



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

Revisions to General Education Requirements

Use this form to request any change to the General Education Requirements specified in Policies 2:7 – Baccalaureate General Education Curriculum and 2:26 – Associate Degree General Education Requirements. This includes any changes to the System General Education Requirements, Institutional Graduation Requirements, Globalization/Global Issues Requirement, and Writing Intensive Requirement.

Note 08/2016: This form is under revision – please consult the university vice president for academic affairs and/or the Board of Regents office for clarification

NOTE: This process does not include approval for the development of a new course. If the proposal does include the development of a new course, the new course process must be completed before the course will be considered for inclusion in any set of the General Education Requirements

USD	Arts & Sciences/ Biomedical Engineering		
Institution	Division/Department	Institutional Approval Signature	Date
USD	Dan Engebretson		
Institution	Form Initiator	Dean's Approval Signature	Date

Prefix & No.	Course Title
ISCI 153/153L	Integrated Science II/Lab

Indicate (X) the component of the General Education Curriculum that the proposal impacts.

- System General Education Requirements
- Institutional Graduation Requirements
- Globalization/Global Issues Requirement
- Writing Intensive Requirement

Indicate (X) the revision(s) that is being proposed (more than one may be checked).

- Revision to an approved course
- Addition of a course to the set of approved courses
- Deletion of an approved course from the set of approved courses

Section 1. Provide a Concise Description of the Proposed Change

We proposed the addition of ISCI 153/153L Integrated Science II/Integrated Science II Laboratory to the list of courses meeting System Graduation Requirement #6 Natural Sciences

Section 2. Provide the Effective Date for the Proposed Change

Fall 2018

Section 3. Provide a Detailed Reason for the Proposed Change

In Fall 2017, the university began offering the A.S. in Integrated Science at University Center, Sioux Falls. The introductory courses for this program (ISCI 151/L and ISCI 153/L) blend chemistry, biology, and physics (particularly thermodynamics) and incorporate mathematics. They include rigorous laboratory work, and therefore meet the student learning outcomes associated with the graduation requirement in ten natural sciences, as indicated in section 4, below. Moreover, these courses will offer a needed general education option for students pursuing other degrees at the University Center.

Section 4. Provide Clear Evidence that the Proposed Modification will Address the Specified Goals and Student Learning Outcomes

The Student Learning Outcomes for SGR #6 are as follows:

As a result of taking courses meeting this goal, students will:

- Demonstrate the scientific method in a laboratory experience,
- Gather and critically evaluate data using the scientific method,
- Identify and explain the basic concepts, terminology and theories of the selected natural sciences, and
- Apply selected natural science concepts and theories to contemporary issues.

In lecture and laboratory setting, students explore energy and probability in equilibrium systems, energy and entropy in bonding, reduction and oxidation chemistry, and catalytic systems.. Students will demonstrate the scientific method through participation in weekly laboratory experiences, and will gather and evaluate data as part of the laboratory sessions. The course will identify and explain fundamental concepts, terminology, and theories from the disciplines of biology and chemistry. Moreover, students will apply the concepts and theories related to these and other topics to contemporary issues in the fields of engineering, health, interdisciplinary and integrated science.

Section 5. Provide a Copy of all Course Syllabi and Other Supporting Documentation

ISCI-153: Integrated Science II: Lecture (U910) and Lab (U910)

Location: Lecture FSC1 Room 214; Lab FSC1 211

Lecture: MWF, 12:00-12:50 pm

Lab: F, 1-3:00 pm

Instructor: Dr. Daniel Engebretson

Email: Daniel.Engebretson@usd.edu

Phone: 605-275-7475

Lab Office Hours, FSC1 214: MWF: 11-11:45 am, or by appointment

Office Hours, GEAR 100: By Appointment.

Course Description: This course will broaden students understanding of chemical and physical concepts important in biology. Concepts will include energy and probability in equilibrium systems, energy and entropy in bonding, reduction and oxidation chemistry, and catalytic systems.

. Co-requisite: ISCI-153L, 1 credit

Course Objective: Students will begin to understand the chemistry, biology, and physics share fundamental concepts.

Course and Laboratory Text:

1. *Chemistry: The Molecular Nature of Matter and Change, 7th Ed* by Silberberg and Amateis
2. *Essential Cell Biology, 4th Ed* by Alberts, et al.

Laboratory Materials and Supplies:

1. Goggles
2. Bound lab notebook
3. Lab descriptions and worksheets will be available on D2L

Student Learning Outcomes:

- Students will learn a variety of chemical, physical, and biological concepts to be used as a basis to solve complex scientific problems.
- Students will learn to use visual and mathematical models as tools to think about particles that are too small to see.
- Students will learn how to design and interpret experiments to answer scientific questions.
- Student will learn how to document their findings and communicate science to others.

Academic Integrity

The College of Arts and Sciences considers plagiarism, cheating, and other forms of academic dishonesty inimical to the objectives of higher education. The College supports the imposition of penalties on students who engage in academic dishonesty, as defined in the "Conduct" section of the University of South Dakota Student Handbook.

No credit can be given for a dishonest assignment. A student found to have engaged in any form of academic dishonesty may, at the discretion of the instructor, be:

- a. Given a zero for that assignment.
- b. Allowed to rewrite and resubmit the assignment for credit.
- c. Assigned a reduced grade for the course.
- d. Dropped from the course.
- e. Failed in the course.

Freedom in Learning

Under Board of Regents and University policy, student academic performance may be evaluated solely on an academic basis, not on opinions or conduct in matters unrelated to academic standards. Students should be free to take reasoned exception to the data or views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled. Students who believe that an academic evaluation reflects prejudiced or capricious consideration of student opinions or conduct unrelated to academic standards should contact the dean of the college or school that offers the class to initiate a review of the evaluation.

Disability Accommodation

Any student who feels s/he may need academic accommodations or access accommodations based on the impact of a documented disability should contact and register with Disability Services during the first week of class or as soon as possible after the diagnosis of a disability. Disability Services is the official office to assist students through the process of disability verification and coordination of appropriate and reasonable accommodations. Students currently registered with Disability Services must obtain a new accommodation memo each semester.

Please note: if your home institution is not the University of South Dakota but one of the other South Dakota Board of Regents institutions (e.g., SDSU, SDSMT, BHSU, NSU, DSU), you contact Jennifer Schelske at University Center (605-274-9509) and your home university:

Disability Services
Service Center North, R119B
(605) 677-6389
Web Site: www.usd.edu/ds

E-mail: disabilityservices@usd.edu

Diversity and Inclusive Excellence

The University of South Dakota strives to foster a globally inclusive learning environment where opportunities are provided for diversity to be recognized and respected. To learn more about USD's diversity and inclusiveness initiatives, please visit the website for the Office of Diversity.

Attendance Policy: Students are expected to attend all class meetings. In the event of an unexpected absence please contact notify the instructor you will be absent. It is the student's responsibility to arrange for any make-up exams. All examinations must be completed on or before the due dates unless otherwise approved in writing by the instructor. All examinations and workbooks that are incomplete on the due dates will be given a zero.

Description of Instructional Methods:

A variety of instructional methods will be used in this course, including lecture, group discussion, out-of-class readings, group work, and writing assignments. You are expected to come to class prepared. You will need to actively participate during class, including asking (and answering) questions. While you are not required to own a computer for this course, internet access is necessary to access supplemental course materials on D2L.

Electronic Devices: Please do not use cell phones or other disruptive electronic devices in class. These devices are very disruptive to the class atmosphere, a potential carrier for contaminants in the lab, and their use during class is highly inappropriate. If you are going to use a computer during class, please set the device on mute. **Anyone seen with a cell phone/electronics during test time will receive a zero grade on their exam.**

Laboratory Safety: Although hazardous chemicals are not typically used in laboratory, some of the chemicals can cause harm if mishandled. Students successfully completing this course will be expected to practice safe laboratory procedures and be aware of emergency procedures. Students are expected to read and follow all procedures in the laboratory to ensure a safe working environment. **No food or drink is allowed in the laboratory. Pants and closed toed shoes are required during lab. Long hair should be tied back.**

Student Assessment & Grades: This course should require a minimum of 2 hours study time for every hour the course meets (6 hours= 12 hours/week) to earn a satisfactory grade.

Section Exams (400 points): There will be four Lecture Exams. Each exam will consist of objective (multiple choice, true/false, matching) questions and short answer questions. Each exam will be worth 100 points.

1. TBD Section 1 Exam: Molecular Thermodynamics – First Law
2. TBD Section 2 Exam: Molecular Thermodynamics – Second Law
3. TBD Section 3 Exam: Electrochemistry
4. TBD Section 3 Exam: Kinetics

Final Exam (150 points): There will be a comprehensive final exam worth 150 points.

Homework (100 points): There will be 10 homework assignments throughout the semester.

Quizzes (100 points): There will be 10 quizzes throughout the semester. These may not be announced and will cover topics in assigned readings.

Laboratory Notebook (100 points): There will be 10 experiments conducted (some take more than one lab period) throughout the semester. Each student will be required to keep a laboratory notebook to record all data and observations made during the laboratory period and activities that occur outside normal lab hours. No make-ups are permitted. Rubrics for Laboratory Notebook grading will be posted to D2L prior to each lab. Each experiment is worth 10 points.

Laboratory Worksheets (150 points): There will be a worksheet for each experiment. Each worksheet is worth 15 points.

Evaluation Procedures:

Lecture		Lab	
Assessment	Points	Assessment	Points
Section Exams (4 @ 100 points each)	400 pts	Laboratory Notebook	100 pts
Comprehensive Final Exam	150 pts	Laboratory Worksheets	150 pts
Homework	100 pts		
Quizzes	100 pts		
Total=	750 pts	Total=	250 pts
Lecture Grading Scale		Lab Grading Scale	
A (90%): 675 and above		A: 225 and above	

B (80%): 600 - 374	B: 200 - 224
C (70%): 525 - 599	C: 175 - 199
D: 450 - 524	D: 150 - 174
F: < 449	F: < 149

Laboratory Experiments:

1. Phycocyanin isolation
2. Heat of reaction
3. Equilibrium and temperature
4. Redox titration
5. 3-D printing
6. Biological electrochemistry (2 weeks)
7. Enzyme kinetics
8. Polymerase Chain Reaction (2 weeks)