

College of Arts & Sciences Faculty Meeting
Thursday, April 21, 2011
3:30 p.m.
Nebraska Union, City Campus

3:30 p.m. Iced tea and cookies
3:45 p.m. Meeting begins

AGENDA

- Item I. Approval of minutes from the Fall Faculty Meeting, December 9, 2010.
- Item II. Opening comments.
- Item III. Opportunity for faculty to ask questions arising from annual reports of the various college committees (see appendix).
- Executive Committee
 - Promotion and Tenure Committee
 - Committee on Student Academic Distinction, Awards, and Appeals
 - Curriculum and Advising Committee
 - Faculty Instructional Development Committee
 - Assessment Committee
 - Endowed/College Professorships Committee
- Item IV. Recommendation from the College Curriculum Committee to approve the proposed changes to the Asian Studies Minor.
- Item V. Recommendation from the College Curriculum Committee to approve the proposed changes to the Biochemistry major.
- Item VI. Recommendation from the College Curriculum Committee to approve the proposed changes to the Environmental Studies major.
- Item VII. Recommendation from the College Curriculum Committee to approve the proposed changes to the Physics major.
- Item VIII. Opportunity to ask questions of the Dean.

APPENDIX

Item I. Approval of minutes from the Fall Faculty Meeting, December 9, 2010

MINUTES OF THE COLLEGE OF ARTS AND SCIENCES FACULTY MEETING (Version 2)

Thursday, 9 December 2010, 3:30 p.m. in the Nebraska Union

Opening Remarks, Approval of Minutes, and Appointment of a Parliamentarian

Dean Manderscheid opened the meeting at 3:45 p.m. and stated that instead of giving a presentation he would respond to faculty questions at the end of the meeting. The minutes of the Spring Faculty Meeting on 22 April 2010 were then approved without change or discussion. Owing to the absence of the Faculty Parliamentarian, Lloyd Ambrosius (History), the Dean initiated discussion of the appointment of a Parliamentarian for this meeting. Asst. Dean Bill Watts agreed to serve as Parliamentarian for this meeting.

Recommendations of the College Curriculum and Advising Committee (CCAC)

Thomas Lynch (English), Chair of the CCAC, introduced the CCAC's seven recommendations. Only the recommendation to approve a new minor in Computational Biology and Bioinformatics generated discussion. **Anthony Starace** (Physics and Astronomy) asked from which departments students who enrolled in this minor would come. **John Osterman** (School of Biological Sciences) responded that students would come from several departments across UNL. The proposal passed.

All other recommendations passed without discussion. Approved were (1) Essential Studies courses in Areas E (Historical Studies) and H (Ethnicity and Gender); (2) A change in the Anthropology major; (3) Changes to the major and minor in Communications Studies; (4) A new minor in Global Security Studies; (5) A title change for the minor in "Human Rights and Human Diversity" to "Human Rights and Humanitarian Affairs"; and (6) A new major in Microbiology.

Update on Achievement-Centered Education (ACE) Certification Process

Glen Ledder (Mathematics), the College's representative to the University Curriculum Committee's ACE subcommittee, opened his presentation by noting that *re-certification of ACE courses would begin next year*. The two key criteria for re-certification are: (1) The course must have followed its approved plan; and (2) Assessment data must have been collected and used. Ledder asserted that the UCC-ACE subcommittee will not assess how well any particular course is doing in meeting the ACE goals, but it expects that departments are doing this. Ledder emphasized that in applying for recertification, departments must be very specific about what data will be collected and how it will be used. Moreover, the UCC-ACE subcommittee will look at the course syllabus to see whether or not students are informed about what outcomes they will gain from the course.

Ledder concluded his presentation by recommending that *departments ask students on the course teaching evaluation form if they are taking the course for ACE credit* since such data will be useful for both departments and for the UCC-ACE subcommittee.

A fast-paced and rather detailed question and answer session followed:

- **Stephen Lahey** (Classics and Religious Studies) questioned why "stewardship" was included in **ACE Outcome 8** (Explain ethical principles, civics, and stewardship, and their importance to society.) Ledder suggested that stewardship does involve ethical matters, such as with regard to the environment.
- **ACE Outcome 9** (Exhibit global awareness or knowledge of human diversity through analysis of an issue.) elicited much discussion concerning whether students could satisfy this requirement by spending a semester abroad. By an informal faculty vote, the faculty present expressed the view that students should request credit for study abroad. **Marshall Olds** (Modern Languages and Literatures) suggested that the relevant paperwork could be administered by International Affairs. **John Meakin** (Mathematics) suggested that students should be required, in order to get credit, to say something about what they gained from their experiences abroad. **Jody Kellas** (Communications Studies) concurred with Meakin.

- The relation of co-curricular experiences to **ACE Outcome 10** (Generate a creative or scholarly product that requires broad knowledge, appropriate technical proficiency, information collection, synthesis, interpretation, presentation, and reflection.) brought to light the fact that the only way to get credit for ACE Outcome 10 for a co-curricular experience they undertake (such as, e.g., a summer research experience) is if the students enroll for credit for that experience.
- **Susan Belasco** (English) asked when the ACE rules would be posted online. Ledder responded that they would be online by the end of December. (*Note added:* The ACE Program URL is: <http://www.unl.edu/ous/ace/>)
- **Anthony Starace** (Physics and Astronomy) asked if there were any plans to bring ACE instructors up to speed. Ledder responded that there were not, but suggested that ACE instructors should prepare to evaluate how well students meet the ACE objective for their course and that they use what is learned from such an evaluation to improve outcomes the next time the course is taught.
- **Deborah Minter** (English) asked which outcomes would be assessed next year. Ledder responded that outcomes 1, 2, and 3 would be assessed.

Note added: Subsequent to the Faculty Meeting, Glen Ledder prepared written notes on his presentation that include the key points of the discussion that took place during the meeting. *Ledder's notes are attached as an Appendix to these minutes.*

Final Agenda Item: Discussion of the College's Strategic Plan and Opportunity to Ask Questions of the Dean

- **Amelia Montes** (Ethnic Studies) suggested that the Strategic Plan's Goals 1 (Enhance Undergraduate Education) and 2 (Increase Research and Creative Activities) should have their orders reversed (so that "research" is number 1). **William Thomas** (History) concurred, noting that UNL is moving into the Big 10. Manderscheid responded that the College's first focus has always been on undergraduate education. He said this is also helpful in informing the public and the Legislature about what we do.
- **Anthony Starace** (Physics and Astronomy) suggested that Goal 2 (Increase Research and Creative Activities) may give other universities in the Big 10 the wrong impression, i.e., that we do not do enough research and creativity now. He suggested that different wording reflecting a more "steady state" goal would be preferable. **Steve Goddard** (Computer Science and Engineering) responded that the College *should* have the goal of increasing the amount of research. He noted that there is a difference between a Strategic Plan and a Mission Statement. **Stephen Reichenbach** (Computer Science and Engineering) expressed agreement with Goddard's remarks. [*Note added:* After the meeting, Starace suggested to Goddard and Reichenbach that a more "steady-state" goal that would give a good impression would be: "Increase high-profile research and creative activity," as this indicates concern with quality and significance as well as with quantity.]
- **Deborah Minter** (English) asked whether Professors of Practice, Lecturers, and Research Faculty were voting members of the College faculty. The Dean answered "Yes" for Professors of Practice and "No" for Lecturers and Research Faculty.
- **Anthony Starace** (Physics and Astronomy) asked how many College faculty were planning to accept the University's retirement incentive. **Manderscheid** indicated that roughly 8% of the faculty have indicated they would, but that they have until December 20th to make their final decisions. He said that these faculty currently teach approximately 100 courses in the College. Departments have been asked to inform the College about the impact of these retirements on their teaching programs and to indicate their financial costs for making sure that all necessary courses are taught.
- **Deborah Minter** (English) asked whether or not the retirement incentive plan is budget neutral and what cuts it may require. **Manderscheid** indicated we do not yet know.

The meeting was adjourned at approximately 4:50 p.m.

Respectfully submitted,

Anthony F. Starace, *Faculty Secretary, 30 January 2011*

Appendix to Minutes from 12-9-2010

General Notes on ACE Administration

Glenn Ledder, College of A&S Representative to the UCC ACE Subcommittee

15 December 2010

The initial ACE certification was done by the IACE committee. The transition from IACE to the ACE subcommittee of UCC resulted in a number of misunderstandings in the 2009-10 academic year; however, UCC ACE has now approved about 40 consecutive ACE proposals from Arts and Sciences stretching back to October. The College Curriculum and Assessment Committee has done an outstanding job of prescreening.

The UCC ACE subcommittee has tightened the certification policies in two areas. First, we are requiring that syllabi meet the policy stated in the governing documents. Faculty whose courses were approved in the initial year are encouraged to revise their syllabi to comply with the ACE syllabus policy. Second, we have clarified the policies regarding dual-outcome courses. Some combinations that may have been approved in the initial year are no longer considered: (1) courses certified for Outcomes 1, 2, or 3 cannot be certified for any additional outcome, (2) courses cannot be certified for more than one of Outcomes 4-7, and (3) courses certified for Outcome 10 cannot also be certified for another outcome except Outcomes 8 and 9.

A number of ACE issues remain, particularly recertification. What follows is the current state of the recertification plan. The calendar has been approved. The submission policies and criteria will be settled at our January meeting. Two points are clear about recertification difficulties. First, decertification can only apply to future offerings of a course. Students who are taking an ACE course at the time of decertification or took it earlier will still get ACE credit for the course. Second, no course will be decertified because of failure to be recertified. Courses that are not recertified because of content issues or noncompliance with ACE guidelines will be put on probation, with a final decision coming only after the course has been offered one more time.

Recertification Calendar:

The University-Wide Assessment Committee and the UCC ACE subcommittee plan to use the same rotation for both assessment and recertification. Next year will be year 1 of the 5-year rotation.

Year 1: Outcomes 1, 2, and 3

Year 2: Outcomes 4, 6, and 7

Year 3: Outcomes 5 and 9

Year 4: Outcomes 8 and 10

Year 5: Program Review (governing documents, co-curricular experience policy, study abroad policy, honors course policy, etc.)

Dual-outcome courses can be recertified for both outcomes in the year corresponding to either of its outcomes. For example, we expect that a course approved for Outcomes 5 and 8 would be reviewed for both outcomes in Year 4; however, the department could choose to have the course reviewed in Year 3 if desired.

Recertification Submission:

1. Update original ACE proposal as needed to incorporate changes made and changes planned. In particular, use of assessment data needs to be more specific.
2. Describe what assessment data has revealed about the success of the course and how those data have been used to help the course succeed.
3. Provide a representative syllabus from the most recent offering of the course.
4. If assessment data has not been collected for all sections, indicate how the department strives to make all sections meet ACE requirements (ex: common syllabus, regular instructor meetings).

Recertification Criteria:

Some criteria are based on the history of the course as an ACE course:

1. Course appears to have followed the certified plan, allowing for changes consistent with the Outcome.
2. Assessment data has been collected and used to help the course meet the Outcome. UCC ACE will not attempt to judge the success of courses; it does want evidence that the controlling department is attempting to judge the success of the course.

Other criteria are essentially the same as initial certification:

3. Course provides opportunities to develop the knowledge/skills for the Outcome and opportunities to demonstrate achievement of the Outcome.
4. Department has a coherent plan for ongoing assessment and revision of the course. This should be more specific than the plan for the original ACE proposal.
5. The syllabus provides students with information about the opportunities to develop the knowledge/skills and demonstrate achievement.
6. At least one reinforcement must be identified. These are not used for recertification but are intended for information only.

Other ACE Issues:

1. We would like to be able to inform departments of the number of students who take each course for ACE credit. This is not currently possible because of a flaw in the DARS program. I am gently pushing for this to be changed. It will not happen soon. Departments should consider adding a line to their course evaluation that asks if the student is using the course for ACE (and which outcome if the course is dual-outcome). This information could be used to prune ACE offerings that are never utilized for ACE credit.
2. The wording of Outcome 8 has proven to be problematic: "Explain ethical principles, civics, and stewardship, and their importance to society." Following a literal interpretation of this language, we have insisted that each of the three elements must be present in the course to some extent. Most Outcome 8 courses strongly emphasize one of the three and do not easily accommodate the others. One option is for us to propose a change in the wording, which would have to be approved by all 8 colleges. Another option is for us to be more flexible in our identification of each of the three elements.
3. The rules for co-curricular experiences are being revamped to make it easier for students to get ACE credit for appropriate non-credit-bearing work. Students must have a UNL faculty sponsor in the academic area of the project, even if the work is actually directed by someone outside the UNL faculty. Students must provide a product as evidence of achievement of the outcome and the sponsor must certify that the work is at least comparable to a 3-credit course. The request for co-curricular credit will have to be approved by the college of the faculty sponsor and the student's home college. Approval for co-curricular experiences may be sought either before or after the experience but must be done no later than the semester following the experience. Students who participate in a non-credit UNL activity will probably want to obtain approval prior to the activity. The student will still need to provide a product after the experience has ended. Students who participate in a program that does not have a fixed structure, such as an REU (Research Experience for Undergraduates), may prefer to wait until they have had the experience to decide if it ought to qualify. Prior to the activity, the student should still find a faculty sponsor and file a form indicating the (possible) intent to apply for co-curricular experience approval.

Study Abroad Policy:

Most programs involving foreign study provide students with an excellent experience of human diversity, global awareness, or both. It is therefore advisable to have a simplified process for students who want to use a study abroad experience to obtain co-curricular experience credit for Outcome 9. Since there are some study abroad programs that do not offer experience in human diversity or global awareness, we don't want to have credit for Outcome 9 automatically granted. We will be trying to formulate a study abroad policy in January. I welcome advice from Arts and Sciences faculty for how to simplify the co-curricular experience mechanism for this case while still ensuring that students have actually achieved the ACE outcome.

Item III. Opportunity for faculty to ask questions arising from annual reports of the various college committees.

ANNUAL REPORT OF THE EXECUTIVE COMMITTEE

The Committee meets weekly to offer advice and comment to the Dean's office and discuss issues identified by the Dean, including offering feedback on unit strategic plans and academic program reviews. Executive committee meeting minutes are distributed through the Weekly Chairs and Director's Mailings.

<http://ascweb.unl.edu/adminresources/cdmailing/index.html>

2010-2011 Committee members: Thomas Borstelmann, Brian Wilcox, Etsuko Moriyama, Tracy Frank, Julia McQuillan, Susan Belasco, Thomas Marley (Secretary), Amy Goodburn, David Manderscheid, Sunil Narumalani, Greg Snow.

ANNUAL REPORT OF THE PROMOTION AND TENURE COMMITTEE

The annual review of tenure and promotion recommendations began in December. The committee reviewed 14 recommendations regarding promotion to Associate Professor with tenure, 8 recommendations regarding promotion to Full Professor, and 1 promotion from Assistant to Associate Professor of Practice. The committee also interviewed several job candidates at the associate and full ranks for consideration of tenure.

2010-11 Committee Members: Professors Anthony Zera (Biological Sciences), David Loope (Geosciences), Jennifer McKittrick (Philosophy), Kathleen Krone (Communication Studies), Helen Moore (Sociology), and Associate Dean Amy Goodburn.

ANNUAL REPORT OF THE COMMITTEE ON STUDENT ACADEMIC DISTINCTION, AWARDS, AND APPEALS

This report covers the period of three graduations: August 2010, December 2010, and May 2011. The College of Arts & Sciences awarded 21 degrees with Highest Distinction, 75 degrees with High Distinction, and 56 degrees with Distinction.

For the sixth year the college combined its process with the UNL Office of Scholarships and Financial Aid. There were 1300 A&S students who completed the OSFA Upper-class scholarship application. Only 245 of those students also completed the A&S portion of the application. The committee considered over 140 students for the 30 scholarship funds controlled by the college and will make one nomination for the Kate Field Grant-in-aid and two nominations for the Donald Walters Miller Scholarship.

There was one grade appeals for this academic year.

2010-2011 Committee Members: Professors Ken Bloom (Physics & Astronomy), Martha McCollough (Anthropology), Jody Redepening (Chemistry), Thomas Rinkevich (Classics & Religious Studies), Priscilla Hayden-Roy (Modern Languages & Literatures), Shivashis Saha (Computer Science & Engineering Graduate Student), Sarah Maresh (Student Advisory Board Member), Tara McDonald (Student Advisory Board Member), and Associate Dean Sunil Narumalani. NOTE: The student members only participate in grade appeal decisions.

ANNUAL REPORT OF THE CURRICULUM AND ADVISING COMMITTEE

The committee reviewed 21 ACE proposals; 10 new course with ACE proposals; five change course/add ACE; 36 new course proposals; 122 change in course proposals; 22 course deletion proposals; 17 proposals for various majors and minors; two proposals for changes in college requirements; and two new major proposals and one new minor proposal for the Individualized Program of Studies.

The Committee forwarded to the faculty the following recommendations:

- to approve changes in the major in Anthropology.
- to approve changes in the minor in Asian Studies.
- to approve changes in the major in Biochemistry.

- to approve changes in the major and minor in Communication Studies.
- to approve a new minor in Computational Biology and Bioinformatics.
- to approve changes in the major in Environmental Studies.
- to approve a new minor in Global Security Studies.
- to approve the change in title of minor for Human Rights Human Diversity to Human Rights and Humanitarian Affairs.
- to approve a new major in Microbiology.
- to approve changes in the major for Physics.

The Committee approved non-substantive changes in the Computer Science major and minor; Ethnic Studies major and minor; Film Studies major; English major; Latino and Latin American Studies major; Lesbian, Gay, Bisexual, Transgender, Queer/Sexuality Studies minor; and Women's & Gender Studies major and minor. These changes went directly to the bulletin editor.

Finally, the committee made nominations for vacancies on the College Promotion and Tenure Committee and the College Curriculum Committee for the 2011-2012 AY.

The chair for the 2011-2012 academic year will be decided at the next committee meeting.

2010-11 Committee Members: Professors Thomas Lynch, Chair (English); Michael Dodd (Psychology); LeenKiat Soh (Computer Science & Engineering); Diana Pilson (Biological Sciences); Oscar Pereira (Modern Languages & Literatures); Katie Kidwell and Kaitlin Mazour (Student Advisory Board); Jenni Brost (Advising); Assistant Dean Bill Watts; and Associate Dean Sunil Narumalani (Executive Secretary).

ANNUAL REPORT OF THE FACULTY INSTRUCTIONAL DEVELOPMENT COMMITTEE

The committee considered nominations for Distinguished Teaching Awards and for the McClymont Award. One nomination for the Annis Chaikin Sorenson Award for distinguished teaching in the humanities were forwarded to the UNL Teaching Council's Subcommittee on Distinguished Teaching Awards and five nominations were made for the College Distinguished Teaching Award. The awardees will be honored at various events including the Arts & Sciences Honors Convocation on April 8, 2011.

The College Distinguished Teaching Award winners are: **Tracy D. Frank**, Assistant Professor, Earth & Atmospheric Sciences; **June Griffin**, Associate Professor of Practice, English; **Kenneth Nickerson**, Professor, School of Biological Sciences; **Ariel Kohen**, Associate Professor, Political Science; **Lisong Xu**, Associate Professor, History.

The Hazel R. McClymont Distinguished Teaching Fellow Award winner is: **Vanessa Gorman**, Associate Professor, History.

2010-11 Committee Members: Effie Athanassopoulos (Anthropology); Laura White (English); David Harwood (Earth & Atmospheric Sciences); Caitlin Gillespie, Student Advisory Board Member; Sean Kammer, Graduate Student – History, and Associate Dean Amy Goodburn.

ANNUAL REPORT OF THE ASSESSMENT COMMITTEE

The University Wide Assessment Committee decided that during the 2010-2011 academic year, departments could either report on their undergraduate majors and graduate programs or report on the preparedness of departments for assessing ACE courses. Assessment of ACE courses begins during the 2011-2012 academic year with Student Learning Outcomes 1, 2, and 3, with ACE courses addressing other Learning Outcomes in subsequent years. In a fall 2010 A&S Chairs & Directors meeting, it was decided that reporting on preparedness for ACE assessment was preferred. A 4-part questionnaire was sent to all Chairs and Directors asking them (i) to describe how student work from ACE courses is being sampled and archived, (ii) to describe their plans for evaluating samples of student work and instructor reflections on ACE courses, (iii) whether they could use guidance from assessment experts in the Office of Undergraduate Studies (OUS) on their ACE assessment activities, and (iv) whether they had questions or

concerns about ACE course assessment at this time. Responses were submitted by all departments and units offering ACE courses. These responses were collected into a report sent to the University Wide Assessment Committee. Most departments have their ACE assessment plans and activities understood and in progress, and some departments are seeking guidance or have questions. The ACE assessment workshops on Learning Outcomes 1, 2, and 3 offered by the OUS in the spring semester 2010 were deemed very useful by department representatives who attended. College Assessment Committee chair and Associate Dean for Research, Greg Snow, and Associate Dean for Academic Programs, Sunil Narumalani, met with a number of departments to answer questions on ACE course assessment, often supplemented by discussions with assessment experts from the OUS.

2010-2011 Committee Members: Professors Gordon Woodward (Mathematics), Daniel Leger (Psychology), Jeannette Jones (History), Briahna Stofferson (Student Advisory Board); Associate Dean Greg Snow.

ANNUAL REPORT OF THE ENDOWED/COLLEGE PROFESSORSHIP COMMITTEE

The Committee reviewed and recommended four renewal applications for College professorships and seven renewals for University Professorships to the Dean.

2010-2011 Committee Members: Professors T. Jack Morris (Biological Sciences), Dawn Braithwaite (Communication Studies), Jonis Agee (English), Thomas Borstelmann (History), David Loope (Geosciences); Associate Dean Amy Goodburn.

Item IV. Recommendation from the College Curriculum Committee to approve the proposed changes to the Asian Studies Minor.

Current: Plan A. A minimum of 18 hours selected from the courses listed below and representing a minimum of two departments.

Plan B. A minimum of 12 hours selected from the courses listed below and representing a minimum of two departments.

Proposed: Plan A. A minimum of 18 hours selected from the courses listed below and representing a minimum of two departments.

Justification: The Dean suggested this since it brings the Asian Studies minor in line with other minors. Few, if any, students opt for the 12 hour minor and those that do are encouraged to complete the Plan A 18 hour minor.

Item V. Recommendation from the College Curriculum Committee to approve the proposed changes to the Biochemistry Major.

Current: Biochemistry 12

BIOC 101 Career Opportunities in Biochemistry 1

BIOC 431 Biomolecules & Metabolism 4

BIOC 432 Gene Expression & Replication 2

BIOC 433 Biochemistry Lab 2

BIOC 435 Advanced Topics in Biochemistry (*ACE 10*) 3

Natural Sciences 43-49

BIOS 102 Cell Structure & Function 4

BIOS 206 General Genetics or AGRO 315 Genetics 4

BIOS 312 Fundamentals of Microbiology 3

BIOS 313 Molecular Microbiology Lab (2 cr) or BIOS 314 Microbiology Lab (1 cr) 1-2

CHEM 109 & CHEM 110 General Chemistry I & II & CHEM 221 Elementary Quantitative Analysis (12 cr) or CHEM 113 & CHEM 114 Fundamental Chemistry I & II & CHEM 116 Quantitative Chemistry Lab (9 cr) 9-12

CHEM 251 & CHEM 253 or CHEM 261 & CHEM 263 Organic Chemistry I & Lab 4-5

CHEM 252 & CHEM 254 or CHEM 262 & CHEM 264 Organic Chemistry II & Lab 4-5

CHEM 471 or CHEM 481 Physical Chemistry 4

PHYS 141 & PHYS 142 Elementary General Physics I & II (10 cr) or PHYS 211 & PHYS 212 General Physics I & II & PHYS 221 & PHYS 222 General Physics Lab I & II (10 cr) 10

Mathematics and Statistics 10

MATH 106 Analytic Geometry & Calculus I 5

MATH 107 Analytic Geometry & Calculus II 5

College Distribution 19-25

ACE Distribution 30

Minimum Credit Hours for Graduation 125

Students concerned about their preparation for college-level biology should take BIOS 101 and BIOS 101L prior to BIOS 102. Please consult your adviser if in doubt. Within the same subject matter area, students may request a more advanced course be substituted for a required course.

Program Assessment. In order to assist the department in evaluating the effectiveness of its programs, selected courses are assessed and majors are required to participate in an exit interview in their senior year. The interview will be conducted in the BIOC 435 course and results of participation in the interview will in no way affect a student's GPA or graduation.

Proposed: Biochemistry 12

BIOC 101 Career Opportunities in Biochemistry 1

BIOC 431 Biomolecules & Metabolism 4

BIOC 432 Gene Expression & Replication 2

BIOC 433 Biochemistry Lab 2

BIOC 435 Advanced Topics in Biochemistry (*ACE 10*) 3

Natural Sciences 43-49

BIOS 102 Cell Structure & Function 4

BIOS 206 General Genetics or AGRO 315 Genetics 4

BIOS 312 Fundamentals of Microbiology 3

BIOS 313 Molecular Microbiology Lab (2 cr) or BIOS 314 Microbiology Lab (1 cr) 1-2

CHEM 109 & CHEM 110 General Chemistry I & II & CHEM 221 Elementary Quantitative Analysis (12 cr) or CHEM 113 & CHEM 114 Fundamental Chemistry I & II & CHEM 116 Quantitative Chemistry Lab (9 cr) 9-12

CHEM 251 & CHEM 253 or CHEM 261 & CHEM 263 Organic Chemistry I & Lab 4-5

CHEM 252 & CHEM 254 or CHEM 262 & CHEM 264 Organic Chemistry II & Lab 4-5

CHEM 471 or CHEM 481 Physical Chemistry 4

PHYS 141 & PHYS 142 Elementary General Physics I & II (10 cr) or PHYS 211 & PHYS 212 General Physics I & II & PHYS 221 & PHYS 222 General Physics Lab I & II (10 cr) 10

Mathematics and Statistics 10

MATH 106 Analytic Geometry & Calculus I 5

MATH 107 Analytic Geometry & Calculus II 5

College Distribution 19-25

ACE Distribution 30

Minimum Credit Hours for Graduation 125

Students concerned about their preparation for college-level biology should take BIOS 101 and BIOS 101L prior to BIOS 102. Please consult your adviser if in doubt. Within the same subject matter area, students may request a more advanced course be substituted for a required course.

Advanced Placement and International Baccalaureate Credit. Students who earned AP or IB credit for general chemistry in high school are still required to complete a freshman level chemistry sequence at an accredited post-secondary institution. These students are encouraged, but not required, to take CHEM 113/114/116 rather than CHEM 109/110/221. High school dual enrollment credit is not included in this policy.

Program Assessment. In order to assist the department in evaluating the effectiveness of its programs, selected courses are assessed and majors are required to participate in an exit interview in their senior year. The interview will be conducted in the BIOC 435 course and results of participation in the interview will in no way affect a student's GPA or graduation.

Justification: Our unofficial departmental policy has been to not accept AP or IB credit for general chemistry in lieu of a one year general chemistry sequence. We want to officially include this policy in the bulletin. Our stance is that AP/IB credit alone does not adequately prepare students to successfully complete the biochemistry program.

Item VI. Recommendation from the College Curriculum Committee to approve the proposed changes to the Environmental Studies Major.

Proposed changes:

Core Requirements

1. Environmental Studies Core (BS and BA Degrees) Total Credit Hours: 12

ENVR 101 Environmental Studies Orientation (1 cr)

ENVR 201 Science, Systems, Environment & Sustainability (3 cr)

ENVR 249 Individual & Cultural Perspectives on the Environment (3 cr)

ENVR 319 Environmental Engagement & the Community (2 cr)

ENVR 499A Environmental Studies Senior Thesis I (1 cr)

ENVR 499B Environmental Studies Senior Thesis II (2 cr)

ENVR 499A & ENVR 499B are the capstone courses for environmental studies majors. ENVR 499H (3 cr) is the capstone course for UNL Honors Students.

2a. Collateral Courses (BS Degree) Total Credit Hours: 43-46

2a and 2b. NOTE: See Emphasis Area for Mathematics and Natural Sciences Requirements

Hours

Earth Systems13-15

Select one from:3-4

NRES 104 Climate in Crisis (3 cr)

METR 200 Weather & Climate (4 cr)

NRES 208 Applied Climate Sciences (3 cr)

Select one from:3-4

NRES 108 Earth's Natural Resource Systems Lab (3 cr)

ENSC 110 Energy in Perspective (3 cr)

GEOL 101 Physical Geology (4 cr)

GEOL 106 Environmental Geology (3 cr)

GEOL 125 Frontiers in Antarctic Geosciences (3)

GEOG 155 Elements of Physical Geography (4 cr)

GEOG 181 Quality of the Environment (3 cr)

SOIL 153 Soil Resources4

Select one from:3

ENVR 189H Humans, Water & the Environment (3 cr)

WATS 281 Intro to Water Science (3 cr)

Geospatial Science3-4

Select one from:

NRES 312 Intro to Geospatial Information Sciences (3 cr)

NRES 412 Intro to Geographic Information Systems (4 cr)

NRES 418 Intro to Remote Sensing (4 cr)

Statistics3

STAT 218 (or equivalent)

Students cannot receive UNL credit for both MATH 203 and STAT 218. Students who transfer STAT 218 credit to UNL will not receive UNL credit for MATH 203.

Human Dimensions²⁴

SOCI 446 Environmental Sociology³

ANTH 473 Ecological Anthropology³

Students work with adviser to select courses in the areas of: Ethics & Law⁶

Select from:

PHIL 225 Environmental Ethics (3 cr)

ALEC 388 Ethics in Agriculture & Natural Resources (3 cr)

BIOS 203 Bioethics (3 cr)

AECN 357 Natural Resource & Environmental Law (3 cr)

AECN 457 Water Law (3 cr)

AECN 456 Environmental Law (3 cr)

Resource Management and Leadership⁶

Select from:

NRES 423 Integrated Resources Management (3 cr)

NRES 475 Water Quality Strategy (3 cr)

ALEC 410 Environmental Leadership (3 cr)

ALEC 202 Leadership Development in Small Groups and Teams (3 cr)

COMM 371 Communication in Negotiation & Conflict Resolution (3 cr)

CRPL 470 Environmental Planning & Policy (3 cr)

Selected courses can also meet ACE areas 8 and 9.

Economics and Policy⁶

Select from: NRES 323 Natural Resources Policy or CRPL 470 or AECN 357 ³

Select from: ECON 211 or ECON 212 or AECN 141 ³

2b. Collateral Courses (BA Degree) Total Credit Hours: 46-49

Same collateral courses as in 2a plus 3 credits in the area of Public Speaking and Education. This requirement is in addition to ACE 2.

Public Speaking and Education³

Select one from:

COMM 109 Fundamentals of Human Communication

COMM 209 Public Speaking

EDPS 250 Fundamentals of Child Development for Education

EDPS 251 Fundamentals of Adolescent Development for Education

ALEC 305 Presentation Strategies for Agricultural Audiences

ALEC 400 Overview to Program Planning

ALEC 413 Program Development

3. Emphasis Areas (BS or BA Degree)

Anthropology – BA

Applied Climate Science (*Only available through the College of Agricultural Sciences and Natural Resources*)

Biological Sciences – BS

Chemistry – BS

Geography – BA and BS

Geology – BS

Meteorology-Climatology – BS

Natural Resources (*Only available through the College of Agricultural Sciences and Natural Resources*)

Political Science - BA and BS

Sociology – BS and BA

Specific Major Requirements

Program Assessment. In order to assist the department in evaluating the effectiveness of its programs, majors will be required to participate in several assessment activities throughout their program of study.

Results of participation in this assessment activity will in no way affect a student's GPA or graduation.

Tracks/Options/Concentrations/Emphases Requirements

Anthropology Emphasis (BA Degree) Total Credit Hours: 35-41

Hours

Anthropology Emphasis Area Courses 18-19

Required:

ANTH 110 Intro to Anthropology 3

ANTH 473 Ecological Anthropology 3

ANTH 482 Research Methods in Anthropology 3

Select one from: 3

ANTH 212 Intro to Cultural Anthropology (3cr)

ANTH 232 Intro to Prehistory (3 cr)

ANTH 242 Intro to Physical Anthropology (3 cr)

Select one from: 3

ANTH 374 Primate Behavior & Ecology (3 cr)

ANTH 430 Nutritional Anthropology (3 cr)

ANTH 474 Applied & Development Anthropology (3 cr)

Select one from: 3

ANTH 350 Peoples & Cultures of Native Latin America (3 cr)

ANTH 351 Indigenous Peoples of North America (3 cr)

ANTH 352 Indigenous Peoples of the Great Plains (3 cr)

ANTH 362 Peoples & Cultures of Africa (3 cr)

ANTH 366 Peoples & Cultures of East Asia (3 cr)

Mathematics 3-5

Select one from:

MATH 103 College Algebra & Trigonometry (5 cr)

MATH 104 Calculus for Managerial & Social Sciences (3 cr)

MATH 106 Analytic Geometry & Calculus I (5 cr)

Natural Sciences 14-17

Biology 7-8

Select one from: BIOS 103 Organismic Biology (4 cr) **or** BIOS 101 & BIOS 101L General Biology & Lab (4 cr)

Select one from: BIOS 220 & BIOS 222 Principles of Ecology & Lab (4 cr) **or** BIOS 232 Ecological Issues in the Great Plains (3 cr)

Chemistry 4

Select one from:

CHEM 105 Chemistry in Context I (4 cr)

CHEM 109 General Chemistry I (4 cr)

CHEM 113 Fundamental Chemistry I (4 cr)

Physics 3-5

Select one from:

PHYS 115 Descriptive Physics (3 cr)

PHYS 141 Elementary General Physics I (5 cr)

PHYS 151 Elements of Physics (4 cr)

MSYM 109 Physical Principles in Agriculture (4 cr)

College Distribution Requirements, ACE Requirements + Free Electives 23-32

Biological Sciences Emphasis (BS Degree) Total Credit Hours: 47-48

Hours

Biological Sciences Emphasis Area Courses 24

BIOS 102 Cell Structure & Function 4

BIOS 103 Organismic Biology 4

BIOS 205 Genetics, Molecular and Cellular Biology Lab 2

BIOS 206 General Genetics4
BIOS 207 Ecology and Evolution4
Choose at least 6 credit hours of 300 or 400 level biology courses6

Mathematics5

Select from: MATH 106 Analytic Geometry & Calculus I or MATH 106B Calculus I for Biology & Medicine

Natural Sciences18-19

Chemistry8-9

Select from: CHEM 109 & CHEM 110 General Chemistry I & II (8 cr) or CHEM 113 & CHEM 114
Fundamental Chemistry I & II & Lab (CHEM 116) (9 cr)

Physics10

Select from: PHYS 141 & PHYS 142 Elementary Physics I & II (10 cr) or PHYS 211 & PHYS 212 General
Physics I & II & Labs (PHYS 221/PHYS 222) (10 cr)

College Distribution Requirements, ACE Requirements + Free Electives 19-23

Chemistry Emphasis (BS Degree) Total Credit Hours: 48-52

Hours

Chemistry Emphasis Area Courses21-24

*Required (select one):*9-12

CHEM 109 & CHEM 110 General Chemistry I & II & CHEM 221 Elementary Quantitative Analysis (12 cr)

CHEM 113 & CHEM 114 Fundamental Chemistry I & II & CHEM 116 Quantitative Chemistry Lab (9 cr)

Choose at least 12 additional credit hours of chemistry courses (*excluding CHEM 131, CHEM 195, CHEM 396 & CHEM 399*)12

Mathematics (ACE 3)10

MATH 106 Analytic Geometry & Calculus I5

MATH 107 Analytic Geometry & Calculus II5

Natural Sciences17-18

Biology7-8

Select one from: BIOS 101 & BIOS 101L General Biology & Lab (4 cr) or BIOS 103 Organismic Biology (4 cr)

Select one from: BIOS 220 & BIOS 222 Principles of Ecology & Lab (4 cr) or BIOS 232 Ecological Issues in the Great Plains (3 cr)

Physics10

Select from: PHYS 141 & PHYS 142 Elementary Physics I & II (10 cr) or PHYS 211 & PHYS 212 General
Physics I & II & Labs (PHYS 221/PHYS 222) (10 cr)

College Distribution Requirements, ACE Requirements + Free Electives15-22

Geography Emphasis (BA Degree) Total Credit Hours: 38-43

Hours

Geography Emphasis Area Courses21

GEOG 181 Quality of the Environment3

A total of 18 credits with at least one course from A, B, and C18

A. Human Geography

GEOG 120 Introductory Economic Geography (3 cr)

GEOG 140 Introductory Human Geography (3 cr)

GEOG 271 Geography of the United States (3 cr)

GEOG 272 Geography of World Regions (3 cr)

GEOG 283 Space, the Environment & You (3 cr)

GEOG 334 Historical Geography in the Great Plains (3 cr)

GEOG 375 Geography of Asia (3 cr)

GEOG 447 Political Geography (3 cr)

B. Physical Geography

GEOG 155 Elements of Physical Geography (4 cr)

GEOL 450 Surficial Processes (3 cr)

GEOG 481 Water Resources Seminar (1 cr)
GEOG 498 Advanced Special Problems (1-24 cr)
METR 408 Microclimate: The Biological Environment (3 cr)
METR 475 Physical Climatology (3 cr)

C. Geographic Techniques

GEOG 317 Cartography I: Intro to Cartography (4 cr)
GEOG 412 Intro to Geographic Information Systems (4 cr)
GEOG 414 Quantitative Methods in Geography (3 cr)
GEOG 418 Intro to Remote Sensing (4 cr)
GEOG 419 Applications of Remote Sensing in Agriculture & Natural Resources (4 cr)

Mathematics3-5

Select from:

MATH 103 College Algebra & Trigonometry (5 cr)
MATH 104 Calculus for Managerial & Social Sciences (3 cr)
MATH 106 Analytic Geometry & Calculus I (5 cr)

Natural Sciences14-17

Biology7-8

Select one from: BIOS 103 Organismic Biology (4 cr) **or** BIOS 101 & BIOS 101L General Biology & Lab (4 cr)
Select one from: BIOS 220 & BIOS 222 Principles of Ecology & Lab (4 cr) **or** BIOS 232 Ecological Issues in the Great Plains (3 cr)

Chemistry4

Select one from:

CHEM 105 Chemistry in Context I (4 cr)
CHEM 109 General Chemistry I (4 cr)
CHEM 113 Fundamental Chemistry I (4 cr)

Physics3-5

Select one from:

PHYS 115 Descriptive Physics (3 cr)
PHYS 141 Elementary General Physics I (5 cr)
PHYS 151 Elements of Physics (4 cr)
MSYM 109 Physical Principles in Agriculture (4 cr)

College Distribution Requirements, ACE Requirements + Free Electives 21-29

Geography Emphasis (BS Degree) Total Credit Hours: 46-48

Hours

Geography Emphasis Area Courses21

GEOG 181 Quality of the Environment3

A total of 18 credits with at least one course from A, B, and C listed above (under the BA degree)18

Mathematics:5

MATH 106 Analytic Geometry & Calculus I5

Natural Sciences20-22

Biology7-8

Select from: BIOS 103 Organismic Biology (4 cr) **or** BIOS 101 & BIOS 101L General Biology & Lab (4 cr)
Select from: BIOS 220 & BIOS 222 Principles of Ecology & Lab (4 cr) **or** BIOS 232 Ecological Issues in the Great Plains (3 cr)

Chemistry8-9

Select from: CHEM 109 & 110 General Chemistry I & II (8 cr) **or** CHEM 113 & 114 Fundamental Chemistry I & II & Lab (CHEM 116) (9 cr)

Physics5

Select from: PHYS 141 Elementary Physics I (5 cr) **or** PHYS 211 & PHYS 221 General Physics I & Lab (5 cr)

College Distribution Requirements, ACE Requirements + Free Electives 19-24

Geology Emphasis (BS degree) Total Credit Hours: 53-54

Geology Emphasis Area Courses 22

Requirements are the same as a minor in geology – 22 credits with only 8 credits at the 100 level. (NOTE CHANGE OF FONT)

Mathematics 10

MATH 106 Analytic Geometry & Calculus I (5 cr)

MATH 107 Analytic Geometry & Calculus II (5 cr)

Natural Sciences 21-22

Biology 7-8

Select one from: BIOS 101 & BIOS 101L General Biology & Lab (4 cr) or BIOS 103 Organismic Biology (4 cr)

Select one from: BIOS 220 & BIOS 222 Principles of Ecology & Lab (4 cr) or BIOS 232 Ecological Issues in the Great Plains (3 cr)

Chemistry 4

Select from: CHEM 109 General Chemistry I (4 cr) or CHEM 113 Fundamental Chemistry I (4 cr)

Physics 10

Select from: PHYS 141 & PHYS 142 Elementary Physics I & II (10 cr) or PHYS 211 & PHYS 212 General Physics I & II & Labs (PHYS 221/PHYS 222) (10 cr)

College Distribution Requirements, ACE Requirements + Free Electives 13-17

Meteorology–Climatology Emphasis (BS Degree) Total Credit Hours: 49-51

Requirements are the same as a minor for meteorology–climatology.

Meteorology Emphasis (40 hrs)

Meteorology Emphasis Area Courses 22

METR 200 Weather & Climate 4

METR 205 Intro to Atmospheric Science 4

METR 311 Dynamic Meteorology 3

METR 323 Physical Meteorology 4

METR 341 Synoptic Meteorology 4

Plus one METR class at the 400 level 3

Mathematics 10

MATH 106 Analytic Geometry & Calculus I 5

MATH 107 Analytic Geometry & Calculus II 5

Physics 9

PHYS 211 & PHYS 212 General Physics I & II & Lab (PHYS 221) 9

Climatology Emphasis (32 hrs)

Climatology Emphasis Area Courses 23

METR 200 Weather & Climate 4

METR 205 Introduction to Atmospheric Science 4

METR 370 Basic & Applied Climatology 3

METR 475 Physical Climatology 3

Select 9 hours from: 9

NRES 408 Microclimate: The Biological Environment (3 cr)

METR 443 Severe Storms Meteorology-Climatology (3 cr)

METR 450 Climate & Society (3 cr)

METR 454 Statistical Analysis of Atmospheric Data (3 cr)

METR 487 Earth's Climate: Past, Present, Future (3 cr)

METR 498 Special Topics in Meteorology-Climatology (1-24 cr)

Mathematics5

MATH 106 Analytic Geometry & Calculus I5

Physics5

PHYS 211 & PHYS 221 General Physics I & Lab5

Natural Sciences11-12

NOTE: Applies to both Climatology and Meteorology Emphasis Areas

Biology7-8

Select one from: BIOS 101 & 101L General Biology & Lab (4 cr) or BIOS 103 Organismic Biology (4 cr)

Select one from: BIOS 220 & BIOS 222 Principles of Ecology & Lab (4 cr) or BIOS 232 Ecological Issues in the Great Plains (3 cr)

Chemistry4

Select from: CHEM 109 General Chemistry I (4 cr) or CHEM 113 Fundamental Chemistry I (4 cr)

College Distribution Requirements, ACE Requirements + Free Electives16-21

Political Science Emphasis in Environmental Studies (BA degrees) Total Credit Hours: 35 - 40

Political Science Courses: 18 Credits

Requirements are the same as a Minor in Political Science – 18 credits including POLS 100 and at least one course at the 400 level.

Mathematics: 3 - 5 credits.

Select from: MATH 103 College Algebra and Trigonometry (5 cr); MATH 104 Calculus for Managerial and Social Sciences(3cr); MATH 106 Analytical Geometry and Calculus I (5 cr)

Natural Sciences: 14 – 17 credits

Biology: 7 – 8 credits

Select from: BIOS 103 Organismic Biology (4 cr) or BIOS 101&101L (4cr) and

Select from: BIOS 220 & BIOS 222 Principles of Ecology + Lab (4 cr) or BIOS 232 Ecological Issues of the Great Plains (3 cr)

Chemistry : 4 credits

Select one from: CHEM 105 Chemistry in Context I (4 cr) or CHEM 109 General Chemistry I (4 cr) or CHEM 113 Fundamental Chemistry I (4 cr)

Physics: 3 – 5 credits

Select one from: PHYS 115 Descriptive Physics (3 cr) or PHYS 141 Elementary General Physics I (5 cr) or PHYS 151 Elements of Physics (4cr) or MYSM 109 Physical Principles in Agriculture (4 cr)

College Distribution Requirements, ACE Requirements + Free Electives: 21 – 29

Political Science Emphasis in Environmental Studies (BS degrees) Total Credit Hours: 43 - 45

Political Science Courses: 18 Credits

Requirements are the same as a Minor in Political Science – 18 credits including POLS 100 and at least one course at the 400 level.

Mathematics: 5 credits.

MATH 106 Analytical Geometry and Calculus I (5 cr)

Natural Sciences: 20 – 22 credits

Biology: 7 – 8 credits

Select from: BIOS 103 Organismic Biology (4 cr) or BIOS 101&101L (4cr) and

Select from: BIOS 220 & BIOS 222 Principles of Ecology + Lab (4 cr) or BIOS 232 Ecological Issues of the Great Plains (3 cr)

Chemistry : 8 – 9 cr

Select from: CHEM 105 & 106 Chemistry in Context I & II (8 cr) CHEM 109 & 110 General Chemistry I & II (8 cr) or CHEM 113 & 114 Fundamental Chemistry I & II & Lab (CHEM 116) (9 cr)

Physics: 5 cr

Select from: PHYS 141 Elementary Physics I (5 cr) or PHYS 211 General Physics I & Labs (221) (5 cr)

College Distribution Requirements, ACE Requirements + Free Electives: 19 - 24

Sociology Emphasis (BA Degree) Total Credit Hours: 38-43

Hours

Sociology Emphasis Area Courses 21

Require SOCI 205 (3 hours) plus meet the requirements of the Minor in Sociology – 18 hours including SOCI 101. No more than 3 hours total from internship and independent study courses, SOCI 397 and/or independent study SOCI 399 may count toward the minor requirements in sociology.

SOCI 101 Intro to Sociology 3

SOCI 205 Intro to Social Research 13

SOCI 206 Intro to Social Research II 3

Select 12 credit hours from the following: 12

SOCI 241 Rural Sociology (3 cr)

SOCI 242 Urban Sociology (3 cr)

SOCI 399 Advanced Readings (1-24 cr)

SOCI 444 Social Demography (3 cr)

SOCI 446 Environmental Sociology (3 cr)

SOCI 468 Policy & Program Evaluation Research (3 cr)

SOCI 480 Social Inequality: Stratification & Life Changes (3 cr)

SOCI 491 Political Sociology (3 cr)

Mathematics 3-5

Select from:

MATH 103 College Algebra & Trigonometry (5 cr)

MATH 104 Calculus for Managerial & Social Sciences (3 cr)

MATH 106 Analytic Geometry & Calculus I (5 cr)

Natural Sciences 14-17

Biology 7-8

Select one from: BIOS 103 Organismic Biology (4 cr) or BIOS 101 & BIOS 101L General Biology & Lab (4 cr)

Select one from: BIOS 220 & BIOS 222 Principles of Ecology & Lab (4 cr) or BIOS 232 Ecological Issues in the Great Plains (3 cr)

Chemistry 4

Select one from:

CHEM 105 Chemistry in Context I (4 cr)

CHEM 109 General Chemistry I (4 cr)

CHEM 113 Fundamental Chemistry I (4 cr)

Physics 3-5

Select one from:

PHYS 115 Descriptive Physics (3 cr)

PHYS 141 Elementary General Physics I (5 cr)

PHYS 151 Elements of Physics (4 cr)

MSYM 109 Physical Principles in Agriculture (4 cr)

College Distribution Requirements, ACE Requirements + Free Electives 21-29

Sociology Emphasis (BS Degree) Total Credit Hours: 46-48

Hours

Sociology Emphasis Area Courses 21

Require SOCI 205 (3 hours) plus meet the requirements of the Minor in Sociology – 18 hours including SOCI 101. No more than 3 hours total from internship and independent study courses, SOCI 397 and/or independent study SOCI 399 may count toward the minor requirements in sociology.

SOCI 101 Intro to Sociology 3

SOCI 205 Intro to Social Research I 3

SOCI 206 Intro to Social Research II 3

Select 12 credit hours from the following: 12

SOCI 241 Rural Sociology (3 cr)

SOCI 242 Urban Sociology (3 cr)

SOCI 399 Advanced Readings (1–24 cr)

SOCI 444 Social Demography (3 cr)

SOCI 446 Environmental Sociology (3 cr)

SOCI 468 Policy & Program Evaluation Research (3 cr)

SOCI 480 Social Inequality: Stratification & Life Changes (3 cr)

SOCI 491 Political Sociology (3 cr)

Mathematics 5

MATH 106 Analytic Geometry & Calculus I 5

Natural Sciences 20-22

Biology 7-8

Select one from: BIOS 103 Organismic Biology (4 cr) or BIOS 101 & BIOS 101L General Biology & Lab (4 cr)

Select one from: BIOS 220 & BIOS 222 Principles of Ecology & Lab (4 cr) or BIOS 232 Ecological Issues in the Great Plains (3 cr)

Chemistry 8-9

Select from:

CHEM 105 & CHEM 106 Chemistry in Context I & II (8 cr)

CHEM 109 & CHEM 110 General Chemistry I & II (8 cr)

CHEM 113 & CHEM 114 Fundamental Chemistry I & II & Lab (CHEM 116) (9 cr)

Physics 5

Select from: PHYS 141 Elementary Physics I (5 cr) or PHYS 211 & PHYS 221 General Physics I & Lab (5 cr)

College Distribution Requirements, ACE Requirements + Free Electives 19-24

ADDITIONAL MAJOR REQUIREMENTS

Grade Rules

C- and D Grades

Environmental studies majors must earn a "C" or "P" in all environmental studies (ENVR) core courses and discipline-specific emphasis area courses.

Pass/No Pass Limits

No environmental studies (ENVR) core courses, unless offered Pass/No Pass, or discipline-specific emphasis area courses may be taken Pass/No Pass.

Justification: Addition of Political Science Emphasis Area: Since the Fall of 2008, the Environmental Studies program has grown from 89 students to 121 majors plus seven minors. With the growth of the program plus increased interest in and the need for increased understanding of the political aspects of environmental issues, we propose to add a new specialization to the Environmental Studies program in Political Science. The faculty of Political Science endorses the creation of this new emphasis area and the use of their courses to support it. Two letters of endorsement from the Political Science Department are attached to endorse the changes.

Modification of Sociology Emphasis Area: We have worked with the department of Sociology to modify the requirements of both the B.A. and B.S. Emphasis areas in Sociology. These changes are necessary to account for changes in the Sociology curriculum that reflect current course offerings and provide Environmental Studies students the flexibility to pursue their interests in either the political, or behavioral, aspects of sociology and their relationship to environmental issues. A letter for the Sociology Department is attached to endorse these changes.

Collateral Courses: As a result of the growth of the major as well as increasing demands on NRES 323 Natural Resources Policy from other majors and that this course is only available in the Fall has created a bottle-neck for our students. An examination of syllabi indicate that CRPL 470 or AECN 357 have similar content. These courses are currently used in our curriculum. The proposed change allows them to be used to satisfy the Economics and Policy part of our collateral courses.

Under the Earth Sciences requirements, we have added GEOL 125 Frontiers in Antarctic Geosciences (3) as it uses a systems approach to understanding of Earth processes and the environment using current research from the Antarctic. A letter from the Earth and Atmospheric Sciences Department is attached to endorse the addition of this option to our curriculum.

Item VII. Recommendation from the College Curriculum Committee to approve the proposed changes to the Physics Major.

Proposed changes: Core Requirements

Core Courses for the BS Degree (52 hrs)

The following required courses are listed in the recommended sequence.

PHYS 201H Modern Topics in Physics & Astronomy (1 hr)

MATH 106 Analytic Geometry & Calculus I (5 hr)

PHYS 211 General Physics I (4 hr)

PHYS 221 General Physics Lab I (1 hr)

MATH 107 Analytic Geometry & Calculus II (5 hr)

PHYS 212 General Physics II (4 hr)

PHYS 222 General Physics Lab II (1 hr)

CHEM 113 Fundamental Chemistry I (4 hr)

MATH 208 Analytic Geometry & Calculus III (4 hr)

PHYS 213 General Physics III (4 hr)

PHYS 223 General Physics Lab III (1 hr)

MATH 221 Differential Equations (3 hr)

PHYS 231 Electrical & Electronic Circuits (3 hr)

PHYS 311 Mechanics (3 hr)

PHYS 431 Thermal Physics (3 hr)

PHYS 451 Electromagnetic Theory (3 hr)

PHYS 461 Quantum Mechanics (3 hr)

Core Courses for the BA Degree (37 hrs)

The following required courses are listed in the recommended sequence.

PHYS 201H Modern Topics in Physics & Astronomy (1 hr)

MATH 106 Analytic Geometry & Calculus I (5 hr)

PHYS 211 General Physics I (*preferred*) (4 hr) & PHYS 221 General Physics Lab I (*preferred*) (1 hr) or PHYS 141 Elementary General Physics I (5 hr)

MATH 107 Analytic Geometry & Calculus II (5 hr)

CHEM 113 Fundamental Chemistry I (*preferred*) or CHEM 111 Chemistry for Engineering & Technology or CHEM 109 General Chemistry I (4)

PHYS 212 General Physics II (*preferred*) (4 hr) & PHYS 222 General Physics Laboratory II (*preferred*) (1 hr) or

PHYS 142 Elementary General Physics II (5 hr)

MATH 208 Analytic Geometry & Calculus III (4 hr)

PHYS 213 General Physics III (4 hr)

PHYS 223 General Physics Lab III (1 hr)

MATH 221 Differential Equations (3 hr)

Tracks/Options/Concentrations/Emphases Requirements

Standard Track – BA ONLY (24 hrs)

The Standard Track is designed for students pursuing careers for which the knowledge and methodology of physics are essential.

The following required courses are listed in the recommended sequence.

PHYS 231 Electrical & Electronic Circuits (3 hr)

PHYS 311 Mechanics (3 hr)

PHYS 361 Concepts of Modern Physics (3 hr)

PHYS 441 Experimental Physics I (3 hr)

In addition, at least 6 hours must be taken from the following courses (6 hr)

PHYS 343 Physics of Lasers & Modern Optics (3 hr)

PHYS 391 Undergraduate Research (3 hr)

PHYS 451 Electromagnetic Theory (3 hr)

PHYS 461 Quantum Mechanics (3 hr)

PHYS 431 Thermal Physics (3 hr)

PHYS 480 Intro to Lasers & Laser Applications (3 hr)

In addition, at least 6 hours must be taken at the 300- or 400-level in mathematics, statistics, engineering, or science (including physics) (6 hr)

I. Professional Track – BS ONLY (18 hrs)

The Professional Track is designed for students intending to pursue graduate study or employment in physics or a related

scientific or engineering discipline. The following required courses are listed in the recommended sequence.

PHYS 441 Experimental Physics I (3 hr)

PHYS 442 Experimental Physics II (3 hr)

PHYS 452 Optics & Electromagnetic Waves (3 hr)

PHYS 462 Atoms, Nuclei & Elementary Particles (3 hr)

In addition, at least 6 hours must be taken from the following courses (6 hr)

PHYS 343 Physics of Lasers & Modern Optics (3 hr)

PHYS 361 Concepts of Modern Physics (3 hr)

PHYS 391 Undergraduate Research (3 hr)

PHYS 401 Computational Physics (3 hr)

PHYS 422 Intro to the Physics & Chemistry of Solids (3 hr)

PHYS 443 Experimental Physics III (3 hr)

PHYS 480 Intro to Lasers & Laser Applications (3 hr)

ASTR 403 Galactic and Extragalactic Astronomy (3 hr)

ASTR 404 Stellar Astrophysics (3 hr)

ASTR 405 Physics of the Solar System (3 hr)

ASTR 407 Physics of the Interstellar Medium (3 hr)

MATH 314 Applied Linear Algebra (Matrix Theory 3 hr) or MATH 324 Intro to Partial Differential Equations (3 hr)

II. Astronomy Track – BS ONLY (19 hrs)

The Astronomy Track is designed for students intending to pursue graduate study or employment in astronomy or astrophysics.

The following required courses are listed in the recommended sequence.

ASTR 204 Intro to Astronomy & Astrophysics (3 hr)

ASTR 224 Astronomy & Astrophysics Lab (1 hr)

PHYS 452 Optics & Electromagnetic Waves (3 hr)

In addition, at least 9 hours must be taken from 400-level astronomy courses (9 hr)

In addition, at least 3 hours must be taken from the following courses (3 hr)

PHYS 391 Undergraduate Research (Up to 3 hours of PHYS 391 may be counted towards these 3 hours by substitution, provided

that the research project is approved by the Chief Adviser.)

PHYS 343 Physics of Lasers & Modern Optics (3 hr)

PHYS 361 Concepts of Modern Physics (3 hr)

PHYS 401 Computational Physics (3 hr)

PHYS 422 Intro to the Physics & Chemistry of Solids (3 hr)

PHYS 441 Experimental Physics I (3 hr)

PHYS 462 Atoms, Nuclei & Elementary Particles (3 hr)

PHYS 480 Intro to Lasers & Laser Applications (3 hr)

III-II. Optics and Lasers Track – BS ONLY (18 hrs)

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The Optics and Lasers Track is designed for students intending to pursue graduate study or employment in optical or laser physics

or in related engineering disciplines. The following required courses are listed in the recommended sequence.

PHYS 343 Physics of Lasers & Modern Optics (3 hr)

PHYS 441 Experimental Physics I (3 hr)

PHYS 452 Optics & Electromagnetic Waves (3 hr)

PHYS 480 Intro to Lasers & Laser Applications (3 hr)

In addition, at least 6 hours must be taken from the following courses (6 hr)

PHYS 391 Undergraduate Research (Up to 3 hours of PHYS 391 may be counted toward these 6 hours by substitution, provided that

the research project is approved by the Chief Adviser.)

PHYS 361 Concepts of Modern Physics (3 hr)

PHYS 401 Computational Physics (3 hr)

PHYS 422 Intro to the Physics & Chemistry of Solids (3 hr)

PHYS 442 Experimental Physics II (3 hr)

PHYS 462 Atoms, Nuclei & Elementary Particles (3 hr)

MATH 314 Applied Linear Algebra (Matrix Theory) or MATH 324 Intro to Partial Differential Equations (3 hr)

IV-III. Materials Physics Track – BS ONLY (18 hrs)

The Materials Physics Track (for the physics B.S.) is designed for students intending to pursue graduate study or employment in

Materials Physics or in related disciplines. The following required courses are listed in the recommended sequence.

CHEM 114 Fundamental Chemistry II (3 hr)

CHEM 116 Quantitative Chemistry Lab (2 hr)

METL 360 Elements of Materials Sciences w/Lab (4 hr)

METL 462 X-ray Diffraction or METL 471 Electron Microscopy of Materials (3 hr)

PHYS 422 I Intro to the Physics & Chemistry of Solids (3 hr)

In addition, at least 3 hours must be taken from the following courses (3 hr)

PHYS 391 Undergraduate Research (Up to 3 hours of PHYS 391 may be counted toward these 3 hours by substitution, provided that

the research project is approved by the Chief Adviser.)

CHEM 261 Organic Chemistry (3 hr)

CHEM 481 Physical Chemistry I (4 hr)

ELEC 216 Electronics & Circuits II (3 hr)

IV. Computational Physics Track – BS ONLY (~~18 hr~~) (17 hr)

The Computational Physics Track (for the physics B.S.) is designed for students intending to pursue graduate study or employment in Computational Physics or in related disciplines. *The following required courses are listed in the recommended sequence.*

CSC 155N Computer Science I: Engineering and Science Focus Computer Science I (4 hr) (3 hr)

CSC 156 Computer Science II (4 hr)

CSC 251 UNIX Programming Environment (1 hr) or CSC 252A FORTRAN Programming (1 hr)

PHYS 401 Computational Physics (3 hr)

In addition, at least 6 hours must be taken from the following courses (6 hr)

PHYS 391 Undergraduate Research (*Up to 3 hours of PHYS 391 may be counted toward these 6 hours by substitution, provided that the research project is approved by the Chief Adviser.*)

CSCE 235 Intro to Discrete Structures (3 hr)
 CSCE 310 Data Structures & Algorithms (3 hr)
 CSCE 340 Numerical Analysis I (3 hr)
 CSCE 456 Parallel Programming (3 hr)

ADDITIONAL MAJOR REQUIREMENTS

Grade Rules

Pass/No Pass Limits

Students majoring in physics may not take any course from the list of core courses or from the list of track courses for Pass/No Pass credit. Students who are getting a minor in physics may not take any courses listed as requirements for the Plan A or Plan B minors for Pass/No Pass credit.

Justification: The Faculty of the Department of Physics and Astronomy has approved the deletion of the "Astronomy Track" from the options for the program for the Bachelor of Science in Physics. A copy of the current bulleting listing, with proposed changes is attached.

We further request that this proposal receive expedited consideration so that it can be reflected in the 2011-12 Undergraduate bulletin. The reason for the relatively late submission is that due to the Chancellor's offer early retirement, we were faced with the unanticipated retirement of our only tenure track astronomer, Prof. Edward Schmidt. We learned about this only in November.

The Department of Physics and Astronomy currently offers a Track, or specialization, in Astronomy as an option for the Bachelor of Science in Physics. The Astronomy Track consists of the Bachelor of Physics Core Curriculum (see attached) plus six astronomy (ASTR) course, two lower-division courses (ASTR 204 and 224) and up to four upper-division Astronomy courses (ASTR 403, 404, 405, 407). The Astronomy Track (called "Astronomy Option" Prior to 2001) was developed decades ago when the department maintained an active research program in Astronomy and Astrophysics, which was led by four active tenure-track faculty. These faculty provided the expertise and vitality essential to the success of the Astronomy track. In recent years, however, departmental priorities have focused on the three strongest research specialties – Condensed Matter and Materials Physics, Atomic, Molecular and Optical Physics, and High Energy and Particle Physics. This focus has resulted in major successes for these programs and therefore for the Department. As the tenure-track Astronomers have retired, we have reduced our capacity to teach the required upper-level ASTR courses to the point that the Astronomy Track is no longer viable. Therefore, we are regretfully compelled to end this long and successful undergraduate major program.

Track Renumbering

In consequence of the deletion of the Astronomy Track, the numbering of the track for the Bachelor of Science in Physics will be revised as follows.

- I Professional Track
- II Optics and Lasers Track
- III Computational Physics Track
- IV Materials Physics Track

Changes to the Professional Track

Despite the deletion of the Astronomy Track, the department of Physics and Astronomy intends to offer the two lower-division courses (ASTR 204 and 224) and the upper-division Astronomy courses (ASTR 403, 404, 405, 407) for the benefit of our majors and to support the minor. In light of this intent, we propose to update the Professional by changing the wording of its preamble and by appending the upper-division Astronomy courses (ASTR 403, 404, 405, 407) to the list from which "at least 6 hours must be taken", giving that list 13 courses to choose from, instead of 9.