SOUTH DAKOTA BOARD OF REGENTS
ACADEMIC AFFAIRS FORMS

New Course Request

SDSU	**College of Engineering / Department of Agricultural & Biosystems Engineering**
Institution	**Division/Department**
Dennis D. Hedge	1/25/2024
Institutional Approval Signature	**Date**

Section 1. Course Title and Description

Prefix & No.	Course Title	Credits
ABE 234	Digital Tools for Agricultural and Biosystems Engineering	3

Course Description

This course provides a practical hands-on working knowledge of digital tools utilized in modern engineering practice to collect, analyze and process data sets for engineering and technical analysis. The course will utilize basic and advanced components of the Excel and MATLAB software packages. Students will be introduced to basic sensor and data acquisition methods in the agricultural and biosystems engineering field.

Pre-requisites or Co-requisites

Prefix & No.	Course Title	Pre-Req/Co-Req?
None		

Registration Restrictions

None

Section 2. Review of Course

2.1. Will this be a unique or common course?

☒ Unique Course

Prefix & No.	Course Title	Credits
ABE 464-464L	Monitoring and Controlling Agriculture and Biological Systems	1, 1
CSC 150	Computer Science I	3

Provide explanation of differences between proposed course and existing system catalog courses below:

This new course provides a practical hands-on working knowledge of digital tools utilized in modern engineering practice to collect, analyze and process data sets for engineering and technical analysis. ABE 234 will cover the data acquisition and control aspects of the deleted ABE 464-464L. Introducing sensors and data acquisition (contents from ABE 464-464L) allows the students to collect information from the real world to inform their design and testing practices. Students will benefit from studying the topic earlier in their curriculum. Taking a course with this content earlier in their program will also allow them to use the digital acquisition and data analysis tools in the various projects and studies they undertake while still a student. CSC 150 is a broad computer science course. Focusing on coding within the Agricultural and Biosystems Engineering program rather than taking a CSC programming course will allow instructors to provide and assign ABE-related problems, which will increase the engagement, interest, and retention of students.

Section 3. Other Course Information

3.1. Are there instructional staffing impacts?

☒ No. Schedule Management, explain below: This course will be taught every fall semester. ABE 464-464L will be phased out and offer fewer sections.

3.2. Existing program(s) in which course will be offered: Agricultural and Biosystems Engineering (B.S.)

3.3. Proposed instructional method by university *(as defined by AAC Guideline 5.4)*: R – Lecture

3.4. Proposed delivery method by university *(as defined by AAC Guideline 5.5)*: 001 – Face to Face

3.5. Term change will be effective: Fall 2024

3.6. Can students repeat the course for additional credit? ☐Yes, total credit limit: ☒ No

3.7. Will grade for this course be limited to S/U (pass/fail)? ☐Yes ☒ No

3.8. Will section enrollment be capped? ☒Yes, max per section: 30 ☐ No

3.9. Will this course equate (i.e., be considered the same course for degree completion) with any other unique or common courses in the common course system database in Colleague and the Course Inventory Report? ☐Yes ☒ No

3.10. Is this prefix approved for your university? ☒ Yes ☐ No

Section 4. Department and Course Codes (Completed by University Academic Affairs)

4.1. University Department: Department of Agricultural and Biosystems Engineering

4.2. Banner Department Code: SABE

4.3. Proposed CIP Code: 14.0301

Is this a new CIP code for the university? ☐ Yes ☒ No

NEW COURSE REQUEST
Supporting Justification for On-Campus Review

K. Muthukumarappan	K. Muthukumarappan	10/22/2023
Request Originator	**Signature**	**Date**
K. Muthukumarappan	K. Muthukumarappan	10/22/2023
Department Chair	**Signature**	**Date**
Suzette Burckhard	Suzette Burckhard	10/30/2023
School/College Dean	**Signature**	**Date**

1. Provide specific reasons for the proposal of this course and explain how the changes enhance the curriculum.

   ABE 234 Digital Tools for Agricultural and Biosystems Engineering will provide content and experience for the students with sensors, data acquisition, and programming earlier in their program so they can use it in their subsequent courses. This course provides a practical hands-on working knowledge of digital tools utilized in modern engineering practice to collect, analyze, and process data sets for engineering and technical analysis. The course will utilize basic and advanced components of the Excel and MATLAB software packages. Students will be introduced to basic sensor and data acquisition methods to prepare them for test and design engineering type internship and career job functions. This course will also introduce students to CAD tools and ABE applications of those tools. ABE 234 will be a new 200-level course that will cover the data acquisition and control aspects from ABE 464-464L. Students will benefit from studying the topic earlier in their curriculum. Taking a course with this content earlier in their program will also allow them to use the digital acquisition and data analysis tools in the various projects and studies they undertake while still a student. Focusing on coding within the ABE program will allow instructors to provide and assign ABE-related problems, which will increase the engagement, interest, and retention of students.

2. Note whether this course is: ☒ Required ☐ Elective
3. In addition to the major/program in which this course is offered, what other majors/programs will be affected by this course?

Engineering for Precision Agriculture Minor

4. If this will be a dual listed course, indicate how the distinction between the two levels will be made.
   N/A
5. Desired section size 30
6. Provide qualifications of faculty who will teach this course. List name(s), rank(s), and degree(s).
   Douglas Prairie, Instructor, M.S.
7. Note whether adequate facilities are available and list any special equipment needed for the course.
   Computing facilities are adequate.
8. Note whether adequate library and media support are available for the course.
   All library and media support needed are available for this course.
9. Will the new course duplicate courses currently being offered on this campus? ☐ Yes ☒ No
10. If this course may be offered for variable credit, explain how the amount of credit at each offering is to be determined.
    N/A