Faculty Senate Course Form

Effective Date: **Fall 2025** Submission Date: 10/28/2024

Department: Chemistry College of: **Arts & Sciences**

Contact Person: Alessandro Martins Prefix: **CHEM**

Create New, Revise, Inactivate, or Reactivate: **New** Course #: **635**

Course Form:
- Used to create new course numbers or new prefixes.
- Used to change Name, Grading, Hours, Description, Reactivate
- Used to inactivate a course from the current catalog. Courses are never deleted. They are made inactive and can be legislated to become active again.

1. Purpose/Justification for the Changes:
Offering new course on Polymer Gels based on faculty expertise in the area.

2. Is this related to, and/or affect, any other department/college/unit curricula or programs at Pittsburg State University? ***If "Yes", please provide an explanation. Provide documentation of any discussions (e.g. copies of emails, memos, etc.) that have occurred.***

◯ Yes ◉ No

3. Is this course to be considered for General Education?
If "yes" this requirement will need approval of the General Education Committee after the revisions have been approved by Faculty Senate. The General Education Course Approval form will also need to be submitted.

◯ Yes ◉ No

4. Will this course be required of any education majors?
If "yes," this requirement will need approval of the Council for Teacher Education before upload to " College Curriculum Legislation" in SharePoint.

◯ Yes ◉ No

5. Will additional resources or costs be required?

◯ Yes ◉ No

If so, what will be needed?

6. Will any additional course fees be required (e.g. equipment, clothing, travel, licensing, etc.)?
If "yes," complete the Course Fee Form on the Faculty Senate website, it will need to gain approval of the President's Council.

○ Yes ◉ No

7. Objectives/Student Learning Outcomes for NEW courses only, as it will appear in the syllabus:
Attach with upload.

8. Assessment Strategies (e.g. exams, projects, university rubric, etc.), as it will appear in the syllabus:
Attach with upload.

Course Numbers cannot be changed, only created.

	Exsisting	New/Proposed
Title:		Polymer Gels
Course Number:		
Credits:		**3**
Grading System:	**Select One**	**A-F, IN**
Pre/Co-Requisite(s):		CHEM325, CHEM326, CHEM625 or instructor's permission
Course Description:		This course provides an introduction to polymer gels, focusing on physical and chemical hydrogels and their applications in fields like drug delivery, tissue engineering, environmental, and agricultural sectors. Key topics include synthesis methods (e.g., photo-polymerization, ionotropic gelation, self-assembly), hydrogel characterization techniques (rheology, spectroscopy, microscopy), and practical lab experiments on hydrogel synthesis and analysis. The course also explores real-world applications and emerging trends in hydrogel research, such as smart and biocompatible materials.

Authorization Sign-Off

Checklist

- ☐ Required fields completed.
- ☐ Syllabus attached for new courses
- ☐ Assignment Strategies Attached

-Approved: Department Chair/Director
Date: Nov 13, 2024 **Signature, Chair/Director:** _____

-Approved: College Curriculum Committee
Date: 12/2/24 **Signature, Committee Chair:** Christopher Childers

-Approved: Dean of College
Date: 12/2/24 **Signature, Dean:** Christopher Childers

-Approved: Council for Teacher Education (if applicable)
Date: _____ **Signature, Council Chair:** _____

-Approved: University Undergraduate Curriculum Committee
Date: _____ **Signature, Committee Chair:** _____

-Approved: Faculty Senate
Date: _____ **Signature, Recorder Faculty Senate:** _____

Originating Departments(s): After completing this form, please upload it to the SharePoint, within the appropriate College folder, "Preliminary Legislation", to allow for review and questions. Any modifications should be saved as "original file name.v2.docx" and uploaded as well.

Following final College Curriculum Committee approval, please apply the appropriate signatures, and send them to your College Administrator.

PITTSBURG STATE UNIVERSITY

Polymer Gels

Course Syllabus

Spring 20XX

CHEM 635 (Undergraduate) and CHEM 818 (Graduate)

Instructor: Dr. Alessandro Martins

Office: 105-G Heckert-Wells Hall

e-mail: amartins@pittstate.edu

Phone No: 620-235-4424

Lecture room: XXXX

Lecture time: MN, WD: 12:00-1:15 PM

Description: This course will introduce "polymer gels and their networks," primarily focusing on physical and chemical hydrogels and their applications. The course aims to introduce and discuss the main methods used in synthesizing hydrogels and their applications, including pharmaceutical (drug delivery), tissue engineering, environmental, and agricultural applications. Selected topics will include:

1. Introduction: Basic Concepts of Gels
2. Synthesis of Polymer and Methods of Making Them
3. Structure and Properties of Polymer Gels
4. Characterization
5. Biomedical Applications
6. Other Applications

Prerequisite: CHEM-325 Organic Chemistry, CHEM-326 Organic Chemistry Laboratory, CHEM-625 Polymer Synthesis and Characterizations or permission of instructor.

Textbook/Materials Required:

1. "Hydrogels: Design, Synthesis, and Application in Drug Delivery and Regenerative Medicine, First Edition." T. R. R. Singh, G. Laverty, and R. Donnelly. CRC Press. ISBN: 978-1498748612
2. "Polymer Gels and Networks, Third Edition." Y. Osada and A. R. Khokhlov. CRC Press. ISBN 978-0824706692
3. "Hydrogels: Biological Properties and Applications." R. Barbucci. Springer. 978-8847011038

Note: Selected parts of these textbooks will be excellent guides for further study. The instructor reserves the right to extract and modify from these textbooks and other sources for a better student learning experience.

Course objectives: The course is designed to:

1. Introduce basic concepts of polymer gels, technology, and applications.
2. Introduce students to different types of gels, their general properties, and application areas.
3. Describe the essential characterization of gels.
4. Spark students' interest in polymer gels and networks and provide them with the foundation for more in-depth polymer chemistry.
5. Spark students' interest and imagination and enthuse them for careers in polymer gels focusing on real applications.

Course Requirements: Regular participation and note-taking are crucial for completing coursework successfully. It is every student's responsibility to attend classes regularly and keep up to date with the lecture material to avoid falling behind. Much of the exam materials for which performance will be evaluated will be based on slides presented and explanations given in the class. Understanding the course material will depend heavily upon understanding the preceding material. Understanding the subject matter is strongly encouraged over mere memorization of facts since the latter will almost certainly guarantee a poor performance in the course and application of the knowledge acquired in the subsequent career. Therefore, the goal of each exam will be to evaluate understanding of the course material instead of mere memorization. This means that each student will ultimately be expected to utilize the basic principles taught in the course to solve new problem situations.

Evaluation of Performance: The grade in this course will be determined by a series of examinations. These exams will be given during class and will cover material discussed since the previous exam. Exams will be closed books, closed notes, and any other helping tool unless differently specified by the instructor. No makeup exams will be given unless prior permission is granted for absence. Showing up late for an exam will result in an automatic 10% reduction in score, and no extra time will be allowed. Grades will be based on the following system:

Four exams: 100 %. Each exam: 25%, including a "final" exam: all exams are equal.

The overall letter grade for the course will be determined using the following relative scale:

A $\geq$90%

B 80-89%

C 70-79%

D 60-69%

F < 60 %

Tentative Calendar: Tentative course calendar for the spring semester of 2025 will be presented on Canvas before the beginning of the course and will be regularly updated during the semester. Please do not make any travel plans that conflict with your exam schedule.

Note that the schedule and examination topics given in the Course calendar in the first class are approximate only and subject to modification as necessary during the course occurrence. The material covered in each examination will be announced in the lecture class.

Academic Misconduct: No help will be allowed during exams, and using any materials, information sources (unless expressly stated by the instructor), or substitute person will be considered cheating. "Collaborative efforts" to answer exam questions are strictly forbidden since your answers must result from strictly individual efforts. As defined above, evidence of cheating will result in a grade of zero for that exam for the first offense, even if the cheating activity involves only one question. In the second instance of such activity, the instructor will proceed with formal charges against the student to affect at least a failing grade in the course. **Please consult the policy on Student Academic Dishonesty.**

Please consult The PSU academic honesty policy, which can be found at the following URL address:

(http://www.pittstate.edu/office/registrar/syllabus-supplement.dot

Other: Students are expected to dress and behave according to generally accepted societal norms of decency for all course events, including classes and exams. Wearing sunglasses, sleeping, or disturbing other students in the class is not permitted. Use of cell phones, tablets, computers, or any other communication device during the class period is not allowed. Any of the above will result in ejection from the class after ONE warning.

Disclaimer: The instructor reserves the right to revise the content of this syllabus (including the Course Content and Calendar) as needed throughout the semester for a better learning experience for the students.