

University of Nebraska at Kearney

Natural Science Curriculum (BIOL 876) Summer 2022

Instructor: Gregory Pec

Emails: pecg@unk.edu (please include "Biol 876" in the subject line of all emails)

On-campus office: BHS 319

Office Hours: Virtual - by appointment. Email should be used judiciously to address questions pertaining to course administration/scheduling or urgent matters. Direct issues related to the course content should be posted to the Canvas forum described below.

Course description: A discussion of the natural science curriculum, with emphasis on scientific literacy and the alignment of curricula with state and national standards and benchmarks.

Course objectives: By the end of this course, students will be able to: (1) evaluate school science curricula for coherence and consistency with state and national standards; (2) utilize state and national science education standards in the delivery of curriculum; (3) apply pedagogical content knowledge to the development and implementation of science curriculum; (4) use the curriculum topic study process for various curriculum development and implementation purposes; and (5) discuss the contextual factors that determine the implemented science curriculum.

Computer requirements: Access to a computer with internet connectivity and Microsoft Office. An updated PDF reader will also be needed to read course materials. Please refer to the UNK Online website for meeting minimum hardware/software and internet connection speed required by all UNK Online students (<https://www.unk.edu/online/resources-info/students/index.php>Links to an external site.).

Required Text: Keeley, P & Tugel, J. Science Curriculum Topic Study: Bridging the Gap Between Three-Dimensional Standards, Research, and Practice. Second Edition. 2019. ISBN-13: 978-1452244648; ISBN-10: 1452244642. Available from the bookstore. Readings will be assigned from the textbook to complement discussions. If you have a previous version of this textbook, please let me know as you may be able to use it in lieu of the latest version.

Canvas: For this class we will use an online course management system called Canvas. Course information, updates and related information, etc. will be posted here. I have also created a forum in Canvas for asking/answering questions about discussion topics. **Course content related questions will not be answered via email.**

Course structure: This is a discussion-based graduate course. No lectures will be given by the instructor – instead, my role will be to facilitate discussions and learning. All materials for each week will be posted on Canvas. This is not a self-paced course. You will be expected to keep up with the pace of the course, and the course structure is designed to help with this. If this is your first distance class, you will find that these classes can be fast paced. Everyone in these classes is busy with work, school, and family. I understand, but if you start to fall behind, it may be difficult to catch up. Please do not hesitate to contact me.

Assignments:

Reading discussions: Students will organize into groups of 2-4 (depending on enrollment) to lead a discussion on selected reading material. Discussion leaders should briefly outline the major points of the readings and have a list of discussion points and questions ready to stimulate discussion (*see evaluation of group discussion leadership on Canvas*). Discussion boards will begin on Monday and run through to Sunday. Students will be expected to respond to one of the discussion questions posed by the discussion leaders and to other students' comments. This will allow us to talk about the topics and answer any questions that students might have. There will be a total of 6 weeks of discussion, each week being worth 50 points (300 points total). Participation marks will be based on the following criteria:

- (1) For the initial post, you will reply to the question(s) posted by Thursday (30 points).
- (2) The second part of the assignment is to respond to two of your classmates' postings by expanding on what they have written. These responses are due by Sunday (20 points).

Further details will be provided for each discussion board assignment. In addition to this weekly mechanism for student participation, please become familiar with all other such policies on attendance found in the University Graduate catalog (<https://catalog.unk.edu/graduate/academics/academic-regulations/expectations-in-the-classroom/class-attendance/>)

Reflection papers: Students will choose two out of five different reading reflections, which are intended to capture four major sources of understanding that can inform effective science teaching: (1) the nature of science, (2) the nature of learning, (3) the nature of learners, and (4) the nature of teaching (*see reflection paper information on Canvas*).

Curriculum topic study: Students will select a topic of study and complete one of the six CTS sections (*see CTS information on Canvas*).

Grading Evaluation: Grades will be assigned using the standard grading scale for the Department of Biology, as follows:

A (93-100%), A- (90-92%), B+ (88-89%), B (83-87%), B- (80-82%), C+ (78-79%), C (73-77%), C- (70-72%), D+ (68-69%), D (63-67%), D- (60-62%), and F (below 60%).

Assignment	Points
Video introductions	10
Reading discussions (6 wks @ 50 points)	300
Reflection papers (2 @ 25 points each)	50
Curriculum topic study	50
Class total	410

Student Responsibilities:

Email: You must use your UNK email to receive any updates associated with the course. As email is a preferred mode of communication for online courses, I make an effort to be timely in my responses. Since I may not always have access to email or be in my office, emails will be answered within 24 hours on weekdays. Emails sent after 3 pm (CST) on Fridays will be answered by the following Monday.

Marks: Marks will be posted on the course Canvas page when available. Grading errors must be brought to the attention of the instructor within five days of the marks being released to the class.

Late Assignments: Without a valid excuse, any assignment not turned in on time is a late assignment. Late assignments will be docked 10% of the total possible points per day, holidays and weekends excluded.

Academic Integrity and Academic Honesty: This course, like all UNK courses, abides by all University policies as outlined in the UNK Student Handbook, which contains the UNK Student Code of Conduct. More information can be found in the University Graduate catalog (<https://catalog.unk.edu/graduate/academics/>).

Plagiarism and Cheating: Anyone found plagiarizing or cheating will receive a 0 for that assignment; subsequent violations will result in referral to the Vice Chancellor for Academic Affairs. Cheating (at any level) is an intolerable behavior that has no place in any scientific, educational, or social activity.

Policy on Withdraw (W) and Incomplete (I) grades: Students may not withdraw past the mid-point of a class (i.e. end of the 7th week of a 15-week spring class) unless extenuating circumstances exist, in which case the student may receive a "W". Extenuating circumstances are defined as circumstances that occur AFTER the mid-point of the course and beyond the control of the student which in the judgment of the Vice Chancellor for Academic Affairs, in consultation with the Exceptional Withdrawal Committee, constitute appropriate cause for withdrawal.

Students will receive a "W" on their transcript (which indicates a withdrawal) for classes dropped on or after the first day of the class. A failing grade of "F" will be recorded on the transcript if a student stops attending class and neither officially withdraws from the course prior to the appropriate deadline nor establishes, prior to the end of the class and to the satisfaction of the instructor, that extenuating circumstances prevented completion of the course.

To be considered for an incomplete, a mark of "I" is reserved for conditions in which a student has been unable, due to circumstances beyond his or her control, to complete the course by the end of the term. Unless an extension of time is granted in writing by the Office of Student Records and Registration, an incomplete must be removed within twelve calendar months. If the course work is not completed during this time, then the "I" will convert to an "F" on the student's transcript and cannot be changed other than by re-registering for the course.

If an extension is desired, the student must initiate a written request for a specific time of extension, must exhibit extenuating circumstances beyond his/her control, and must make the request in advance of the twelve-month expiration. The request must be supported by a written endorsement from the course instructor, or the department chairperson in the absence of the instructor and submitted to the Registrar's Office prior to the expiration of the twelve-month period.

UNK Statement of Diversity & Inclusion: UNK stands in solidarity and unity with our students of color, our LatinX and international students, our LGBTQIA+ students and students from other marginalized groups in opposition to racism and prejudice in any form, wherever it may exist. It is the job of institutions of higher education, indeed their duty, to provide a haven for the safe and meaningful exchange of ideas and to support peaceful disagreement and discussion. In our classes, we strive to maintain a positive learning environment based upon open communication and mutual respect. UNK does not discriminate on the basis of race, color, national origin, age, religion, sex, gender, sexual orientation, disability or political affiliation. Respect for the diversity of our backgrounds and varied life experiences is essential to learning from our similarities as well as our differences. The following link provides resources and other information regarding D&I: <https://www.unk.edu/about/equity-access-diversity.php> **Links to an external site.**

Students with Disabilities: It is the policy of the University of Nebraska at Kearney to provide flexible and individualized reasonable accommodation to students with documented disabilities. To receive accommodation services for a disability, students must be registered with the UNK Disabilities Services for Students Office, 172 Memorial Student Affairs Building, 308-865-8988 or by email unkdso@unk.edu

Students Who are Pregnant: It is the policy of the University of Nebraska at Kearney to provide flexible and individualized reasonable accommodation to students who are pregnant. To

receive accommodation services due to pregnancy, students must contact Cindy Ference in Student Health, 308-865-8219. The following link provides information for students and faculty regarding pregnancy rights. <http://www.nwlc.org/resource/pregnant-and-parenting-students-rights-faqs-college-and-graduate-students>

If you have an accommodation plan, please see the instructor as soon as possible, so any necessary arrangements can be made for your learning. **No accommodations can be provided until a Reasonable Accommodation Plan is in place. Please remember, plans are not retroactive and cannot be used for assignments prior to the date of the instructor's signature.** To the greatest extent possible, University Representatives, shall observe confidentiality with respect to any request for accommodation.

Veterans Services. UNK works diligently to support UNK's military community by providing military and veteran students and families with resources and services to help them succeed. Veterans Services assists with the GI Bill process and acts as a liaison between the student and the Veterans Administration. If you need assistance or would like more information, please contact Lori Weed Skarka at 308-865-8677 or unkveterans@unk.edu

Reporting Student Sexual Harassment, Sexual Violence or Sexual Assault: Reporting allegations of rape, domestic violence, dating violence, sexual assault, sexual harassment, and stalking enables the University to promptly provide support to the impacted student(s), and to take appropriate action to prevent a recurrence of such sexual misconduct and protect the campus community. Confidentiality will be respected to the greatest degree possible. Any student who believes she or he may be the victim of sexual misconduct is encouraged to report to one or more of the following resources:

Local Domestic Violence, Sexual Assault Advocacy Agency 308-237-2599

Campus Police (or Security) 308-865-8911

Title IX Coordinator 308-865-8655

Retaliation against the student making the report, whether by students or University employees, will not be tolerated.

If you have questions regarding the information in this email please contact **Mary Chinnock Petroski, Chief Compliance Officer** (petroskimj@unk.edu or phone 8400).

Disclaimer: Any typographical errors in this Course Outline are subject to change and will be announced on the course Canvas page.

Tentative course schedule

Week	Topic	Discussion
1	Course Introductions	
2	Curriculum development	How should curriculum be developed?
2	Toward scientific literacy	Scientific literacy as a curriculum goal
3	National standards for science education	How do standards relate to curriculum?
3	Essential science content	What is essential in the natural science curriculum?
4	Curriculum Topic Study	Critique on Keeley and Tugel's list of curriculum topics
4	Processes and practices of science	Processes & "practices" in the curriculum
5	Interdisciplinary connections	Addressing the Cross- Cutting Concepts
5	Pedagogical considerations	Curriculum support for pedagogical concerns
6	Curriculum coherence	P-16 curriculum?
6	Assessment for standards-based curricula	Curriculum assessment issues
7	Science for All	Differentiating the curriculum
7	Current issues in science curricula	What's up with your curriculum?
8	Course conclusions	

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