

LSC Use Only No:	LSC Action-Date:	UWUCC USE Only No.	UWUCC Action-Date:	Senate Action Date:
		10-45n.	app 2/8/11	App-2/22/11

Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee

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Check all appropriate lines and complete information as requested. Use a separate cover sheet for each course proposal and for each program proposal.

1. Course Proposals (check all that apply)
 New Course Course Prefix Change Course Deletion
 Course Revision Course Number and/or Title Change Catalog Description Change

BIOL 221 Environmental Health & Protection

<u>Current</u> Course prefix, number and full title	<u>Proposed</u> course prefix, number and full title, if changing
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2. Additional Course Designations: check if appropriate
 This course is also proposed as a Liberal Studies Course. Other: (e.g., Women's Studies, Pan-African)
 This course is also proposed as an Honors College Course.

3. Program Proposals
 New Degree Program Program Title Change Program Revision
 New Minor Program New Track Other

<u>Current</u> program name	<u>Proposed</u> program name, if changing
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4. Approvals

		Date
Department Curriculum Committee Chair(s)	<i>[Signature]</i>	9/30/10
Department Chair(s)	<i>[Signature]</i>	10/1/10
College Curriculum Committee Chair	<i>[Signature]</i>	11/10/10
College Dean	<i>[Signature]</i>	11/10/10
Director of Liberal Studies *		
Director of Honors College *		
Provost *		
Additional signatures as appropriate: (include title)		
UWUCC Co-Chairs	<i>[Signature]</i>	2/8/11

* where applicable

Received

Received

FEB 2 2011

NOV 17 2010

Liberal Studies

Liberal Studies

I. Catalog Description

BIOL 221 Environmental Health and Protection

(3c-3l-4cr)

Prerequisites: BIOL 104 or 112, CHEM 102 or 112 or 114

A survey of indoor and outdoor environmental health hazards. Hazards are addressed from the standpoint of their source and nature, human health effects, measurement and control, and management.

II. Course Outcomes:

Students will be able to

1. Identify the origins of environmental health hazards.
2. Describe the nature and characteristics of these hazards.
3. Explain the human health effects of these hazards.
4. Describe the control of these hazards.
5. Recognize the regulatory and economic significance of managing these hazards.
6. Assess environmental health hazards, and report their findings, conclusions and recommendations following established guidelines.

III. Course Outline

A. Lecture

[Based on three hours per week]

1. Introduction and Overview (1 hour)
2. Indoor Air Pollution & Housing Hazards (4 hours)
 - a. Source and Nature
 - b. Health Effects
 - c. Measurement and Control
 - d. Management
3. Radiation Hazards (3 hours)
 - a. Source and Nature
 - b. Health Effects
 - c. Measurement and Control
 - d. Management
4. Recreational Environment Hazards (4 hours)
 - a. Source and Nature
 - b. Health Effects
 - c. Measurement and Control
 - d. Management
5. Examination 1 (1 hour)
6. Food Contamination (4 hours)
 - a. Source and Nature
 - b. Health Effects
 - c. Measurement and Control
 - d. Management
7. Drinking Water Contamination (4 hours)
 - a. Source and Nature
 - b. Health Effects

- c. Measurement and Control
 - d. Management
8. Wastewater (4 hours)
 - a. Source and Nature
 - b. Health Effects
 - c. Measurement and Control
 - d. Management
 9. Examination 2 (1 hour)
 10. Solid and Hazardous Waste (4 hours)
 - a. Source and Nature
 - b. Health Effects
 - c. Measurement and Control
 - d. Management
 11. Outdoor Air Pollution (4 hours)
 - a. Source and Nature
 - b. Health Effects
 - c. Measurement and Control
 - d. Management
 12. Community Noise (4 hours)
 - a. Source and Nature
 - b. Health Effects
 - c. Measurement and Control
 - d. Management
 13. Vector Borne Diseases (4 hours)
 - a. Source and Nature
 - b. Health Effects
 - c. Measurement and Control
 - d. Management

Examination 3 (during final examination period)

B. Laboratory

[Based on three hours per week]

1. Classroom Inspection, Radon & Lead Testing (1 laboratory)
2. Indoor Air Quality Monitoring (i.e., Environmental Hygiene) (1 laboratory)
3. Pool Inspection (1 laboratory)
4. Cafeteria Inspection (1 laboratory)
5. Drinking Water Plant Field Trip (1 laboratory)
6. Indiana Sewage Treatment Plant Field Trip (1 laboratory)
7. Drinking Water & Wastewater Analyses (1 laboratory)
8. Municipal Landfill Field Trip (1 laboratory)
9. Environmental Site Assessment for Real Estate (1 laboratory)
10. Coal-fired Utility Power Plant Field Trip (1 laboratory)
11. Community Noise Survey (1 laboratory)
12. Mosquito Monitoring (1 laboratory)
13. Black Fly Monitoring (1 laboratory)
14. Pennsylvania Emergency Management Agency & 911 Center Field Trip (1 laboratory)

IV. Evaluation Methods

The final grade for the course will be determined as follows:

- 75% Tests. Three examinations (25 % each) that may consist of multiple choice, matching, fill-in-the blank, short answer and long essay. Examinations will cover all lecture, laboratory, text and supplemental reading materials.
- 20% Four laboratory reports (5% each). A number of environmental health inspection and testing exercises will be performed during the laboratory. Four of these exercises will result in professional reports. For each, students will be working in teams of 3 or 4 throughout all of its stages (e.g., planning, data gathering analyzing and reporting). They will use established government guidelines to complete the project and draft the report. Laboratory grades will be based on the team's overall performance by evaluating the quality (e.g., professionalism, thoroughness and accuracy) of the final reports and supporting materials, and on the students' individual efforts and contributions by evaluating daily logs documenting their activities.
- 5% Class participation will be evaluated on the basis of weekly quizzes.

V. Example Grading Scale

90 – 100 %	A
80 – 89 %	B
70 – 79 %	C
60 – 69 %	D
< 60 %	F

VI. Attendance Policy

Although there is no formal attendance policy, students are expected to attend and participate in class to enhance their learning.

VII. Required Textbooks and Supplemental Reading

Frumkin, H. (2010) Environmental Health: from global to local. 2nd ed. Wiley, John & Sons, Inc., New York. 1280 pp.

VIII. Special Resource Requirements

None

IX. Bibliography

A. Textbooks

- APHA (2005) Standard Methods for Examination of Water and Wastewater (21st ed.) American Public Health Association.
- Koren, H., Bisesi, M. (2002) Handbook of Environmental Health and Safety (Volume I): Biological, Chemical, and Physical Agents of Environmentally Related Disease (4th ed.). Taylor and Francis, Inc. N.Y. 824 pp.
- Koren, H., Bisesi, M. (2002) Handbook of Environmental Health and Safety (Volume II): Pollutant Interactions in Air, Water and Soil. (4th ed.) Taylor and Francis, Inc. N.Y. 904 pp.
- Moeller, D.W. (2005) Environmental Health (3rd ed.). Harvard University Press. 624 pp.
- Morgan, M.T. (2002) Environmental Health. (3rd ed.). Cengage Learning. 340 pp.
- Nadakavukaren, A. (2005) Our Global Environment: A Health Perspective (6th ed.) Waveland Press, Inc. 624pp.
- Argady, F.J. (2003) Environmental Engineering. John Wiley & Sons, Inc., Wiley, John & Sons, Inc. 1544 pp.

B. Journals and Government Documents

- ASTM (2005) Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (E 1527-5). American Society for Testing and Materials, PA. 35 pp.

ASTM (2005) Standard Practice for Limited Due Diligence: Transaction Screen Practice (E 1528-6). American Society for Testing and Materials, PA. 26 pp.

ASTM (2002) Standard Practice for Use of Qualitative Chemical Spot Kits for Detection of Lead in Dry Paint Films (E 1753-1). American Society for Testing and Materials, PA. 26 pp.

American Journal of Public Health (American Public Health Association)

Commonwealth of Pennsylvania (1991) Pennsylvania Code, Title 25. Environmental Resources, Chapter 240. Radon Certification.

Environmental Manager (Air & Waste Management Association)

Journal of the American Waterworks Association

Journal of Environmental Health (National Environmental Health Association)

U.S. Department of Health & Human Services (1991) Health People 2000: National Health Promotion and Disease Prevention Objectives. PHS 91-50212. Washington, D.C. 692 pp.

U.S. Department of Housing and Urban Development (1985) The Noise Guidebook. HUD-953-CPD. Washington, D.C.

Water Environment & Technology (Water Environment Federation)

American Journal of Public Health (American Public Health Association)

U.S. Department of Health & Human Services (1991) Health People 2000: National Health Promotion and Disease Prevention Objectives. PHS 91-50212. Washington, D.C. 692 pp.

U.S. Department of Housing & Urban Development (1995) Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing. U.S. G.P.O. 1995-396-057

U.S. Environmental Protection Agency (1991) Building Air Quality: A Guide for Building Owners and Facility Managers.

U.S. Environmental Protection Agency (1992) Technical Support Document for the 1992 Citizen's Guide to Radon. EPA 402-R-92-011. Washington, D.C.

U.S. Environmental Protection Agency (1992) Indoor Radon Decay Product Measurement Device Protocols. EPA 402-R-92-004. Washington, D.C.

U.S. Environmental Protection Agency (1993) Protocols for Radon and Radon Decay Product Measurement. EPA 402-R-93-003. Washington, D.C.

U.S. Environmental Protection Agency (1995) Indoor Air Quality: Tools for Schools, IAQ Coordinator's Guide. EPA 402-K-95-001. Washington, D.C.

U.S. Environmental Protection Agency (2002) Indoor Air Quality Building Education and Assessment Model. (I-Beam). [<http://www.epa.gov/iaq/largebldgs/i-beam/index.html>]

U.S. Environmental Protection Agency (2005) Indoor Air Quality Tools for Schools Action Kit. EPA 402-C-05-001. Washington, D.C.

Course Analysis Questionnaire

- A1 BIOL 221 would be a core course for the proposed B.S. in Biology / Environmental Health Track which is replacing the B.S. in Environmental Health Science degree program. This course would also be an elective for other biology majors. In addition to Environmental Health Track majors, BIOL 221 would be attractive to Pre-medicine Track majors in the Department of Biology and pre-professional majors in the College of Natural Sciences and Mathematics who are interested in public health. For example, the national American Medical Student Association has a standing Community and Environmental Health Action Committee. BIOL 221 is replacing ENVH 221 Environmental Health & Protection I and ENVH 222 Environmental Health & Protection II, which previously covered the environmental health content.
- A2 BIOL 221 will replace ENVH 221 and ENVH 222 which were core courses in the B.S. in Environmental Health Science curriculum, which is being revised to a B.S. in Biology / Environmental Health Track. Proposals are being submitted to delete ENVH 221, ENVH 222 and the B.S. in Environmental Health Science degree program, and to create a B.S. in Biology / Environmental Health Track.
- A3 BIOL 221 has not been taught on a trial basis, but ENVH 221 and ENVH 222, and prior to these courses BIOL 321 Environmental Protection I and BIOL 322 Environmental Protection II have been taught since 1980.
- A4 BIOL 221 will not be a dual-level course.
- A5 BIOL 221 can not be taken for variable credit.
- A6 Many institutions in addition to IUP, have offered similar courses. For example, California State University – Northridge (EOH 356 Environmental Health), University of Georgia (EHSC 360 Introduction to Environmental Health); Bowling Green State University (ENVH 105 Environmental Health Science); and University of Washington (ENVH 311 Introduction to Environmental Health).
- A7 The Environmental Health Science and Protection Accreditation Council recommends that the content covered in BIOL 221 be covered in one or more courses. The undergraduate guidelines can be found at <http://www.ehacoffice.org/accred-guide/under-guide.php>.

Section B: Interdisciplinary Implications

- B1 BIOL 221 will not be taught by professors from more than one department.
- B2 The content in BIOL 221 is unique, and was previously covered in ENVH 221 and ENVH 222.
- B3 BIOL 221 will not be cross-listed with other departments.

Section C: Implementation

- C1 Faculty resources are adequate, since the professor who will teach BIOL 221 previously taught ENVH 221 and ENVH 222.
- C2 The resources for this course are marginal. The budget for its predecessor courses, ENVH 221 and ENVH 222 have remained the same since at least 1987, unadjusted for inflation. It is anticipated that enrollment for BIOL 221 will be greater than for ENVH 221 and ENVH 222, since BIOL 221 will be open to all biology majors as an elective. Therefore, the budget for ENVH 221 and ENVH 222 should be combined and maintained for BIOL 221 to compensate for the increased enrollment. In addition, the Department of Biology has requested permission and is awaiting approval to implement laboratory fees to adequately fund its laboratory courses.
- C3 The resources for this course are not funded by a grant.
- C4 It is anticipated that BIOL 221, as were ENVH 221 and ENVH 222, will be offered every other year. BIOL 221 could be offered in either the fall or spring semesters.
- C5 It is anticipated that one section of this course would be offered in any single semester due to limited resources.
- C6 It is anticipated that the maximum number of students in a section is twenty-four, due to laboratory classroom space limitations.
- C7 No professional society recommends enrollment limits or parameters for a course of this nature.

C8 BIOL 221 is not a distance education course.

Section D: Miscellaneous

BIOL 221 is proposed as a 4 credit course to cover the material previously covered in ENVH 221 and ENVH 222 which were 3 credit courses.