
Term Information

Effective Term Autumn 2025

General Information

Course Bulletin Listing/Subject Area Chemistry
Fiscal Unit/Academic Org Chemistry - D0628
College/Academic Group Arts and Sciences
Level/Career Undergraduate
Course Number/Catalog 3573
Course Title Climate Science Chemistry, Education, and Citizenship
Transcript Abbreviation ChemEduCitizenship
Course Description This course explores epistemology, the Nature of Science, and informed citizenship through the lens of climate science, with a focus on chemical principles. By integrating chemical knowledge with scientific literacy, students will gain insight into how molecular interactions and chemical reactions drive global climate processes.
Semester Credit Hours/Units Fixed: 4

Offering Information

Length Of Course 14 Week, 12 Week, 8 Week, 7 Week
Flexibly Scheduled Course Never
Does any section of this course have a distance education component? No
Grading Basis Letter Grade
Repeatable No
Course Components Lecture, Recitation
Grade Roster Component Lecture
Credit Available by Exam No
Admission Condition Course No
Off Campus Never
Campus of Offering Columbus

Prerequisites and Exclusions

Prerequisites/Corequisites Chem 1110, 1210, 1610, 1910H, or equivalent coursework.
Exclusions
Electronically Enforced Yes

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code 40.0501
Subsidy Level Baccalaureate Course
Intended Rank Sophomore, Junior, Senior

Requirement/Elective Designation

Citizenship for a Diverse and Just World; Interdisciplinary Seminar

The course is an elective (for this or other units) or is a service course for other units

Course Details

Course goals or learning objectives/outcomes

- Students will develop an advanced understanding of how chemical processes are central to citizenship and justice in the context of anthropogenic climate change and global citizenship.
- Students will evaluate the merits of climate denialism and climate skepticism with an understanding of the chemical phenomena underlying climate change and the epistemology of science, including the role of chemical models, uncertainty, and theories.
- Students will reflect on their understanding of chemical processes in climate science, epistemology, and citizenship, describe their growth in these areas, and develop a personal plan for future action rooted in chemistry-driven solutions

Content Topic List

- Engage in critical and logical thinking to connect issues of global citizenship with the chemical processes that contribute to or mitigate anthropogenic climate change, such as greenhouse gas emissions, energy production, and carbon sequestration.
- Identify and describe issues of climate justice for different communities across geographic, temporal, and socio-economic boundaries.
- Describe, analyze, and critically evaluate alternative claims counter to the scientific consensus on climate change by focusing on chemical principles.
- Explain how the scientific method includes models and theories to make predictions, construct arguments, and offer explanations for phenomena related to climate change, including molecular interactions and reaction mechanisms
- Engage in advanced, in-depth scholarly exploration that connects chemical aspects of climate science, such as greenhouse gas chemistry, energy storage, and pollution control, with issues of epistemology and citizenship.
- Reflect on and describe changes in one's perspectives regarding the chemical mechanisms underlying climate science, as well as epistemology and citizenship.
- Synthesize and internalize ideas from the course into a coherent framework that emphasizes chemistry-based actions and informs future efforts to address climate issues.

Sought Concurrence

Yes

Attachments

- Syllabus Chem3573-CHEMISTRY.docx: Chem 3573 Syllabus
(Syllabus. Owner: Ramirez, Ana G)
- Chemistry 3573 Concurrence Emails.pdf: Concurrence Emails
(Concurrence. Owner: Ramirez, Ana G)
- Interdisciplinary-integrated-collaborative-teaching.pdf: Collaborative Teaching Statement
(Other Supporting Documentation. Owner: Ramirez, Ana G)
- submission-doc-citizenship GE Form Chem 3573.pdf: GE submission form
(Other Supporting Documentation. Owner: Ramirez, Ana G)

Comments

- need to update forms *(by Jackman, Jane E on 10/21/2024 01:33 PM)*
- Neither the GE form nor the form for the Interdisciplinary and Integrated Collaborative Teaching HIP have been uploaded. Also please check off the box for "Interdisciplinary and Integrated Collaborative Teaching" on the form in curriculum.osu.edu *(by Vankeerbergen, Bernadette Chantal on 10/20/2024 09:06 PM)*
- Concurrence sent via email. *(by Ramirez, Ana G on 09/30/2024 12:48 PM)*

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Ramirez, Ana G	10/01/2024 08:47 AM	Submitted for Approval
Approved	Jackman, Jane E	10/02/2024 07:09 AM	Unit Approval
Approved	Vankeerbergen, Bernadette Chantal	10/20/2024 09:03 PM	College Approval
Revision Requested	Vankeerbergen, Bernadette Chantal	10/20/2024 09:07 PM	ASCCAO Approval
Submitted	Ramirez, Ana G	10/21/2024 09:42 AM	Submitted for Approval
Revision Requested	Jackman, Jane E	10/21/2024 01:33 PM	Unit Approval
Submitted	Ramirez, Ana G	10/21/2024 01:35 PM	Submitted for Approval
Approved	Jackman, Jane E	10/21/2024 01:35 PM	Unit Approval
Approved	Vankeerbergen, Bernadette Chantal	11/01/2024 03:06 PM	College Approval
Pending Approval	Jenkins, Mary Ellen Bigler Hanlin, Deborah Kay Hilty, Michael Neff, Jennifer Vankeerbergen, Bernadette Chantal Steele, Rachel Lea	11/01/2024 03:06 PM	ASCCAO Approval

CHEMISTRY 3573 – Climate science chemistry, education, and citizenship

4 Credit hours: Two 80-minute classes + 55-minute recitation

Instructor Information

Instructor:	Dr. Ted M. Clark	Office:	120 Celeste Laboratory
Email:	Clark.789@osu.edu	Office Hours:	By arrangement
Instructor:	Dr. Sophia Jeong	Office:	283 Arps Hall
Email:	Jeong.387@osu.edu	Office Hours:	By arrangement

Course Description: This course explores epistemology, the Nature of Science, and informed citizenship through the lens of climate science, with a strong focus on chemical principles. It emphasizes the crucial role of chemistry in understanding key climate phenomena. By integrating chemical knowledge with scientific literacy, students will gain insight into how molecular interactions and chemical reactions drive global climate processes. The curriculum develops students' ability to critically evaluate scientific claims and understand the mechanisms of climate change at a molecular level. Through this knowledge, they will be empowered to make informed decisions and engage in active citizenship. The course also examines the responsibilities individuals hold within their communities, encouraging students to apply their understanding of chemistry in addressing real-world climate challenges and advocating for evidence-based solutions.

Prerequisites: One semester of General Chemistry: Chemistry 1110, Chemistry 1210, Chemistry 1250, Chemistry 1610, Chemistry 1910H, or equivalent coursework.

Course Contacts and Resources

Undergraduate Office: 614-292-6009, Celeste Laboratory, room 110 (CE 110). Stop by any time Monday–Friday, 8:00am–4:30pm for assistance.

Carmen: carmen.osu.edu: Carmen is the Learning Management System (LMS) used at Ohio State. It is the central hub from which your course will be conducted. Everything you need for the course is available in and communicated through Carmen, so daily engagement with it is crucial to your success in this course. It is important that you check your Carmen notification settings to ensure you receive course announcements in a timely manner. You can learn how to set up Carmen notifications by clicking [Step 2 on this webpage](#).

Log in to Carmen to:

- Access course materials
- Read important announcements
- Complete assignments
- Take exams
- View your grades

A free Canvas app is available to download for both [Android](#) and [iOS](#), making it easy to log in to your course from anywhere.



Required Materials

1.) Readings: *You do not need to purchase a textbook for the course.* Required readings will be provided via Carmen.

2.) Tablet or laptop: A tablet or laptop is required for exams. A device with digital inking capability is recommended for notetaking.

- Tablet for digital notetaking: If your computer does not have digital inking capability, then a secondary device is strongly recommended. A recent-model iPad or MS Surface are good options.
- If you do not already own a device, your device does not meet the minimum requirements for exams, or your device does not have digital inking capability, you may borrow a device from the university. Please follow the instructions on the [Student Technology Loan Program webpage](#) to borrow one.

3.) Approved calculator: Some components of the course require a calculator. Only four calculator models are approved for use in this course. Please note that these are the only calculators permitted during exams:

- [Texas Instruments TI-30XIIS](#)
- [Texas Instruments TI-30Xa](#)
- [Texas Instruments TI-83](#)
- [Texas Instruments TI-84](#)
- *Plus* and *Plus CE* models of the above calculators are also permitted.

If you do not already own one of these calculators, the most cost-effective models are the TI30XIIS and the TI30Xa. You can purchase your calculator at the retailer of your choice.

Course Components

1. Lecture

(Two sessions per week, 1 hr 20 minutes each)

- a. Your lecture schedule appears on pages 11-12.
- b. Being present and engaged during lecture sessions is integral to your understanding of the course material.
- c. The course instructors are your first point of contact for lecture.

2. Recitation

(One session per week, 55 minutes)

- a. Assignments completed within recitation include the On-going reflection and Application activities.
- b. Your first point of contact for lab is your Teaching Assistant (TA) who you will meet on the first day of class.

3. Exams

(Two 55-minute midterms)

- a. Exams take place during two regularly scheduled recitations.
- b. See the class schedule (pages 11-12) for exam dates.
- c. The course instructors are your first point of contact for exams.

See pages 8-9 for details on class assignments.

Health, Safety, and Absences

COVID-19: We will follow all university guidelines regarding COVID-19. You can find the latest university



guidelines on the [Safe and Healthy Buckeyes website](#).

If you contract COVID-19, please complete the [Columbus Public Health self-report form](#) and follow the university's [isolation guidelines](#). If you will miss class or an exam, follow the directions under "Illness-related Absences."

Illness-related Absences: If you experience injury or illness (including COVID-19) that necessitates an extended absence, please reach out to your instructors to make alternative arrangements for your success. If you will miss an exam, please read the [Alternate and Make-up Midterm Policy](#) or [Final Exam Make-up Policy](#), and submit the request form linked within.

Faith-related Absences: You may be absent from class for up to three days for reasons of faith or religious or spiritual belief system or to participate in organized activities conducted under the auspices of a religious denomination or spiritual organization. You must notify genchem@osu.edu IN WRITING of ALL specific dates for which you are requesting religious accommodations no later than the end of the second week of the class (**deadline: XXX**). If your faith-based absence occurs on the date of an exam, please make sure to fill out the [Alternate and Make-up Midterm](#) or [Make-up Final Exam](#) request form for that absence by **XXX**. All requests are confidential and we will work with you to determine accommodations that will support your success in the class.

Course Information and Policies

Communication: We will communicate important information to you throughout the term via Carmen announcements and your Buckeyemail email account. Please verify that your OSU email is set up appropriately on your electronic devices so we can keep in touch. We highly recommend that you check email and Carmen at least once per day.

Enrollment Information: In accordance with federal regulations (Title IV), we must report your attendance status to the University Registrar after the first week of classes.

Goals and Expected Outcomes

Goal 1: Successful students will develop an advanced understanding of how chemical processes are central to citizenship and justice in the context of anthropogenic climate change and global citizenship.

Expected Learning Outcomes:

- Engage in critical and logical thinking to connect issues of global citizenship with the chemical processes that contribute to or mitigate anthropogenic climate change, such as greenhouse gas emissions, energy production, and carbon sequestration.
- Identify and describe issues of climate justice for different communities across geographic, temporal, and socio-economic boundaries.

Goal 2: Successful students will evaluate the merits of climate denialism and climate skepticism with an understanding of the chemical phenomena underlying climate change and the epistemology of science, including the role of chemical models, uncertainty, and theories.

Expected Learning Outcomes:

- Describe, analyze, and critically evaluate alternative claims counter to the scientific consensus on climate change by focusing on chemical principles.
- Explain how the "scientific method" includes models and theories to make predictions, construct arguments, and offer explanations for phenomena related to climate change, including molecular interactions and reaction mechanisms.



Goal 3: Successful students will reflect on their understanding of chemical processes in climate science, epistemology, and citizenship, describe their growth in these areas, and develop a personal plan for future action rooted in chemistry-driven solutions to climate challenges.

Expected Learning Outcomes:

- Engage in advanced, in-depth scholarly exploration that connects chemical aspects of climate science, such as greenhouse gas chemistry, energy storage, and pollution control, with issues of epistemology and citizenship.
- Reflect on and describe changes in one's perspectives regarding the chemical mechanisms underlying climate science, as well as epistemology and citizenship.
- Synthesize and internalize ideas from the course into a coherent framework that emphasizes chemistry-based actions and informs future efforts to address climate issues.

Citizenship for a Just & Diverse World: Goals and Outcomes

This course meets the General Elective (GE) requirements for the category "Citizenship for a Just & Diverse World" by examining the topic of climate science and the related issue of climate justice through an **interdisciplinary perspective that centers on chemical principles** and their connection to citizenship, community, and policy decisions. The three strands that run throughout the course are 1) chemistry content, 2) science education, and 3) citizenship and community. The chemistry strand emphasizes the molecular and chemical mechanisms driving climate change, such as greenhouse gas emissions, energy transformations, and pollution chemistry. The role of science education includes epistemology on a personal level (i.e., guiding self-reflection on the chemical knowledge explored in class) and as an element of scientific literacy. The goals, expected learning outcomes (ELOs), and how these ELOs are met are listed below.

Goal 1: Successful students will... analyze an important topic or idea at a more advanced and in-depth level than the foundations. In this context, "advanced" refers to courses that are e.g., synthetic, rely on research or cutting-edge findings, or deeply engage with the subject matter, among other possibilities.

Expected Learning Outcome (ELO 1.1) Engage in critical and logical thinking. Meeting ELO 1.1. The critical analysis of scientific readings, drawn from a variety of sources, is an important theme in the course. There is not a single textbook, but rather diverse sources that are meant to be critiqued rather than "accepted". This is one reason that epistemology is a named strand for the course. The critical analysis of readings is then extended with classroom discussion co-led by both instructors. Exams in the course (mid-term, final) also require critical and logical thinking in the context of scientific problem solving. All strands in the course require a high level of critical thinking skills.

Specific assessments of this learning objective:

- Course readings.
- Classroom discussion.
- Exams

Expected Learning Outcome (ELO 1.2) Engage in an advanced, in-depth, scholarly exploration of the topic or ideas within this theme. Meeting ELO 1.2. This course is an advanced exploration of the interdisciplinary and complex topic of climate science, with a strong focus on chemistry. The range of disciplines brought into the conversation is noteworthy, including both STEM and non-STEM fields, but chemistry is central to understanding the scientific phenomena. The scholarly discussion on epistemological development, themes from the Nature of Science, and the examination of citizenship will be advanced and deeply grounded in real-world scientific contexts, particularly those related to fundamental chemistry topics. These include the molecular mechanisms driving climate change, the chemistry of greenhouse gases, and the chemical processes involved in energy production and environmental mitigation.

Specific assessments of this learning objective:

- Course readings.
- Student in-class presentations.



- Classroom discussion.
- Exams.

Goal 2. Successful students will... integrate approaches to the theme by making connections to out-of-classroom experiences with academic knowledge or across disciplines and/or to work they have done in previous classes and that they anticipate doing in future.

Expected Learning Outcome (ELO 2.1) Identify, describe, and synthesize approaches or experiences.

Meeting ELO 2.1. Students and the instructors are positioned as “co-investigators” of the topics in the course. Student prior knowledge, experiences, and expertise are highly valued. Working with the instructors, students will find and analyze information pertaining to weekly topics and then present this information and co-lead discussions for specific topics. The objective of “synthesizing approaches” will be informed by an epistemological understanding of how knowledge is constructed. The numerous activities on self-reflection are aligned with the goal of “identifying experiences.”

Specific assessments of this learning objective:

- Classroom discussion.
- Student in-class presentations.
- Self-reflection activities in recitation.
- Reflection paper.

Expected Learning Outcome (ELO 2.2) Demonstrate a developing sense of self as a learner through reflection, self-assessment, and creative work, building on prior experiences to respond to new and challenging contexts.

Meeting ELO 2.2. This course emphasizes student growth and self-reflection. This growth will include content knowledge, but importantly personal epistemological development is also a priority. This is a reason why epistemology is a strand in the course. The course begins by a self-reflection that is informed by models of epistemological development. Science education, epistemology, and scientific ways of knowing are introduced to week 4, allowing connections to be made between one’s personal epistemology and the epistemology for this discipline. In week 5, epistemological change will be examined; this will also have a personal component. At the end of the semester, the topic of epistemological change will be revisited as the class storyline concludes. These topics will be given continued attention with periodic activities in recitation culminating in a Reflection paper at the end of the course.

Formative feedback will be provided for the recitation activities. The personal action plan also requires a high degree of reflection and self-assessment, but it goes beyond this by challenging the student to identify tangible actions they intend to implement.

Specific assessments of this learning objective:

- Recitation activities
- Reflection paper.
- Personal action plan

Goal 3. Successful students will... explore and analyze a range of perspectives on local, national, or global citizenship, and apply the knowledge, skills, and dispositions that constitute citizenship.

Expected Learning Outcome (ELO 3.1) Describe and analyze a range of perspectives on what constitutes citizenship and how it differs across political, cultural, national, global, and/or historical communities.

Meeting ELO 3.1. Citizenship is a strand in the course that is returned to many times. Perspectives on what constitutes citizenship, and how it relates to community, is an early focus of the course. The scale at which communities can exist will be examined, with consideration of the smallest and largest communities we identify with. The question of scale will also include time. “Does a community exist for those living in the period between mass extinction events?” is a particularly provocative question. Communities based on culture and national identity will also be important when considering issues of climate justice.

Specific assessments of this learning objective:

- Class readings.
- Class discussion.
- Recitation activities
- Reflection paper.
- Personal action plan



Expected Learning Outcome (ELO 3.2) Identify, reflect on, and apply the knowledge, skills and dispositions required for intercultural competence as a global citizen. Meeting ELO 3.2. Climate justice and cannot be separated from the issue of global citizenship and quite often proposed paths forward include a role for “global citizens.” This course includes an examination of how “global citizenship” has been conceptualized, if it is possible to be a global citizen, and if global citizenship helps or hinders efforts to address climate change. In addition, critiques of global citizenship from both ends of the political spectrum will be examined.

Specific assessments of this learning objective:

- Class readings.
- Class discussion.
- Recitation activities
- Reflection paper.

Goal 4. Successful students will... examine notions of justice amidst difference and analyze and critique how these interact with historically and socially constructed ideas of citizenship and membership within societies, both within the US and/or around the world.

Expected Learning Outcome (ELO 4.1) Examine, critique, and evaluate various expressions and implications of diversity, equity, inclusion, and explore a variety of lived experiences. Meeting ELO 4.1.

Examining issues of equity and inclusion will be essential when discussing the topic of climate justice. For example, Issues of equity were central at the recent COP27 conference, and they are expected to remain salient, including financial and humanitarian measures to support nations of the Global South and mass migrations in response to climatic emergencies. In addition, displacement of workers from fossil-fuel industries in affluent countries or creation of new energy-related jobs with suspect working conditions, e.g. lithium-mining, are also issues of equity.

Specific assessments of this learning objective:

- Class readings.
- Class discussion.
- Recitation activities
- Reflection paper.

Expected Learning Outcome (ELO 4.2) Analyze and critique the intersection of concepts of justice, difference, citizenship, and how these interact with cultural traditions, structures of power and/or advocacy for social change. Meeting ELO 4.2. A theme for the second half of this course is the role of political and economic power structures in establishing and maintaining practices that lead to climate change, and the relative “winners and losers” living on a planet in which these power structures persist. When discussing pathways forward and advocating change, diverse views are again introduced with some authors calling to upend the status quo as a prerequisite to saving the planet and others advocating for incremental timely change. Activism and advocacy for change are explicitly included in the course and lead to the Personal Action Plan assignment.

Specific assessments of this learning objective:

- Class readings.
- Class discussion.
- Personal Action Plan.

Interdisciplinary High-Impact Practices

What makes this an Interdisciplinary Team-Taught Course?

The two instructors for this course differ in many respects, including ethnicity, gender, and academic discipline. They are experts but have different areas of expertise. One instructor is in the Department of Chemistry and Biochemistry, and the other is in the School of Teaching and Learning. What they have in common is a passion for this subject and an eagerness to learn from each other and from students in the class. They will each be active participants throughout the course, bringing different perspectives to the topics, and encouraging students to do the same by sharing their experiences and views. The course structure includes interdisciplinary high-impact pedagogical practices as specified below.



Goal 1. Successful students will... analyze an important topic or idea at a more advanced and in-depth level than the foundations. In this context, “advanced” refers to courses that are e.g., synthetic, rely on research or cutting-edge findings, or deeply engage with the subject matter, among other possibilities.

Expected Learning Outcome (ELO 1.1) Engage in critical and logical thinking.

- **Specific Objective (1.1a). Critical Thinking.** Clearly state and comprehensively describe the issue or problem under consideration, delivering all relevant information necessary. **Meeting Objective 1.1a.** The critical analysis of scientific readings, drawn from a variety of sources, is an important theme in the course. There is not a single textbook, but rather diverse sources that are meant to be critiqued rather than “accepted”. Course readings, classroom discussion, and exams all require critical thinking.
- **Specific Objective 1.1.b Analysis:** Interpret and evaluate information from multiple sources and multiple disciplinary perspectives to develop a comprehensive analysis or synthesis, and thoroughly question the viewpoints of experts and professionals. **Meeting Objective 1.1.b.** Critical analysis of readings occurs every week and is then extended with classroom discussion co-led by both instructors.
- **Specific Objective 1.1.c Critical thinking & analysis** Systematically and methodically analyze their own and others' assumptions using more than one disciplinary lens and carefully evaluate the relevance of contexts when representing a position. **Meeting Objective 1.1.c.** The joining of critical thinking and analysis is central to the epistemological strand in the course and using that as a lens to evaluate claims and arguments.

Expected Learning Outcome (ELO 1.2) Engage in an advanced, in-depth, scholarly exploration of the topic or ideas within this theme.

- **Specific Objective (1.2a). Scholarly engagement:** Articulate a thorough and complex understanding of the factors and contexts, including natural, social, cultural and political, contributing to an integrative understanding of the issue. **Meeting Objective 1.2a.** Class topics and readings are diverse and will look at topics from different STEM and non-STEM disciplines. In addition, students will bring their own discipline-specific perspectives to the conversation. The breadth of the course readings is indicative of the extent of the scholarly engagement, which is then demonstrated by the student in in-class presentations, classroom discussions, and exams.

Goal 2: Successful students will... integrate approaches to the theme by making connections to out-of-classroom experiences with academic knowledge or across disciplines and/or to work they have done in previous classes and that they anticipate doing in future.

Expected Learning Outcome (ELO 2.1) Identify, describe, and synthesize approaches or experiences.

- **Specific Objective 2.1.a Integration of knowledge:** Connect, analyze, and extend knowledge (facts, theories, etc.) from course content to integrate their insights through construction of a more comprehensive perspective. **Meeting Objective 2.1.a.** Students and the instructors are positioned as “co-investigators” of the topics in the course. Student prior knowledge, experiences, and expertise are highly valued. Working with the instructors, students will find and analyze information pertaining to weekly topics and then present this information and co-lead discussions for specific topics.
- **Specific Objective 2.1.b Multiple perspectives:** Evaluate and apply diverse perspectives to complex subjects from multiple cultural and disciplinary lenses as appropriate. **Meeting Objective 2.1.b.** This course includes a rich collection of perspectives and, with an emphasis on epistemological development, a framework for discussing them. Readings have been intentionally chosen to provide this diversity, consider the tensions that exist between ideas, and seek a resolution. Classroom discussion, self-reflection activities in recitation, and the Reflection paper are all aligned with this objective.

Expected Learning Outcome (ELO 2.2) Demonstrate a developing sense of self as a learner through reflection, self- assessment, and creative work, building on prior experiences to respond to new and challenging contexts.

- **Specific Objective 2.2.a Self-awareness:** Evaluates the impacts of cross disciplinary synthesis of the issue on themselves, the scholarly inquiry, the local and global systems and also considers the long-term



impact of the work. **Meeting Objective 2.2.a.** Personal growth and self-awareness are central to the culminating Reflection paper. The Personal action plan, in a very direct way, joins self-awareness with tangible actions and the individual level.

- **Specific Objective 2.2.b. Empathy:** Interpret and explain the issue under consideration from the perspective other than their own and more than one worldview and demonstrates openness towards others in the academic community and their perspectives. **Meeting Objective 2.2.b.** Empathy can be categorized as an emotional or cognitive response. In this class, the focus is on cognitive aspects of empathy and the intersection between epistemological development, the nature of scientific knowledge, and aspects of citizenship and community. This will go beyond “consideration” of diverse perspectives to include epistemological underpinnings of arguments and the pertinent scientific knowledge. Specific assignments related to this objective include the Reflection paper and the Personal action plan.

Assignments and Grading

Your performance in this course will be evaluated based on the components below. **There is no extra credit.** Sixty days after grades are posted, your grade in Carmen is considered final and all other records are destroyed. If you have a concern or question about a grade, please contact an instructor promptly and we will work to adjust any inconsistencies in a timely manner.

Assignments	%	Setting	Primary Strand(s)	Timing
Annotations to Course Readings	20%	Pre-Class	All	Every class
Discussion & Presentations	15%	In Class	Sci. Ed & Citizenship	Every class
On-going Reflection	10%	Recitation	Sci. Ed & Citizenship	Weeks 1, 5, 8, 10, 13
Applications	10%	Recitation	All	Weeks 4, 7, 9, 11
Exam 1	10%	Recitation	Chemistry	Week 6
Exam 2	10%	Recitation	Chemistry	Week 12
Reflection Paper	20%	End of Semester	Sci. Ed & Citizenship	Final week of class
Personal Action Plan	5%	End of Semester	Sci. Ed & Citizenship	Final week of class

Attendance and Late Assignments. Assignments that are completed in person during class or recitation include discussions and presentations, on-going reflection, applications, and Exams. Students must attend class or recitation to earn points from these assignments. Assignments to be completed outside of class time include annotations to course readings, the Reflection paper, and the Personal Action Plan, with a penalty of 2% per day used for late assignments.

Pre-Class Homework. To achieve the course’s ambitious objectives, pre-class reading assignments will occur throughout the semester. Readings are drawn from a wide variety of sources and posted online. Individual reading assignments include adding annotations to the text (approximately 4-8 per reading) as part of asynchronous discussions.

In-Class Discussions and Presentations. For some reading assignments we will employ a jigsaw reading strategy in which students work together in groups to become experts and then take the lead in subsequent in-class discussion. In-class discussions are based on the weekly reading, and these will be supplemented with content in lecture to connect to the three strands of the course. Students attending class and participating will receive full credit.



Exams. There are two exams in the course that focus on chemistry content knowledge. The exam format will be a combination of closed response questions and open-response questions and include skills like performing calculations, constructing scientific explanations, and interpreting data presented in figures and tables.

Recitation assignments include On-going reflections and Application activities. These assignments are opportunities to synthesize ideas from the course and receive feedback from classmates and the Teaching Assistant. Recitation assignments are intended to support student learning and lead to success on higher-stakes class assignments. The On-going reflection assignments and the Application activities are precursors to the Reflection paper and exams, respectively. Recitation assignments are intended to be completed within a single recitation period for full credit.

Self-Reflection paper. As listed previously in this syllabus, the self-reflection paper addresses many of the expected learning outcomes for the course. It is a cumulative assignment in which the student reflects on how their understanding of scientific issues and climate justice have evolved during the course. A key aspect of the assignment (in terms of grading) is the use of supporting information. The recommended length of the paper is 8-12 pages with supporting references using both readings from the course and resources outside of the course.

Personal Action plan. The issues examined in this course can be overwhelming, for students and instructors alike. As described above, the Personal Action plan addresses several expected learning outcomes. Importantly, it is also a way to psychologically move forward by committing to short-term and long-term actions that are informed by insights from the course. The plan will include specific actions with supporting rationale. The length and format of the plan are not predefined, but it anticipated it will be at least 2 pages in length.

Course Letter Grade Assignment: Once your overall point total (final score) has been calculated using the weighting scheme shown above, your letter grade will be assigned based on the following scale:

Total Score (%)	Letter Grade
92.0 – 100	A
90.0 – 91.9	A-
88.0 – 88.9	B+
82.0 – 87.9	B
80.0 – 81.9	B-
78.0 – 79.9	C+
72.0 – 77.9	C
70.0 – 71.9	C-
68.0 – 68.9	D+
62.0 – 67.9	D
<62	E

Course Structure, Strands, and Schedule

This course meets three times a week. **Two meetings are 80-minute classes** and the other a **55-minute recitation**. In addition, there is a significant amount of outside of class reading assigned weekly. The readings support the weekly 80-minute classes and there are asynchronous reading assignments every week. Students will also learn how to find, analyze, and discuss readings aligned with their own discipline-specific interests. Recitations will have different objectives. Some recitation sessions are focused on chemistry applications. Other sessions include self-reflection activities in which students consolidate their evolving understanding of epistemology, the Nature of Science, and citizenship and community.

Course Strands



Three strands run throughout the course: Science education, citizenship and community, and chemistry content knowledge. These strands are interrelated and most weeks the strands will be “put into conversation with each other” to consider how insights in one area provide new ways to think about another area.

The **science education** strand includes aspects of the Nature of Science, scientific literacy, and epistemology. Epistemology is a word you may not know. It can be defined as “the theory of knowledge, especially with regard to its methods, validity, and scope.” This strand begins the first week of class with an introduction to the topic and a personal reflection to consider the sources of information we trust, how we know things, how we construct arguments, and what counts as evidence. Epistemology is an important strand in this class because we will be on a journey, examining and critiquing ideas drawn from different sources, and we need a framework to use on this journey and epistemological considerations will contribute to this framework. The nature of scientific knowledge and the tools of science- its models, mechanisms, and theories, will be investigated, and this will be connected to aspects of denialism and climate skepticism. In addition, the intersection of epistemology and culture will be especially important because scientific information is often insufficient to persuade people to change their views.

The **citizenship and community strand** also begins the first week of class with a personal reflection to gather initial perspectives on the relationship between citizenship and community, and the communities we identify with. This will include examination of citizenship as a political construct with inherent rights and responsibilities, along with other ways of conceptualizing citizenship. Next is an examination of the scales on which communities can function, across time and across space. The notion of “global citizen” will be examined multiple times during the semester to explore aspects of its complexity, and consider questions like “Is it truly possible to be a global citizen and, if so, what does this entail?”, “What are positive and negative connotations associated with global citizenship?”, and “Is global citizenship, in some form, necessary to address global issues like climate change?” Citizenship and community will be connected to the other strands to investigate issues of climate justice and the power structures and policy decisions that have shaped our current trajectory, who stands to suffer the consequences of these policy decisions, and the role of personal and community action to changing this trajectory.

The **chemistry content knowledge strand** covers key topics that support a fundamental understanding of climate science and technologies to address climate change, such as atmospheric chemistry, mass spectrometry, combustion reactions, molecules and electromagnetic radiation, kinetics, electrochemistry of energy storage, chemical equilibrium, colligative properties. Chemical knowledge is essential for explaining the mechanisms behind climate phenomena. It also plays a central role in developing technological solutions like carbon capture and renewable energy systems. Beyond understanding climate mechanisms, chemistry fosters critical thinking and scientific literacy, enabling students to evaluate scientific claims and address climate misinformation. Moreover, chemical principles have real-world applications in climate justice, helping to understand the unequal environmental impacts of pollution and global warming.

In the first week of class information will be gathered about student interests and their areas of study. This is an **interdisciplinary course** that seeks to incorporate diverse ideas for a multifaceted topic. Connections between different disciplines and class content will be explicitly made and students will make presentations and lead in-class discussions in which they share their expertise. Class discussions will be supported by two instructors who are, themselves, from different disciplines. Throughout the course it will be important to know the scientific underpinnings for the different topics and ideas we encounter. It is not sufficient to “trust the author” to get it right. The readings themselves are not meant to be a definitive treatment of the scientific ideas, but instead are critiqued and serve as a starting point for in-class discussions.

The class concludes with a debate regarding actions we can take and the role of activism. What is the responsibility of a scientist, an educator, or a student? Can activism effect change, or it primarily a coping mechanism? Is there hope for the future, and what might a better future look like? Issues in this class are not static. Content appears in news stories, research articles, blog posts, etc. As the course concludes all participants, including students and instructors, will reflect on current events and use insights gained during the semester to better understand where things stand, where we are headed, and the actions we can take.



Course Sequence

Week and Theme	Science Education	Citizenship and community	Chemistry content	Recitation activity
1. Initial views	Models of development	Citizenship vis-à-vis community.		Initial positioning and interests
2. Our planet			Atmospheric chemistry	Finding scientific information
3. Environmental change		Communities across time and space.	Mass spectrometry	Reading scientific information
4. Scientific knowing	Scientific models, Scientific theories Gender and epistemology	Gender perspectives on global citizenship.		Applications
5. Science, culture, advocacy	Epistemological change	Culture and community		Self-Reflection
6. Anthropocene		Communities across time and space.	Combustion reactions	EXAM
7. Humanity and the carbon-cycle				Applications
8. Scientific debate, skepticism, and denialism	Epistemological change		Molecules and light	Self-Reflection
9. A recent history of climate policy		"Global citizens"	Kinetics and reaction mechanisms	Application
10. Climate justice		Justice, citizenship, and power structures	Electrochemistry	Self-reflection
11. Present day impacts			Le Chatelier's principle	Application
12. Future impacts		Global citizens	Colligative properties	EXAM
13. Paths forward				Self-reflection
14. Activism and coping	Epistemological change	Global citizens		

Important Resources and Policies for Academic Success

Disability Services: The university strives to maintain a healthy and accessible environment to support student learning in and out of the classroom. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let us know immediately so that we can privately discuss options. To establish reasonable accommodations, we may request that you register with Student Life Disability Services. After registration, make arrangements with us as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion.

If you are isolating while waiting for a COVID-19 test result, please let us know immediately. Those testing positive for COVID-19 should refer to the [Safe and Healthy Buckeyes](#) site for resources. Beyond five days of the



required COVID-19 isolation period, we may rely on Student Life Disability Services to establish further reasonable accommodations. You can connect with them at slds@osu.edu; 614-292-3307; or slds.osu.edu.

Academic Misconduct: It is the responsibility of the Committee on Academic Misconduct (COAM) to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct <http://studentlife.osu.edu/csc/>.

Violations of academic standards will be referred to the University Committee of Academic Misconduct (COAM) as required by Faculty Rules. It is the responsibility of COAM to investigate all reported cases of student academic misconduct; illustrated by, but not limited to, cases of plagiarism and any dishonest practices in connection with examinations, quizzes, and graded assignments. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information see the Code of Student Conduct: studentlife.osu.edu/csc

Student Responsibilities: *Any graded material must represent your own work.* Unauthorized group efforts by students, use of another student’s course materials, or assistance from individuals who already have taken the course, could place you in jeopardy of violation of the standards for the course. In some courses, group work is acceptable on certain activities (as explicitly stated by your instructor). In these cases, it is important that you know and understand where authorized collaboration (working in a group) ends and collusion (working together in an unauthorized manner) begins. Identical answers indicate copying or unacceptable group efforts - always answer questions in your own unique words. It is important that you consult with your instructor for clarification on whether or not collaboration is appropriate on an activity. *You should not assist others in violating academic standards.* Students supplying materials for others to “look at” may be charged with academic misconduct.

Mental Health: As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student’s ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life’s Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling [614-292-5766](tel:614-292-5766). CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at [614-292-5766](tel:614-292-5766) and 24 hour emergency help is also available 24/7 by dialing 988 to reach the Suicide and Crisis Lifeline.

Commitment to Diversity: The Department of Chemistry and Biochemistry promotes a welcoming and inclusive environment for all students and staff, regardless of race, gender, ethnicity, national origin, disability or sexual orientation. There is no tolerance for hateful speech or actions. All violations of this policy should be reported to the OSU Bias Assessment and Response Team (BART, studentaffairs.osu.edu/bias). The Department encourages diversity at all levels, particularly among



the next generation of scientists. Students are encouraged to participate in organizations that provide support specifically for science and engineering students who are African-American, Asian, disabled, Hispanic, LGBTQ or women. These organizations are listed on the Colleges of Arts and Sciences (artsandsciences.osu.edu/stem-organizations) and Engineering (engineering.osu.edu/studentorgs) websites.

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Interdisciplinary and Integrated Collaborative Teaching Course Inventory

Overview

The GE allows students to take a single, 4+ credit course to satisfy a particular GE Theme requirement if that course includes key practices that are recognized as integrative and high impact. Courses seeking one of these designations need to provide a completed Integrative Practices Inventory at the time of course submission. This will be evaluated with the rest of the course materials (syllabus, Theme Course submission document, etc). Approved Integrative Practices courses will need to participate in assessment both for their Theme category and for their integrative practice.

Please enter text in the boxes below to describe how your class will meet the expectations of Interdisciplinary and Integrated Collaborative Teaching courses. It may be helpful to consult your Director of Undergraduate Studies or appropriate support staff person as you complete this Inventory and submit your course.

Please use language that is clear and concise and that colleagues outside of your discipline will be able to follow. You are encouraged to refer specifically to the syllabus submitted for the course, since the reviewers will also have that document. Because this document will be used in the course review and approval process, you should be *as specific as possible*, listing concrete activities, specific theories, names of scholars, titles of textbooks etc.

Accessibility

If you have a disability and have trouble accessing this document or need to receive it in another format, please reach out to Meg Daly at daly.66@osu.edu or call 614-247-8412.

Pedagogical Practices for Interdisciplinary and Integrated Collaborative Teaching Courses

Course subject & number

Chemistry 3573

Please answer the 3 questions below.

“Collaborative”

Meaning and context: Teaching partners are expected to collaborate on (1) defining the objectives for the course, (2) putting together the course materials, (3) conducting the formal instruction of students, and (4) evaluating student performance. Note that courses in which one faculty member of record convenes the course and invites one or more guest speakers to take part in the class are not considered courses taught collaboratively. (Those courses may, however, utilize outside speakers when appropriate *in addition to* the primary faculty members of record.)

In the box below, list which two or more faculty members from what departments/units within which college(s) will engage in the interdisciplinary and integrated collaborative teaching. (This information should also be readily visible on the syllabus.)

Dr. Ted M. Clark. Department of Chemistry and Biochemistry
Dr. Sophia Jeong Department of Teaching and Learning, College of Education and Human Ecology

“Interdisciplinary”

Meaning and context: Participating faculty must be from *demonstrably* different disciplines, programs, or departments. (Think along the lines of Art & Molecular Genetics, Pharmacy & History, Public Health & Music, etc.)

In the box below, explain what the distinct disciplines and contributions of each faculty member are. Furthermore, explain where and how these will show in/contribute to the course GEN Theme. (This information should also be readily visible on the syllabus.)

Statement on the Syllabus:

What makes this an Interdisciplinary Team-Taught Course?

The two instructors for this course differ in many respects, including ethnicity, gender, and academic discipline. They are experts but have different areas of expertise. What they have in common is a passion for this subject and an eagerness to learn from each other and from students in the class. They will each be active participants throughout the course, bringing different perspectives to the topics, and encouraging students to do the same by sharing their experiences and views. The course structure includes interdisciplinary high-impact pedagogical practices as specified below.

“Integrated”

Meaning and context: Interdisciplinary integrative teaching is different from multidisciplinary teaching where “faculty present their individual perspectives one after another, leaving differences in underlying assumptions unexamined and integration up to the students. In interdisciplinary courses [...] faculty interact in designing a course, bringing to light and examining underlying assumptions and modifying their perspectives in the process. They also make a concerted effort to work with students in crafting an integrated synthesis of the separate parts that provides a larger, more holistic understanding of the question, problem, or issue at hand.” (Klein & Newell, 12)

In the box below, explain how the faculty members will be teaching the course together by being both present during all or most course meetings (at least 50% of the meetings) and bringing their different disciplines and perspectives into dialogue to address the GEN Theme. Exactly where and in what manner will this happen? What kinds of assignments will the students produce that demonstrate their ability to integrate the different disciplinary questions, methods, or knowledge to address the GEN Theme at hand? Be specific. (This information should also be readily visible on the syllabus.)

As described on the syllabus, the course structure has three strands that run throughout the course: Climate science, epistemology and scientific literacy, and citizenship and community. These strands are interrelated and most weeks the strands will be “put into conversation with each other” to consider how insights in one area provide new ways to think about another area. Both instructors will be active participants throughout the semester and will each attend all classes.

The integrated aspect of the course will go beyond the expertise of the two instructors and will include the expertise and interests of the students. In the first week of class information will be gathered about student interests and their areas of study. This is an interdisciplinary course that seeks to incorporate diverse ideas for a multifaceted topic. Connections between different disciplines and class content will be explicitly made and students will make presentations and lead in-class discussions in which they share their expertise. The “student interests” column of the Course Sequence table (see syllabus) lists a few areas where different disciplines will be integrated into the class discussion. Class discussions will be supported by two instructors who are, themselves, from different disciplines. Throughout the course it will be important to know the scientific underpinnings for the different topics and ideas we encounter. It is not sufficient to “trust the author” to get it right. In this course ideas from a host of STEM disciplines will be explored, including geology, geochemistry, atmospheric chemistry, biology, biochemistry, environmental chemistry, engineering, etc., and students will bring their own experiences and expertise into the course, be it from a STEM or a non-STEM discipline.

Two significant assignments in the course that require integration of knowledge are the Reflection paper (20% of grade) and the Personal Action Plan (5%), which are cumulative assignments due at the end of the semester. On-going Reflection assignments (10%), which are found throughout the course, also require integration of knowledge.

GE Theme course submission worksheet: Citizenship for a Diverse and Just World

Overview

Courses in the GE Themes aim to provide students with opportunities to explore big picture ideas and problems within the specific practice and expertise of a discipline or department. Although many Theme courses serve within disciplinary majors or minors, by requesting inclusion in the General Education, programs are committing to the incorporation of the goals of the focal theme and the success and participation of students from outside of their program.

Each category of the GE has specific learning goals and Expected Learning Outcomes (ELOs) that connect to the big picture goals of the program. ELOs describe the knowledge or skills students should have by the end of the course. Courses in the GE Themes must meet the ELOs common for **all** GE Themes and those specific to the Theme, in addition to any ELOs the instructor has developed specific to that course. All courses in the GE must indicate that they are part of the GE and include the Goals and ELOs of their GE category on their syllabus.

The prompts in this form elicit information about how this course meets the expectations of the GE Themes. The form will be reviewed by a group of content experts (the Theme Advisory) and by a group of curriculum experts (the Theme Panel), with the latter having responsibility for the ELOs and Goals common to all themes (those things that make a course appropriate for the GE Themes) and the former having responsibility for the ELOs and Goals specific to the topic of **this** Theme.

Briefly describe how this course connects to or exemplifies the concept of this Theme (Citizenship)

In a sentence or two, explain how this class “fits’ within the focal Theme. This will help reviewers understand the intended frame of reference for the course-specific activities described below.

(enter text here)

Connect this course to the Goals and ELOs shared by *all* Themes

Below are the Goals and ELOs common to all Themes. In the accompanying table, for each ELO, describe the activities (discussions, readings, lectures, assignments) that provide opportunities for students to achieve those outcomes. The answer should be concise and use language accessible to colleagues outside of the submitting department or discipline. The specifics of the activities matter—listing “readings” without a reference to the topic of those readings will not allow the reviewers to understand how the ELO will be met. However, the panel evaluating the fit of the course to the Theme will review this form in conjunction with the syllabus, so if readings, lecture/discussion topics, or other specifics are provided on the syllabus, it is not necessary to reiterate them within this form. The ELOs are expected to vary in their “coverage” in terms of number of activities or emphasis within the course. Examples from successful courses are shared on the next page.

Goal 1: Successful students will analyze an important topic or idea at a more advanced and in-depth level than the foundations. In this context, “advanced” refers to courses that are e.g., synthetic, rely on research or cutting-edge findings, or deeply engage with the subject matter, among other possibilities.

Goal 2: Successful students will integrate approaches to the theme by making connections to out-of-classroom experiences with academic knowledge or across disciplines and/or to work they have done in previous classes and that they anticipate doing in future.

	Course activities and assignments to meet these ELOs
ELO 1.1 Engage in critical and logical thinking.	
ELO 1.2 Engage in an advanced, in-depth, scholarly exploration of the topic or ideas within this theme.	
ELO 2.1 Identify, describe, and synthesize approaches or experiences.	
ELO 2.2 Demonstrate a developing sense of self as a learner through reflection, self-assessment, and creative work, building on prior experiences to respond to new and challenging contexts.	

Example responses for proposals within “Citizenship” (from Sociology 3200, Comm 2850, French 2803):

ELO 1.1 Engage in critical and logical thinking.	<i>This course will build skills needed to engage in critical and logical thinking about immigration and immigration related policy through: Weekly reading response papers which require the students to synthesize and critically evaluate cutting-edge scholarship on immigration; Engagement in class-based discussion and debates on immigration-related topics using evidence-based logical reasoning to evaluate policy positions; Completion of an assignment which build skills in analyzing empirical data on immigration (Assignment #1)</i>
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	<p>Completion 3 assignments which build skills in connecting individual experiences with broader population-based patterns (Assignments #1, #2, #3)</p> <p>Completion of 3 quizzes in which students demonstrate comprehension of the course readings and materials.</p>
<p>ELO 2.1 Identify, describe, and synthesize approaches or experiences.</p>	<p>Students engage in advanced exploration of each module topic through a combination of lectures, readings, and discussions.</p> <p><u>Lecture</u> Course materials come from a variety of sources to help students engage in the relationship between media and citizenship at an advanced level. Each of the 12 modules has 3-4 lectures that contain information from both peer-reviewed and popular sources. Additionally, each module has at least one guest lecture from an expert in that topic to increase students' access to people with expertise in a variety of areas.</p> <p><u>Reading</u> The textbook for this course provides background information on each topic and corresponds to the lectures. Students also take some control over their own learning by choosing at least one peer-reviewed article and at least one newspaper article from outside the class materials to read and include in their weekly discussion posts.</p> <p><u>Discussions</u> Students do weekly discussions and are given flexibility in their topic choices in order to allow them to take some control over their education. They are also asked to provide information from sources they've found outside the lecture materials. In this way, they are able to explore areas of particular interest to them and practice the skills they will need to gather information about current events, analyze this information, and communicate it with others.</p> <p>Activity Example: Civility impacts citizenship behaviors in many ways. Students are asked to choose a TED talk from a provided list (or choose another speech of their interest) and summarize and evaluate what it says about the relationship between civility and citizenship. Examples of Ted Talks on the list include Steven Petrow on the difference between being polite and being civil, Chimamanda Ngozi Adichie's talk on how a single story can perpetuate stereotypes, and Claire Wardle's talk on how diversity can enhance citizenship.</p>
<p>ELO 2.2 Demonstrate a developing sense of self as a learner through reflection, self-assessment, and creative work, building on prior experiences to respond to new and challenging contexts.</p>	<p>Students will conduct research on a specific event or site in Paris not already discussed in depth in class. Students will submit a 300-word abstract of their topic and a bibliography of at least five reputable academic and mainstream sources. At the end of the semester they will submit a 5-page research paper and present their findings in a 10-minute oral and visual presentation in a small-group setting in Zoom.</p> <p>Some examples of events and sites: The Paris Commune, an 1871 socialist uprising violently squelched by conservative forces</p>

	<p><i>Jazz-Age Montmartre, where a small community of African-Americans—including actress and singer Josephine Baker, who was just inducted into the French Pantheon—settled and worked after World War I.</i></p> <p><i>The Vélodrome d’hiver Roundup, 16-17 July 1942, when 13,000 Jews were rounded up by Paris police before being sent to concentration camps</i></p> <p><i>The Marais, a vibrant Paris neighborhood inhabited over the centuries by aristocrats, then Jews, then the LGBTQ+ community, among other groups.</i></p>
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Goals and ELOs unique to Citizenship for a Diverse and Just World

Below are the Goals and ELOs specific to this Theme. As above, in the accompanying Table, for each ELO, describe the activities (discussions, readings, lectures, assignments) that provide opportunities for students to achieve those outcomes. The answer should be concise and use language accessible to colleagues outside of the submitting department or discipline. The ELOs are expected to vary in their “coverage” in terms of number of activities or emphasis within the course. Examples from successful courses are shared on the next page.

GOAL 3: Successful students will explore and analyze a range of perspectives on local, national, or global citizenship, and apply the knowledge, skills, and dispositions that constitute citizenship.

GOAL 4: Successful students will examine notions of justice amidst difference and analyze and critique how these interact with historically and socially constructed ideas of citizenship and membership within societies, both within the US and/or around the world.

	Course activities and assignments to meet these ELOs
ELO 3.1 Describe and analyze a range of perspectives on what constitutes citizenship <u>and</u> how it differs across political, cultural, national, global, and/or historical communities.	
ELO 3.2 Identify, reflect on, and apply the knowledge, skills and dispositions required for intercultural competence as a global citizen.	
ELO 4.1 Examine, critique, and evaluate various expressions and implications of diversity, equity, inclusion, and explore a variety of lived experiences.	
ELO 4.2 Analyze and critique the intersection of concepts of justice, difference, citizenship, and how these interact with cultural traditions, structures of power and/or advocacy for social change.	

Example responses for proposals within “Citizenship” (Hist/Relig. Studies 3680, Music 3364; Soc 3200):

ELO 3.1 Describe and analyze a range of perspectives on what constitutes citizenship <u>and</u> how it differs across political, cultural,	<i>Citizenship could not be more central to a topic such as immigration/migration. As such, the course content, goals, and expected learning outcomes are all, almost by definition, engaged with a range of perspectives on local, national, and global citizenship.</i>
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<p><i>national, global, and/or historical communities.</i></p>	<p><i>Throughout the class students will be required to engage with questions about what constitutes citizenship and how it differs across contexts.</i></p> <p><i>The course content addresses citizenship questions at the global (see weeks #3 and #15 on refugees and open border debates), national (see weeks #5, 7-#14 on the U.S. case), and the local level (see week #6 on Columbus). Specific activities addressing different perspectives on citizenship include Assignment #1, where students produce a demographic profile of a U.S.-based immigrant group, including a profile of their citizenship statuses using U.S.-based regulatory definitions. In addition, Assignment #3, which has students connect their family origins to broader population-level immigration patterns, necessitates a discussion of citizenship. Finally, the critical reading responses have the students engage the literature on different perspectives of citizenship and reflect on what constitutes citizenship and how it varies across communities.</i></p>
<p>ELO 3.2 <i>Identify, reflect on, and apply the knowledge, skills and dispositions required for intercultural competence as a global citizen.</i></p>	<p><i>This course supports the cultivation of "intercultural competence as a global citizen" through rigorous and sustained study of multiple forms of musical-political agency worldwide, from the grass-roots to the state-sponsored. Students identify varied cultural expressions of "musical citizenship" each week, through their reading and listening assignments, and reflect on them via online and in-class discussion. It is common for us to ask probing and programmatic questions about the musical-political subjects and cultures we study. What are the possibilities and constraints of this particular version of musical citizenship? What might we carry forward in our own lives and labors as musical citizens Further, students are encouraged to apply their emergent intercultural competencies as global, musical citizens in their midterm report and final project, in which weekly course topics inform student-led research and creative projects.</i></p>
<p>ELO 4.1 <i>Examine, critique, and evaluate various expressions and implications of diversity, equity, inclusion, and explore a variety of lived experiences.</i></p>	<p><i>Through the historical and contemporary case studies students examine in HIST/RS 3680, they have numerous opportunities to examine, critique, and evaluate various expressions and implications of diversity, equity, and inclusion, as well as a variety of lived experiences. The cases highlight the challenges of living in religiously diverse societies, examining a range of issues and their implications. They also consider the intersections of religious difference with other categories of difference, including race and gender. For example, during the unit on US religious freedom, students consider how incarcerated Black Americans and Native Americans have experienced questions of freedom and equality in dramatically different ways than white Protestants. In a weekly reflection post, they address this question directly. In the unit on marriage and sexuality, they consider different ways that different social groups have experienced the regulation of marriage in Israel and Malaysia in ways that do not correspond simplistically to gender (e.g. different women's groups with very different perspectives on the issues).</i></p> <p><i>In their weekly reflection posts and other written assignments, students are invited to analyze the implications of different regulatory models for questions of diversity, equity, and inclusion. They do so not in a simplistic sense of assessing which model is</i></p>

	<p><i>"right" or "best" but in considering how different possible outcomes might shape the concrete lived experience of different social groups in different ways. The goal is not to determine which way of doing things is best, but to understand why different societies manage these questions in different ways and how their various expressions might lead to different outcomes in terms of diversity and inclusion. They also consider how the different social and demographic conditions of different societies shape their approaches (e.g. a historic Catholic majority in France committed to laicite confronting a growing Muslim minority, or how pluralism *within* Israeli Judaism led to a fragile and contested status quo arrangement). Again, these goals are met most directly through weekly reflection posts and students' final projects, including one prompt that invites students to consider Israel's status quo arrangement from the perspective of different social groups, including liberal feminists, Orthodox and Reform religious leaders, LGBTQ communities, interfaith couples, and others.</i></p>
<p>ELO 4.2 <i>Analyze and critique the intersection of concepts of justice, difference, citizenship, and how these interact with cultural traditions, structures of power and/or advocacy for social change.</i></p>	<p><i>As students analyze specific case studies in HIST/RS 3680, they assess law's role in and capacity for enacting justice, managing difference, and constructing citizenship. This goal is met through lectures, course readings, discussion, and written assignments. For example, the unit on indigenous sovereignty and sacred space invites students to consider why liberal systems of law have rarely accommodated indigenous land claims and what this says about indigenous citizenship and justice. They also study examples of indigenous activism and resistance around these issues. At the conclusion of the unit, the neighborhood exploration assignment specifically asks students to take note of whether and how indigenous land claims are marked or acknowledged in the spaces they explore and what they learn from this about citizenship, difference, belonging, and power. In the unit on legal pluralism, marriage, and the law, students study the personal law systems in Israel and Malaysia. They consider the structures of power that privilege certain kinds of communities and identities and also encounter groups advocating for social change. In their final projects, students apply the insights they've gained to particular case studies. As they analyze their selected case studies, they are required to discuss how the cases reveal the different ways justice, difference, and citizenship intersect and how they are shaped by cultural traditions and structures of power in particular social contexts. They present their conclusions in an oral group presentation and in an individually written final paper. Finally, in their end of semester letter to professor, they reflect on how they issues might shape their own advocacy for social change in the future.</i></p>

From: [Jackman, Jane](#)
To: [Ramirez, Ana](#)
Subject: FW: Concurrence request for Chemistry 3573
Date: Monday, September 30, 2024 10:56:33 PM

Dr. Jane E. Jackman (She/her pronouns)
Professor and Vice Chair for Undergraduate Studies
Department of Chemistry and Biochemistry
Vice Chair Office: 110 Celeste Lab
Research Office: 740 Biological Sciences
Mailing Address:
Department of Chemistry and Biochemistry
484 W. 12th Avenue
Columbus, OH 43210
Phone: 614-247-8097

From: Kline, Susan <kline.48@osu.edu>
Sent: Tuesday, December 26, 2023 10:19 AM
To: Jackman, Jane <jackman.14@osu.edu>
Cc: Vankeerbergen, Bernadette <vankeerbergen.1@osu.edu>
Subject: Concurrence request for Chemistry 3573

Dear Dr. Jackman,

The School of Communication received your request a concurrence for the proposed new course, Chemistry 3573: "Climate Science, Climate Justice, and STEM Activism." We gladly provide a concurrence.

Sincerely,

Dr. Susan L. Kline
Undergraduate Communication Program Chair
School of Communication

From: [Jackman, Jane](#)
To: [Ramirez, Ana](#)
Subject: FW: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"
Date: Monday, September 30, 2024 10:54:12 PM
Attachments: [image001.png](#)

Dr. Jane E. Jackman (She/her pronouns)
Professor and Vice Chair for Undergraduate Studies
Department of Chemistry and Biochemistry
Vice Chair Office: 110 Celeste Lab
Research Office: 740 Biological Sciences
Mailing Address:
Department of Chemistry and Biochemistry
484 W. 12th Avenue
Columbus, OH 43210
Phone: 614-247-8097

From: Zhang, Yuan <yzhanghf@stat.osu.edu>
Sent: Wednesday, December 20, 2023 10:34 AM
To: Kaizar, Elly <kaizar.1@osu.edu>; Lee, Yoonkyung <yklee@stat.osu.edu>; Sivakoff, David <dsivakoff@stat.osu.edu>; Jackman, Jane <jackman.14@osu.edu>; Vankeerbergen, Bernadette <vankeerbergen.1@osu.edu>
Subject: Re: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Dear Jane,

Thanks for the request. After discussion, the Statistics Department is happy to give their concurrence.

Happy holidays,
Curriculum Committee, Department of Statistics
Yoonkyung Lee and Yuan Zhang

From: Kaizar, Elly <kaizar.1@osu.edu>
Sent: Tuesday, December 19, 2023 19:28
To: Lee, Yoonkyung <yklee@stat.osu.edu>; Zhang, Yuan <yzhanghf@stat.osu.edu>
Subject: Fw: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Hi Yoon and Yuan,

This request for concurrence came in today.

Thanks.

From: Vankeerbergen, Bernadette <vankeerbergen.1@osu.edu>
Sent: Tuesday, December 19, 2023 12:27 PM
To: _ASC NMS Chairs Directors <ASC-nms-chairs-directors@osu.edu>; _ASC SBS-Chairs <ASC-SBS-Chairs@osu.edu>
Cc: Jackman, Jane <jackman.14@osu.edu>
Subject: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Dear Chairs and Directors,

Please find attached a proposal for new course Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism." The Department of Chemistry is requesting concurrence for the proposed new course. Please email your responses/concurrences to Jane Jackman (jackman.14@osu.edu), Vice Chair for Undergraduate Studies in the Department of Chemistry, and cc me. *Responses are due by **Monday, January 8, 2024**. If due to the holidays your department will need more time to review the course, please let Jane Jackman know **asap** that you need more time.* Otherwise, if the Department of Chemistry does not hear back from you, they will assume concurrence by January 8.

Please let me know if you have any questions.

Many thanks,
Bernadette



Bernadette Vankeerbergen, Ph.D.
Assistant Dean, Curriculum
College of Arts and Sciences
114F University Hall, 230 North Oval Mall.
Columbus, OH 43210
Phone: 614-688-5679
<http://ascas.osu.edu>

From: [Jackman, Jane](#)
To: [Ramirez, Ana](#)
Subject: FW: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"
Date: Monday, September 30, 2024 10:55:38 PM
Attachments: [image001.png](#)
[image002.png](#)

Dr. Jane E. Jackman (She/her pronouns)
Professor and Vice Chair for Undergraduate Studies
Department of Chemistry and Biochemistry
Vice Chair Office: 110 Celeste Lab
Research Office: 740 Biological Sciences
Mailing Address:
Department of Chemistry and Biochemistry
484 W. 12th Avenue
Columbus, OH 43210
Phone: 614-247-8097

From: Ralph, Anne E. <ralph.52@osu.edu>
Sent: Wednesday, December 20, 2023 12:59 PM
To: Jackman, Jane <jackman.14@osu.edu>
Cc: Vankeerbergen, Bernadette <vankeerbergen.1@osu.edu>
Subject: Re: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Hi, Jane,
Thanks for your email. The College of Law is pleased to grant concurrence. Please let me know if the College of Law can help in any other way. This looks like an exciting addition.
Very best,
Anne



Anne E. Ralph
Morgan E. Shipman Professor in Law & Associate Dean for Academic Affairs
Michael E. Moritz College of Law
55 West 12th Avenue | Columbus, OH 43210
614-247-4797 Office | ralph.52@osu.edu
Pronouns: she/her/hers

From: Jackman, Jane <jackman.14@osu.edu>
Date: Wednesday, December 20, 2023 at 12:33 PM

To: Ralph, Anne E. <ralph.52@osu.edu>

Cc: Vankeerbergen, Bernadette <vankeerbergen.1@osu.edu>

Subject: FW: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Dear Anne,

I'm writing about a new themes course that my department has developed in collaboration with the Dept of Teaching and Learning (see attached syllabus and email below). We are seeking concurrence from you for the course. I'm happy to answer questions or discuss more of the details with you or anyone else in your college.

If you need more time to evaluate because of the holidays (we have requested a response by January 8), please just let me know.

Thanks and best wishes for a happy new year!

Jane

Dr. Jane E. Jackman

Professor and Vice Chair for Undergraduate Studies

Department of Chemistry and Biochemistry

Vice Chair Office: 110 Celeste Lab

Research Office: 740 Biological Sciences

Mailing Address:

Department of Chemistry and Biochemistry

484 W. 12th Avenue

Columbus, OH 43210

Phone: 614-247-8097

She/her pronouns

From: Vankeerbergen, Bernadette <vankeerbergen.1@osu.edu>

Sent: Tuesday, December 19, 2023 12:27 PM

To: _ASC NMS Chairs Directors <ASC-nms-chairs-directors@osu.edu>; _ASC SBS-Chairs <ASC-SBS-Chairs@osu.edu>

Cc: Jackman, Jane <jackman.14@osu.edu>

Subject: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Dear Chairs and Directors,

Please find attached a proposal for new course Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism." The Department of Chemistry is requesting concurrence for the proposed new course. Please email your responses/concurrences to Jane Jackman (jackman.14@osu.edu), Vice Chair for Undergraduate Studies in the Department of

Chemistry, and cc me. *Responses are due by **Monday, January 8, 2024**. If due to the holidays your department will need more time to review the course, please let Jane Jackman know **asap** that you need more time.* Otherwise, if the Department of Chemistry does not hear back from you, they will assume concurrence by January 8.

Please let me know if you have any questions.

Many thanks,
Bernadette



Bernadette Vankeerbergen, Ph.D.

Assistant Dean, Curriculum

College of Arts and Sciences

114F University Hall, 230 North Oval Mall.

Columbus, OH 43210

Phone: 614-688-5679

<http://ascas.osu.edu>

From: [Jackman, Jane](#)
To: [Ramirez, Ana](#)
Subject: FW: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"
Date: Monday, September 30, 2024 10:55:08 PM
Attachments: [image001.png](#)
[Syllabus Chem 3573-updatedV3.docx](#)

Dr. Jane E. Jackman (She/her pronouns)
Professor and Vice Chair for Undergraduate Studies
Department of Chemistry and Biochemistry
Vice Chair Office: 110 Celeste Lab
Research Office: 740 Biological Sciences
Mailing Address:
Department of Chemistry and Biochemistry
484 W. 12th Avenue
Columbus, OH 43210
Phone: 614-247-8097

From: Williams, Kristi <williams.2339@osu.edu>
Sent: Wednesday, December 20, 2023 11:29 AM
To: Jackman, Jane <jackman.14@osu.edu>; Downey, Douglas <downey.32@osu.edu>
Subject: Fwd: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Sociology concurs.

Best,
Kristi

Kristi Williams

Professor and Chair
Department of Sociology
The Ohio State University
238 Townshend Hall, 1885 Neil Avenue Mall, Columbus, OH 43210-1222
williams.2339@osu.edu / sociology.osu.edu

From: Vankeerbergen, Bernadette <vankeerbergen.1@osu.edu>
Sent: Tuesday, December 19, 2023 12:27:06 PM
To: _ASC NMS Chairs Directors <ASC-nms-chairs-directors@osu.edu>; _ASC SBS-Chairs

<ASC-SBS-Chairs@osu.edu>

Cc: Jackman, Jane <jackman.14@osu.edu>

Subject: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Dear Chairs and Directors,

Please find attached a proposal for new course Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism." The Department of Chemistry is requesting concurrence for the proposed new course. Please email your responses/concurrences to Jane Jackman (jackman.14@osu.edu), Vice Chair for Undergraduate Studies in the Department of Chemistry, and cc me. *Responses are due by **Monday, January 8, 2024**. If due to the holidays your department will need more time to review the course, please let Jane Jackman know **asap** that you need more time.* Otherwise, if the Department of Chemistry does not hear back from you, they will assume concurrence by January 8.

Please let me know if you have any questions.

Many thanks,
Bernadette



Bernadette Vankeerbergen, Ph.D.

Assistant Dean, Curriculum

College of Arts and Sciences

114F University Hall, 230 North Oval Mall.

Columbus, OH 43210

Phone: 614-688-5679

<http://ascas.osu.edu>

From: [Jackman, Jane](#)
To: [Ramirez, Ana](#)
Subject: FW: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"
Date: Monday, September 30, 2024 10:55:27 PM
Attachments: [image001.png](#)
[Outlook-52uk2rb3.png](#)

Dr. Jane E. Jackman (She/her pronouns)
Professor and Vice Chair for Undergraduate Studies
Department of Chemistry and Biochemistry
Vice Chair Office: 110 Celeste Lab
Research Office: 740 Biological Sciences
Mailing Address:
Department of Chemistry and Biochemistry
484 W. 12th Avenue
Columbus, OH 43210
Phone: 614-247-8097

From: Bisesi, Michael <bisesi.12@osu.edu>
Sent: Wednesday, December 20, 2023 12:47 PM
To: Jackman, Jane <jackman.14@osu.edu>
Cc: Vankeerbergen, Bernadette <vankeerbergen.1@osu.edu>; Rosile, Paul <rosile.1@osu.edu>; Droesch, Kynthia <drosch.4@osu.edu>
Subject: Re: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Jane,

I read your very well-constructed syllabus for the course Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism". Although this course may compete somewhat with our course PUBHEHS 4235 "Climate Change and Human Health" if a student is only planning to take one course, overall, your course will be complementary with ours and others within the university. Indeed, separate from my roles in the College of Public Health, I am the Administrative Chair of the OSU Sustainability Institute - Sustainability Education and Learning Committee (SELIC) and we have been working the last couple years encouraging units to develop more climate change and/or sustainability-related courses, minors, and certificates.

On behalf of the College of Public Health, we support concurrence of your proposed course. I also encourage you to submit it to the GE - Sustainability theme committee.

Mike

Michael S. Bisesi, MS, PhD, REHS, CIH

Vice Dean, Academic Affairs & Academic Administration

Professor & Chair, Environmental Health Sciences

College of Public Health

Senior Strategic Advisor, OSU Global One Health initiative (GOHi)

Administrative Chair, Sustainability Education and Learning Committee

Fellow AIHA

Phone: (614) 247-8290 Email: bisesi.12@osu.edu

(Administrative Assistants Samantha Hicks (614) 688-3822 hicks.598@osu.edu or

Mindy Freed freed.28@osu.edu)

From: Jackman, Jane <jackman.14@osu.edu>

Sent: Wednesday, December 20, 2023 9:34 AM

To: Bisesi, Michael <bisesi.12@osu.edu>

Cc: Vankeerbergen, Bernadette <vankeerbergen.1@osu.edu>

Subject: FW: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Dear Michael,

I'm writing about a new themes course that my department has developed in collaboration with the Dept of Teaching and Learning (see attached syllabus and email below). We are seeking concurrence from you for the course. I'm happy to answer questions or discuss more of the details with you or anyone else in your college.

If you need more time to evaluate because of the holidays (we have requested a response by January 8), please just let me know.

Thanks and best wishes for a happy new year!
Jane

Dr. Jane E. Jackman

Professor and Vice Chair for Undergraduate Studies
Department of Chemistry and Biochemistry

Vice Chair Office: 110 Celeste Lab
Research Office: 740 Biological Sciences
Mailing Address:
Department of Chemistry and Biochemistry
484 W. 12th Avenue
Columbus, OH 43210
Phone: 614-247-8097
She/her pronouns

From: Vankeerbergen, Bernadette <vankeerbergen.1@osu.edu>
Sent: Tuesday, December 19, 2023 12:27 PM
To: _ASC NMS Chairs Directors <ASC-nms-chairs-directors@osu.edu>; _ASC SBS-Chairs <ASC-SBS-Chairs@osu.edu>
Cc: Jackman, Jane <jackman.14@osu.edu>
Subject: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Dear Chairs and Directors,

Please find attached a proposal for new course Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism." The Department of Chemistry is requesting concurrence for the proposed new course. Please email your responses/concurrences to Jane Jackman (jackman.14@osu.edu), Vice Chair for Undergraduate Studies in the Department of Chemistry, and cc me. *Responses are due by **Monday, January 8, 2024**. If due to the holidays your department will need more time to review the course, please let Jane Jackman know **asap** that you need more time.* Otherwise, if the Department of Chemistry does not hear back from you, they will assume concurrence by January 8.

Please let me know if you have any questions.

Many thanks,
Bernadette



Bernadette Vankeerbergen, Ph.D.
Assistant Dean, Curriculum
College of Arts and Sciences
114F University Hall, 230 North Oval Mall.
Columbus, OH 43210
Phone: 614-688-5679
<http://ascas.osu.edu>

From: [Jackman, Jane](#)
To: [Ramirez, Ana](#)
Subject: FW: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"
Date: Monday, September 30, 2024 10:56:53 PM
Attachments: [image001.png](#)
[Syllabus Chem 3573-updatedV3.docx](#)

Dr. Jane E. Jackman (She/her pronouns)
Professor and Vice Chair for Undergraduate Studies
Department of Chemistry and Biochemistry
Vice Chair Office: 110 Celeste Lab
Research Office: 740 Biological Sciences
Mailing Address:
Department of Chemistry and Biochemistry
484 W. 12th Avenue
Columbus, OH 43210
Phone: 614-247-8097

From: Tomasko, David <tomasko.1@osu.edu>
Sent: Monday, January 8, 2024 1:53 PM
To: Jackman, Jane <jackman.14@osu.edu>
Cc: Vankeerbergen, Bernadette <vankeerbergen.1@osu.edu>; Quinzon-Bonello, Rosario <quinzon-bonello.1@osu.edu>
Subject: Re: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Jane,

The College of Engineering is pleased to concur with this course. It looks very interesting and we would love to see it count for additional thematic areas in addition to Citizenship.

David

David L. Tomasko
Associate Dean for Academic Programs & Student Services
Professor of Chemical & Biomolecular Engineering
The Ohio State University
If you have a zoom meeting scheduled with me: <https://osu.zoom.us/my/davidtomasko>

Executive Assistant: Winnie Sampson
sampson.38@osu.edu
614-688-4602

If one accepts that without deeply understanding and being a part of society then one cannot develop meaningful solutions to the problems it presents, then current demographic

trends in engineering are an actual threat to the profession.

From: Jackman, Jane <jackman.14@osu.edu>
Sent: Wednesday, December 20, 2023 12:29 PM
To: Tomasko, David <tomasko.1@osu.edu>
Cc: Vankeerbergen, Bernadette <vankeerbergen.1@osu.edu>
Subject: FW: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Dear Dave,

I hope you are doing well. I'm writing about a new themes course that my department has developed in collaboration with the Dept of Teaching and Learning (see attached syllabus and email below). We are seeking concurrence from you for the course. I'm happy to answer questions or discuss more of the details with you or anyone else in Engineering.

If you need more time to evaluate because of the holidays (we have requested a response by January 8), please just let me know.

Thanks and best wishes for a happy new year!
Jane

Dr. Jane E. Jackman

Professor and Vice Chair for Undergraduate Studies

Department of Chemistry and Biochemistry

Vice Chair Office: 110 Celeste Lab

Research Office: 740 Biological Sciences

Mailing Address:

Department of Chemistry and Biochemistry

484 W. 12th Avenue

Columbus, OH 43210

Phone: 614-247-8097

She/her pronouns

From: Vankeerbergen, Bernadette <vankeerbergen.1@osu.edu>
Sent: Tuesday, December 19, 2023 12:27 PM
To: _ASC NMS Chairs Directors <ASC-nms-chairs-directors@osu.edu>; _ASC SBS-Chairs <ASC-SBS-Chairs@osu.edu>
Cc: Jackman, Jane <jackman.14@osu.edu>
Subject: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Dear Chairs and Directors,

Please find attached a proposal for new course Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism." The Department of Chemistry is requesting concurrence for the proposed new course. Please email your responses/concurrences to Jane Jackman (jackman.14@osu.edu), Vice Chair for Undergraduate Studies in the Department of Chemistry, and cc me. *Responses are due by **Monday, January 8, 2024**. If due to the holidays your department will need more time to review the course, please let Jane Jackman know **asap** that you need more time.* Otherwise, if the Department of Chemistry does not hear back from you, they will assume concurrence by January 8.

Please let me know if you have any questions.

Many thanks,
Bernadette



Bernadette Vankeerbergen, Ph.D.

Assistant Dean, Curriculum

College of Arts and Sciences

114F University Hall, 230 North Oval Mall.

Columbus, OH 43210

Phone: 614-688-5679

<http://asccas.osu.edu>

From: [Jackman, Jane](#)
To: [Ramirez, Ana](#)
Subject: FW: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"
Date: Monday, September 30, 2024 10:56:05 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)

Dr. Jane E. Jackman (She/her pronouns)
Professor and Vice Chair for Undergraduate Studies
Department of Chemistry and Biochemistry
Vice Chair Office: 110 Celeste Lab
Research Office: 740 Biological Sciences
Mailing Address:
Department of Chemistry and Biochemistry
484 W. 12th Avenue
Columbus, OH 43210
Phone: 614-247-8097

From: Croxton, Keely <croxton.4@osu.edu>
Sent: Thursday, December 21, 2023 10:42 AM
To: Jackman, Jane <jackman.14@osu.edu>
Cc: Vankeerbergen, Bernadette <vankeerbergen.1@osu.edu>
Subject: Re: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

I'm happy to offer concurrence for this course. It sounds like a great one!

Keely



Keely L. Croxton, PhD
Prof. of Logistics
Associate Dean of Undergraduate Programs
Fisher College of Business
The Ohio State University
croxton.4@osu.edu

HATE
HAS NO
BUSINESS
HERE.

From: Jackman, Jane <jackman.14@osu.edu>
Date: Thursday, December 21, 2023 at 10:00 AM
To: Croxton, Keely <croxton.4@osu.edu>
Cc: Vankeerbergen, Bernadette <vankeerbergen.1@osu.edu>
Subject: FW: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Sorry about that, Keely.

Here you go, and please let me know if I can help.

Best,
Jane

Dr. Jane E. Jackman

Professor and Vice Chair for Undergraduate Studies

Department of Chemistry and Biochemistry

Vice Chair Office: 110 Celeste Lab

Research Office: 740 Biological Sciences

Mailing Address:

Department of Chemistry and Biochemistry

484 W. 12th Avenue

Columbus, OH 43210

Phone: 614-247-8097

She/her pronouns

From: Jackman, Jane
Sent: Wednesday, December 20, 2023 12:32 PM
To: Prud'homme, Andrea <prudhomme.3@osu.edu>
Cc: Vankeerbergen, Bernadette <vankeerbergen.1@osu.edu>
Subject: FW: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Dear Andrea,

I'm writing about a new themes course that my department has developed in collaboration with the Dept of Teaching and Learning (see attached syllabus and email below). We are seeking concurrence from you for the course. I'm happy to answer questions or discuss more of the details with you or anyone else in your college.

If you need more time to evaluate because of the holidays (we have requested a response by January 8), please just let me know.

Thanks and best wishes for a happy new year!
Jane

Dr. Jane E. Jackman

Professor and Vice Chair for Undergraduate Studies

Department of Chemistry and Biochemistry

Vice Chair Office: 110 Celeste Lab

Research Office: 740 Biological Sciences

Mailing Address:

Department of Chemistry and Biochemistry

484 W. 12th Avenue

Columbus, OH 43210

Phone: 614-247-8097

She/her pronouns

From: Vankeerbergen, Bernadette <vankeerbergen.1@osu.edu>

Sent: Tuesday, December 19, 2023 12:27 PM

To: _ASC NMS Chairs Directors <ASC-nms-chairs-directors@osu.edu>; _ASC SBS-Chairs <ASC-SBS-Chairs@osu.edu>

Cc: Jackman, Jane <jackman.14@osu.edu>

Subject: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Dear Chairs and Directors,

Please find attached a proposal for new course Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism." The Department of Chemistry is requesting concurrence for the proposed new course. Please email your responses/concurrences to Jane Jackman (jackman.14@osu.edu), Vice Chair for Undergraduate Studies in the Department of Chemistry, and cc me. *Responses are due by **Monday, January 8, 2024**. If due to the holidays your department will need more time to review the course, please let Jane Jackman know **asap** that you need more time.* Otherwise, if the Department of Chemistry does not hear back from you, they will assume concurrence by January 8.

Please let me know if you have any questions.

Many thanks,
Bernadette



Bernadette Vankeerbergen, Ph.D.

Assistant Dean, Curriculum

College of Arts and Sciences

114F University Hall, 230 North Oval Mall.

Columbus, OH 43210

Phone: 614-688-5679

<http://ascas.osu.edu>

From: [Jackman, Jane](#)
To: [Ramirez, Ana](#)
Subject: FW: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"
Date: Monday, September 30, 2024 11:01:18 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)

Dr. Jane E. Jackman (She/her pronouns)
Professor and Vice Chair for Undergraduate Studies
Department of Chemistry and Biochemistry
Vice Chair Office: 110 Celeste Lab
Research Office: 740 Biological Sciences
Mailing Address:
Department of Chemistry and Biochemistry
484 W. 12th Avenue
Columbus, OH 43210
Phone: 614-247-8097

From: Pintor, Lauren <pintor.6@osu.edu>
Sent: Wednesday, March 13, 2024 2:51 PM
To: Jackman, Jane <jackman.14@osu.edu>; Osborne, Jeanne <osborne.2@osu.edu>
Subject: Re: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Hi Jane,

First, my sincere appreciation for your patience as I struggled to prioritize this once I heard back from faculty last week.

Next, I want to thank you for the careful evaluation of our comments and how you addressed them. We appreciate how attentive you were to them. At this time, we do offer our concurrence on the revised course. I did want to share, however, that faculty still felt that there is overlap between the topics original identified in our original review (5. Science, culture, advocacy, 8. Scientific debate, skepticism, and denialism, 9. A recent history of climate policy, 10. Climate justice). These modules remain in the revised course, but do not constitute greater than 70% overlap.

We wish you the best & look forward to seeing the course on the books!

Best,
Lauren



THE OHIO STATE UNIVERSITY

COLLEGE OF FOOD, AGRICULTURAL,
AND ENVIRONMENTAL SCIENCES

Lauren M. Pintor, PhD (she/her)

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From: Jackman, Jane <jackman.14@osu.edu>

Date: Tuesday, March 12, 2024 at 9:22 AM

To: Pintor, Lauren <pintor.6@osu.edu>, Osborne, Jeanne <osborne.2@osu.edu>

Subject: RE: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Hi Lauren,

I'm sure things have been as crazy for you as with me- I'm sorry I'm just catching up on my email backlog now.

I'm wondering if you can update me on where things stand for your faculty regarding this course revision?

We want to try to get this turned around back to our curriculum committee next week and hope that we can address any remaining issues with concurrence before then. Please let me know when you get a chance and thanks!

Jane

Dr. Jane E. Jackman

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From: Pintor, Lauren <pintor.6@osu.edu>

Sent: Tuesday, March 5, 2024 7:26 AM

To: Jackman, Jane <jackman.14@osu.edu>; Osborne, Jeanne <osborne.2@osu.edu>

Subject: Re: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Hi Jane,

I heard back from one of our faculty and am going to give one other one more nudge today and ask for his feedback by tomorrow morning at the latest. Thanks again for your patience. Just wanted to let you know I hadn't forgotten!

Best,
Lauren

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From: Jackman, Jane <jackman.14@osu.edu>

Sent: Tuesday, February 20, 2024 11:33:53 AM

To: Pintor, Lauren <pintor.6@osu.edu>; Osborne, Jeanne <osborne.2@osu.edu>

Subject: RE: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Hi Lauren,

No apology needed- I just wanted to make sure you had seen our changes and were still willing to discuss further.

Why don't you let me know what you hear from your faculty, and if they still want to set up a meeting with Ted and Sophia to discuss any remaining points or get clarification, we can move forward with that? (I can try to be there too, but like Jeanne, probably planning around my schedule is going to delay things, and anyway, I will also defer to all of you as you work out the best path).

Thanks so much and hang in there- it's a busy time for sure!

Best,
Jane

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From: Pintor, Lauren <pintor.6@osu.edu>

Sent: Tuesday, February 20, 2024 11:31 AM

To: Osborne, Jeanne <osborne.2@osu.edu>; Jackman, Jane <jackman.14@osu.edu>

Subject: Re: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Thanks, Jeanne.

Jane: I have reached out to the faculty who have taught the two courses where we identified overlap and have asked them to look at the syllabus again to see if the overlap is still of concern. I'm just waiting on hearing back from them. We've been in the midst of a search for a new Director and the majority of the folks involved in those classes have been on that search committee (along with me). Not an excuse, but just an explanation on why we haven't gotten back sooner.

For what it's worth, I personally think the new title of the course will be a much stronger signal to students and employers (who'd look at a student's transcript eventually).

I'll ping the faculty again. It might be that they're fine with the revisions and I can just offer concurrence, but I'd like to learn their thoughts.

Many thanks for your patience.

Best,
Lauren



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From: Osborne, Jeanne <osborne.2@osu.edu>

Date: Tuesday, February 20, 2024 at 11:21 AM

To: Pintor, Lauren <pintor.6@osu.edu>, Jackman, Jane <jackman.14@osu.edu>

Subject: RE: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Lauren and Jane,

Please let me know if you believe I need to participate – I will support the decisions of the faculty so it may not be necessary at this point. I don't want to hold up your discussion with the craziness of my schedule.

Let me know and thank you!

Jeanne

From: Pintor, Lauren <pintor.6@osu.edu>

Sent: Tuesday, February 20, 2024 11:05 AM

To: Jackman, Jane <jackman.14@osu.edu>; Osborne, Jeanne <osborne.2@osu.edu>

Subject: Re: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Hi Jane & Jeanne,

My apologies for not replying sooner. I know this course is important for you and I'm sorry I haven't been able to keep on top of it more promptly. I'm happy to meet to talk through it. I can definitely make time to meet ASAP if you're available.

Best,

Lauren



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From: Jackman, Jane <jackman.14@osu.edu>

Date: Monday, February 19, 2024 at 2:02 PM

To: Osborne, Jeanne <osborne.2@osu.edu>

Cc: Pintor, Lauren <pintor.6@osu.edu>

Subject: RE: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Dear Jeanne and Lauren,

I hope you are doing well. I'm following up on my email below and wondering if you have had a chance to consider our course revisions and would be willing to set up a meeting with our instructors to discuss further?

Please let me know if you have any questions, or how to go about scheduling a meeting if you are able to do that.

Best,
Jane

Dr. Jane E. Jackman

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From: Jackman, Jane

Sent: Monday, February 5, 2024 8:22 AM

To: Osborne, Jeanne <osborne.2@osu.edu>

Cc: Pintor, Lauren <pintor.6@osu.edu>

Subject: RE: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Dear Jeanne and Lauren,

Thank you again for your comments on our CHEM 3573 proposed course. We have been working to address the issues that were raised and have made some substantial changes to the course (including the name) and to the way that it is described in the syllabus so that the distinct nature of this course is more clear. I have attached a revised syllabus and a file with a response addressing individual concerns raised by SENR. We appreciate your offer to meet to discuss the course in more detail and would like to set something up with our instructors and appropriate members of your curriculum committee, if you are still able to do that?

Please let me know the best way to connect everyone to set up a meeting and thanks very much for your time.

Best,

Jane

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From: Osborne, Jeanne <osborne.2@osu.edu>

Sent: Thursday, January 18, 2024 11:24 AM

To: Jackman, Jane <jackman.14@osu.edu>

Cc: Vankeerbergen, Bernadette <vankeerbergen.1@osu.edu>; Pintor, Lauren <pintor.6@osu.edu>

Subject: RE: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Dear Jane,

Thank you for your patience as we collected input from our academic units in CFAES regarding the request for concurrence for the course proposal for Chemistry 3573, 'Climate Science, Climate Justice, and STEM Activism'.

Unfortunately, the College of Food, Agricultural, and Environmental Sciences cannot provide concurrence for the proposed course as currently presented due to overlap with courses that are offered in the School of Environment and Natural Resources, ENR 3400, 'Psychology of Environmental Problems' and to the greatest extent, ENR 4450, 'Climate Change Policy' (syllabi attached). Specifically, the response from Dr. Lauren Pintor, Chair of the Academic Affairs committee in SENR:

- **ENR 3400**, 'Psychology of Environmental Problems': This class uses the climate crisis to discuss some features of climate change (e.g. uncertainty, distant impacts) make it hard, psychologically, for people to commit to taking action. The course also covered differing perspectives on justice and how they complicate efforts to take action on behalf of the environment and climate change.
- **ENR 4450**, 'Climate Change Policy'. There are complete overlaps in the following sections of the proposed class with ENR 4450.
 - 5. Science, culture, advocacy
 - 8. Scientific debate, skepticism, and denialism
 - 9. A recent history of climate policy
 - 10. Climate justiceENR 4450 also covers current and projected climate change impacts, activism & geoengineering. This content overlap with the following proposed course sections: 11. Present day impacts, 12. Future impacts, 13. Paths forward, 14. Activism and coping

Dr. Pintor estimated the content overlap with ENR 4450, the course with the greatest overlap: 'There is clear overlap in 60% of the course but there are weeks where the theme described is broad and doesn't provide enough information to know the degree of overlap with material in that given week. But in those weeks that are more broadly defined, there is still overlap of concern. So [it appears based on the information provided that] CHEM 3573 overlaps with [at least] 70% of ENR 4450: Climate Change Policy.'

Peripherally, there is concern about the discipline expertise of the faculty listed to instruct the course regarding teaching material on climate science and justice, but this is based on limited information. The School would welcome an opportunity to discuss this further if the Department of Chemistry and Biochemistry is interested.

Please let me know if you have any questions or need additional information.

Take care,

Jeanne



Jeanne M. Osborne | Pronouns: She, Her, Hers

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'Unexpected kindness is the most powerful, least costly, and most underrated agent of human change' (Bob Kerrey)

From: Jackman, Jane <jackman.14@osu.edu>

Sent: Wednesday, December 20, 2023 12:31 PM

To: Osborne, Jeanne <osborne.2@osu.edu>

Cc: Vankeerbergen, Bernadette <vankeerbergen.1@osu.edu>

Subject: FW: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Dear Jeanne,

I'm writing about a new themes course that my department has developed in collaboration with the Dept of Teaching and Learning (see attached syllabus and email below). We are seeking concurrence from you for the course. I'm happy to answer questions or discuss more of the details with you or anyone else in CFAES.

If you need more time to evaluate because of the holidays (we have requested a response by January 8), please just let me know.

Thanks and best wishes for a happy new year!

Jane

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From: Vankeerbergen, Bernadette <vankeerbergen.1@osu.edu>

Sent: Tuesday, December 19, 2023 12:27 PM

To: _ASC NMS Chairs Directors <ASC-nms-chairs-directors@osu.edu>; _ASC SBS-Chairs <ASC-SBS-Chairs@osu.edu>

Cc: Jackman, Jane <jackman.14@osu.edu>

Subject: Concurrence request Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism"

Dear Chairs and Directors,

Please find attached a proposal for new course Chemistry 3573 "Climate Science, Climate Justice, and STEM Activism." The Department of Chemistry is requesting concurrence for the proposed new course. Please email your responses/concurrences to Jane Jackman (jackman.14@osu.edu), Vice Chair for Undergraduate Studies in the Department of Chemistry, and cc me. *Responses are due by **Monday, January 8, 2024**. If due to the holidays your department will need more time to review the course, please let Jane Jackman know **asap** that you need more time.* Otherwise, if the Department of Chemistry does not hear back from you, they will assume concurrence by January 8.

Please let me know if you have any questions.

Many thanks,

Bernadette



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