

**The Ohio State University  
First-Year Seminar Program  
Course Proposal**

**Course Information**

1. Attach a syllabus that includes the following (sample syllabi can be found at <http://firstyourseminars.osu.edu>):

- the course goals
- a brief description of the content
- the distribution of meeting times
- a weekly topical outline
- a listing of assignments
- grade assessment information (A-E or S/U)
- required textbooks and/or reading list
- the academic misconduct and disability services statements (sample statements can be found at <http://ascas.osu.edu/curriculum/asc-syllabus-elements>)

**Instructor Information**

2. Attach a brief biographical paragraph that includes the current research interests, teaching awards and honors, and undergraduate courses taught by the participating instructor(s).

Roman Lanno, Department of Evolution, Ecology, and Organismal Biology

Proposer's Name and Primary Academic Unit (please print)

Associate Professor

Proposer's Title

lanno.1@osu.edu

Proposer's e-mail Address

March 1, 2021

Submission Date

John Freudenstein

Approval of Department Chair of Academic Unit (please print)

**Please return this form and any attachments to Todd Bitters, [bitters.4@osu.edu](mailto:bitters.4@osu.edu), no later than MARCH 1.**

**Chemical pollutants in the environment: Cause for concern or media hype?  
Arts and Sciences 113\*.\*\*, First-Year Seminar  
1 Semester-hour Credit  
Day/Time Room - TBD**

**Instructor:** Roman Lanno, Department of Entomology **Office hours: By appt**  
492 Aronoff Laboratory  
[lanno.1@osu.edu](mailto:lanno.1@osu.edu)

**Proposed semester:** Autumn 2021

**Course Description**

Industrial chemicals cover the planet – from the Arctic and Antarctic to the depths of the Amazon jungles. How did they get there? Is this actually a problem? What can be done about this? We will explore, discuss, and hopefully, answer some of these questions from different perspectives including effects on animal and human ecology and the societal implications and consequences of chemical (mis)management. Topics discussed will range widely from hot button, legacy issues such as lead in drinking water to more recent topics such as environmental microplastics.

This course meets the stated goals of the First-Year Seminar initiative by providing first-year students the opportunity to discuss an issue of real concern, chemical pollutants in today's environment, in a small group setting with a faculty member actively engaged in research in the area of ecotoxicology and environmental risk assessment. Since ecotoxicology and risk assessment involves a multidisciplinary approach, a single course covering the range of issues encountered in ecotoxicology and risk assessment is not offered at the undergraduate level. This course is not designed to provide detailed study of environmental chemistry and biochemical toxicology of environmental chemicals, but rather a broad overview and open forum for the discussion of major current topics and questions in environmental toxicology (e.g., bioaccumulation, endocrine disruptors, Are fish from the Great Lakes safe to eat?). All topics will be discussed from the perspectives of very different interest groups (industry, academia, non-government stakeholders, and government) to provide students with perspectives on the management and regulation of environmental chemicals ranging from corporate America to Greenpeace.

Since the faculty member teaching this seminar is actively involved in research on the effects and management of chemicals in the environment, he will be able to offer first-hand insights into how research is conducted in the different facets of ecotoxicology. He also has experience in conducting research in both consulting and academic environments, and has worked with U.S. and Canadian governments on environmental issues related to a number chemicals.

**Course Objectives:**

- 1) Overall objective - to familiarize students with aspects of hazards and risks posed by various groups of chemicals so they can begin to interpret (dis)information available in the press and on social media
- 2) To introduce students to the different types of chemicals present in the environment

- 3) Discuss the various pathways by which chemicals move into organisms and are transported to the far reaches of the planet
- 4) Provide an overview of the hazard posed by various groups of chemicals to organisms, including humans
- 5) Discuss the process of risk assessment and methods for understanding the environmental and societal effects of chemicals in the environment.

**Required Activities:**

1. Students are *expected to attend class and actively participate in the seminar discussions*. Unexcused absences will be reflected in the participation grade.
2. Each student is expected to write one or two challenging questions for all student presentations to assist the speaker in facilitating discussion after the presentation.
3. Each student will give one presentation on a chemical or related topic and will be an active member of a team for the final debate.
4. Each student will submit a song that addresses some aspect of chemicals in the environment and provide an interpretation of the lyrics and lead a discussion of the song

**Texts:**

There is no specific textbook required for this seminar and reading material will be provided by the instructor in the form of scientific review articles, newspaper articles, book chapters, or government synopses. Students are responsible for completing all reading assignments as described in class. Students that have obviously not read assigned material will be deducted marks from the participation grade.

**Grading:**

Student presentation .....	35%
Chemical tunes .....	5%
Submitted questions.....	20%
Debate .....	30%
Class participation .....	10%

Your final letter grade will be based on the percentage of the 100 points that you earn during the semester, as indicated below:

93-100%: A	80-82%: B-	67-69%: D+
90-92%: A-	77-79%: C+	60-66%: D
87-89%: B+	73-76%: C	≤59%: E
83-86%: B	70-72%: C-	

**Academic Misconduct:**

It is the responsibility of the Committee on Academic Misconduct 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/>.

**Accommodation of Special Needs:**

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: [slds@osu.edu](mailto:slds@osu.edu); 614-292-3307; [slds.osu.edu](http://slds.osu.edu); 098 Baker Hall, 113 W. 12th Avenue.

**Tentative Seminar Schedule\* (subject to change as events in the news dictate):**

<b>Week (Week of)</b>	<b>Activities</b>
1 (Aug 17)	Introduction to Freshman Seminar Introduction to environmental chemicals and ecotoxicology Discussion of major topics of interest to students Presentation sign-up
2 (Aug 23)	Endocrine disruptors and low level environmental contamination Theo Colborn – “Our Stolen Future”
3 (Aug 30)	Bioaccumulation/biomagnification Rachel Carson – “Silent Spring”
4 (Sep 6)	Consuming Great Lakes fishes – are they safe to eat? Student presentations
5 (Sep 13)	Non-point source pollution – Beautiful rivers or beautiful lawns? Student presentations
6 (Sep 20)	Radiation in the environment – From Hiroshima to Chernobyl Student presentations
7 (Sep 27)	Dioxins – the most toxic man-made chemical – is it really a threat? Student presentations
8 (Oct 4)	Environmental plastics – Do we really need to get rid of them? Student presentations
9 (Oct 11)	“Forever” chemicals – PFAS (Poly- and perfluoroalkyl substances In YOUR body, so what? Student presentations
10 (Oct 18)	Environmental impacts of hydraulic fracturing – Aquifer and drinking water contamination or not? Student presentations
11 (Oct 25)	Chemical terrorism – Is the threat real? Student presentations
12 (Nov 1)	Amphibian deformities – are they actually caused by herbicides? Student presentations

- 13 (Nov 8)                    **The Great Chlorine Debate** – students will present the various perspectives of government, industry, NGOs (e.g., Green Peace) and academia on the production and use of chlorinated chemicals in a panel discussion
- 14 (Nov 15)                   Gulf of Mexico oil spill – Ten+ years after – where do we stand?  
Student presentations
- 15 (Nov 22)                   “Omics” tools applied to environmental toxicology – genomics, transcriptomics, metabolomics, and environmental DNA (eDNA)  
Student presentations
- 16 (Nov 29)                   Diclofenac and the decline of vultures in Asia – social and ecological consequences (or what does(n’t) happen when someone or something dies?)  
Student presentations

\*The final list of topics and number of days needed for student presentations will be determined once class size and day when the class will take place are established

**Biographical Statement:**

Roman Lanno is currently Associate Professor in the Department of Evolution, Ecology, and Organismal Biology. The primary focus of his research group lies in applied and theoretical aspects of chemical exposure assessment and ecological effects assessment in various environmental media. Specifically, research examines relationships between chemical and biological measures of bioavailability and toxicity endpoints such as lethality, growth, reproduction, or biomarkers, in both aquatic and terrestrial systems. His research group has developed and applied solid-phase extraction techniques as biomimetic or biological surrogates for estimating the bioavailability of organic chemicals and metals. More recent areas of interest include the environmental risks of hydraulic fracturing and the application of environmental DNA (eDNA) in ecotoxicology. He has published on ecotoxicology and risk assessment in both terrestrial and aquatic systems and has edited a Society of Environmental Toxicology and Chemistry (SETAC) book “Contaminated Soils: From soil-chemical interactions to ecosystem management”. He has been a member of SETAC since 1988, serving two terms on the editorial board for Environmental Toxicology and Chemistry and has just completed a 5-year term serving on the Board of Directors for SETAC North America, including as president in 2019. His teaching portfolio includes Biology 101 (during quarters), BIOL 1114H (Ecology and Evolution), BIOL 3401 (Integrated Biology – module on Gulf of Mexico oil spill, Chernobyl nuclear meltdown, energy production), and EEOB 6210 (Ecotoxicology).