

**PubH 8341**  
**Advanced Epidemiologic Methods: Concepts**  
**Fall 2015**

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<b>Credits:</b>	<b>3</b>	
<b>Meeting Days:</b>	<b>Tuesdays, Thursdays</b>	
<b>Meeting Time:</b>	<b>9:45 am – 11:00 am</b>	
<b>Meeting Place:</b>	<b>Mayo Bldg &amp; Additions 1250</b>	
<b>Instructor:</b>	<b>J. Michael Oakes, PhD</b>	<b>Alvaro Alonso, MD, PhD</b>
<b>Office Address:</b>	<b>431 West Bank Office Building (WBOB)</b>	<b>474 WBOB</b>
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<b>E-mail:</b>	<b><a href="mailto:oakes007@umn.edu">oakes007@umn.edu</a></b>	<b><a href="mailto:alonso@umn.edu">alonso@umn.edu</a></b>
<b>Office Hours:</b>	<b>By appointment</b>	<b>By appointment</b>

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**I. Course Description**

This doctoral seminar introduces students to the conceptual foundations of essential issues in epidemiologic methodology. The focus is on how and why a given method, design, or approach might help us explain population health. The emphasis is on the strengths, limitations, and potential alternatives for a given approach. The origins, use, and potential of both classic and cutting-edge methods are considered. Examples and readings are aimed at both clinical/biologic and social/behavioral track students.

**II. Course Prerequisites**

None. A general background on basic epidemiologic concepts is recommended.

**III. Course Goals and Objectives**

Upon completion of this course the student should be able to:

- Understand the concept of causal inference in epidemiology, the different approaches that underpin this concept, and how to ask meaningful research questions for causal inference.
- Understand the concept of identification and how it is different from statistical estimation.
- Define the main types of bias (confounding, selection bias, measurement error), understand alternative approaches to dealing with them, and recognize situations in which those approaches are appropriate.
- Understand the concepts of effect modification and mediation, and implement general approaches for their analysis

- Apply classic epidemiologic study designs (cohort, case-control, cross-sectional) and their variants, knowing their particular strengths and limitations.

#### IV. Methods of Instruction and Work Expectations

The class will meet twice a week. Most topics will be covered over two days. Generally, the first meeting will be an instructor led discussion of the week's topic, including discussion of assigned background readings. The second meeting will entail a more thorough doctoral-level discussion of assigned readings and consideration of how a given method or concept might be implemented in an actual epidemiological study.

Students are required to attend each class having read the assigned material and prepared for group discussion and debate.

Homework assignments will be handed out at the end of weeks 2, 4, 6, 8, 10 and 12, and will be due before the end of weeks 3, 5, 7, 9, 11, and 13. The take-home final exam will be handed out at the beginning of week 14 and will be due at the beginning of the last day of class.

#### V. Course Text and Readings

Two texts are required:

Rothman, Kenneth J., Sander Greenland, and Timothy L. Lash. 2012. *Modern Epidemiology*, 3<sup>rd</sup> edition (mid-cycle revision). New York: Lippincott Williams & Wilkins. [Note: this 2012 mid-cycle revision is mostly the same as the 3<sup>rd</sup> edition from 2008]

Hernán MA, Robins JM. *Causal Inference*. Chapman & Hall/CRC, 2015. Available online at: <http://www.hsph.harvard.edu/miguel-hernan/causal-inference-book/>

Additionally, a number of papers and book chapters are also required. These will be made available to students through the course shared folder in Dropbox.

Readings in the course texts are denoted as ME3 and CI

Reading assignments marked with an asterisk (\*) are optional; you will not be expected to read this material, though you may benefit by doing so.

##### Introduction to Epidemiological Inference

ME3 – Chapter 1 Introduction

Taubes G. Epidemiology faces its limits. *Science* 1995;269:164-9

Taubes G. Do we really know what makes us healthy? *New York Times*. New York, 2007

Lehrer J. The truth wears off. *The New Yorker*. New York, 2010

Teicholz N. The government's bad diet advice. *New York Times*. New York, Feb 20, 2015

\* Hernán MA. Invited commentary: hypothetical interventions to define causal effects--afterthought or prerequisite? *Am J Epidemiol* 2005;162:618-20; discussion 621-2.

\* Kaufman JS, Cooper RS. Seeking Causal Explanations in Social Epidemiology. *American Journal of Epidemiology* 1999;150:113-120.

##### Counterfactuals and Other Causal Models

ME3 – Chapter 2 Causation and Causal Inference

CI – Chapter 1 A definition of causal effect

Little RJ, Rubin DB. Causal effects in clinical and epidemiological studies via potential outcomes: concepts and analytical approaches. *Annu Rev Public Health* 2000;21:121-45.

Glass TA, Goodman SN, Hernán MA, Samet JM. Causal inference in public health. *Annual Review of Public Health* 2013;34:61-75

\* Holland PW. Statistics and Causal Inference. *Journal of the American Statistical Association* 1986;91:945-960.

## **Causal Effects in Observational Studies: Exchangeability, Identifiability, Positivity**

CI – Chapter 2 Randomized experiments

CI – Chapter 3 Observational studies

Rosenbaum PR. From association to causation in observational studies: the role of tests of strongly ignorable treatment assignment. *Journal of the American Statistical Association* 1984;79:41-48.

Greenland S, Robins JM. Identifiability, exchangeability, and epidemiological confounding. *Int J Epidemiol* 1986;15:413-9.

Greenland S, Robins JM. Identifiability, exchangeability and confounding revisited. *Epidemiol Perspect Innov* 2009;6:4

\* Oakes JM, Johnson PJ. Propensity score matching methods for social epidemiology. In: *Methods in Social Epidemiology*, Oakes JM, Kaufman JS, eds. San Francisco: Jossey-Bass, 2006. Pp. 370-392.

\* Becher H. The concept of residual confounding in regression models and some applications. *Stat Med* 1992;11:1747-58.

\* Manski CF. Identification Problems in the Social Sciences. In: *Sociological Methodology*, Marsden PV, ed. San Francisco: Jossey-Banks, 1993.

\* Oakes JM. Effect identification in comparative effectiveness research. *EGEMS (Wash DC)* 2013;1:1004.

### **Directed Acyclic Graphs**

ME3 – Chapter 12 Causal diagrams

CI – Chapter 6 Graphical representation of causal effects

Robins JM. Data, Design, and Background Knowledge in Etiologic Inference. *Epidemiology* 2001;12:313-320.

\* VanderWeele TJ, Hernán MA, Robins JM. Causal directed acyclic graphs and the direction of unmeasured confounding bias. *Epidemiology* 2008;19:720-8.

### **Confounding**

ME3 – Chapter 9 Validity in Epidemiologic Studies, pp. 129-134 (Confounding)

CI – Chapter 7 Confounding

Greenland S, Morgenstern H. Confounding in health research. *Annu Rev Public Health* 2001;22:189-212

Hernán MA, Hernández-Díaz S, Werler MM, Mitchell AA. Causal knowledge as a prerequisite for confounding evaluation: an application to birth defects epidemiology. *Am J Epidemiol* 2002;155:176-84.

\* Hernán MA, Clayton D, Keiding N. The Simpson's paradox unraveled. *Int J Epidemiol* 2011;40:780-5.

### **Selection Bias**

ME3 – Chapter 9 Validity in Epidemiologic Studies, pp. 134-137 (Selection bias)

CI – Chapter 8 Selection bias

\* Cole SR, Platt RW, Schisterman EF, Chu H, Westreich D, Richardson D, Poole C. Illustrating bias due to conditioning on a collider. *Int J Epidemiol* 2010;39:417-20.

### **Measurement Bias**

ME3 – Chapter 9 Validity in Epidemiologic Studies, pp. 137-146 (Information bias)

CI – Chapter 9 Measurement bias

Dosemeci M, Wacholder S, Lubin JH. Does nondifferential misclassification of exposure always bias a true effect toward the null value? *Am J Epidemiol* 1990;132:746-8.

Vanderweele T, Hernán MA. Results on differential and dependent measurement error of the exposure and the outcome using signed directed acyclic graphs. *Am J Epidemiol* 2012;175:1303-10.

\* Flegal KM, Keyl PM, Nieto FJ. Differential misclassification arising from nondifferential errors in exposure measurement. *Am J Epidemiol* 1991;134:1233-44.

\* Jurek AM, Greenland S, Maldonado G, Church T. Proper interpretation of non-differential misclassification effects: expectations vs. observations. *Int J Epidemiol* 2005;34:680-7.

### **Effect Modification**

ME3 – Chapter 5 Concepts of Interaction

CI – Chapter 4 Effect modification

CI – Chapter 5 Interaction

Greenland S. Basic problems in interaction assessment. *Environ Health Perspect* 1993;101 Suppl 4:59-66.

Knol MJ, VanderWeele TJ. Recommendations for presenting analyses of effect modification and interaction. *Int J Epidemiol* 2012;41:514-20.

\* VanderWeele TJ. Sufficient cause interactions and statistical interactions. *Epidemiology* 2009;20:6-13.

### **Mediation**

Cole SR, Hernán MA. Fallibility in estimating direct effects. *Int J Epidemiol* 2002;31:163-5.

Kaufman JS, MacLehose RF, Kaufman S. A further critique of the analytic strategy of adjusting for covariates to identify biologic mediation. *Epidemiol Perspect Innov* 2004;1:4

\* Robins JM, Greenland S. Identifiability and exchangeability for direct and indirect effects. *Epidemiology* 1992;3:143-55.

\* Pearl J. The causal mediation formula: a guide to the assessment of pathways and mediation. *Prev Sci* 2012;13:426-36

\* VanderWeele TJ. A unification of mediation and interaction: a 4-way decomposition. *Epidemiology* 2014;25:5:749-61.

### **Hypothesis Testing, P-Values & Precision**

ME3 – Chapter 10 Precision and Statistics in Epidemiologic Studies

CI – Chapter 10 Random Variability

Poole C. Low P-values or narrow confidence intervals: which are more durable? *Epidemiology* 2001;12:291-4.

Rothman KJ. Curbing type I and type II errors. *Eur J Epidemiol* 2010;25:223-4.

Stang A, Poole C, Kuss O. The ongoing tyranny of statistical significance testing in biomedical research. *Eur J of Epidemiol* 2010;25:225-230

Goodman S. A dirty dozen: twelve p-value misconceptions. *Semin Hematol* 2008;45:135-40.

\* Hoenig JM, Heisey DM. The Abuse of Power: The Pervasive Fallacy of Power Calculations for Data Analysis. *The American Statistician* 2001;55:19-24.

\* Oakes JM. Statistical Power and Sample Size: Considerations for Clinician-Researchers. In: *Essentials of Clinical Research*, Glasser SP, ed. New York: Springer. In Press

### **Instrumental Variables**

CI – Chapter 16 Instrumental Variable Estimation

Glymour MM. Natural experiments and instrumental variable analyses in social epidemiology. In: *Methods in Social Epidemiology*, Oakes JM, Kaufman JS, eds. San Francisco: Jossey-Bass / Wiley, 2006, pp 423-445.

**Randomized Clinical Trials**

Fisher LD. Advances in clinical trials in the twentieth century. *Annu Rev Public Health* 1999; 20:109-24.

DeMets DL. Statistical issues in interpreting clinical trials. *J Intern Med* 2004;255:529-37.

\* Kaufman JS, Kaufman S, Poole C. Causal inference from randomized trials in social epidemiology. *Soc Sci Med* 2003;57:2397-409.

**Group Randomized Trials**

Feldman HA, Proschan MA, Murray DM, Goff DC, Stylianou M, Dulberg E, McGovern PG, Chan W, Mann NC, Bittner V. Statistical design of REACT (Rapid Early Action for Coronary Treatment), a multisite community trial with continual data collection. *Control Clin Trials* 1998;19:391-403.

Hannan PJ. Experimental social epidemiology: Controlled community trials. In: *Methods in Social Epidemiology*. Oakes JM, Kaufman JS, eds. San Francisco: Jossey-Bass / Wiley, 2006. Pp. 335-364.

**Review of Cohort and Case-Control Studies**

ME3 – Chapters 7 (Cohort Studies, pp 100-110) and 8 (Case-control Studies, pp. 111-122)

Knol MJ, Vandembroucke JP, Scott P, Egger M. What do case-control studies estimate? Survey of methods and assumptions in case-control research. *Am J Epidemiol* 2008;168:1073-81.

Vandembroucke JP, Pearce N. Case-control studies: basic concepts. *Int J Epidemiol* 2012;41:1480-9.

**Matching**

ME3 pp. 171-182 [Matching]

**Hybrid Study Designs**

ME3 pp. 122-126 [Variants of the case-control design]

Barlow WE, Ichikawa L, Rosner D, Izumi S. Analysis of case-cohort designs. *J Clin Epidemiol* 1999;52:1165-1172.

Maclure M, Mittleman MA. Should we use a case-crossover design? *Annu Rev Public Health* 2000;21:193-221.

**Observational Multilevel Studies**

Diez-Roux AV. Multilevel analysis in public health research. *Annu Rev Public Health* 2000;21:171-92

Oakes JM. The (mis)estimation of neighborhood effects: causal inference for a practicable social epidemiology. *Soc Sci Med* 2004;58:1929-52

**VI. Course Outline/Weekly Schedule**

WEEK	DATE	TOPIC	INSTRUCTOR
1	Sep 8	Introduction to Epidemiologic Inference	Oakes, Alonso
	Sep 10	Counterfactuals and other causal models (I)	Oakes
2	Sep 15	Counterfactuals and other causal models (II)	Alonso
	Sep 17	Causal effects in observational studies: exchangeability, identifiability, positivity (I)	Alonso
3	Sep 22	Causal effects in observational studies: exchangeability,	Oakes

		identifiability, positivity (II)	
	Sep 24	Directed acyclic graphs (I)	Alonso
4	Sep 29	Directed acyclic graphs (II)	Alonso
	Oct 1	Confounding (I)	Oakes
5	Oct 6	Confounding (II)	Alonso
	Oct 8	Measurement bias	Alonso
6	Oct 13	Selection bias (I)	Alonso
	Oct 15	Selection bias(II)	Oakes
7	Oct 20	Effect modification (I)	Oakes
	Oct 22	Effect modification (II)	Alonso
8	Oct 27	Mediation (I)	MacLehose
	Oct 29	Mediation (II)	Oakes
9	Nov 3	Mediation (III)	Alonso
	Nov 5	Hypothesis testing, p-values, precision (I)	Oakes
10	Nov 10	Hypothesis testing, p-values, precision (II)	Alonso
	Nov 12	Instrumental variables	Oakes
11	Nov 17	Randomized clinical trials	Oakes
	Nov 19	Review of cohort and case-control studies	Alonso
12	Nov 24	Group randomized trials	Oakes
	Nov 26	THANKSGIVING	
13	Dec 1	Matching	Oakes
	Dec 3	Hybrid study designs (I)	Alonso
14	Dec 8	Hybrid study designs (II)	Alonso
	Dec 10	Observational multilevel studies	Oakes
15	Dec 15	Review final exam, course wrap up	Alonso, Oakes

## VII. Evaluation and Grading

Letter grades and associated points are awarded in this course as follows below. These will appear in the student's official transcript. See <http://www1.umn.edu/usenate/policies/gradingpolicy.html> for details.

*Pass/Fail Grading:* An alternative to traditional A-F scale grades is the S/N grading scale. The "S" grade does not carry points but credit will count toward completion of student's degree if permitted by college or program. An "N" is given for student's exercising the S/N grading option but who fail to meet minimum course requirements. Students may change grading options without written permission as specified by the University and without penalty during the initial registration period or during the first two weeks of the semester. The grading option may not be changed after the second week of the term.

The maximum number of points a student can earn is 100. **Six homework assignment** demonstrating understanding of assigned readings and lectures will account for **50 points** (50%) of the final grade, while a take-home **final exam** will account for **25 points** (25%) of the final grade. **Class participation** will account for the remaining **25 points**. Numeric grades will map to letter grades as per the table above.

Grade Mapping	
Class Points	Letter Grade
>94	A
90-94	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
70+	S
-	N/F
-	I

A 4.000 - Represents achievement that is outstanding relative to the level necessary to meet course requirements

A- 3.667

B+ 3.333

B 3.000 - Represents achievement that is significantly above the level necessary to meet course requirements

B- 2.667

C+ 2.333

C 2.000 - Represents achievement that meets the course requirements in every respect

C- 1.667

D+ 1.333

D 1.000 - Represents achievement that is worthy of credit even though it fails to meet fully the course requirements

S Represents achievement that is satisfactory, which is equivalent to a C- or better.

**For additional information, please refer to:**

<http://policy.umn.edu/Policies/Education/Education/GRADINGTRANSCRIPTS.html>.

### Course Evaluation

The SPH will collect student course evaluations electronically using a software system called CoursEval: [www.sph.umn.edu/courseeval](http://www.sph.umn.edu/courseeval). The system will send email notifications to students when they can access and complete their course evaluations. Students who complete their course evaluations promptly will be able to access their final grades just as soon as the faculty member renders the grade in SPHGrades: [www.sph.umn.edu/grades](http://www.sph.umn.edu/grades). All students will have access to their final grades through OneStop two weeks after the last day of the semester regardless of whether they completed their course evaluation or not. Student feedback on course content and faculty teaching skills are an important means for improving our work. Please take the time to complete a course evaluation for each of the courses for which you are registered.

### Incomplete Contracts

A grade of incomplete "I" shall be assigned at the discretion of the instructor when, due to extraordinary circumstances (e.g., documented illness or hospitalization, death in family, etc.), the student was prevented from completing the work of the course on time. The assignment of an "I" requires that a contract be initiated and completed by the student before the last official day of class, and signed by both the student and instructor. If an incomplete is deemed appropriate by the instructor, the student in consultation with the instructor, will specify the time and manner in which the student will complete course requirements. Extension for completion of the work will not exceed one year (or earlier if designated by the student's college). For more information and to initiate an incomplete contract, students should go to SPHGrades at: [www.sph.umn.edu/grades](http://www.sph.umn.edu/grades).

**University of Minnesota Uniform Grading and Transcript Policy** - A link to the policy can be found at [onestop.umn.edu](http://onestop.umn.edu).

## VIII. Other Course Information and Policies

### **Grade Option Change** (if applicable)

For full-semester courses, students may change their grade option, if applicable, through the second week of the semester. Grade option change deadlines for other terms (i.e. summer and half-semester courses) can be found at [onestop.umn.edu](http://onestop.umn.edu).

### **Course Withdrawal**

Students should refer to the Refund and Drop/Add Deadlines for the particular term at [onestop.umn.edu](http://onestop.umn.edu) for information and deadlines for withdrawing from a course. As a courtesy, students should notify their instructor and, if applicable, advisor of their intent to withdraw.

Students wishing to withdraw from a course after the noted final deadline for a particular term must contact the School of Public Health Office of Admissions and Student Resources at [sph-ssc@umn.edu](mailto:sph-ssc@umn.edu) for further information.

### **Student Conduct Code**

The University seeks an environment that promotes academic achievement and integrity, that is protective of free inquiry, and that serves the educational mission of the University. Similarly, the University seeks a community that is free from violence, threats, and intimidation; that is respectful of the rights, opportunities, and welfare of students, faculty, staff, and guests of the University; and that does not threaten the physical or mental health or safety of members of the University community.

As a student at the University you are expected adhere to Board of Regents Policy: *Student Conduct Code*. To review the Student Conduct Code, please see:

[http://regents.umn.edu/sites/default/files/policies/Student\\_Conduct\\_Code.pdf](http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf).

Note that the conduct code specifically addresses disruptive classroom conduct, which means "engaging in behavior that substantially or repeatedly interrupts either the instructor's ability to teach or student learning. The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities."

### **Use of Personal Electronic Devices in the Classroom**

Using personal electronic devices in the classroom setting can hinder instruction and learning, not only for the student using the device but also for other students in the class. To this end, the University establishes the right of each faculty member to determine if and how personal electronic devices are allowed to be used in the classroom. For complete information, please reference:

<http://policy.umn.edu/Policies/Education/Education/STUDENTRESP.html>.

### **Scholastic Dishonesty**

You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis. (Student Conduct Code:

[http://regents.umn.edu/sites/default/files/policies/Student\\_Conduct\\_Code.pdf](http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf)) If it is determined that a student has cheated, he or she may be given an "F" or an "N" for the course, and may face additional sanctions from the University. For additional information, please see:

<http://policy.umn.edu/Policies/Education/Education/INSTRUCTORRESP.html>.

The Office for Student Conduct and Academic Integrity has compiled a useful list of Frequently Asked Questions pertaining to scholastic dishonesty: <http://www1.umn.edu/oscai/integrity/student/index.html>. If you have additional questions, please clarify with your instructor for the course. Your instructor can respond to your specific questions regarding what would constitute scholastic dishonesty in the context of a particular class-e.g., whether collaboration on assignments is permitted, requirements and methods for citing sources, if electronic aids are permitted or prohibited during an exam.

### **Makeup Work for Legitimate Absences**

Students will not be penalized for absence during the semester due to unavoidable or legitimate circumstances. Such circumstances include verified illness, participation in intercollegiate athletic events, subpoenas, jury duty, military service, bereavement, and religious observances. Such circumstances do not include voting in local, state, or national elections. For complete information, please see: <http://policy.umn.edu/Policies/Education/Education/MAKEUPWORK.html>.

### **Appropriate Student Use of Class Notes and Course Materials**

Taking notes is a means of recording information but more importantly of personally absorbing and integrating the educational experience. However, broadly disseminating class notes beyond the classroom community or accepting compensation for taking and distributing classroom notes undermines instructor interests in their intellectual work product while not substantially furthering instructor and student interests in effective learning. Such actions violate shared norms and standards of the academic community. For additional information, please see: <http://policy.umn.edu/Policies/Education/Education/STUDENTRESP.html>.

### **Sexual Harassment**

"Sexual harassment" means unwelcome sexual advances, requests for sexual favors, and/or other verbal or physical conduct of a sexual nature. Such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive working or academic environment in any University activity or program. Such behavior is not acceptable in the University setting. For additional information, please consult Board of Regents Policy: <http://regents.umn.edu/sites/default/files/policies/SexHarassment.pdf>

### **Equity, Diversity, Equal Opportunity, and Affirmative Action**

The University will provide equal access to and opportunity in its programs and facilities, without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression. For more information, please consult Board of Regents Policy: [http://regents.umn.edu/sites/default/files/policies/Equity\\_Diversity\\_EO\\_AA.pdf](http://regents.umn.edu/sites/default/files/policies/Equity_Diversity_EO_AA.pdf).

### **Disability Accommodations**

The University of Minnesota is committed to providing equitable access to learning opportunities for all students. Disability Services (DS) is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations.

If you have, or think you may have, a disability (e.g., mental health, attentional, learning, chronic health, sensory, or physical), please contact DS at 612-626-1333 to arrange a confidential discussion regarding equitable access and reasonable accommodations.

If you are registered with DS and have a current letter requesting reasonable accommodations, please contact your instructor as early in the semester as possible to discuss how the accommodations will be applied in the course.

For more information, please see the DS website, <https://diversity.umn.edu/disability/>.

### **Mental Health and Stress Management**

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance and may reduce your ability to participate in daily activities. University of Minnesota services are available to assist you. You can learn more about the broad range of confidential mental health services available on campus via the Student Mental Health Website: <http://www.mentalhealth.umn.edu>.

### **The Office of Student Affairs at the University of Minnesota**

The Office for Student Affairs provides services, programs, and facilities that advance student success, inspire students to make life-long positive contributions to society, promote an inclusive environment, and enrich the University of Minnesota community.

Units within the Office for Student Affairs include, the Aurora Center for Advocacy & Education, Boynton

Health Service, Central Career Initiatives (CCE, CDes, CFANS), Leadership Education and Development –Undergraduate Programs (LEAD-UP), the Office for Fraternity and Sorority Life, the Office for Student Conduct and Academic Integrity, the Office for Student Engagement, the Parent Program, Recreational Sports, Student and Community Relations, the Student Conflict Resolution Center, the Student Parent HELP Center, Student Unions & Activities, University Counseling & Consulting Services, and University Student Legal Service.

For more information, please see the Office of Student Affairs at <http://www.osa.umn.edu/index.html>.

**Academic Freedom and Responsibility: for courses that do not involve students in research**

Academic freedom is a cornerstone of the University. Within the scope and content of the course as defined by the instructor, it includes the freedom to discuss relevant matters in the classroom. Along with this freedom comes responsibility. Students are encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truth. Students are free to take reasoned exception to the views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled.\*

Reports of concerns about academic freedom are taken seriously, and there are individuals and offices available for help. Contact the instructor, the Department Chair, your adviser, the associate dean of the college, or the Vice Provost for Faculty and Academic Affairs in the Office of the Provost.

\* Language adapted from the American Association of University Professors "Joint Statement on Rights and Freedoms of Students".

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