

**UCC/UGC/ECCC**

Proposal for New Course

***Please attach proposed Syllabus in*** [***approved university format***](http://www4.nau.edu/avpaa/UCCForms/syllabus.doc)***.***

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| --- | --- | --- | --- |
| 1. Course subject and number: | **PHY 172** | 2. Units: | **5** |

 [**See upper and lower division undergraduate course definitions.**](http://www4.nau.edu/avpaa/UCCPolicy/Uplow.doc)

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| 3. College:  | **CEFNS** | 4. Academic Unit: | **Physics and Astronomy** |

5**.** Student Learning Outcomes of the new course. *(*[*Resources & Examples for Developing Course Learning Outcomes*](http://www4.nau.edu/avpaa/Assessment/CourseLearningOutcomesPDF_090712.pdf)*)*

**Objective 1) Students will have an understanding of charges, electric fields and magnetic fields. They will be able to explain what a charge is, how it creates these fields, and be able to draw field patterns for typical situations. The student will understand how these fields interact with each other and how the entire electrical power grid operates. A baseline assessment of this objective will involve the ability of the student to find the electric or magnetic field pattern (formula and pictures) for particular charge configurations.**

**Objective 2) The student will understand how Force, Field, Energy and Potential apply to electric and magnetic fields. A baseline assessment of this objective will involve the ability of the student to, for instance, find the forces between groups of charges and the energy it would take to create that group of charges.**

**Objective 3) The student will understand how basic electrical circuits operate and how that operation is explained by an understanding of charges, electric fields and magnetic fields. A baseline assessment of this objective will involve the ability of the student to find the static or time-dependent current in a particular circuit.**

**Objective 4) The student will understand the properties of electromagnetic radiation (Maxwell’s Equations), and how AM waves, FM waves, microwaves, infrared radiation, visible light, ultraviolet light, x rays and cosmic rays operate, and how that operation is explained by an understanding of charges, electric fields and magnetic fields. A baseline assessment of this objective will involve the ability of the student to explain how all electromagnetic radiation is similar, how radiation interacts with matter and how radiation is created in particular situations.**

**Objective 5) The student will be able to apply the fundamental principles of classical thermodynamics (First and Second Law of Thermodynamics) to the resolution of questions and problems in the physical world. A baseline assessment of this objective will involve the ability of the student to explain the efficiency and power output of a typical engine.**

**Objective 6) The student will be able to design and perform various experiments to facilitate the understanding of electricity, magnetism and thermodynamics. A baseline assessment of this objective will involve the ability of the student to carefully take and analyze data, explain where error or uncertainty exists, and discuss the possible match between theory and experiment.**

6. Justification for new course, including how the course contributes to degree program outcomes, or other university requirements / student learning outcomes. *(*[*Resources, Examples & Tools for Developing Effective Program Student Learning Outcomes*](http://www4.nau.edu/avpaa/Assessment/ProgramLearningOutcomesPDF_090712.pdf)*).*

**The number of engineering majors greatly exceeds the number of physics and astronomy majors in PHY 262. Thus, the focus in PHY 262 is primarily on engineering students. Clearly, the needs and interests of engineering students are different from those of physics and astronomy majors, and both groups would benefit from a course targeted towards their own needs and interests. Furthermore, our physics and astronomy majors are hampered by the three-hour lecture limitation of the current PHY 262 course. The engineering curriculum does not allow an extension of PHY 262 to a four-hour lecture. Separating out our majors into PHY 172 will allow us more time to delve deeper into the same material, a necessity for improving student performance in PHY 331 and PHY 332, required courses for majors in electricity and magnetism, and PHY 441, a require course for majors in thermodynamics and statistical mechanics. Adding another hour will allow us to extend the curriculum of PHY 262 by including additional topics such as electromagnetic waves. Furthermore, the current PHY 262 lab is designed to help the students learn the concepts, and not as focused on the technical issues of taking and analyzing data that are essential to physics and astronomy majors. The lab component of PHY 172 will focus on concepts as well as taking and analyzing data.**

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| 7. Effective **BEGINNING** of what term and year? | **Fall 2014** |  |
|  [**See effective dates calendar**](http://www4.nau.edu/avpaa/timelines/1314Effective.xls)**.** |  |  |

|  |  |
| --- | --- |
| 8.  Long course title: | **UNIVERSITY PHYSICS II FOR PHYSICISTS**  |
|  *(max 100 characters including spaces)* |

|  |  |
| --- | --- |
| 9. Short course title: | **UNIV PHYSICS II FOR PHYSICISTS** |
|  *(max. 30 characters including spaces)* |

10. Catalog course description *(max. 60 words, excluding requisites):*

**The second semester of a three-semester, calculus-based, introductory physics sequence especially designed for physics and astronomy majors. This course covers all topics in PHY 262 including electric fields, magnetic fields, Maxwell’s equations, and the First and Second Laws of Thermodynamics, and goes beyond PHY262 by adding topics that are especially useful in preparation for upper division physics courses including time-varying electric fields, time varying-magnetic fields, electromagnetic waves, and entropy.**

11. Will this course be part of any plan (major, minor or certificate) or sub plan (emphasis)?

                                                                                                                                    Yes [x]  No [ ]

 If yes, include the appropriate plan proposal.

12. Does this course duplicate content of existing courses? Yes [x]  No [ ]

If yes, list the courses with duplicate material. If the duplication is greater than 20%, explain why NAU should establish this course.

**This course duplicates much of the material in PHY 262, but because the lecture component is 4 hours instead of 3 hours, it will allow students to go into more depth on the existing material. Additional depth is essential for the improvement of student performance in PHY 331 and PHY 332, required major courses in electricity and magnetism, and PHY 441, a required major course in thermodynamics and statistical mechanics. The extra hour will allow us to cover more topics such as electromagnetic waves.**

13. Will this course impact any other academic unit’s enrollment or plan(s)?              Yes [ ]  No [x]

       If yes, describe the impact. If applicable, include evidence of notification to and/or response from

 each impacted academic unit

14. Grading option:      Letter grade **[x]** Pass/Fail **[ ]**Both **[ ]**

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| 15. Co-convened with: |  | 14a. UGC approval date\*: |  |
| (For example: ESE 450 and ESE 550) [See co-convening policy](http://www4.nau.edu/avpaa/UCCPolicy/crosslist.doc). \*Must be approved by UGC before UCC submission, and both course syllabi must be presented. |

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| 16. Cross-listed with: |  |  |
|  (For example: ES 450 and DIS 450) [See cross listing policy](http://www4.nau.edu/avpaa/UCCPolicy/crosslist.doc).      Please submit a single cross-listed syllabus that will be used for all cross-listed courses. |
| 17. May course be repeated for additional units? |  |  Yes [ ]     No [x]  |
|  16a. If yes, maximum units allowed? |  |  |
|  16b. If yes, may course be repeated for additional units in the same term? |  | Yes [ ]     No [ ]  |
| 18. Prerequisites: | **MAT 136 and PHY 171** |  |

 If prerequisites, include the rationale for the prerequisites.

**PHY 172 builds on the techniques in PHY 171, and uses calculus covered in MAT 136.**

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| 19. Co requisites: | **MAT 137** |  |

 If co requisites, include the rationale for the co requisites.

**The later parts of PHY 172 relies heavily on the calculus in MAT 137.**

20. Does this course include combined lecture and lab components?                   Yes [x]  No [ ]

 If yes, include the units specific to each component in the course description above.

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| 21. Names of the current faculty qualified to teach this course: | **Entire Department** |

**Answer 22-23 for UCC/ECCC only:**

22. Is this course being proposed for Liberal Studies designation?             Yes [x]  No [ ]

       If yes, include a [Liberal Studies proposal](http://www2.nau.edu/~d-ugstdy/_source/docs/LS_Proposal_form.doc) and syllabus with this proposal.

23. Is this course being proposed for Diversity designation?Yes [ ]    No [x]

       If yes, include a [Diversity proposal](http://www4.nau.edu/avpaa/EthDiv/Divform2010.doc) and syllabus with this proposal.

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| **FLAGSTAFF MOUNTAIN CAMPUS** |  |
| **Scott Galland**  | **1/9/2014** |
| Reviewed by Curriculum Process Associate | Date |
|  |  |
| **Approvals**: |  |
| Stephen C. Tegler |  |
| Department Chair/Unit Head (if appropriate) | Date |
|  |  |
| Chair of college curriculum committee | Date |
|  |  |
| Dean of college | Date |
|  |  |
| **For Committee use only:** |  |
|  |  |
| UCC/UGC Approval | Date |

Approved as submitted: Yes [ ]  No [ ]

Approved as modified: Yes [ ]  No [ ]

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| **EXTENDED CAMPUSES** |  |
|  |  |
| Reviewed by Curriculum Process Associate | Date |
|  |  |
| **Approvals:**  |  |
|  |
| Academic Unit Head | Date |
|  |
| Division Curriculum Committee (Yuma, Yavapai, or Personalized Learning) | Date |
|  |
| Division Administrator in Extended Campuses (Yuma, Yavapai, or Personalized Learning) | Date |
|  |
| Faculty Chair of Extended Campuses Curriculum Committee (Yuma, Yavapai, or Personalized Learning) | Date |
|  |
| Chief Academic Officer; Extended Campuses (or Designee) | Date |
|  |  |

Approved as submitted: Yes [ ]  No [ ]

Approved as modified: Yes [ ]  No [ ]

**College of Engineering, Forestry, and Natural Sciences**

**Department of Physics and Astronomy**

**PHY 172: University Physics II for Physicists**

**Spring 2015**

**Clock Hours/Location**

MWF 8:00 – 8:50 a.m. and TH 5:00-5:50 p.m.

Plus an augmented “studio” lab section.

Bldg # 19, Room 233-class, Room 316-studio lab.

**Instructor**

Dr. David Cole, Office in Bldg. 19, Room 224, Phone 523-8017. Office hours are TBD and by

appointment.

**Credit** **Hours**

4 credit hours for lecture plus 1 credit hour for lab; a total of 5 credit hours.

**Course Pre-requisites**

PHY 171 and MAT 136 or MAT 136H.

**Course Co-requisites**

MAT 137 or MAT 137H.

**Course Description**

This is the second semester of a three-semester, calculus-based, introductory physics sequence especially designed for physics and astronomy majors. This course covers all topics in PHY 262 including electric fields, magnetic fields, Maxwell’s equations, and the First and Second Laws of Thermodynamics, and goes beyond PHY262 by adding topics that are especially useful in preparation for upper division physics courses including time-varying electric fields, time varying-magnetic fields, electromagnetic waves, and entropy.

This is also a Liberal Studies course appearing in the “Science/Applied Science” distribution block. The essential skills of Critical Thinking and Quantitative Reasoning will be emphasized throughout the course. However, the ‘one essential skill’ to assess, with regard to the basic laws of nature and how those laws apply to our world and our environment, will be “Scientific Inquiry”. Students will engage the skills of quantitative reasoning and critical thinking as they perform the process of scientific inquiry in the solution of fundamental problems and laboratory experiments in physics.

**Student Learning Expectations/Outcomes for this Course**

**After finishing this course, students will be able to demonstrate their mastery of six basic objectives:**

**Objective 1)** Students will have an understanding of charges, electric fields and magnetic fields. They will be able to explain what a charge is, how it creates these fields, and be able to draw field patterns for various charge configurations. The student will understand how these fields interact with each other and how the entire electrical power grid operates.

A standard assessment of this objective will involve the ability of the student to find the electric or magnetic field pattern (formula and pictures) for particular charge configurations.

**Objective 2)** The student will understand how Force, Field, Energy and Potential apply to electric and magnetic fields. A standard assessment of this objective will involve the ability of the student to, for instance, find the forces between groups of charges and the energy it would take to create that group of charges.

**Objective 3)** The student will understand how basic electrical circuits operate and how that operation is explained by an understanding of charges, electric fields and magnetic fields. A standard assessment of this objective will involve the ability of the student to find the static or time-dependent current in a particular circuit.

**Objective 4)** The student will understand the properties of electromagnetic radiation (Maxwell’s Equations), and how AM waves, FM waves, microwaves, infrared radiation, visible light, ultraviolet light, x rays and cosmic rays operate, and how that operation is explained by an understanding of charges, electric fields and magnetic fields.

A standard assessment of this objective will involve the ability of the student to explain how all electromagnetic radiation is similar, how radiation interacts with matter and how radiation is created in particular situations.

**Objective 5)** The student will be able to apply the fundamental principles of classical thermodynamics (First and Second Law of Thermodynamics) to the resolution of questions and problems in the physical world.

A standard assessment of this objective will involve the ability of the student to explain the efficiency and power output of an internal combustion engine.

**Objective 6)** The student will be able to design and perform various experiments to facilitate the understanding of electricity, magnetism and thermodynamics.

A standard assessment of this objective will involve the ability of the student to carefully take and analyze data, explain where error or uncertainty exists, and discuss the possible match between theory and experiment.

**Course Structure/Approach**

The classes will consist of some lecturing, but will also include demonstrations, discussion with partner time, and problem solving sessions. Homework will be assigned each class period and will be due before the beginning of the next class period. ALL homework will be done via the web using the WileyPlus Tutorial system. You must register yourself into this system and complete all HW assignments online. There will also be very short (~ 5 minute) daily quizzes that will be held in class at random times. If you are late or absent and miss the quiz, then there will be no chance for make-ups without an officially excused absence. As these quizzes will be a large part of your grade, it is very important that you arrive on time. In general, there will be paper-based quizzes given perhaps every week, but most of the quizzes will be done with the “eInstruction classroom participation system remote control unit” (aka clickers), and so you are required to register yourself into this system and bring your clicker to class every day. Bring a calculator to class every day. If you do not own a calculator, you will need to buy one. It does not need to be programmable or the graphing kind--it just needs to have trig and inverse trig capability.

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**This course has been certified to conform to FYLI guidelines**

**to help promote student success for first year students.**

**FYLI Teaching Assistants**

This semester we have received funding from the First Year Learning Initiative (FYLI) to provide special teaching assistants for our intro physics courses.  Siera is assigned to this class and will be sitting in class for each of our lecture periods.  She will have office hours to help students - individually and in small groups - out of class.  Times will be provided when they become available.

**Supplemental Instruction (SI)**

Supplemental Instruction (SI) is assigned to historically difficult academic courses. SI leaders are model students who were previously successful in the course. They attend class and hold four study sessions each week. Based on the text and class lectures, they develop study guides, worksheets, quizzes, practice tests, etc. to share with students. Discussion centers not only on explaining and understanding course content, but also on more effective study skills and strategies appropriate to the particular course. SI leaders may work with one to three students, groups of eight to ten, or larger audiences of 40 to 50 in a test review session. Students may attend as many SI sessions as they wish. Students who attend 3 or more SI sessions for a course earn one-half letter grade higher on the average than students who do not attend, earning more A’s and B’s and receiving fewer D’s, and F’s.

**Get a Group**

Working in groups to solve the homework problems is not only permitted, it is encouraged! Do yourself a favor and find some people you think are trustworthy, exchange phone numbers, and pick certain times of the week to regularly meet in a study area. Please do not simply copy someone else’s work, as you will pay for it on the tests and quizzes.

**About the Lab**

This is a 5-credit course (4 for class and 1 for lab). You must be enrolled in the lab simultaneously with the lecture. ***You will receive a single grade for these 5 credits***, with the lab comprising 20% of that grade. The labs are designed to supplement ideas developed in lecture and are thus very helpful in developing deeper physical insights. ***If you must miss a lab during a given week, please go to another one***---just walk in on any of the sections that same week, tell the lab instructor, and they will let you join in so as not to miss your lab points that week. **Lab material will also be covered on the quizzes and tests given in the class.**

**You must purchase the lab manual online and pay for it before coming to lab. The link is:** <http://www.physics.nau.edu/LABMAN/labman.php>

**Textbook and Required Materials**

**Text**  We will be using the text called *Fundamentals of Physics* by David Halliday, Robert Resnick, and Jearl Walker, 10th edition, inside the WileyPlus online homework system. The WileyPlus access, which comes with the e-book, is available for about $100. Or you may purchase the paper book bundled with access to WileyPlus (which includes the e-book.) Please follow the instructions you have from me via email to register yourself into the HW system and purchase your choice of text.

**Lab manual**  You must also buy the lab manual entitled PHY 172 LAB Manual. You need to pay for this paper lab manual online **before** the first lab meeting, and then pick up the manual at the first lab meeting. The URL is <http://www.physics.nau.edu/LABMAN/labman.php>

**Clicker**  The eInstruction classroom participation system remote control unit is available at the bookstore. You must purchase this and register yourself in BBLearn.

**Calculator**  Bring your calculator to class every day.

**Optional Materials** Any calculus-based physics book that you have used in the past.

**Course Outline**

Ch. 1. Electric Charge and Coulomb’s Law

Ch. 2. Electric Field

Ch. 3. Gauss’ Law

Ch. 4. Electric Potential Energy and Potential

Ch. 5. Electric Properties of Materials

Ch. 6. Capacitance

Ch. 7. DC Circuits

Ch. 8. The Magnetic Field

Ch. 9. Magnetic Field of a Current

Ch. 10. Faraday’s Law of Induction

Ch. 11. Magnetic Properties of Materials

Ch. 12. Inductance

Ch. 13. Alternating Current Circuits

Ch. 14. Maxwell’s Equations and Electromagnetic Waves

Ch. 15. Temperature

Ch. 16. Molecular Properties of Gasses

Ch. 17. First Law of Thermodynamics

Ch. 18. Entropy and the Second Law of Thermodynamics

**Assessment of Student Learning Outcomes:**

The assessment of all six objectives will involve students being able to demonstrate their understanding by using 4 different kinds of tools. First, students should be able to *explain* the nature of a problem and its resolution in plain english. The student should also be able to *describe* and *interpret* information in tabular, graphical and spreadsheet form, and be able to *communicate* their own solutions and analysis in these formats. The student will often be presented with a pictorial representation of the problem, and should be able to *depict* their understanding/answer with an appropriate picture. Finally, the use of computers (computational physics) will overlap each of these areas.

Thus, a student will be presented with a ‘word’ problem at the end of a chapter, and be able to discuss what is being asked for in simple terms, draw a picture describing the important aspects of the issue, and present an ‘answer’ to the challenge in both graphical and mathematical form. Likewise, a student will be shown a picture of some device and

then asked to explain how and why it works, both quantitatively and qualitatively. The student will also be asked to explain when a particular formula is valid for use, and to derive valid formulas useful in novel situations. Finally, each student will often be asked “how do you know?”, and should be able to back up their assertions by discussing the results of experiments (things they have done with their own hands).

* **Methods of and Timeline for Assessment**

**Exams:** There will be three hour-long exams and a cumulative final exam. The date of the final exam is fixed by the University and cannot be changed. The dates for the hour-long exams will be announced in advance but depend on our progress through the material.

If for some reason you are unable to take an exam at the scheduled time, you must arrange with me *before the exam* to take it at a different time. Otherwise I reserve the right to give you a more difficult exam as a make-up exam. The necessary equations will be provided on the exam; there is no need to memorize equations or constants. There will be a cumulative final exam.

**Quizzes & HW:** There will typically be quizzes and homework assignments for every lecture.

**Grading System**

The grades will be weighted as follows:

 Attendance see policy below

 Homework and reading quizzes 20 %

 In-class quizzes 15 %

 First hour exam 10 %

 Second hour exam 10 %

 Third hour exam 10 %

 Final exam 15 %

 Laboratory 20 %

The grading scale is A (≥ 90 %), B (≥ 80 %), C (≥ 70 %), D (≥ 60 %).

I reserve the right to lower the curve, but not to raise it.

**Course Policies**

* **Retests/makeup tests**

If you miss an exam for any reason without prior arrangements, I will offer a single, cumulative, make-up exam *outside of class* during the next-to-last week of class. This grade will be substituted for the exam you missed.

* **Attendance**

Attendance is required, and will affect your grade as follows:

|  |  |
| --- | --- |
| ***number of classes missed*** | ***effect on grade*** |
| ≤ 3 | none |
| ≥ 4 and ≤ 6 | lowered by 10%  |
| ≥ 7 and ≤ 9 | lowered by 20% |
| ≥ 10  | lowered by 30% |

I will accept documented illness as an excuse, and will of course honor institutional excuses. Snow or other issues must be accommodated inside your three allowances.

* **Statement on plagiarism and cheating**

I have absolutely no patience with cheating. Anyone cheating on a quiz or exam will receive a zero on that assignment, and possibly a failing grade in the course. Working with other students to solve homework problems is not considered academic dishonesty, but copying other students’ homework solutions IS considered academic dishonesty.

* **Cell phones and laptops**

Please turn off all phones, laptops, and other communication devices before class starts. This policy will be strictly enforced; if you violate this policy, I will ask you to leave for the rest of the class period, and you will lose your attendance for that day. If for some reason you think you need an exception to this policy, talk to me about it.

**Environmental Responsibility**

There is a growing effort on this campus to increase faculty, administrative, and student awareness of fundamental environmental issues. In fact, NAU is nationally recognized for its role in this nascent effort. Students, who are in fact leading the way in this reform, continue to place pressure on the curriculum to acknowledge and reflect such basic ideas as conservation and sustainability.

As future citizens with a college degree, your knowledge and ability will allow your ideas and actions to have a disproportionately large effect upon the environment. As such, it is appropriate, and perhaps even critical, that your classes begin to validate and increase your environmental awareness.

The content of this class will not change; we will cover the same amount of the same material as previous classes, but I will take the opportunity to point out, along the way:

a) The background, rationale, and repercussions of the ideas and actions of the past.

b) Possible and probable implications of current technology and behavior.

c) Alternate possibilities, thinking, and language.

**University policies**

* See the following document for policy statements

 *http://www4.nau.edu/avpaa/UCCPolicy/plcystmt.html*.

* Safe Working and Learning Environment policy

 http://home.nau.edu/images/userimages/lc94/6874/Safe%20policy%208.07.pdf

* Students with Disabilities policy

If you have a documented disability, you can arrange for accommodations by contacting Disability Resources (DR) at 523-8773 (voice)or 523-6906 (TTY), dr@nau.edu (e-mail)or 928- 523-8747 (fax).Students needing academic accommodations are required to register with DR and provide required disability related documentation. Although you may request an accommodation at any time, in order for DR to best meet your individual needs, you are urged to register and submit necessary documentation (www.nau.edu/dr) 8 weeks prior to the time you wish to receive accommodations. DR is strongly committed to the needs of student with disabilities and the promotion of Universal Design. Concerns or questions related to the accessibility of programs and facilities at NAU may be brought to the attention of DR or the Office of Affirmative Action and Equal Opportunity (523-3312).

* Institutional Review Board policy

 See Physics and Astronomy Department Office

* Academic Integrity policy

 http://home.nau.edu/studentlife/handbook/appendix\_g.asp.

*NORTHERN ARIZONA UNIVERSITY*

**POLICY STATEMENTS**

**SAFE ENVIRONMENT POLICY**

NAU’s Safe Working and Learning Environment Policy seeks to prohibit discrimination and promote the safety of all individuals within the university.  The goal of this policy is to prevent the occurrence of discrimination on the basis of sex, race, color, age, national origin, religion, sexual orientation, disability, or veteran status and to prevent sexual harassment, sexual assault or retaliation by anyone at this university.

You may obtain a copy of this policy from the college dean’s office or from the NAU’s Affirmative Action website [*http://home.nau.edu/diversity/*.](http://home.nau.edu/diversity/)  If you have concerns about this policy, it is important that you contact the departmental chair, dean’s office, the Office of Student Life (928-523-5181), or NAU’s Office of Affirmative Action (928-523-3312).

**STUDENTS WITH DISABILITIES**

If you have a documented disability, you can arrange for accommodations by contacting Disability Resources (DR) at 523-8773 (voice)or 523-6906 (TTY),  dr@nau.edu (e-mail)or 928-523-8747 (fax).Students needing academic accommodations are required to register with DR and provide required disability related documentation.  Although you may request an accommodation at any time, in order for DR to best meet your individual needs, you are urged to register and submit necessary documentation ([www.nau.edu/dr](http://www.nau.edu/dr)) 8 weeks prior to the time you wish to receive accommodations. DR is strongly committed to the needs of student with disabilities and the promotion of Universal Design. Concerns or questions related to the accessibility of programs and facilities at NAU may be brought to the attention of DR or the Office of Affirmative Action and Equal Opportunity (523-3312).

**INSTITUTIONAL REVIEW BOARD**

Any study involving observation of or interaction with human subjects that originates at NAU—including a course project, report, or research paper—must be reviewed and approved by the Institutional Review Board (IRB) for the protection of human subjects in research and research-related activities.

The IRB meets monthly.  Proposals must be submitted for review at least fifteen working days before the monthly meeting.  You should consult with your course instructor early in the course to ascertain if your project needs to be reviewed by the IRB and/or to secure information or appropriate forms and procedures for the IRB review.  Your instructor and department chair or college dean must sign the application for approval by the IRB.  The IRB categorizes projects into three levels depending on the nature of the project:  exempt from further review, expedited review, or full board review.  If the IRB certifies that a project is exempt from further review, you need not resubmit the project for continuing IRB review as long as there are no modifications in the exempted procedures.

A copy of the IRB *Policy and Procedures Manual* is available in each department’s administrative office and each college dean’s office or on their website: [*http://www.research.nau.edu/compliance/irb/index.aspx*](http://www.research.nau.edu/compliance/irb/index.aspx)*.*  If you have questions, contact the IRB Coordinator in the Office of the Vice President for Research at 928-523-8288 or 523-4340.

**ACADEMIC INTEGRITY**

The university takes an extremely serious view of violations of academic integrity.  As members of the academic community, NAU’s administration, faculty, staff and students are dedicated to promoting an atmosphere of honesty and are committed to maintaining the academic integrity essential to the education process.  Inherent in this commitment is the belief that academic dishonesty in all forms violates the basic principles of integrity and impedes learning.  Students are therefore responsible for conducting themselves in an academically honest manner.

Individual students and faculty members are responsible for identifying instances of academic dishonesty.  Faculty members then recommend penalties to the department chair or college dean in keeping with the severity of the violation.  The complete policy on academic integrity is in Appendix G of NAU’s *Student Handbook*[*http://www4.nau.edu/stulife/handbookdishonesty.htm*](http://www4.nau.edu/stulife/handbookdishonesty.htm)***.***

**ACADEMIC CONTACT HOUR POLICY**

The Arizona Board of Regents Academic Contact Hour Policy (ABOR Handbook, 2-206, Academic Credit) states:  “an hour of work is the equivalent of 50 minutes of class time…at least 15 contact hours of recitation, lecture, discussion, testing or evaluation, seminar, or colloquium as well as a minimum of 30 hours of student homework is required for each unit of credit.”

*The reasonable interpretation of this policy is that for every credit hour, a student should expect, on average, to do a minimum of two additional hours of work per week; e.g., preparation, homework, studying.*

 **SENSITIVE COURSE MATERIALS**

If an instructor believes it is appropriate, the syllabus should communicate to students that some course content may be considered sensitive by some students.

“University education aims to expand student understanding and awareness.  Thus, it necessarily involves engagement with a wide range of information, ideas, and creative representations.  In the course of college studies, students can expect to encounter—and critically appraise—materials that may differ from and perhaps challenge familiar understandings, ideas, and beliefs.  Students are encouraged to discuss these matters with faculty.”