UNIVERSITY OF MINNESOTA
CI 1563—PHYSICS BY INQUIRY (4 credits)
Meets CLE Physical Science w/lab Core requirement

Schedule and Location:
001: MW 14:30 – 16:25 in Bruininks 131B
002: TTh 14:30 – 16:25 in Bruininks 131B

Tests:
Mid-unit quizzes: Feb 1, Mar 8, Apr 19 (section 001); Feb 2, Mar 9, Apr 20 (section 002)
End-of-unit tests: Feb 15, Mar 29, May 9 (section 001); Feb 16, Mar 30, May 13 (section 002)
Final Exam: May 9, 8-10 (section 001); May 13, 10:30-12:30 (section 002), locations TBA

Staff:
Instructor: Leon Hsu lhsu@umn.edu
320N LES (Learning and Environmental Sciences)

TAs:

Materials:
Text: Course packet for CI 1563. Available at the Coffman Union bookstore.

Course website and general information:
Students can access the Moodle course website from their myU page (www.myu.umn.edu).

Pre-requisites:
There are no pre-requisites for this course.

Extra help and fine conversation:
1. **Leon office hours:** W 10:30-11:30, Th 11:00-12:00, and by appointment in 130C Williamson.
2. **TA office hours**: TAs may also be available outside class hours for help. Check with them.

COURSE DESCRIPTION

What are the goals of the course?
The goal of CI 1563 is to help students create their own understanding of some fundamental concepts in physics by working in a way similar to scientists. Students will work in small groups to perform experiments and to create explanatory theories for how things work. This process of making qualitative and quantitative observations of experiments, analyzing the data, developing predictive models, discussing the results with peers, and conducting further experiments to refine the models is the essence of what scientists do. By "model" we mean a collection of relationships, both qualitative and mathematical, that have explanatory and predictive power. Students will have the primary responsibility for their own learning in this class. The professor will rarely, if ever, "lecture" in the traditional sense. Instead, students will learn science through doing it and talking about it with their lab partners and the course staff.

Emphasis will be placed on students being able to answer physics questions about situations that they have not encountered before and to explain their answers based on the experiments they have performed in class. The aim is not just to know the principles, but to know the evidence that justifies them and to be able to apply the principles and evidence in new situations.

This class is intended for students who are early in their academic career and incorporates instructional strategies that will help students examine their own learning habits and metacognition. It has secondary goals for students to learn to express their ideas in writing (in the context of physics) and to learn formal techniques for working productively in groups. These are particularly valuable for students entering into CEHD majors, especially those who are considering a career in elementary or early childhood education.

Who is your instructor?
You can call me Leon. I've been at the University of Minnesota since 2000 and have taught this course since 2003. I got my undergraduate degree at Harvard and my Ph.D. at the University of California at Berkeley, both in physics. In graduate school, I studied the transport of electrons in semiconductor materials as well as the electronic properties of defects in semiconductors. Around 1997, I became very interested in how students learn physics and how learning physics could be made more efficient and fun.

One area of my research involves trying to understand the thought processes necessary for learning new concepts and principles in physics and using that knowledge to design more effective instruction. Many of the activities we will be doing in class are based on my own research and the research of others who are also interested in physics education. I have been teaching this class since 2003 and always look forward to terrific interactions with students during the laboratories. I have also taught most of the different introductory physics classes in the Physics department at the University of Minnesota as well as continued to perform research and publish in semiconductor physics.

How does CI 1563 satisfy the requirements for a Physical Science with Lab core course?
CI 1563 imparts an understanding of physical phenomena by analyzing and describing the nature, constitution, and properties of non-living matter and energy. Because physics is a vast, dynamic field of study, we choose to study three topics that allow for the exploration of key fundamental principles in physics while being amenable to study through in-class experiments and simulations.

- Electric Circuits: Students will build and test progressively more complex circuits constructed from batteries, light bulbs, and other circuit elements to develop a model of electricity. By the end of this unit, students will be able to use their model to perform qualitative analyses on circuits that would be challenging for any student in a traditional introductory physics course for engineering majors, as well as being able to perform quantitative analyses on somewhat simpler circuits.

- Light and Color: Students will build and test progressively more complex set ups of optical elements to develop a model of light and its propagation. Students will also work with progressively more complex combinations of colors of both light and pigment to build a physical model for color mixing and the interaction of light and pigment. By the end of this unit, students' models will enable them to understand the geometric properties of light propagation and the physical basis of color as well as any student from a traditional introductory physics course for engineering majors, as well as understand the interaction of colored light and pigments better than such students.
- Astronomy: Students will make quantitative and qualitative observations of the position and appearance of the Sun and Moon to develop a predictive model of the Sun/Earth/Moon system. By the end of this unit, students will be able to use their model to determine the date on which any satellite photo with discernable shadows was taken. Students will also be able to use their model to understand the relationships between phase of the moon, time, and location in the sky well enough to be able to predict any one quantity given the other two (e.g., given the time of day and the current phase of the moon, students will be able to predict whether the moon is in the sky and if so, precisely where it will be located).

The course meets the specific core criteria in the following ways:

- The course imparts an understanding of physical phenomena by analyzing and describing the nature, constitution, and properties of non-living matter and energy.

In the Electric Circuits unit, students will learn about the nature, constitution, and properties of materials that conduct or do not conduct electricity. In the Light and Color unit, students will learn about the nature, constitution, and properties of light, such as what differentiates different colors of light and the relationship between energy and light. In the Astronomy unit, students will learn about the nature, constitution, and properties of the Sun/Earth/Moon system of bodies.

- Students employ mathematical or quantitative analysis in the description and elucidation of natural phenomena.

In the Electric Circuits unit, students will discover and use mathematical relationships to calculate quantities such as current, energy, resistance, and voltage. In the Light and Color unit, students will discover and use mathematical relationships to predict the sizes and shapes of images and shadows formed by light as well as to deduce the sizes and distances between optical elements from the sizes and shapes of images. In the Astronomy unit, students will calculate quantitatively the sizes and directions of sun shadows, the positions of the Sun and Moon in the sky, distances between points on the Earth, and calendar dates and times corresponding to particular appearances and positions of the Sun and Moon.

- The course includes a laboratory or field work component, consisting of, on average, two hours per week, which may involve direct experimentation, fieldwork, or computer simulations.

Almost all the class time will be spent working in small groups to perform experiments or run simulations, and discuss to the results and their implications with peers or the course staff. This in-class laboratory component lasts, on average, 3.5 to 4 hours per week. Some homework assignments will involve fieldwork to collect data on positions of the sun and the moon in the sky.

- The course provides an understanding of the scientific method, by which observations of the natural world lead to the formulation of hypotheses or explanations of physical phenomena that are then empirically tested by experiment or observation.

In all three topics, students begin with observations of physical phenomena, whether it involves electric circuits, combinations of optical elements, or the appearance and position of the Sun or Moon.

Quantitative measurements of these phenomena are used to formulate both qualitative and quantitative relationships between quantities relevant to each of these phenomena. These relationships then form the basis of a physical model that students then test using more complex circuits, various combinations of lights and optics, or additional observations of the sky. Students also use the models to make quantitative predictions in each case, for example, the amount of current through a circuit element, the height of an image, or the angle between the Sun and the Moon in the sky at a given time.

Finally, students will learn the goals of the field of physics and how physics fits in with other disciplines. Students will also learn about aspects of physics that will be applicable to their future studies, their careers (regardless of what it is), and being engaged citizens, such as using evidence to justify a claim.

The laboratory experience in this course meets the specific core criteria in the following ways:

- Perform hands-on experiments, measurements, simulations or analyses that test basic concepts or hypotheses

The in-class laboratories in all three units satisfy this requirement by having students work with real circuit elements, optical elements, or astronomical measurements. We will also use computer simulations in the Electric Circuits and Astronomy units. These hands-on lab sessions comprise almost the entirety of the class time.

- Quantitatively examine and test phenomena that may be described in terms of principles recognized within the discipline

Since the language of physics is mathematics, many of the experiments that students perform will involve quantitative measurements. Relationships between the measured quantities can then be described and tested against mathematical representations of principles.

- Do discovery-based experiments

The experiments are designed to help students discover for themselves qualitative and quantitative relationships between physical quantities, rather than to confirm known laws.

- Manipulate data sets

In the Electric Circuits unit, students will perform measurements on sets of similar circuits in order to compare characteristics of each and to discover quantitative relationships. In the Light and Color unit, students will compare numerical measurements from similar optical set-ups to discover relationships between quantities such as image sizes and the distances between optical elements. In the Astronomy unit, students will pool their observations of the Sun and Moon to create data sets describing their positions at various times of the day over the course of the year to create models of the Sun, Earth, and Moon system and predict their appearances and positions at other times.

What is the value of a liberal education?

In today's increasingly interconnected world, many of the most important advances are made by combining knowledge from two or more fields or by applying knowledge and techniques from one field to another. Skills for solving non-routine problems, along with the ability to work productively with diverse colleagues, are now highly valued skills. A knowledge of the ways in which scientific knowledge is created, developed, and tested is a crucial part of a liberal education, in addition to being a necessary ingredient of an informed and educated citizen capable of making good decisions.

Student learning outcomes

Of the seven student learning outcomes specified by the University of Minnesota, CI 1563 will help students to advance their competency in the following three:

- **Can identify, define, and solve problems**: Students perform experiments and then are asked to devise an explanatory model for what is going on. They perform further experiments to test their model and if that model is inadequate, then they must refine or modify their model. Students are also given physics problems to solve in class. They develop an answer through conversations with their lab partners and then ultimately, the entire class. For example, students construct simple electric circuits composed of one and two light bulbs in different arrangements. From the different brightness of the bulbs, they must devise a model of what is happening to the current in those different circuits and what the battery is doing. In a second example, students shine different colors of light on paint patches of different colors in a dark room. By looking at the resulting color that appears, students develop a model for how our eyes perceive color and how light of different colors interacts with colored objects. In a third example, on a quiz, students are asked to predict the relative brightness of bulbs in a circuit that they have never before seen or constructed, or they are asked to predict what color they will perceive when a particular color of light is shined on a particular color of paint (a color combination that they have never experimented with).

  How will this be assessed? The homework, quizzes and exams in this class are composed of physics problems. The problems describe situations that students have never before encountered and students are asked to apply the concepts they have learned to these new situations to solve them. Students' work is evaluated based on their problem-solving process and justification of their answers based on experimental evidence. For example, a question asking students to predict the brightness of bulbs in a circuit they have never before encountered also asks them to explain the reasoning behind their prediction. The ideal answer must be correct, give a correct line of reasoning that corresponds to the correct answer, and give experimental evidence from class that supports their line of reasoning. Full credit for the question depends on the presence of all three components. A correct answer with correct reasoning that does not offer any supporting experimental evidence may earn only 80% of the points for the problem. An incorrect answer that has a consistent line of reasoning and that quotes supporting experimental evidence may earn 85% of the points for the problem.

- **Have mastered a body of knowledge and a mode of inquiry:** In the class, students build their physics knowledge by conducting experiments and then carrying out a consensus-building discussion of the results of the experiments with their lab partners, classmates, and the course staff. Based on these discussions, students formulate theories and models of how a variety of phenomena work. This mode of inquiry is the one that scientists use to build scientific knowledge. During the process of engaging in this mode of inquiry, students will build and master their own store of science knowledge. For example, students construct simple electric circuits composed of one and two light bulbs in different arrangements. From the different brightness of the bulbs, they must discuss with their lab partners to devise a model of what is happening to the current in those different circuits and what the battery is doing. They then discuss their results with a member of the course staff, who checks their knowledge and process through Socratic questioning. Through this process, as well as experimenting with more complex circuits, students learn physics knowledge about electric circuits and practice gaining this knowledge through experimentation and discussion.

  How will this be assessed? The homework, quizzes, and exams in this class require students to apply the physics knowledge they have constructed in class to solve problems. For example, a question on a homework asking student to predict on which day of the year a particular satellite photo was taken based on the length and direction of shadows in the picture requires students to know how the positions of the sun and Earth are related throughout the year, as well as how light from the sun interacts with solid objects to cast shadows of a certain size, in a certain direction. A good answer must not only be correct, but also give an explanation based on correct physics. In a second example, students may be given a sealed box with a number of wires sticking out of it and be asked to use their lab equipment to determine how the wires are connected inside the box. An ideal answer should give not only how the sires inside the box are connected, but also describe a correct process for experimentally determining the connections.

- **Can communicate effectively:** In class, students must work with their lab partners to perform experiments. Sometimes, the discussion will include determining what experiments to perform. To work successfully as a group, students must be able to communicate effectively with each other. Students will also discuss their results with members of the course staff, practicing their communication. Finally, the majority of the problems on homework, quizzes, and exams, require students to provide reasoning and experimental evidence to support their answer. Thus, students must learn to communicate effectively both in writing and in speaking. The class project assignment will require communicating effectively either in writing, or some other form (e.g., visually) depending on the student's project.

  How will this be assessed? The questions on homework, exams, and quizzes are graded partially on students' ability to communicate a clear line of logical reasoning that supports their answer, as well as the experimental evidence that supports their reasoning. For example, a question asking students to predict the brightness of bulbs in a circuit they have never before encountered also asks them to explain the reasoning behind their prediction. The ideal answer must be correct, give a correct line of reasoning that corresponds to the correct answer, and give experimental evidence from class that supports their line of reasoning. An answer that does not make it obvious to the grader that all three components are present and correct will not receive full credit. In addition, students periodically give their lab partners feedback on communicating within their lab group. At the end of each unit, students assign their partners a grade for their ability to work together productively and to communicate effectively. This grade is a part of a student's actual grade in the class.

Who should take this course?
This course is designed for students who (1) want a more "hands-on" science course, (2) are not necessarily confident in their ability to do science, and/or (3) are considering becoming elementary education majors.

Who should NOT take this course?
Students who (1) have commitments that would cause them to miss or be late for class, (2) want to learn a lot of information about a lot of different topics in science, and/or (3) are not interested in working intensively with a group every day in class should probably choose a different science course.

SECTION 002 only

The CEHD First Year Experience

College is more than classes. With this in mind, we designed the CEHD First-Year Experience with coursework, advising and campus engagement in mind. We hope to give you a full picture of the knowledge, skills and resources you will need to be a successful student. You will approach big questions from multiple perspectives through reading, writing, listening and speaking. You will also grow as a person through interactions with fellow students, teachers and Student Services staff. You will join new communities, reflect on who you are in relation to others and build a path toward graduation. Our goal is to integrate these various aspects of college; we hope you will see them working together to give you the best possible support as you experiment with new ideas and experiences.

How Does this Learning Community Contribute to the CEHD First-Year Experience?

Spring semester Learning Communities (LC's) build on, but are different from, your fall semester experience in EDHD 1525W: First Year Inquiry. The LC's link two courses that meet graduation or major requirements and help you build academic connections around common themes and concepts. Drawing on the disciplinary lens of both courses, classes are intentionally linked through activities and assignments to deepen student learning. LC's also provide students with the opportunity to deepen connections within the shared peer community and work together on curricular and/or co-curricular activities.

FYE Student Development and Learning Objectives

The University of Minnesota expects graduating students to have acquired skills that extend well beyond content knowledge. You can find complete lists of all Student Development Outcomes http://www.sdo.umn.edu/ and Student Learning Outcomes http://www.slo.umn.edu/ online. CEHD's First Year Experience is focused on two outcomes.

Student Development Outcomes:

<u>Appreciation of differences</u>

Students will:

- Recognize the value of interacting with individuals with backgrounds, perspectives, and ideas different than their own.
- Critically examine own values and beliefs as a result of engaging with different perspectives.

<u>Communicate effectively</u>

Students will:

- Effectively determine audience, purpose, and form in specific communication contexts.
- Demonstrate confidence and competence to communicate effectively with different audiences (academic, personal, public, peer) in a variety of forms (oral, visual, performance, and written).

GRADING

In-class assignments	10%
Warm-up/review questions	20%
Homework	10%
Peer Evaluations	10%
Three mid-unit quizzes	20%
Three end-of-unit exams	30%
Total Possible	100%

100% – 90%	A/A– (S)
89.9% – 80%	B+/B/B– (S)
79.9% – 70%	C+/C/C– (S)
69.9% – 60%	D+/D (N)
59.9% or less	F (N)

To encourage cooperation, grades are not curved. Helping someone else to do better will never hurt a student's own grade.

Attendance
Students are expected to be in class and working the full time. Attendance will be taken five minutes after the start of class and five minutes before the end of class. If a student is present at one time but not the other time, it will be counted as one-half of an absence.

- There is no direct grade penalty for the first 3 absences.
- A fourth and fifth absence each result in a 5% deduction to a student's overall average.
- Six or more absences will result in an "F" for the course.

Because this class is centered on group discussions, students play an important role in the learning of their lab partners. Therefore, attendance and participation is essential. Absences that occur because of unavoidable circumstances or for legitimate reasons (as defined by University of Minnesota policy) will not result in a grade deduction. However, six absences of any type (excused or unexcused), will result in a student's being unable to pass the class. All students are expected to be judicious in their use of electronic devices such as cell phones and laptops. If their use becomes a distraction, students will be charged half an absence.

In-class assignments:
At the beginning and/or end of most classes, there will be a Question of the Day (QoD). This is a short question based on previous class work. Students are encouraged to discuss their answers with their lab partners and others. The purpose of the QoD is as a quick review and warm-up and as practice for answering exam questions. Grading of QoDs is full credit for a correct and well-explained answer and half credit for an answer (either correct or not) that is not well-justified. For example, students may be asked to make quantitative predictions of the current through different elements of a circuit they have never seen before, as well as justify their answer using evidence from previous circuits they studied in class.

Warm-ups/reviews:
The purposes of the warm-ups and reviews are to focus students' attention on upcoming topics and to enhance their learning by letting them compare their ideas about a concept before and after instruction (research shows that this aids in learning). For example, students may be asked to predict the quantitative size of an optical image produced on screen by a combination of optical elements and justify their answer based on other set-ups they have encountered in class. Before beginning a new section, each student individually completes a warm-up, which is graded only on completeness and the quality of the reasoning, and not correctness. The student then works through the section with his or her group before completing a review. Group discussion is encouraged during the review and students may also get help from the TAs. However, answers must be the work of each student and may not be identical or largely similar to those of another student. Reviews are graded both on correctness and

completeness. Each student (not a TA or another helper) is solely responsible for the correctness of his or her own review answers.

Homework:
The homework is designed to give students the opportunity for extra practice with applying the concepts from class, connecting those concepts to real-world situations, and reflecting on how they learn (research shows that this process, called metacognition, enhances learning). For example, students might be asked to predict the size, shape, and direction of the shadow of an object of a known size at a particular date and time. Homework is due Fridays at 11:55 p.m. and is submitted through the Moodle site. Because of the large number of students in the class, no late homework can be accepted.

Peer evaluations:
Periodically, students will give their lab partners feedback and evaluate both the performance of their group and of their lab partners individually. Students will work with a different group for each section. Half of this component of the grade is dependent on a student providing good feedback to his or her partners. Half of this component of the grade is dependent on the evaluation given to a student by his or her partners.

Quizzes and exams:
All quizzes and exams are open-notes and open-book. The emphasis is on reasoning and using experimental and experiential evidence to explain one's answers. Even if an answer to a problem is correct, students will receive full credit for the answer only if the reasoning behind the answer is correct. Every few weeks, there will be a short mid-unit quiz or end-of-unit exam in class. If a student misses a mid-unit quiz for any reason, I will replace that quiz grade with the student's grade on the end-of-unit exam. In addition, if it is advantageous to do so, I will replace any student's mid-unit quiz grade with the corresponding end-of-unit exam grade (to encourage continuous learning and reviewing of quizzes).

Part of each quiz and exam will be taken as a group. However, if a student misses more than 2 classes during the lead up to a quiz/exam, that student is not eligible to participate in the group section and will lose those points automatically. Also, if a student is more than 10 minutes late for the group part of the quiz/exam, then that student will not receive any credit for the group part of the quiz. These points cannot be made up.

One good way to study for the tests is to try the supplementary problems found at the end of each section in the course packet. Helping group members to understand the material by answering their questions and explaining things to them will also improve any student's grade by giving him or her practice in explaining concepts. Since grades are not curved, this can never hurt.

Schedule (approximate)

Week 1 (Jan 17-19) Electric Circuits (EC) 1 Due 1/20: HW #1	Week 9 (Mar 20-23) LC 6 Due 3/22 and 3/23: Review questions for LC 5 Due 3/24: HW #9
Week 2 (Jan 23-26) EC 1 and 2 Due 1/25 and 1/26: Review questions for EC 1 Due 1/27: HW #2, Peer eval 1A	Week 10 (Mar 27-30) LC 7 **Test 2 on 3/29 and 3/30 (LC 1-7)** Due 3/29 and 3/30: Review questions for LC 6-7 Due 3/31: HW #10, Peer eval 2B
Week 3 (Jan 30-Feb 2) EC 3 **Quiz 1 on 2/1 and 2/2 (EC 1-2)** Due 2/1 and 2/2: Review questions for EC 2 Due 2/3: HW #3	Week 11 (Apr 3-6) Astronomy by Sight (AbS) 1 Due 4/7: HW #11, Peer eval 3A
Week 4 (Feb 6-Feb 9) EC 4 Due 2/10: HW #4	Week 12 (4/10-13) AbS 2 and 4 Due 4/12 and 4/13: Review questions for AbS 1 Due 4/14: HW #12
Week 5 (Feb 13-16) EC 4 **Test 1 on 2/15 and 2/16 (EC 1-4)** Due 2/15 and 2/16: Review questions for EC 3-4 Due 2/17: HW #5, Peer eval 1B	Week 13 (4/17-20) AbS 4 **Quiz 3 on 4/19 and 4/20 (AbS 1, 2, 4)** Due 4/19 and 4/20: Review questions for AbS 4 Due 4/21: HW #13
Week 6 (Feb 20-23) Light and Color (LC) 1 and 2 Due 2/22 and 2/23: Review questions for LC 1 Due 2/24: HW #6, Peer eval 2A	Week 14 (4/24-27) AbS 5 Due 4/28: HW #14
Week 7 (Feb 27-Mar 2) LC 2 and 3 Due 3/3: HW #7	Week 15 (5/1-5/4) AbS 3 Due 5/3 and 5/4: Review questions for AbS 3,5 Due 5/5: HW #15, Peer eval 3B
Week 8 (Mar 6-9) LC 4 and 5 **Quiz 2 on 3/8 and 3/9 (LC 1-4)** Due 3/8 and 3/9: Review questions for LC 2-4 Due 3/10: HW #8	**Test 3 on 5/9 and 5/13 (AbS 1-5)**

The above schedule shows approximately the pace at which students should be working. There may be day-to-day fluctuations.

UNIVERSITY POLICIES

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/regents.umn.edu/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/education/studentresp*.

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/regents.umn.edu/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/education/instructorresp*.

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/education/makeupwork*.

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/education/studentresp*.

Grading and Transcripts
The University utilizes plus and minus grading on a 4.000 cumulative grade point scale in accordance with the following:

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/education/gradingtranscripts*.

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/regents.umn.edu/files/policies/SexHarassment.pdf

Equity, Diversity, Equal Opportunity, and Affirmative Action
The University provides 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/regents.umn.edu/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. The Disability Resource Center 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 Disability Resource Center at 612-626-1333 to arrange a confidential discussion regarding equitable access and reasonable accommodations.

If you are registered with Disability Resource Center 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 Disability Resource Center 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*.

Academic Freedom and Responsibility:
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. *[Customize with names and contact information as appropriate for the course/college/campus.]*

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