

Villanova University
Interdisciplinary Course: GEV and Nursing
Course Title: (VIA 3100) Indoor Air Quality and Human Health

Thursdays 6:00 – 8:30 PM Driscoll Hall 221
January 14 – May 10, 2019

Course Description:

The air we breathe is influenced by building structure, heating and cooking, the local environment, public policy, and social, cultural, geographic, and economic factors. This course will examine and analyze current issues surrounding indoor air quality (IAQ) and human health. We will rely on principles of environmental science, human biology, public health, and social, cultural, policy, and economic influences of residential air quality. Topics will include (a) fundamentals of air pollution (b) indoor air pollutants (c) human health effects related with IAQ (d) determinants of health including economics, social, and cultural factors (e) Comparison of IAQ in developed and developing countries (f) IAQ and environmental justice.

Instructors:

Ruth McDermott-Levy, PhD, MPH, MSN, RN
Associate Professor & Director, Center for Global & Public Health
M. Louise Fitzpatrick College of Nursing, Room 340
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Office hours: Tuesday & Thursday 3:30 – 4:30 PM (please make an appointment)

Kabindra Shakya, PhD
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Department of Geography and the Environment
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Office hours: by appointment

Learning Objectives:

1. Identify major indoor air pollutants, sources, and health effects.
2. Demonstrate skills in measuring and analyzing IAQ data.
3. Identify social, cultural, policy, and economic challenges related with IAQ.
4. Evaluate IAQ scientific literature in relationship to human health and health determinants.
5. Propose control measures structural, behavioral, and policy factors to reduce indoor air pollution.
6. Compare current IAQ issues in global and local context.
7. Evaluate factors that influence IAQ related to environmental justice locally and globally.
8. Communicate scientific information related to IAQ to the public.

Instructional activities:

(a) Lectures: for introductory concepts. (b) Learning teams: to work through 1) Case Studies: that analyze the issues in IAQ and 2) Comprehensive analysis: to address the relationships of the determinants of health and to IAQ in a variety of settings. (c) IAQ Measurement: within learning team, measure and analyze the exposure to indoor air pollutants and present the findings to the class. (d) Social factors: consideration of social determinants of health will be incorporated throughout all assignments.

Evaluation:

Evaluation of student learning will be a combination of individual and group assignments. In the beginning of the semester the students will be placed in learning teams.

1. Lead Assigned Reading and 1-page Written Response* (group)	15%
2. Personal home IAQ assessment and analysis (individual assignment)	30 %
3. IAQ Environmental Justice Communication (individual)	20%
4. Final Paper: Analysis of home assessment data (group)	25%
5. Attendance and participation (individual)	<u>10%</u>
	100%

Required Readings:

There is no required textbook for this class, instead there will be required weekly readings of peer-reviewed articles and official web resources. Students are expected to complete the required reading and participate in class discussions and class work based on the assigned reading and any additional relevant materials that the student may come across in the course of the semester.

Spring Semester 2019 Schedule (***)Subject to Change, new Schedules will be posted on Blackboard)

Wk	Date	Lecture Topic	Instructor	Readings	Assign.
1	01/17	Intro to IAQ history, science, and concepts. Course expectations	Shakya & McD-Levy	Syllabus	*Student Article write up is due one week after leading the class discussion
2	01/24	How do we measure IAQ?	Shakya		
3	01/31	Indoor Air Pollutants: Gases & Particulates	Shakya	Student article 1	
4	02/07	Indoor Air Pollutants: Biological and Radioactive (molds, fungus, bacterial, pests, radon)	McD-Levy	Student article 2	
5	2/14	Cardio-Pulmonary Physiology; Comparison of respiratory health data, socioeconomic status, and culture/ethnicity (the determinants of health)	McD-Levy	Student article 3	
6	02/21	Indoor environments: Home, work, school, worship and culture.	McD-Levy	Student article 4	
7	02/28	Control methods Steve Luxton Energy Coordinating Agency			Personal home IAQ assessment
8	03/07	Semester Recess			
9	03/14	Environmental Justice & IAQ Todd Aagaard, Vice Dean, Charles Widger Law School, Villanova University	McD-Levy & Shakya	Student article 5	
10	03/21 Fri 3/22	IAQ Case studies Developing Country Developed Country (Finland) Local: Philadelphia	McD-Levy & Shakya	Student article 6	
11	03/28	Learning teams: Data analysis	Shakya & McD-Levy		EJ communication assignment
12	4/04	Climate change and indoor air pollution	Shakya	Student article 7	
13	04/11	Policies that influence IAQ: TSCA, NIOSH, State & Federal Building Regulations Dr. Pouné Saberi, MD, MPH Occupational & Environmental Health University of Pennsylvania	Shakya & McD-Levy	Student article 8	

14	04/18	Easter Recess			
	4/24	Earth Day Speaker: John Balbus, MPH, MD Climate Change and Our Health https://www.niehs.nih.gov/about/od/advisor/balbus/index.cfm	Driscoll Auditorium 6:00 PM		Not a required class, but worth attending.
15	04/25	Strategies to improve indoor air quality. Penn State IPM			CATS during class
16	05/02	Learning Team Presentations And course summary			Final Paper: Analysis of Home Data

Helpful Web Resources

National Library of Medicine Toxnet <https://toxnet.nlm.nih.gov>

National Institute for Occupational Safety and Health <https://www.cdc.gov/niosh/>

Penn State Extension Integrated Pest Management <https://extension.psu.edu/pests-and-diseases/pest-management-and-education>

U.S. EPA Indoor Air Quality <https://www.epa.gov/indoor-air-quality-iaq>

U.S. EPA Publications About Indoor Air Quality: <https://www.epa.gov/indoor-air-quality-iaq/publications-about-indoor-air-quality>

WHO Household Air Pollution and Health <https://www.who.int/news-room/fact-sheets/detail/household-air-pollution-and-health>

WHO Indoor Air Pollution <https://www.who.int/features/qa/indoor-air-pollution/en/>

ACADEMIC ACCOMMODATIONS

It is the policy of Villanova to make reasonable academic accommodations for qualified individuals with learning disabilities. If you are a person with a disability and wish to request accommodations to complete your course requirements, please make an appointment with the course professor as soon as possible to discuss the request. If you would like information on documentation requirements, contact the Office of Learning Support Services at 610-519-5636, visit the office on the 2nd floor of Falvey Hall, or visit the webpage: <http://www1.villanova.edu/villanova/provost/learningsupport.html>

The Office of Disability Services collaborates with students, faculty, staff, and community members to create diverse learning environments that are usable, equitable, inclusive and sustainable. The ODS provides Villanova University students with *physical disabilities* the necessary support to successfully complete their education and participate in activities available to all students. If you have a diagnosed disability and plan to utilize academic accommodations, please contact *Gregory Hannah, advisor to students with disabilities* @ 610-519-3209 or visit the office on the second floor of the Connelly Center.

ACADEMIC INTEGRITY

Students are expected to know and comply with all University policies related to academic dishonesty and plagiarism. The Villanova University Code of Academic Integrity is available at the following web site:

<https://www1.villanova.edu/villanova/provost/resources/student/policies/integrity.html>

WEATHER AND EMERGENCY INFORMATION

In case of inclement weather or an emergency, announcements regarding canceled or delayed classes will be available on Villanova University Snow and Emergency Hotline at 610.519.4505 and on local radio stations (e.g., KYW 1060 AM) using the school call number 524. You are also encouraged to check your Villanova University email for information.