed and approved this new minor**

Kathryn Sell  
Chair, Department Curriculum Committee

11/1/16  
Date

Kathryn Sell  
Department Chair

11/1/16  
Date

Natural Sciences  
**The College of \_\_\_\_\_**  
**has reviewed and approved this new minor**

Anna Petrova-Mayor  
Chair, College Curriculum Committee

11/16/16  
Date

[Signature]  
College Dean

Date 11/18/16

**Send signature page with proposal attached to Curriculum Services at Undergraduate Education, zip 680**

Curriculum Review Completed

[Signature] 3/20/17

Effective date if approved: 2018/2019

Note: The department will be notified on the of dates for EPPC, Academic Senate, and Chancellor's Office (applicable) review and number of copies needed.

NOV 28 2016

RECEIVED

## Proposal for a New Minor

- I. Proposed title of new minor.  
Minor in Food Science
- II. Academic year of intended implementation.  
2018-19
- III. Name of the department and college submitting the proposal; identify unit with primary responsibility for the minor.  
Nutrition and Food Science, College of Natural Sciences
- IV. Statements on questions of need and demand.
  - A. Relation of the minor to the University Strategic Plan.
    1. High quality learning environment:  
Many of the required courses and courses among the list of electives for the minor in food science have laboratory or activity components. Thus, hands-on learning and active application of course material is occurring. As the food industry evolves, our teaching/curriculum must evolve with it. The community will be involved as some of the courses will take field trips to local food processing plants. In addition, many of the required and courses among the list of electives exposes students to scientific equipment that they would be using in the food industry. There is currently a shortage of qualified food scientist in the state of California (see attached letter of support). There are not enough training programs in the state, thus this minor will help students with degrees in Biological Sciences and Chemistry and Biochemistry obtain some training in food science that would allow them to apply for entry level positions in the food industry.
    2. Invest in faculty and staff:  
The minor in food science is interdisciplinary in nature. It is designed for majors in Biological Sciences and Chemistry and Biochemistry and possibly majors in Agriculture and Animal Science. Thus, the interdisciplinary nature of the minor should lead to collaborations with faculty in other departments within and outside of the College of Natural Sciences. There is potential for many food science research projects. Also, there is potential to collaborate with the local food industry.
    3. Provide technology and training to create high quality learning:  
The Department of Nutrition and Food Science has state of the art equipment in the area of sensory science. Students would be exposed to instrumentation and technology used in the food industry.
    4. Serve educational, cultural, and economic needs of NorCal:

There is a need for trained food scientist/food technologist in the state of California. According to the Bureau of Labor Statistics California is one of the states with the highest employment of food scientists in the nation. The overall job outlook for food scientists is positive. In California only 5 of the 23 CSU campuses offer degrees in food science/food technology plus UC Davis. Vacancies for this career have increased 45% since 2004, with an average growth of 8% per year (<https://www.recruiter.com/careers/food-scientists-and-technologists/outlook>) Our goal is to train/educate students who could move onto entry level positions in the food industry or be prepared for a graduate degree in food science (MS or PhD).

5. Diversify our sources of revenue and manage what we have:  
There are many opportunities for the food industry to invest in our University and its students.

6. Sustainability:  
The minor will incorporate sustainability principles into the curriculum.

B. Need for the proposed minor.

As described above there is a need for trained food scientists to meet the demands in California

C. Identify other closely related curricula currently offered by the campus.  
1. Explain the impact the proposed minor will have on these programs.

Students who are completing degrees in the Biological Sciences or Chemistry and Biochemistry are required to take nearly all the chemistry courses listed under the electives. For these majors they simply need to complete the four food science courses for the minor. Thus, the minor will not have any impact on the Departments of Chemistry and Biochemistry and Biological Sciences. There may be a few students majoring in Agriculture or Animal Science that would need to take Chemistry 350 (as these students complete Chemistry 107 and 108) but we anticipate that this would have little impact on the Department of Chemistry and Biochemistry.

2. Explain how current programs do not meet the proposed minor's objectives.

Currently, there is no BS degree in Food Science or Food Technology at California State University, Chico.

D. Student demand for the minor.

We sent out a survey via survey monkey to majors in Biological Sciences and Chemistry and Biochemistry. We only had 38 students complete the survey but 30 of the 38 said this is a minor they would be interested in pursuing (79%)

yes). We estimated that between 25-50 students will be select a minor in food science each year.

#### V. Resources

##### A. List the faculty members for the required courses in the minor by

Name Melissa Nicholaw

Rank Lecturer

Appointment status Temporary

Highest degree earned MPH

Date and Field of highest degree 1980 Public Health

Professional experience Several years working as a Registered Dietitian and has worked as an instructor in the Department of Nutrition and Food Science and has taught NFSC 120- Introduction to Food Science since fall 2008.

Name Stephanie Bianco

Rank Associate Professor

Appointment status Tenured

Highest degree earned MS

Date and Field of highest degree 2002 Nutrition

Professional experience Co-author of a food safety textbook and developed and has taught NFSC 122 Food Safety and Sanitation since fall 2009. She does research in the area of food safety implementation on farms.

Name Maria Giovanni

Rank Associate Professor

Appointment status Tenured

Highest degree earned PhD

Date and Field of highest degree 2000; Food Science

Professional experience has worked as a food scientist in the industry for over 20 years and has developed and taught NFSC 320 since fall 2011. Dr. Giovanni will also be in charge of developing the new course NFSC 420.

##### B. List the faculty members for the elective courses in the minor

The Department of Chemistry and Biochemistry has a cadre of tenured and tenure-track faculty who teach the chemistry courses that are part of the list of electives including Dr. Arpin, Dr. Ball, Dr. Clark, Dr. Edwards, Dr. Everson, Dr. Nichols, Dr. Ott, Dr. Wasinger and Dr. Zhang.

Dr. Chao and Dr. Doyle, both faculty, are available to teach ANSC courses and long-time lecturer Dr. Rosecrance teaches PSSC 305 for the College of Agriculture

- C. List the resources needed to sustain the program for the first five years, including cost and funding source.

The only new course being proposed is NFSC 420 which will initially be offered every third semester until course enrollments justify it being offered once per year. Dr. Giovanni is currently teaching a course, NFSC 345, which will be taught by another instructor. This will free up Dr. Giovanni's time to teach NFSC 420. We will offer extra lab sections of NFSC 120 and NFSC 320 to meet any increase in student demand. Dean David Hassenzahl is supportive of the minor in food science and will work with the Department to ensure that curricular and staff needs are met. Lab sections are often taught by teaching associates and part-time instructors thus instructional costs will be less than for a permanent faculty member.

Our laboratory based courses will be held in our Food Lab in Tehama 118.

No new need for equipment is anticipated nor specialized material or additional library resources.

- D. Additional support resources required, including source of support. Beyond the resources mentioned above (one new course and potentially adding new lab sections to existing courses) no additional support is anticipated.

## VI. Curriculum

Note: Proposed curriculum should take advantage of courses already offered in other departments when subject matter would otherwise overlap or duplicate existing course content.

- A. Total number of units required for the minor: 26-27 units.

- B. List all new courses for the proposed program.

1. Course number and title: NFSC 420 Advanced Food Science  
Units of credit 3.0  
Prerequisites NFSC 320  
Proposed catalog description: Development of knowledge and skills in food chemistry, microbiology, processing, packaging; and sensory evaluation, with an emphasis on current food industry practices.  
Mode of course delivery if other than regular: 2 hour lecture plus a 2 hour activity per week.
2. Identify the new courses needed to initiate the program.  
NFSC 420 Advanced Food Science
3. Identify the new courses needed during the first two years after implementation.  
One section of NFSC 420 offered during the first two years of implementation

C. List all required courses for the minor. (See attached list)

Course number and title

Units of credit

Prerequisites

D. List all elective courses for the minor. (See attached list)

Course number and title

Units of credit

E. Explain provisions for articulation of the proposed minor with community college courses.

Many community college offer NFSC 120 and NFSC 122 that have been approved for transfer to CSU, Chico.

F. Complete catalog copy, including admission and completion requirements.

See the current University Catalog for correct format; please follow it exactly. Before the proposal is submitted to Academic Affairs, it may be helpful to review catalog copy with Academic Publications.

Attach the New Minor signature form to the front of the proposal and submit to Academic Affairs after all department and college reviews are complete.

## ***The Minor in Food Science***

Course Requirements for the Minor: 18-19 units

The following courses, or their approved transfer equivalents, are required of all candidates for this minor.

**4 courses required:** 11 units

NFSC 120	Introduction to Food Science	3.0	FS
NFSC 122	Food Safety and Sanitation	2.0	FS
NFSC 320	Science of Food	3.0	FS

*Prerequisites: CHEM 107 or CHEM 111, NFSC 120, NFSC 122*

NFSC 425	Advanced Food Science	3.0	INQ
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*Prerequisites: NFSC 320.*

**1 course selected from:** 4 units

CHEM 107	General Chemistry for Applied Sciences	4.0	FS	GE
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*Prerequisites: Completion of ELM requirement, Intermediate Algebra.*

CHEM 111	General Chemistry	4.0	FS	GE
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*Prerequisites: Completion of ELM requirement; second-year high school algebra; one year high school chemistry. (One year of high school physics and one year of high school mathematics past Algebra II are recommended.)*

**1 course selected from:** 3-4 unit

CHEM 112	General Chemistry	4.0	FS
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*Prerequisites: CHEM 111 with a grade of C- or better.*

ANSC 350	Meat and the Consumer	3.0	FA
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ANSC 450	Food Sanitation and Quality Control	3.0	SP
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*Prerequisites: ANSC 101; CHEM 107 or CHEM 111.*

PSSC 305	Introduction to Wines	3.0	FA
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*Prerequisites: At least 21 years of age.*

**Advisory:** If you plan to pursue a career or post-baccalaureate education in food science, please see the advisor for the minor in food science. Additional courses in organic chemistry and biochemistry are highly recommended.



**Silliman, Kathryn**

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**From:** Miller, Randy  
**Sent:** Thursday, October 06, 2016 1:22 PM  
**To:** Silliman, Kathryn  
**Subject:** Re: Support for minor in Food Science

Katie,

I am very supportive of this new minor in Food Science. I am confident that many of our majors (CHEM and BIOCHEM) will want to add this minor to their studies.

Randy

Randy M. Miller, Ph.D.  
Professor and Chair, Department of Chemistry and Biochemistry  
530-898-5259  
PHSC 216  
California State University, Chico  
400 W. First Street Chico, CA 95929  
rmmiller@csuchico.edu  
<http://www.csuchico.edu/~rmmiller>

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**From:** Silliman, Kathryn  
**Sent:** Thursday, October 6, 2016 12:46 PM  
**To:** Miller, Randy  
**Subject:** Support for minor in Food Science

Randy,

As a follow-up to our meeting with you. Would you please send an e-mail response that you are supportive of the minor in food science. We think many of your majors would be interested in this minor. Here is the list of courses we discussed. Thank you. Katie

## **The Minor in Food Science**

### **Course Requirements for the Minor: 26-27 units**

The following courses, or their approved transfer equivalents, are required of all candidates for this minor.

#### **4 courses required: 11 units**

NFSC 120	Introduction to Food Science	3.0	FS
NFSC 122	Food Safety and Sanitation	2.0	FS
NFSC 320	Science of Food	3.0	FS

*Prerequisites: CHEM 108 or CHEM 270, NFSC 120, NFSC 122*

NFSC420      Advanced Food Science      3.0      INQ

*Prerequisites: NFSC 320.*

**4 courses selected from: 15-16 units**

CHEM 111      General Chemistry      FS      GE

*Prerequisites: Completion of ELM requirement; second-year high school algebra; one year high school chemistry. (One year of high school physics and one year of high school mathematics past Algebra II are recommended.)*

CHEM 112      General Chemistry      4.0      FS

*Prerequisites: CHEM 111 with a grade of C- or better.*

CHEM270      Organic Chemistry      4.0      FS

*Prerequisites: CHEM 112.*

CHEM 320      Quantitative Analysis      4.0      FS

*Prerequisites: CHEM 112 with a grade of C- or higher.*

CHEM350      Introductory Biochemistry      3.0      FS

*Prerequisites: CHEM 108.*

CHEM451      Biochemistry      3.0      FS

*Prerequisites: CHEM 370 with a grade of C- or higher.*

ANSC350      Meat and the Consumer      3.0      FA

ANSC450      Food Sanitation and Quality Control      3.0      **SP**

*Prerequisites: ANSC 101; CHEM 107 or CHEM 111.*

PSSC305      Introduction to Wines      3.0      **FA**

*Prerequisites: At least 21 years of age.*

*Kathryn Silliman, Ph.D., RDN*

*Chair and Professor*

*Department of Nutrition and Food Science*

*California State University, Chico*

*95929-0002*

*ksilliman@csuchico.edu*

*530-898-6245*

## Silliman, Kathryn

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**From:** Day, Jonathan  
**Sent:** Wednesday, October 12, 2016 10:31 AM  
**To:** Silliman, Kathryn  
**Subject:** RE: Proposal for new minor in Nutrition and Food Science (Summary Copy)

Right, got it. Finally.

To Katy Silliman:

The proposal for a new minor in Nutrition and Food Science is of great interest to our department. In particular our microbiology majors and BA majors might very well avail themselves of this opportunity. This could mean 50-100 new students for the minor in Nutrition and Food Science.

Jonathan R. Day, PhD  
Professor of Biological Sciences and Chair  
College of Natural Sciences,  
California State University, Chico

**From:** Silliman, Kathryn  
**Sent:** Wednesday, October 12, 2016 10:24 AM  
**To:** Day, Jonathan <JDay@csuchico.edu>  
**Subject:** RE: Proposal for new minor in Nutrition and Food Science (Summary Copy)

Yes - I need YOU to send me a statement that as Chair of the Department of Biological Sciences you support the proposed minor in food science and it is your belief that many of your majors would be interested in pursuing it.

Thanks, Katie

**From:** Day, Jonathan  
**Sent:** Wednesday, October 12, 2016 10:14 AM  
**To:** Silliman, Kathryn <KSilliman@csuchico.edu>  
**Subject:** FW: Proposal for new minor in Nutrition and Food Science (Summary Copy)

This is what I sent out before. Do you need more?

**From:** Day, Jonathan  
**Sent:** Thursday, October 06, 2016 1:46 PM  
**To:** Silliman, Kathryn <KSilliman@csuchico.edu>  
**Subject:** FW: Proposal for new minor in Nutrition and Food Science (Summary Copy)

FYI



**California League of Food Processors**

2485 Natomas Park Drive, Suite 550 | Sacramento, CA | 95833  
P: (916) 640-8150 | F: (916) 640-8156 | www.dfp.com

October 10, 2016

Kathryn Silliman, PhD, RDN  
Chair and Professor  
Department of Nutrition and Food Science  
Room 123 Holt Hall  
California State University, Chico  
Chico, Ca 95929

Dear Dr. Silliman:

The California League of Food Processors (CLFP) strongly supports the proposal by the Nutrition and Food Science Department to add a minor in food science. The proposed course requirements will provide the students with a solid background in the fundamentals of food science and chemistry, which will give them the basic skills to work in California's growing food processing industry.

The California food processing industry faces many challenges related to food safety, food labeling, and product testing and development. To meet these challenges, the industry needs a workforce with the training and skills in food science to work in a wide variety of jobs in quality control, laboratory analysis, regulatory compliance, and in operations. Currently there is a significant shortage of workers in this field, and some CLFP members are seeking staff from universities in other states or countries. We have heard about this issue from many of our members, and the problem is especially acute for employers in some rural areas in the Central Valley. Your proposed new program would help address a need that is not anticipated to decline in the foreseeable future. CLFP appreciates your efforts to establish this minor.

CLFP looks forward to assisting your department in developing this program and I am sure that our members look forward to hiring the graduates with this minor degree.

Sincerely,

Rob Neenan  
President/CEO