



**SENATE COMMITTEE ON CURRICULAR AFFAIRS**  
**COURSE SUBMISSION AND CONSULTATION FORM**

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**Principal Faculty Member(s) Proposing Course**

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Name	User ID	College	Department
MARK MORRISSON	MXM61	Liberal Arts (LA)	Not Available
DANNY GLYNN SYKES	dgs12	Science (SC)	Not Available

**Academic Home:** Liberal Arts (LA)

**Type of Proposal:**  Add  Change  Drop

**Current Bulletin Listing**

Abbreviation: **ENGL**

Number: **233**

I am requesting recertification of this course for the new Gen Ed and/or University Requirements Guidelines

**Course Designation**

**(ENGL 233N) Chemistry and Literature**

**Course Information**

**Cross-Listed Courses:**

CHEM 233N(LA)

**Prerequisites:**

**Corequisites:**

**Concurrents:**

**Recommended Preparations:**

**Abbreviated Title:** Chem and Lit

**Discipline:** General Education

**Course Listing:** Inter-Domain

**Special categories for Undergraduate (001-499) courses**

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**Foundations**

Writing/Speaking (GWS)

Quantification (GQ)

**Knowledge Domains**

Health & Wellness (GHW)

Natural Sciences (GN)

Arts (GA)

Humanities (GH)

Social and Behavioral Sciences (GS)

**Additional Designations**

Bachelor of Arts

International Cultures (IL)

United States Cultures (US)

Honors Course

Common course number - x94, x95, x96, x97, x99

Writing Across the Curriculum

#### First-Year Engagement Program

First-Year Seminar

#### Miscellaneous

Common Course

#### GE Learning Objectives

GenEd Learning Objective: Effective Communication

GenEd Learning Objective: Creative Thinking

GenEd Learning Objective: Crit & Analytical Think

GenEd Learning Objective: Global Learning

GenEd Learning Objective: Integrative Thinking

GenEd Learning Objective: Key Literacies

GenEd Learning Objective: Soc Resp & Ethic Reason

#### Bulletin Listing

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**Minimum Credits:** 3

**Maximum Credits:** 3

**Repeatable:** NO

**Department with** English (UPLA\_ENGL)

**Curricular Responsibility:**

**Effective Semester:** After approval, the Faculty Senate will notify proposers of the effective date for this course change. Please be aware that the course change may not be effective until between 12 to 18 months following approval.

**Travel Component:** NO

#### Course Outline

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##### A brief outline or overview of the course content:

This pedagogically innovative course will be team taught by an instructor from the English department and one from the Chemistry department. Both instructors will be present in the classroom throughout the semester, providing joint presentations and leading discussions. The integration of humanities and natural sciences domain content will encourage students from humanities and natural science backgrounds, as well as other interested students, to take the course and learn how to integrate these two domains of knowledge in their education and their lives after leaving Penn State. This course teaches both basic concepts of chemistry and their cultural elaboration in literature, and it models a critical assessment of the implications of chemistry and literature emerging from a shared cultural field, rather than autonomously from two separate cultures. The course seeks to provide students with a nuanced understanding of how literature and science inform each other and negotiate cultural, religious, and political tensions. Understanding the origin and development of these ideas, perspectives, and discoveries is an essential component of science and scientific achievement, but too often our methods of teaching science focus almost exclusively on teaching facts and theories at the expense of the historical discovery, creation, and development of those facts and theories. This course teaches both the scientific facts and theories and the contexts of their production in order to sharpen students' abilities at critical evaluation of facts. The literary and scientific focus will vary from class to class, but may include writings by literary authors such as Mary Shelley, Edward Bulwer-Lytton, Bram Stoker, H. G. Wells, Garrett Serviss, Aldous Huxley, Roald Hoffmann, Carl Djerassi, Don DeLillo, William Butler Yeats, Arthur Machen, D.H. Lawrence, A. E. Waite, Aleister Crowley, Arthur Conan Doyle, Camille Flammarion, and Rachel Carson, and scientific texts by scientists such as T.H. Huxley, William Crookes, William Ramsay, Frederick Soddy, Ernest Rutherford, Wilhelm Conrad Roentgen, Henri Becquerel, J.J. Thomson, Niels Bohr, and Marie Curie. Key concepts of environmental chemistry The specific focus of this class will vary from class to class, but all sections will spend approximately 40% of the class on units specifically devoted to key concepts in basic chemistry, 40% of the class on literary interpretations of and influences upon concepts in chemistry in specific historical periods, and 20% of the class on significant methods of theorizing the boundaries between and interrelationships of science and culture., and on the concept of the "culture of science." However, these subjects will be interwoven throughout the semester. Indeed, the pedagogy of the course depends upon the literature and the science not being neatly separated from each other. Instead, students will learn up-to-date science while exploring the origins, development, and cultural dimensions of that science, and will learn to integrate their understanding of the domains of science and the humanities through the course.

##### A listing of the major topics to be covered with an approximate length of time allotted for their discussion:

- Introduction to field of Science and Literature, including discussions of "one culture" vs "two culture" theories, boundary theory, paradigm shifts, thought style, technoscience, and cultures of science (Kuhn, Fleck, Snow, and others). 1 week
- Scientific paradigms and developments from the Age of Enlightenment to the Romantic period (such as the shift from alchemical thinking to atomic theory, Galvani and reanimation, vivisection, and boundaries of science, ethics of science, vitalism, and modern stem cell theory) Mary Shelley's Frankenstein as literary text. 2 weeks
- Birth of modern chemistry (including emergence of scientific disciplines, attribution, and concepts in the historiography of science) Djerassi and Hoffmann's Oxygen as literary text. 2 weeks.

--Chemistry and the life sciences in the Victorian period (including discussions of vivisection, bio-ethics, evolution, and debates about the nature of humanity). Wells's *The Island of Dr. Moreau* for literary text. 2 weeks.

--chemistry and poetry of chemical warfare from WWI to present. literary texts could include WWI poetry by Wilfred Owen and others. 1 week

--Science and social structure, individuality, freedom, politics, boundaries of the human, babies in bottles, chemistry and pharmaceuticals. Aldous Huxley's *Brave New World*. 2 weeks.

--Chemistry and the environment. Unit on chemistry of pesticides, synthetic fertilizers, industrial pollution, toxicity. Rachel Carson's *Silent Spring*. 3 weeks

--Chemistry and the environment continued, in relationship to environmental ethics, human relationships to nature, pharmaceutical industry, information age, postmodernism, relationship of self to society. DeLillo's *White Noise*. 2 weeks.

### Course Description:

This pedagogically innovative course will be team taught by an instructor from the English department and one from the Chemistry department. Both instructors will be present in the classroom throughout the semester, providing joint presentations and leading discussions. The integration of humanities and natural sciences domain content will encourage students from humanities and natural science backgrounds, as well as other interested students, to take the course and learn how to integrate these two domains of knowledge in their education and their lives after leaving Penn State. This course teaches both basic concepts of chemistry and their cultural elaboration in literature, and it models a critical assessment of the implications of chemistry and literature emerging from a shared cultural field, rather than autonomously from two separate cultures. The course seeks to provide students with a nuanced understanding of how literature and science inform each other and negotiate cultural, religious, and political tensions. Understanding the origin and development of these ideas, perspectives, and discoveries is an essential component of science and scientific achievement, but too often our methods of teaching science focus almost exclusively on teaching facts and theories at the expense of the historical discovery, creation, and development of those facts and theories. This course teaches both the scientific facts and theories and the contexts of their production in order to sharpen students' abilities at critical evaluation of facts. The literary and scientific focus will vary from class to class, but may include writings by literary authors such as Mary Shelley, Edward Bulwer-Lytton, Bram Stoker, H. G. Wells, Garrett Serviss, Aldous Huxley, Roald Hoffmann, Carl Djerassi, Don DeLillo, William Butler Yeats, Arthur Machen, D.H. Lawrence, A. E. Waite, Aleister Crowley, Arthur Conan Doyle, Camille Flammarion, and Rachel Carson, and scientific texts by scientists such as T.H. Huxley, William Crookes, William Ramsay, Frederick Soddy, Ernest Rutherford, Wilhelm Conrad Roentgen, Henri Becquerel, J.J. Thomson, Niels Bohr, and Marie Curie. Key concepts of environmental chemistry The specific focus of this class will vary from class to class, but all sections will spend approximately 40% of the class on units specifically devoted to key concepts in basic chemistry, 40% of the class on literary interpretations of and influences upon concepts in chemistry in specific historical periods, and 20% of the class on significant methods of theorizing the boundaries between and interrelationships of science and culture., and on the concept of the "culture of science." However, these subjects will be interwoven throughout the semester. Indeed, the pedagogy of the course depends upon the literature and the science not being neatly separated from each other. Instead, students will learn up-to-date science while exploring the origins, development, and cultural dimensions of that science, and will learn to integrate their understanding of the domains of science and the humanities through the course. The course will be offered once every year with approximately 20-35 seats per offering.

### The name(s) of the faculty member(s) responsible for the development of the course:

1 Name: MARK MORRISSON (MXM61)

Title:

Phone:

Address:

Campus: UP

City:

Fax:

1 Name: DANNY SYKES (dgs12)

Title: DIRECTOR ANALYTICAL LABS

Phone: +1 814 863 0796

Address: 330 Whitmore Lab

Campus:

City:

Fax:

## Course Justification

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### Instructional, Educational, and Course Objectives:

**This section should define what the student is expected to learn and what skills the student will develop.**

Upon completing this course, students will be able to:

- 1) Understand key concepts in the history of chemistry and ways of understanding the construction of scientific fact.
- 2) understand key concepts in modern chemistry, environmental chemistry, chemistry of the life sciences, and basic scientific literacy.
- 3) Critically assess the social, cultural, economic, political, technological, ethical, and religious dimensions informing the development of modern scientific culture from the Enlightenment to the present.
- 4) Read literary texts critically, to understand how they produce meaning.
- 5) Be able to construct a strong thesis using literary analysis and a critical understanding of science in culture and society.

### Evaluation Methods:

**Include a statement that explains how the achievement of the educational objective identified above will be assessed. The procedures for determining students' grades should be specifically identified.**

The methods of evaluation and exact grading requirements will necessarily vary by instructor and location. Current methods of assessment include group presentations and scientific demonstrations, papers, exams, and the quality of class participation. The assignment distribution in determining students' grades might be as follows:

Group presentation 10%  
Group scientific demonstration 5%  
Science and culture paper 15%  
2 literary analysis papers 30%  
Class participation quality 10%  
Final exam 30%

**Relationship/Linkage of Course to Other Courses:**

**This statement should relate the course to existing or proposed new courses. It should provide a rationale for the level of instruction, for any prerequisites that may be specified, or for the course's role as a prerequisite for other courses.**

Prerequisites: Engl 15, 30, or 137/138.

**Relationship of Course to Major, Option, Minor, or General Education:**

**This statement should explain how the course will contribute to the major, option, or minor and indicate how it may function as a service course for other departments.**

The course can be used as an elective credit toward the English Major and Minor, and can help students in English, Chemistry, or any other major fulfill General Education requirements.

**A description of any special facilities:**

N/A

**Frequency of Offering and Enrollment:**

The course is taught once per year, with a cap (depending on available room size) of 20-35.

**Justification for Changing The Proposal:**

**Include a justification for each change to the course. Particular attention should be paid to the effects of the course change within the discipline and in other disciplines where the course may be required within a major or used as a service course. When a unit submits several course changes, with or without new course proposals, a general statement covering the programmatic effects of the changes should be submitted.**

For Gen Ed recertification and interdomain designation.

## **Alignment with General Education Objectives**

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**EFFECTIVE COMMUNICATION** – the ability to exchange information and ideas in oral, written, and visual form in ways that allow for informed and persuasive discourse that builds trust and respect among those engaged in that exchange, and helps create environments where creative ideas and problem-solving flourish.

**KEY LITERACIES** – the ability to identify, interpret, create, communicate and compute using materials in a variety of media and contexts. Literacy acquired in multiple areas, such as textual, quantitative, information/technology, health, intercultural, historical, aesthetic, linguistic (world languages), and scientific, enables individuals to achieve their goals, to develop their knowledge and potential, to lead healthy and productive lives, and to participate fully in their community and wider society.

**CRITICAL AND ANALYTICAL THINKING** – the habit of mind characterized by comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating a conclusion. It is the intellectually disciplined process of conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action.

**INTEGRATIVE THINKING** – the ability to synthesize knowledge across multiple domains, modes of inquiry, historical periods, and perspectives, as well as the ability to identify linkages between existing knowledge and new information. Individuals who engage in integrative thinking are able to transfer knowledge within and beyond their current contexts.

**CREATIVE THINKING** – the capacity to synthesize existing ideas, images, or expertise in original ways and the experience of performing, making, thinking, or acting in an imaginative way that may be characterized by innovation, divergent thinking, and intellectual risk taking.

**GLOBAL LEARNING** – the intellectually disciplined abilities to analyze similarities and differences among cultures; evaluate natural, physical, social, cultural, historical, and economic legacies and hierarchies; and engage as community members and leaders who will continue to deal with the intricacies of an ever-changing world. Individuals should acquire the ability to analyze power; identify and critique interdependent global, regional, and local cultures and systems; and evaluate the implications for people's lives.

**SOCIAL RESPONSIBILITY AND ETHICAL REASONING** – the ability to assess one's own values within the social context of problems, recognize ethical issues in a variety of settings, describe how different perspectives might be applied to ethical dilemmas, and consider the ramifications of alternative actions. Individuals should acquire the self-knowledge and leadership skills needed to play a role in creating and maintaining healthy, civil, safe, and thriving communities.

**What component(s) of the course will help students achieve the General Education Learning Objectives covered in the course? Provide evidence that students in the course have adequate opportunities to achieve the identified learning objectives.**

Key literacies, Critical and Analytical Thinking:

Students attain both scientific and literary historical literacy, learning how to understand key concepts in basic science that inform our world today through lectures, class discussions, and group activities that require them to develop and demonstrate scientific literacy as well as an understanding of technical and conceptual dimensions of scientific knowledge in historical and cultural context. Students will achieve literary historical literacy by lectures, discussions, and writing assignments requiring them to develop theses about literary texts from the 18th century to the present by using literary analysis and understanding cultural contexts of literary production. The professors will model the integration of literary historical and scientific literacies by analyzing with students the historical, cultural, and textual nature of scientific production, and the elaboration of scientific concepts in aesthetic and critical forms in literary texts. The lectures, presentations, class discussions, and written work will help students learn to perform their own critical analysis of the cultural, political, economic, ethical, and aesthetic dimension of paradigm shifts, technoscientific culture, and the construction and cultural transmission of scientific facts.

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**How will students be assessed to determine their attainment of the Learning Objective(s) of General Education covered in this course? This assessment must be included as a portion of the student's overall performance in this course.**

Students' mastery of scientific and literary and historical literacies will be assessed through tests, presentations, papers, and contributions to class discussions. Tests and papers assess students' abilities to employ basic scientific and literary historical concepts and construct critical arguments about them, connecting what they have learned about the integration of scientific and humanistic concerns in critical thinking about contemporary society and culture. Class discussions, presentations, and scientific demonstrations allow students to practice and demonstrate their critical and integrative thinking and their scientific and literary and historical literacies in the environment of dialogue and discussion that the classroom affords. Critical and interpretive skills must be demonstrated throughout all graded assignments but are assessable most clearly in the written papers and exams.

The structure of the course---providing key analytical and critical concepts from the interdisciplinary field of Science and Literature and the History and Philosophy of Science, and then building historical and scientific knowledge and critical argumentation across several case studies from the history of chemistry and literary history---allows students to build an integrative perspective that sees its full elaboration in their papers and other written work.

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## General Education Domain Criteria

General Education Designation: Inter-Domain

### GH Criteria

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- Explain the methods of inquiry in humanities fields and describe how the contributions of these fields complement inquiry in other areas
- Demonstrate competence in critical thinking about topics and texts in the humanities through clear and well-reasoned responses
- Critically evaluate texts in the humanities-- whether verbal, visual, or digital-- and identify and explain moral or ethical dimensions within the disciplines of the humanities
- Demonstrate knowledge of major cultural currents, issues, and developments through time, including evidence of exposure to unfamiliar material that challenges their curiosity and stretches their intellectual range
- Become familiar with groups, individuals, ideas, or events that have influenced the experiences and values of different communities

**What components of the course will help students achieve the domain criteria selected above?**

The readings, lectures, class discussions, and written work will help students learn to develop a critical perspective about the development and cultural elaboration of scientific facts, and teach students to construct a well-reasoned argument about science and culture across history and in the present. The three papers--two literary analyses and one science and culture paper--will require students to develop a well-reasoned thesis and argue for it. Textual analysis of literary texts and science writing will be at the center of this course throughout, and methods of literary criticism and textual interpretation obtaining in the fields of literary criticism, literary history, and rhetoric of science, will provide students with tools for developing strong critical arguments about ethical and even aesthetic dimensions of literary and scientific texts. The historical nature of the course will provide students with a nuanced sense of the development and change across time of both scientific and literary contexts that inform the interpretation of scientific and technoscientific culture in the modern world.

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### GN Criteria

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- Explain the methods of inquiry in the natural science fields and describe how the contributions of these fields complement inquiry in other areas
- Construct evidence-based explanations of natural phenomena
- Demonstrate informed understandings of scientific claims and their applications
- Evaluate the quality of the data, methods, and inferences used to generate scientific knowledge
- Identify societal or philosophical implications of discoveries in the natural sciences, as well as their potential to address contemporary problems

**What components of the course will help students achieve the domain criteria selected above?**

The course focuses intensely on the historical and cultural emergence of the modern scientific method, and on the changing understand of what constitutes evidence for scientific claims. The historical events as well as current scientific controversies the course covers will give students ample opportunity to develop their understanding of the historical nature of our present understanding of scientific reasoning and culture. Like many literature courses, Eng/Chem 233 interprets history, assesses individual and social behavior, engages philosophical ideas, and expresses ethical and aesthetic values. It is especially useful at exploring cultural and social tensions involving scientific knowledge. The course will use its historical and contemporary subjects to explore the technical and conceptual dimensions of scientific knowledge in historical and cultural context. Political, cultural and personal motivations are integral components of the scientific method and deeply influenced the discovery of many of the

fundamental chemical and physical concepts students are expected to master in their science curricula. The focus on science in contemporary philosophical, political, social, and cultural contexts allows students to develop a more nuanced understanding of the impact of science on social issues, but also on the impact of social, cultural, economic, and political issues on the types of questions scientists ask and how they are funded, and how they are understood across domains of knowledge.

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## Integrative Studies

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**Explain how the intellectual frameworks And methodologies of the two Knowledge Domains will be explicitly addressed in the course and practiced by the students.**

Every day of the class will be devoted to integrating scientific knowledge and thinking with the historical, cultural, and ethical frameworks of the humanities. The theoretical frameworks of Kuhn's paradigm shifts, Fleck's thought styles, or concepts from the historiography of science or from the social construction of scientific fact, and agential realism derived from STS paradigms and the rhetoric and philosophy of science and Science and Literature, will be employed throughout the course, though the basic general education place of this course in the Penn State curriculum necessitates the instructors to model those forms of thinking and explain them in discussions and lectures, rather than asking students to read deeply in the dense philosophical literature of the concepts that inform the instructors' approach to the subject of Chemistry and Literature. Moreover, the combinations of assignments such as scientific demonstrations and presentations and science and culture papers from the sciences with the literary analyses and rhetorical analysis papers from humanities courses, and the group discussions drawing students from disciplinary backgrounds across the university together to integrate these domains of knowledge and modes causes the students to step out of the comfort zones of their disciplines to think with a truly interdisciplinary and integrative approach. As the course creators have shown in an article published by the American Chemical Society, the results of such a pedagogy develop scientific literacy in the complex critical and analytic context of cultural, social, and ethical analysis that informs the humanities.

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**Demonstrate that each Of the two domains will receive approximately equal attention, providing evidence from course topics, assignments, or other course components, and that students will integrate material from both domains.**

The distribution of the topics and assignments as laid out in previous sections, and the presence of both instructors in the classroom at all times, ensures that both domains are in active dialogue with each other in class discussion and graded work in equal proportions across the semester.

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**Briefly explain the staffing plan. Given that each Inter-Domain course is approved for two Knowledge Domains, it will be taught by an instructor (or instructional team) with appropriate expertise in both domains.**

The team-taught nature of the course across its previous decade as a GH/GN course will continue in its new proposed incarnation as an N course. Both Chemistry and English have supported the team teaching of this course and will continue to do so.

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**Describe the assessments that will be used to determine students' ability to apply integrative thinking.**

All of the assignments and assessments described in previous sections require students to integrate both domains in order to achieve successful outcomes. Understanding chemistry and literature as emerging and mutually informing each other in a shared cultural field, rather than emerging separately and simply reflecting or responding to each other, is the bedrock assumption of all graded work in the class, and the perspective both instructors model and teach students to employ in their graded assignments.

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## General Education Designation Requirements

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Bachelor Of Arts Requirements:

- BA: Natural Sciences
- BA: Other Cultures
- BA: Foreign/World Lang (12th Unit)
- BA: Humanities
- BA: Social and BA: Behavioral Sciences
- BA: Arts
- BA: Quantification
- BA: Foreign/World Lang (All)

The course integrates humanities and natural sciences content and methodologies from Chemistry and English.

## Campuses That Have Offered (ENGL 233) Over The Past 4 Years

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semester	AB	AL	BK	BR	BW	CR	DS	ER	FE	GA	GV	HB	HN	HY	LV	MA	NK	PC	SH	SL	UP	WB	WC	WS	XC	XP	XS	YK
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**UPLOADED DOCUMENTS FOLLOW:**

## Chem/Engl 233 (GH/GN) Chemistry and Literature

Spring 2018

T R 3:05 PM - 4:20 PM

220 Thomas

Dan Sykes

Office: 330 Whitmore

Mailbox: 104 Whitmore

Office Phone: 863-0796

Email: dgs12@psu.edu

Office Hours: MT 1:30-3:00,

and by appointment

Mark Morrisson

Office: 404 Burrowes

Mailbox: 430 Burrowes

Office Phone: 863-2626

Email: mxm61@psu.edu

Office Hours: T 1:30-3:00, W

12:00-1:30, and by appointment

### **Description:**

Engl/Chem 233 is a pedagogically innovative course taught by Dan Sykes from the Chemistry department and Mark Morrisson from the English department. Both of us will be present in the classroom throughout the semester, providing joint presentations and leading discussions. Students may earn either GH or GN credit for the course, but not both. This course teaches both basic concepts of chemistry and their cultural elaboration in literature across the modern period. It seeks to provide students with a nuanced understanding of how literature and science inform each other and negotiate cultural, religious, economic, and political tensions. The course seeks to explore ways in which our modern world is defined by and dependent on a variety of sciences and technologies. The impact of scientific and technological discoveries continues to dominate discussions of who we are, where we come from, where we are going, and our place in the universe. Understanding how we, as a society, have acquired knowledge is especially important when the ideas, perspectives, and discoveries are perceived to be in conflict with our religious, cultural, or political beliefs. Understanding the origin and development of these ideas, perspectives, and discoveries is an essential component of science and scientific achievement, but too often our methods of teaching science focus almost exclusively on teaching facts and theories at the expense of the historical discovery and development of those facts and theories. This course teaches both the scientific facts and theories and the contexts of their production in order to sharpen students' abilities at critical evaluation of facts.

### **Learning Objectives:**

Upon completing this course, students will be able to:

- 1) Understand key concepts in the history of chemistry and ways of understanding the construction of scientific fact.
- 2) Understand key concepts in modern chemistry, environmental chemistry, chemistry of the life sciences, and basic scientific literacy.
- 3) Critically assess the social, cultural, economic, political, technological, ethical, and religious dimensions informing the development of modern scientific culture from the Enlightenment to the present.
- 4) Read literary texts critically, to understand how they produce meaning.

- 5) Be able to construct a strong thesis using literary analysis and a critical understanding of science in culture and society.

### **Assignments and Grading:**

- 1) Group presentation: a 15-minute class presentation on a topic germane to the course. This presentation must **use at least two non-Internet sources (other than an encyclopedia)**, and include the sources in a bibliography. Articles or electronic database resources derived through Penn State Library electronic holdings don't count as "internet sources" and are perfectly legitimate to use. (10%)
- 2) Group scientific demonstration: an approximate 5-minute demonstration which illustrates an important chemical concept or principle. Scores are based on the group's ability to effectively convey the scientific concept via the demonstration and the overall performance of the demonstration. (5%)
- 3) 1 science and culture synopsis papers exhibiting your mastery of the scientific and cultural material presented by the course, around 5 pages (15%)
- 4) 2 literary analysis papers, around 6-8 pages each (15%, 15%=30% total)
- 5) Class participation (measuring quality as well as quantity). Simply attending class is not the same as participating in class. (10%)
- 6) Final exam (short answer and essay) (30%)

### **Academic Integrity and Plagiarism:**

*Penn State defines academic integrity as "the pursuit of scholarly activity in an open, honest and responsible manner." (Policy 49-20). Dishonesty of any kind will not be tolerated in this course. Dishonesty includes, but is not limited to, cheating, plagiarizing, fabricating information or citations, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students. Students facing allegations of academic misconduct who drop the course will be returned and will be expected to complete course work and meet course deadlines until the allegations are dismissed and the drop is permitted. Students responsible for academic misconduct often receive academic sanctions, which can be severe, and put themselves at risk for disciplinary sanctions assigned by the University's Office of Student Conduct (see Senate Policy G-9).*

If you are unsure about how to cite secondary work in a paper, PLEASE ask Professor Morrisson or Professor Sykes. The university takes plagiarism VERY seriously, and you can ruin your academic career here very quickly by intentionally plagiarizing. But let's be sure not to make inadvertent mistakes that could be construed as intentional. Please take this seriously. Your work must be your own.

**Attendance and Participation:** Your written work is important to your performance in this class, but so is your attendance and active participation in discussion. Therefore, you will be allowed to miss a total of **3 class sessions** throughout the semester for any reason (you're sick, you have an athletic absence, you're asleep--whatever). **But each**

**unexcused absence beyond those first three will lower your final course grade by one grade. Being more than 10 minutes late to class will count as an absence, as will routine lateness of any sort.** The only acceptable excuses beyond these first 3 absences will be serious personal injury or illness (hospitalization), death in the family, and the like, and **you must let us know your reason for absence upon your first day back in class and have written documentation of it.** So, don't use your 3 absences immediately, because you may get sick and need them later. Moreover, University policy is that: "A student whose irregular attendance causes him or her, in the judgment of the instructor, to become deficient scholastically, may run the risk of receiving a failing grade or receiving a lower grade than the student might have secured had the student been in regular attendance." Because this class is certainly more than just its written work, **if you miss more than a third of the classes, even for excused absences, you may not earn a passing grade in the course.** Withdrawing from the semester would likely be a better option in case of a catastrophic illness or family crisis. Please come to see us if you are facing an extended illness or other difficulty that is causing you to miss numerous class sessions, so we can discuss your options.

We expect you all to participate actively in this class, and you will certainly learn more from each other if you do. **Your participation grade counts for 10% of your course grade, and you must regularly and thoughtfully participate in order to earn an A. No participation in class discussions will earn an F, and occasional participation will earn a C or lower.**

**Late Work:** You must get your written work in on time, or it will lose a full letter grade each class period it is late. Please let us know in **advance** if some problem is hindering your completion of an assignment so that we can help you, rather than ask us to judge an excuse after you turn in late work. If you're stuck on an assignment, we're sure we can help you!

**Electronic Devices:** You are welcome to bring electronic devices like pagers, cell-phones, iPods, watches with alarms, etc., into class with you, **BUT THEY MUST REMAIN SILENCED OR TURNED OFF THROUGHOUT THE CLASS PERIOD.** Please show some consideration and respect for your class-mates and your professors. It is quite distracting to the class to have a phone ringing, or a student texting or immersed in Instagram. **If a device in your possession sounds more than once during the semester, you will lower your final grade for the course by a letter.** If you are paying more attention to your devices than to the class, you will earn an F for your participation grade. While some students find access to a laptop or tablet useful during class time, some research is beginning to suggest that many students learn less from a course when they use laptops or tablets in class. As long as you are not performing activities unrelated to the course or distracting your fellow students or your professors, you are welcome to use yours during class. But we encourage you to consider taking this course without them. You may learn more and participate more actively in the classroom discussions.

**Services for Students with Disabilities:** Penn State welcomes students with disabilities into the University's educational programs. Every Penn State campus has an office for

students with disabilities. The Office for Disability Services (ODS) Web site provides contact information for every Penn State campus: <http://equity.psu.edu/ods/dcl>. For further information, please visit the Office for Disability Services Web site: <http://equity.psu.edu/ods>.

In order to receive consideration for reasonable accommodations, you must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <http://equity.psu.edu/ods/doc-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with an accommodation letter. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. You must follow this process for every semester that you request accommodations.

**Required Course Texts:**

Mary Shelly, *Frankenstein, 1818 Text* (Oxford University Press 2009) ISBN-10: 0199537151  
ISBN-13: 978-0199537150

Carl Djerassi and Roald Hoffmann, *Oxygen* (Wiley-VCH 2001) ISBN-10: 3527304134  
ISBN-13: 978-3527304134

H. G. Wells, *The Island of Dr. Moreau* (Oxford University Press 2017) ISBN-10: 0198702663 ISBN-13: 978-0198702665

Aldous Huxley, *Brave New World* (Harper Perennial Modern Classics) 2006 ISBN-10: 0060850523 ISBN-13: 978-0060850524

Don DeLillo, *White Noise* (Viking Critical Edition) 1998 ISBN-10: 0140274987 ISBN-13: 978-0140274981

Rachel Carson, *Silent Spring* (Houghton Mifflin) 2002 ISBN-10: 0618249060 ISBN-13: 978-0618249060

Other readings available on the Canvas website added throughout the semester.

## Syllabus

### Jan

- 9 T Intro  
11 R Age of Enlightenment to Romantic Period  
  
16 T cont. **\*\*\*Group presentation topic due\*\*\***  
18 R Shelley, *Frankenstein* (lit and science, scientific Paradigms, Galvani and reanimation, vivisection, boundaries of science, ethics, stem cell research)  
  
23 T cont.  
25 R cont.

- 30 T cont. **\*\*\*Group presentations Begin\*\*\***

### Feb

- 1 R birth of modern chemistry  
  
6 T Djerassi & Hoffmann, *Oxygen* (birth of modern chemistry, emergence of disciplines, attribution, history of science) **\*\*\*Topic for Science and Culture Synopsis due\*\*\***  
8 R cont. **\*\*\*Topic for Demonstration due\*\*\***  
  
13 T Wells, *The Island of Dr. Moreau* (vivisection, bio-ethics, the nature of humanity) **\*\*\*Lit Paper #1 due\*\*\***  
15 R cont.  
  
20 T cont.  
22 R WWI poetry and chemical warfare  
  
27 T cont. **\*\*\*Demonstrations begin\*\*\***

### Mar

- 1 R cont.

- 6 T **No class---enjoy Spring Break!**  
8 R **No class---enjoy Spring Break!**

- 13 T Huxley, *Brave New World* (science and social structure, individuality, freedom)  
The chemical Industry  
15 R cont.  
  
20 T cont.  
22 R Chemistry and the Environment  
  
27 T cont.  
29 R **\*\*\*Science and culture synopsis paper due\*\*\***

### Apr

- 3 T cont. Carson, *Silent Spring*  
5 R cont.  
  
10 T Demonstration or Presentation days  
12 R cont.  
  
17 T DeLillo, *White Noise* (chem. and the environment, ethics, drugs, chem. and relationship of self to society)  
19 R cont. **\*\*\*Lit Paper #2 due\*\*\***  
  
24 T cont.  
26 R cont. Review for final exam

### **Final Exam**