



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

**New Baccalaureate Degree Minor**

<b>UNIVERSITY:</b>	SDSU
<b>TITLE OF PROPOSED MINOR:</b>	Dairy Industry
<b>DEGREE(S) IN WHICH MINOR MAY BE EARNED:</b>	Any
<b>EXISTING RELATED MAJORS OR MINORS:</b>	Dairy Production (B.S.), Dairy Manufacturing (B.S.)
<b>INTENDED DATE OF IMPLEMENTATION:</b>	2021-2022 Academic Year
<b>PROPOSED CIP CODE:</b>	01.0905
<b>UNIVERSITY DEPARTMENT:</b>	Dairy & Food Science
<b>BANNER DEPARTMENT CODE:</b>	SDFS
<b>UNIVERSITY DIVISION:</b>	College of Agriculture Food & Environmental Sciences
<b>BANNER DIVISION CODE:</b>	3F

**Please check this box to confirm that:**

- The individual preparing this request has read [AAC Guideline 2.8](#), which pertains to new baccalaureate degree minor requests, and that this request meets the requirements outlined in the guidelines.
- This request will not be posted to the university website for review of the Academic Affairs Committee until it is approved by the Executive Director and Chief Academic Officer.

**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.*

\_\_\_\_\_  
President of the University

4/30/2021  
\_\_\_\_\_  
Date

- 1. Do you have a major in this field?**       Yes       No
- 2. If you do not have a major in this field, explain how the proposed minor relates to your university mission and strategic plan, and to the current Board of Regents Strategic Plan 2014-2020.**

South Dakota State University (SDSU) requests authorization to offer a minor in Dairy Industry. The Department of Dairy and Food Science, which currently offers undergraduate majors in Dairy Manufacturing and Dairy Production, has proposed the new minor. The proposed minor is intended for students in other majors at SDSU. The dairy industry in South Dakota is growing at an exponential rate and there is a strong demand for students with knowledge of the field. The dairy industry in South Dakota is expanding rapidly. Currently

there are approximately 150,000 cows in the state and this number is expected to grow to 200,000 in the next 3-4 years. Operations that manage these herds are in need of qualified, knowledgeable personnel. While there is concerted effort to increase enrollment in the majors, there also are students at SDSU who are majoring in other areas, that are not interested in double majoring but have opportunities for employment in the dairy industry. This minor will provide such students the credentials needed to fill needs within the industry. Students in other majors that will enroll in this minor will offer dairy employers additional credentials through their majors.

The Dairy Industry Minor will contribute to the attainment of the Imagine 2023<sup>1</sup> strategic plan Strategic Goal 1 – Excellence through Transformative Education. The minor will utilize active and innovative teaching and learning practices and incorporates multiple cross-curricular skills, including inquiry and analysis, critical thinking, teamwork and problem-solving. Hands-on opportunities through the Dairy Research and Training Facility (dairy farm) and the Davis Dairy Plant will be available to students giving them strong skills for employment.

SDSU does not request new state resources.

**3. What is the nature/purpose of the proposed minor? Please include a brief (1-2 sentence) description of the academic field in this program.**

Dairy science is an application of the sciences, engineering and technology, and business for the study of milk production and processing. Dairy science students may choose a major in Dairy Production, Dairy Manufacturing, or both. Dairy Production is the study of production of milk, management of the farm, feeding, breeding and herd health. Dairy Manufacturing is the study of processing and merchandising of milk and milk products. The purpose of this minor is for students majoring in programs other than Dairy Production or Dairy Manufacturing to develop a limited knowledge and competency in the dairy industry.

The proposed minor will allow students to become credentialed in several of the basic aspects of the dairy industry. This will enable employment opportunities in a growing industry. SDSU is unique nationwide in that it offers programs that cover the dairy industry from the farm to product. Students that enroll in this minor will have the opportunity to develop credentials in both the farm and product aspect and thereby enhance their employment opportunities.

**4. How will the proposed minor benefit students?**

The dairy industry in South Dakota is growing at an exponential rate and there is a strong demand for students with knowledge of the field. The nature of the current industry is such that in addition to a strong demand for graduates with majors in dairy science, there also is a need for those that may specialize in other programs such as Animal Science, Agricultural Business, Agricultural & Biosystems Engineering with knowledge of the dairy profession. The new minor is designed to offer courses in both dairy production and dairy manufacturing.

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<sup>1</sup> <https://www.sdstate.edu/imagine-2023-aspire-discover-achieve>

## 5. Describe the workforce demand for graduates in related fields, including national demand and demand within South Dakota.

The workforce demand in the field of Dairy and Food Science is strong. This point is exemplified by the fact that the SDSU Dairy and Food Science Department has had a 100% job placement rate for decades. Even amidst fluctuations throughout the dairy industry over the years – graduates from the University’s programs have maintained a 100% job placement rate due to the strong reputation of the SDSU Dairy and Food Science program and the need for professionals trained in this field. This minor will further support this industry.

Nationally, the dairy industry has seen growth in its employment opportunities over the last five years – and is projected to continue growing. The following statistics provided by IBISWorld highlights these trends.

- The average business in the Dairy Farms industry in the US now employs more workers than it did five years ago.
- Between the years of 2016 to 2021 – the number of people employed in the Dairy Farm Industry in the US increased by an average of 0.6% per year.
- Dairy Farms in the US are expected to see 2.1% employment growth in 2021.
- The market size of the Dairy Farm Industry in the US is \$39 billion – and projected to increase at an annualized rate.

As seen through these statistics, the national workforce demand for graduates in this field is projected to continue growing. The fact that milk is a staple food according to the US Department of Agriculture helps keep the demand for dairy products and employment opportunities in the dairy industry relatively stable. (IBIS World, 2020)<sup>2</sup>

Without direct listings in the BLS Occupational Outlook Handbook for a Dairy Manufacturing degree, closely related career fields were identified.

- Agricultural and Food Science Technicians: “Employment of agricultural and food science technicians is projected to grow 4 percent from 2019 to 2029, about as fast as the average for all occupations. Agricultural and food science technicians will be needed to assist scientists as research into agricultural production methods and techniques continues.” (BLS, 2021)<sup>3</sup>
- Agricultural and Food Scientists: “Overall employment of agricultural and food scientists is projected to grow 6 percent from 2019 to 2029, faster than the average for all occupations. Employment of agricultural and food scientists is projected to grow as research into agricultural production methods and techniques continues.” (BLS, 2021)<sup>4</sup>

Demand for SDSU graduates in South Dakota comes from industry linkages and a geographic location that places SDSU in a corridor of flourishing dairy industry. Michael Dykes, CEO and President of the International Dairy Foods Association said, “There’s a lot of growth here along the I-29 corridor in South Dakota. Great location, great regulations, and policy. It is a growth

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<sup>2</sup> IBIS World. (2020, November 22<sup>nd</sup>). *Dairy Farms in the US industry trends (2015-2020)*.

<sup>3</sup> Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Agricultural and Food Science Technicians. <https://www.bls.gov/ooh/life-physical-and-social-science/agricultural-and-food-science-technicians.htm>

<sup>4</sup> Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Agricultural and Food Scientists. <https://www.bls.gov/ooh/life-physical-and-social-science/agricultural-and-food-scientists.htm>

story for dairy” (McDonald, 2019)<sup>5</sup>. The South Dakota dairy industry has grown from approximately 80,000 cows in 2002 to approximately 150,000 today. It is anticipated that it will reach 200,000 cows in the next 3 to 4 years. Trained professionals will be needed to serve this industry. Having a growing dairy industry in South Dakota helps set the stage for the success of a Dairy Industry minor.

**6. Provide estimated enrollments and completions in the table below and explain the methodology used in developing the estimates.**

	Fiscal Years*			
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>
<i>Estimates</i>	FY 22	FY 23	FY 24	FY 25
Students enrolled in the minor (fall)	5	10	15	20
Completions by graduates	--	5	10	15

\*Do not include current fiscal year.

Estimates are based on student enrollment in the Food Safety Minor that is housed in the Dairy and Food Science Department, advisor recommendations, and expressed student interest across campus. The desire is to continue growing enrollment in the minor as it gains notoriety.

**7. What is the rationale for the curriculum? Demonstrate/provide evidence that the curriculum is consistent with current national standards.**

The proposed curriculum is drawn predominantly from the framework found in the Dairy Production and Dairy Manufacturing majors offered at SDSU. Students enrolled in this minor will have the opportunity to take a wide variety of these classes that peak a multitude of interests throughout the dairy industry. By leaving the curriculum very customizable – students have the chance to be as specific or broad as they would like in their studies, making it an ideal minor for students coming from a wide variety of academic majors. Currently, there are no national standards for dairy science programs. The minor will be based on the standards set forth by the Dairy and Food Science Department, South Dakota State University, and the South Dakota Board of Regents.

**8. Complete the tables below. Explain any exceptions to Board policy requested.**

**A. Distribution of Credit Hours**

Dairy Industry Minor	Credit Hours	Percent
Requirements in minor	4-6	22%-33%
Electives in minor	12-14	67%-78%
Total	18	100%

<sup>5</sup> McDonald, S. (2019, April 25). *Dairy industry growing in South Dakota*. Keloland Media Group. <https://www.keloland.com/news/dairy-industry-growing-in-south-dakota/>

**B. Required Courses in the Minor**

Prefix	Number	Course Title	Prerequisites for Course	Credit Hours	New (yes, no)
DS	130-130L	Introduction to Dairy Science		3	No
DS OR DS	314 496	Dairy Farm Evaluation (1 cr.) Field Experience (3 cr.)		1-3	No
Subtotal				4-6	

**C. Elective Courses in the Minor: List courses available as electives in the program. Indicate any proposed new courses added specifically for the minor.**

Select 12-14 credits from the following:

Prefix	Number	Course Title	Prerequisites for Course	Credit Hours	New (yes, no)
AS	218	Survey of Animal Nutrition	AS 101 or AS 102 or DS 130-130L	3	No
AS	219	Principals of Nutrition	AS 101 or DS 130-130L	3	No
DS	202	Dairy Products Judging		1	No
DS	231	Dairy Foods		3	No
DS	301 – 301L	Dairy Microbiology & Lab	MICR 231-231L or MICR 233-233L	4	No
DS	311	Dairy Cattle Judging		2	No
DS	312-312L	Dairy Cattle Breeding & Evaluation & Lab		4	No
DS	314	Dairy Farm Evaluation		1	No
DS	321-321L	Dairy Product Processing I & Lab	DS 130-130L; MICR 231-231L or MICR 233-233L	5	No
DS	322-322L	Dairy Product Processing II & Lab	DS 130-130L; MICR 231-231L or MICR 233-233L	5	No
DS	400-400L	Dairy Chemistry & Analysis & Lab	DS 130-130L; CHEM 106 or CHEM 112; CHEM 108	5	No
DS	401	Advanced Dairy Products Judging	DS 202	1-2	No
DS	421–421L	Dairy Plant Management & Lab	Junior standing	4	No
DS	442	Dairy Product & Process Development	DS 400-400L	3	No
DS	480-480L	Dairy Farm Operations I & Lab	AS 218 or AS 219; DS 130-130L; ECON 201 or ECON 202	4	No
DS	481-481L	Dairy Farm Operations II & Lab	DS 130-130L; DS 480-480L; ECON 201 or ECON 202	4	No

Prefix	Number	Course Title	Prerequisites for Course	Credit Hours	New (yes, no)
DS	494	Internship		3	No
DS	496	Field Experience		3	No

**9. What are the learning outcomes expected for all students who complete the minor? How will students achieve these outcomes?**

In the Dairy Industry Minor students will:

- Demonstrate a general understanding of dairy farm management and operations.
- Demonstrate a general understanding of dairy plant management and operations.
- Demonstrate a general understanding of milk composition and dairy products.
- Demonstrate the ability to communicate a general understanding of the dairy industry through written reports and oral presentations.

Individual Student Outcomes	Program Courses that Address the Outcomes																			
	*DS 130-130L	*DS 314	*DS 496	AS 218	AS 219	DS 202	DS 231	DS 301-301L	DS 311	DS 312-312L	DS 321-321L	DS 322-322L	DS 400-400L	DS 401	DS 421-421L	DS 442	DS 480-480L	DS 481-481L	DS 494	
Demonstrate a general understanding of dairy farm management and operations.	X	X		X	X			X	X	X							X	X	X	
Demonstrate a general understanding of dairy plant management and operations.	X		X					X			X	X	X		X				X	
Demonstrate a general understanding of milk composition and dairy products.	X		X			X	X	X			X	X	X	X		X			X	
Demonstrate the ability to communicate a general understanding of the dairy industry through written reports and oral presentations.	X	X				X	X	X	X	X	X	X		X	X		X	X	X	

**10. What instructional approaches and technologies will instructors use to teach courses in the minor?**

The Dairy Industry Minor will offer instruction through lecture, discussion, laboratory exercises, and hands-on practical training.

**11. Delivery Location**

*Note: The accreditation requirements of the Higher Learning Commission (HLC) require Board approval for a university to offer programs off-campus and through distance delivery.*

**A. Complete the following charts to indicate if the university seeks authorization to deliver the entire program on campus, at any off campus location (e.g., USD Community Center for Sioux Falls, Black Hills State University-Rapid City, Capital City Campus, etc.) or deliver the entire program through distance technology (e.g., as an online program)?**

	Yes/No	Intended Start Date
On campus	Yes	2021-2022 Academic Year

	Yes/No	If Yes, list location(s)	Intended Start Date
<b>Off campus</b>	No		
	Yes/No	If Yes, identify delivery methods <i>Delivery methods are defined in <a href="#">AAC Guideline 5.5.</a></i>	Intended Start Date
<b>Distance Delivery (online/other distance delivery methods)</b>	No		
<b>Does another BOR institution already have authorization to offer the program online?</b>	No	<b>If yes, identify institutions:</b>	

**B. Complete the following chart to indicate if the university seeks authorization to deliver more than 50% but less than 100% of the minor through distance learning (e.g., as an online program)? This question responds to HLC definitions for distance delivery.**

	Yes/No	If Yes, identify delivery methods	Intended Start Date
<b>Distance Delivery (online/other distance delivery methods)</b>	No		

**12. Does the University request any exceptions to any Board policy for this minor? Explain any requests for exceptions to Board Policy. If not requesting any exceptions, enter "None."**

None

**13. Cost, Budget, and Resources: Explain the amount and source(s) of any one-time and continuing investments in personnel, professional development, release time, time redirected from other assignments, instructional technology & software, other operations and maintenance, facilities, etc., needed to implement the proposed minor. Address off-campus or distance delivery separately.**

The Dairy Industry Minor utilizes courses that are already part of the set curriculum within the Dairy and Food Science Department. Because of this there is no significant change in cost, budget, or resources associated with the implementation of the Dairy Industry Minor.

**14. New Course Approval: New courses required to implement the new minor may receive approval in conjunction with program approval or receive approval separately. Please check the appropriate statement (place an "X" in the appropriate box).**

YES, the university is seeking approval of new courses related to the proposed program in conjunction with program approval. All New Course Request forms are included as Appendix C and match those described in section 7.

NO, *the university is not seeking approval of all new courses related to the proposed program in conjunction with program approval; the institution will submit new course approval requests separately or at a later date in accordance with Academic Affairs Guidelines.*

**15. Additional Information:**

**Academic Requirements**

Dairy Production and Dairy Manufacturing majors are not eligible to complete the Dairy Industry Minor.