

BMS 199
 New Frontiers in Biomedical Sciences: Everyday medicine
Registration 22332
UB Seminar - 3 credits
Fall 2017

COURSE INFORMATION

Lecture: Tuesday 10:00-11:20 AM
 Deifendorf 203
 3 credits

Lecturer

Dr. David Shubert, Assistant Dean
Shubert@buffalo.edu
 716-829-2800
 Biomedical Sciences

Recitation Section- Bioinformatics

Thursday 1:00-2:20pm

Deifendorf 207

Biomedical Informatics
 Dr. Werner Ceusters, MD, Professor (with tenure)
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Course Coordinator:

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COURSE DESCRIPTION

Students will engage with topics on medicine and health that relate to their everyday lives. The topics discussed will be pulled from the news and current events. These topics will encompass subjects we encounter either in our daily lives or as a larger community.

Students will learn how to review articles from a scientific point of view and look at topics of health in the news from the prospective of a health professional. Small group recitations will be taught by a department within the school of medicine and topics will be examined through the lens of those individual departments. Subject areas will range from the cold flu, and Zika viruses to more controversial topics like medical marijuana, environmental hazards, and rising cost of health care. Students will have the opportunity to engage with the material under the guidance of medical school departments such as pharmacology & toxicology, biomedical informatics, microbiology, physiology and clinical lab sciences.

STUDENT LEARNING OUTCOMES

Having completed a UB Seminar, students will be able to:

Course Learning Outcome	Maps to the Following Program Outcomes / Competencies:	Delivered through the Following Instructional Method(s):	Student Achievement Assessed with the Following Method(s)/Assignments:
1. Think critically using multiple modes of inquiry.	UBGE, SUNY Critical Thinking, MSCHE Critical Analysis and Reasoning	Discussion; assigned reading and writing	Discussion; written work

Course Learning Outcome	Maps to the Following Program Outcomes / Competencies:	Delivered through the Following Instructional Method(s):	Student Achievement Assessed with the Following Method(s)/Assignments:
2. Analyze disciplinary content to identify contexts, learn fresh perspectives, and debate and discuss problems in the field.	UBGE, SUNY Information Literacy	Lecture, discussion and assigned reflections on reading	Participation in discussion; quality of thought in brief written reflections
3. Understand and apply the methods of close reading, note taking, analysis, and synthesis.	UBGE, SUNY Critical Thinking, MSCHE Critical Analysis and Reasoning	Lecture, assigned essays, & discussion. Reflection will also require synthesis and analysis	Participation in discussion; written article review and structured class discussions.
4. Recognize and debate ethical issues and academic integrity in a variety of settings.	UBGE, MSCHE Values, Ethics, & Diverse Perspectives	Participation in small group discussions and presentations. Informal and formal writing assignments	Participation in small group discussions and presentations. Informal and formal writing assignments
5. Demonstrate proficiency in oral discourse and written communication.	UBGE, SUNY Basic Communication, MSCHE Oral and Written Communication	Informal and formal writing	Scientific article reviews, small group discussions, large group presentations
6. Develop essential research and study skills such as time management.	UBGE, SUNY Information Literacy	Lecture, modeling, practice in preparing course work	Article review Panel Discussion Time management log Small group discussion
7. Utilize the eportfolio for at least one assignment.	UBGE, SUNY Information Literacy, MSCHE Technological Competency	Discussed and modeled	Article Review (and presentation)
8. Understand the academic expectations pertaining to studentship at the University at Buffalo and to higher learning at a research university.	UBGE	Topic addressed in lecture and addressed in written reflections	All written assignments and class discussion

Note: *This course meets or contributes to meeting the SUNY General Education Requirements (GER) for Critical Thinking, Information Literacy, and Basic Communication: ([SUNY website](#)), as well as areas of general education required by the Middle States Commission on Higher Education.

COURSE REQUIREMENTS

Students must attend and participate in class discussions

- All assignment must be completed on time. Late or make-up assignments will not be accepted.
 - Attend class regularly and participate in class discussion. Excused absences are limited to school sanctioned event or religious observation. Medical absence must be accompanied by a doctor's note.
- Learning outcomes: 1,2,3,4,5,8

- Class Discussion: Each student will be able to provide analysis and reflection on assigned articles for use during the class discussion., learning outcomes 2,3,5,
- Article outlines should show analytical and thoughtful reading. Learning outcomes 2,3,5,7
- Complete time management log with reflection. Students will select a pre-requisite course for their major. They will complete a weekly log on; time spent studying, class time, etc. for that course and turn it in with a reflection on how they managed their time, what they would change and what tactics they employed or wish they had used. learning outcome 6
- Panel Discussion Outline: Complete the prescribed outline on information delivered at the Panel Discussion on 10/17
- Final Assignment: Write a brief reflection (personal statement) on how the course and panel discussion(s) with faculty informed your career choice.
- Assignments may be added or modified at any time in the semester at the discretion of the instructor

Assigned Readings

- Lewis, Jordan Gaines (2017).What happens to your brain when you give up sugar. CNN retrieved from <http://www.cnn.com/2017/03/02/health/sugar-brain-diet-partner/index.html>
- Potarazu, Sreedhar (2015). Rising Cost of Prescription Drugs Threaten Health Care Gains. CNN. Retrieved from <http://www.cnn.com/2015/08/26/opinions/potarazu-drug-price-hikes/>
- Sacks, Oliver (2010). This Year, Change Your Mind. The New York Times. Retrieved from <http://www.nytimes.com/2011/01/01/opinion/01sacks.html>
- Sifferlin, Alexandra (2017).Degenerative Brain Disease Found in 87% of Former Football Players: Study Time Magazine. Retrieved from <http://time.com/4871597/degenerative-brain-disease-cte-football/>
- Medical Marijuana: A Primer on Ethics, Evidence, and Politics (2014), Journal for Nurse Practitioners. Retrieved from <http://www.medscape.com/viewarticle/833782><http://www.drugdiscountcardinfo.com/argusredirect.taf>.
- <http://www.buffalowater.org/quality/waterqualityreports>.
- *Career Paths: A Seller's Market for Biomedical Data Science Jobs* (2015), Biomedical Computation Review. Retrieved from <http://biomedicalcomputationreview.org/content/career-paths>
- Casey BJ et al (2013). DSM-5 and RDoC: progress in psychiatry research? Nat Rev Neurosci. 2013 Nov; 14(11): 810–814. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4372467/>
- Pfeiffer, Eric (2013). Study says e-cigarettes may contain carcinogens similar to regular cigarettes. Yahoo news. Retrieved from <http://news.yahoo.com/blogs/sideshow/-study-says-e-cigarettes-contain-carcinogens-similar-to-regular-cigarettes--205045093.html>
- <https://www.amia.org/biomedical-informatics-core-competencies>

GRADING POLICY

Learning assessments will be graded based on rubric criteria and weighted according to the following breakdown.

Weighting	Assessment / Assignment
40%	Attendance and Participation in discussion
10%	Articles
5%	Library Roadmap
15%	Time management log
15%	In Class Assignments
15%	Personal Statement

Final Grades:

Grade	Quality Points	Percentage (EXAMPLE)
A	4.0	93.0% - 100.00%
A-	3.67	90.0% - 92.9%
B+	3.33	87.0% - 89.9%
B	3.00	83.0% - 86.9%
B-	2.67	80.0% - 82.9%
C+	2.33	77.0% - 79.9%
C	2.00	73.0% - 76.9%
C-	1.67	70.0% - 72.9%
D+	1.33	67.0% - 69.9%
D	1.00	60.0% - 66.9%
F	0	59.9 or below

Incompletes (I/IU)*: A grade of incomplete (“I”) indicates that additional course work is required to fulfill the requirements of a given course. Students may only be given an “I” grade if they have a passing average in coursework that has been completed and have well-defined parameters to complete the course requirements that could result in a grade better than the default grade. An “I” grade may not be assigned to a student who did not attend the course.

Prior to the end of the semester, students must initiate the request for an “I” grade and receive the instructor’s approval. Assignment of an “I” grade is at the discretion of the instructor.

The instructor must specify a default letter grade at the time the “I” grade is submitted. A default grade is the letter grade the student will receive if no additional coursework is completed and/or a grade change form is not filed by the instructor. “I” grades must be completed within 12 months – see the [Incomplete Grade Policy](#) for the schedule. Individual instructors may set shorter time limits for removing an incomplete than the 12-month time limit. Upon assigning an “I” grade, the instructor shall provide the student specification, in writing or by electronic mail, of the requirements to be fulfilled, and shall file a copy with the appropriate departmental office.

Students must not re-register for courses for which they have received an “I” grade

ACADEMIC INTEGRITY

Academic integrity is a fundamental university value. Through the honest completion of academic work, students sustain the integrity of the university while facilitating the university's imperative for the transmission of knowledge and culture based upon the generation of new and innovative ideas.

- Reference to the university [Undergraduate Academic Integrity Policy](#) and any additional instructor requirements and comments regarding academic dishonesty.

* Undergraduate Only

ACCESSIBILITY RESOURCES

If you have any disability which requires reasonable accommodations to enable you to participate in this course, please contact the Office of Accessibility Resources, 25 Capen Hall, 645-2608, and also the instructor of this course. The Office of [Accessibility Resources](#) will provide you with information and review appropriate arrangements for reasonable accommodations.

COURSE AGENDA

Date	Topic	Readings
Tuesday August 29 th	Introduction to the course. Review of UBLearns <ul style="list-style-type: none">• Discuss Academic Integrity	Medical Marijuana Scholarly Roadmap (9/7)
Thursday August 31 st	Review of Study Skills/ Time management Students will complete a HS Vs. College matching exercise to examine the differences between what is expected (academically) of a HS student Vs. College Student. Students will complete a Study-Skill self-assessment. After completing the assessment the class (as a whole) will review students' responses to questions and possible implications. Direct Instruction: Students will learn how to create study guides	Time management log and reflection (due 10/31)
Tuesday September 5 th	Ethics: What does ethics mean in Medicine and research? Students will discuss the meaning of academic integrity. They will review the academic integrity policy of the university. Students will be broken into small groups and asked to review scenarios in which students violated the policy. They will be tasked with formulating alternative actions that do not violate the policy. Students will engage in a large group discussion relating academic integrity to larger ethical issues (specifically in medicine).	Read: Medical Marijuana: A Primer on Ethics, Evidence and Politics. Complete article outline. (Due 9/12)
Thursday September 7 th	Presented by: Nell Aronoff & Elizabeth Stellrecht Plagiarism and Library resources	
Tuesday September 12 th	Discussion Topic: Medical Marijuana	Read: Rising Cost of Prescription Drugs Threaten Healthcare Gains. Complete article outline (Due 9/19)

Thursday September 14 th	Discuss scientific writing with examples <ul style="list-style-type: none"> - Break students into groups and assign article. - Students will give synopsis on abstract and introduction, methods, results and discussion. 	
Tuesday September 19 th	Discussion Topic: Cost of Prescription Drugs	
Thursday September 21 st	Establish E-Portfolio	If Students have a laptop please bring that to class.
Tuesday September 26 th	Virology: "Vaccines: a health savior or a danger?"	Check UBLearns for assignments
Thursday September 28 th	Virology: "Vaccines: a health savior or a danger?" Cont'd	Read: Casey BJ et al (2013). DSM-5 and RDoC: progress in psychiatry research? Nat Rev Neurosci. 2013 Nov; 14(11): 810–814. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4372467/ . (due 10/10)
Tuesday October 3 rd	Bacteriology- Covered by Microbiology	
Thursday October 5 th	Bacteriology- Covered by Microbiology	
Tuesday October 10 th	Discussion Topic: Psychiatric Disorders w/ Dr. Dubovsky PhD.	Read: This Year, Change your Mind (due 10/17)
Thursday October 12 th	An explanation about the differences between <i>disorders</i> , <i>diseases</i> , <i>disease courses</i> and <i>diagnoses</i> will be followed by an exploration into the principles used by the DSM (http://dsm.psychiatryonline.org/doi/bo/10.1176/appi.books.9780890425596) to classify psychiatric disorders and how these principles differ from the ones used to classify non-psychiatric disorders such as in RDoC (https://www.nimh.nih.gov/research-priorities/rdoc/index.shtml) and SNOMED CT (http://browser.ihtsdo.org). Students will discuss cases where disorder versus diagnosis classification run awry.	
Tuesday October 17 th	Discussion Topic: The Brain and Thought W/ Dr. Covey & Dr. Dietz, PhD	
Thursday October 19 th	Perception and reality. Discussion on sensory input, perception and observation. How things can go wrong: illusions, hallucinations, oversight. Introduction to accurate terminology and elements of philosophy of science related to observations.	Access https://www.pharmacychecker.com/drug-price-comparisons.asp . They must perform enough searches on drugs, thereby playing with different drugs, quantities and zip-codes, to be able to demonstrate what pricing policies are used by distinct pharmacies and to provide arguments what factors for price setting seem to be used within specific brands of pharmacies. Findings must be documented and discussed in an Excel spreadsheet (due 10/25 noon, send to wceusters@gmail.com)

Tuesday October 24 th	Discussion Topic: Genetics w/ Dr. O'Brian PhD	Read: What happens to your brain when you give up sugar? (due 10/31)
Thursday October 26 th	Comparing drug prices. Students will present their analysis results and discuss problems encountered with the interface of https://www.pharmacychecker.com/drug-price-comparisons.asp , strategies they used to come up with answers to the assignment, and how the insights obtained might be used to advise friends and family about the usefulness of that website.	Read: A Seller's Market for Biomedical Data Science Jobs from http://biomedicalcomputationreview.org/content/career-paths . Create groups of 4 or 5 students. Each group must find somewhere on the internet a job posting for a biomedical informatics position and prepare a set of questions that the search committee might ask a candidate during a selection interview and indicate how that question relates to the job description (due 11/1 noon, send to wceusters@gmail.com)
Tuesday October 31 st	Panel Discussion- Careers in Biomedical Sciences	Time Management log due
Thursday November 2 nd	This recitation will consist of a number of role playing sessions by groups of 4 or 5 students. One student of the group will be interviewed by the others. Each session will be followed by a discussion about what was asked and answered to assess suitability of the candidate and point out possible ethical and legal issues.	watch https://www.youtube.com/watch?v=b694exl_oZo as well as https://www.youtube.com/watch?v=CgOceZinQ2I&feature=share&list=FLwikA_t8e6TSJW-L-IAHkKw and bring to class a proposal for criteria that would allow one to say that something is alive, taking into account that one 'something' might be very distinct from another 'something' and that for distinct 'somethings' the criteria might be different. Consider in your proposal arguments in favor and against the hypothesis that general criteria for life can be construed (due 11/8 noon, sent by email to wceusters@gmail.com).
Tuesday November 7 th	Discussion Topic: Structural Biology W/Dr. Malkowski, PhD	Panel discussion outline due on UBLearns. Read https://www.amia.org/biomedical-informatics-core-competencies (due 11/14)
Thursday November 9 th	Are cells, viruses, prions, enzymes, ... , alive? The question what is life has received various answers since the discovery of new sorts of beings. Students will engage in a group discussion on what would constitute criteria for being alive and methods to test which criteria apply to what sort of life-forms.	Access http://www.buffalowater.org/quality/waterqualityreports . From the reports available, accumulate the information on at least five detected non-organic contaminants in a spreadsheet and produce graphs showing the changes in concentration levels of these contaminants over the past 20 years. Report on problems encountered with respect to information gathering, extraction, reformatting and interpretation. (due Nov 15, noon, send to wceusters@gmail.com)
Tuesday November 14 th	Discussion Topic: Biomedical Informatics W/ Dr. Ceusters PhD	

Thursday November 16 th	Assessing the water quality of Buffalo NY over the past 20 years. Students will demonstrate and discuss the methodology they used to arrive at their results. See assignment.	
Tuesday November 21 st	Personal Wellness- Guest Speaker: Wellness Services	
Thursday November 23 rd	No Class Thanksgiving	
Tuesday November 28 th	Panel Discussion: Careers in Biomedical Sciences	Read: Study says e-cigarettes may contain carcinogens similar to regular cigarettes (due 11/30)
Thursday November 30 th	E-cigarettes in diagnostic classifications. The International Classification of Diseases (ICD) is by law required to be used as a standard code set for documenting diagnoses. ICD is developed by the World Health Organization which offers an online browser for finding the most accurate code(s) that correspond to the condition(s) a clinician wants to report on (http://apps.who.int/classifications/icd10/browse/2016/en#). E-cigarettes are not yet represented in that system. Students will explore how to use this browser, develop search strategies for finding acceptable related codes and identify issues in interpreting ICD in function of what they want to document about patients with different types of e-cigarette use.	Read: Degenerative Brain Disease Found in 87% of Former Football Players: Study. Complete article outline (due 12/5)
Tuesday December 5 th	Discussion Topic: CTE: the NFL and Concussions	
Thursday December 7 th	Course wrap-up and final test.	Final Assignment Due

COURSE MATERIALS

- Copies of articles as well as Syllabus and faculty contact information will be available on [UBlearns Blackboard](#) site.

Due Date

9/5

9/12

Assignments/Readings

Scholarly Research Roadmap

Read: Medical Marijuana: A Primer on Ethics, Evidence and Politics
Complete article outline

9/19	Read: Rising Cost of Prescription Drugs Threaten Health Care Gains Complete article outline
10/10	Read: Casey BJ et al (2013). DSM-5 and RDoC: progress in psychiatry research? Nat Rev Neurosci. 2013 Nov; 14(11): 810–814. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4372467/ .
10/17	Read: This Year, Change your Mind Complete article outline
10/19	You Tube Videos/Assignment
10/25	Assignment on comparing prescription drug prices.
10/31	Read: What Happens to your Brain When you Give up Sugar? Time Management Log
11/1	Assignment on Biomedical Data Science Jobs
11/7	Panel discussion Outline
11/8	Assignment on criteria for something being alive.
11/14	Read https://www.amia.org/biomedical-informatics-core-competencies
11/15	Assignment on Buffalo water quality analysis
11/30	Read: Study says e-cigarettes may contain carcinogens similar to regular cigarettes
12/5	Read: Degenerative Brain Disease Found in 87% of Former Football Players: Study. Complete article outline
12/7	Personal Statement- Needs to be uploaded to your E-portfolio by the start of class.