DEGREE/PROGRAM CHANGE
FORM C

Fields marked with * are required

Name of Initiator: Beverly Kay Willerton **Email:*** kwiller@unm.edu **Date:*** 02-12-09

Phone Number:* 505 661-4697 Initiator's Rank / Title* Division Head, Los Alamos Branch

Faculty Contact* Oksana Gerlits Administrative Contact* Kay Willerton

Department* Science & Engineering

Division Math, Science & Engineering **Program** Pre-Engineering

Branch Los Alamos

Proposed effective term:

Semester Fall Year 2009

Course Information

Select Appropriate Program Undergraduate Degree Program CIP Code

Name of New or Existing Program * Associate of Science in Pre-Engineering

Catalog Page Number 50 Select Category Degree Degree Type AS

Select Action Revision

Exact Title and Requirements as they should appear in the catalog.

See current catalog for format within the respective college (enter text below or upload a doc/pdf file)

Associate of Science in Pre-engineering. Please see attached proposed degree program with proposed changes included.

Associate of Science in Pre-engineering2-09.pdf

☐ **This Change affects other departmental program/branch campuses**

Reason(s) for Request * (enter text below or upload a doc/pdf file)

We are requesting changes to our pre-engineering degree program to bring it into compliance with the NM Pre-engineering transfer module. We are requesting the addition of CE 160L and ME 217 to make our degree more easily transferrable to the UNM departments. Please see attached.

Associate of Science in Pre-engineering rationale2-09.pdf

Statements to address budgetary and Faculty Load Implications and Long-range planning * (enter text below or upload a doc/pdf file)

There will be no faculty load or budgetary implications since the courses are either already being taught or will be rotated with current offerings. Please see attached for more information.

Budgetary and faculty load.pdf

UNM-Los Alamos
Associate of Science in Pre-Engineering
Proposed Revised Degree

About the Program

This program represents the course work for the first two years of the bachelor's degree at UNM Albuquerque Campus, and is in compliance with the New Mexico Engineering Transfer Module. The courses are pertinent to all fields of engineering: electrical, mechanical, chemical, nuclear, civil, construction and computer. Students with this degree are qualified to enter the work force as technicians in various engineering fields or to continue their studies to the baccalaureate level.

Specific Requirements

1. **A minimum of 66 credit hours with a minimum grade point average of 2.2 overall, with a grade of 2.5 or better in any specifically required course. *Note: Students planning to transfer to a four year institution should check grade point requirements at that institution.**

   At least 15 of these 66 hours must be UNM-LA catalog credit courses taken in residence. It is strongly recommended that the student check the specific requirements for the B.S. in the particular area of engineering of interest (chemical and nuclear, civil and construction, electrical and computer, mechanical, etc.) in order to make the best choices among the optional courses below.

2. **Writing and Speaking (9 credit hours)**
   ENGL 101: Composition I: Exposition (3)
   ENGL 102: Composition II: Analysis & Argument (3)
   ENGL 219 Technical Writing (3)

3. **Engineering and Computer Science (6 credit hours)**
   Including:
   CS 151L: Computer Programming Fundamentals for Non-Majors (3)
   And
   3 credit hours selected from:
   CE 160L: Civil Engineering Design (3)
   CE 202: Engineering Statics (3)
   ECE 203L: Circuit Analysis I (3)
   ECE 213: Circuit Analysis II (3)
   ECE 238L: Computer Logic Design (4)
   ME 160L: Mechanical Engineering Design I (3)
   ME 260L: Mechanical Engineering Design II (3)

NOTE: Other engineering courses specified in the B.S. degree plan of interest may be substituted, if offered by UNM–LA.

4. Physical/Natural Sciences (12 credit hours)

CHEM 121/123L: General Chemistry I (3)/General Chemistry I Lab (1)
PHYC 160: General Physics (3)
PHYC 160L: General Physics Laboratory (1)
PHYC 161: General Physics (3)
PHYC 161L: General Physics Laboratory (1)

5. **Mathematics and Statistics (12 credit hours)**

MATH 162: Calculus I (4)
MATH 163: Calculus II (4)
MATH 264: Calculus III (4)

6. Humanities (6 credit hours)

Select any UNM Core Curriculum courses in this area

7. Fine Arts (3 credit hours)

Select any UNM Core Curriculum course in this area, or substitute one additional course from the core curriculum in either Humanities or Social & Behavioral Sciences.

8. Social and Behavioral Sciences (6 credit hours)

Including:
ECON 105: Introductory Macroeconomics (3)
and
Select one other UNM Core Curriculum course in this area.

9. Other (12 credit hours)

To complete the required number of hours for this degree, other courses (12 credit hours) may be chosen from the following if not already counted in degree program:

Engineering and Computer Science

CE 160L: Civil Engineering Design (3)
CE 202: Engineering Statics (3)
ECE 203L: Circuit Analysis I (3)
ECE 213: Circuit Analysis II (3)
ECE 238L: Computer Logic Design (4)
ME 160L: Mechanical Engineering Design I (3)
ME 260L: Mechanical Engineering Design II (3)
ME 217: Energy, Environment & Society (3)
Note: Other engineering courses specified in the B.S. degree plan of interest may be substituted, if offered by UNM–LA.

Physical/Natural Sciences

CHEM 122/124L: General Chemistry II (3)/General Chemistry II Lab (1)
EPS 101: How the Earth Works–An Introduction to Geology (3)
PHYC 167: Problems in General Physics (1)

PHYC 168: Problems in General Physics (1)
PHYC 262: General Physics (3)
PHYC 267: Problems in General Physics (1)

Foreign Language (Maximum of 3 credit hours)
Select any UNM Core Curriculum course in this area.

Proposed Revision of UNM-LA's Associate of Science in Pre-Engineering

Overall rationale for change: The program will now require ENGL 219 instead of having it optional, and it will move the course in Fine Arts, Humanities, or Social & Behavioral Sciences from elective to requirements in order to be in compliance with the New Mexico Engineering Transfer Module. The proposed revised program includes CE 160L, the new course which will be required by the Civil Engineering department beginning in Fall 2009, as an elective specifically for those students considering Civil Engineering for their Baccalaureate degree; it also allows ME 217 offered as an elective in the Mechanical engineering department and specifically for ME students. These additional courses will make the degree program more versatile for all students.

Under: About the Program
Current Text*:*
This program represents the course work for the first two years of the bachelor's degree at UNM Albuquerque Campus. The courses are pertinent to all fields of engineering: mechanical, chemical, nuclear, civil and computer. Students with this degree are qualified to enter the work force as technicians in various engineering fields or to continue their studies to the baccalaureate level.

Proposed Revision:
This program represents the course work for the first two years of the bachelor's degree at UNM Albuquerque Campus **and is in compliance with the New Mexico Pre-Engineering Transfer Module.** The courses are pertinent to all fields of engineering: **electrical,** mechanical, chemical, nuclear, civil, **construction**, and computer. Students with this degree are qualified to enter the work force as technicians in various engineering fields or to continue their studies at the baccalaureate level.

Under Specific Requirement:
Current Specific Requirements
1. A minimum of 66 credit hours with a minimum grade point average of 2.2 overall, with a grade of 2.5 or better in any specifically required course.

At least 15 of these 66 hours must be UNM-LA catalog credit courses taken in residence. It is strongly recommended that the student check the specific requirements for the B.S. in the particular area of engineering of interest (chemical and nuclear, civil, electrical and computer, mechanical, etc.) in order to make the best choices among the optional courses below.

No Change

Under Writing and Speaking:
Current Writing and Speaking:
2. Writing and Speaking (6 credit hours)
ENGL 101: Composition I: Exposition (3)
ENGL 102: Composition II: Analysis & Argument (3)

Proposed Revision:

2. Writing and Speaking (**9** credit hours)
ENGL 101: Composition I: Exposition (3)
ENGL 102: Composition II: Analysis & Argument (3)
ENGL 219 Technical Writing (3)

Rationale: During the last year an articulation committee met to develop the New Mexico Engineering transfer module. In order to be in compliance with HED which requires 9 credit hours of Writing and Speaking, the committee proposed adding technical writing to the module rather than public speaking since this would be more useful to most engineers. UNM–Los Alamos wishes to add this course to our degree requirements.

Under Engineering and Computer Science*:*

Current Engineering and Computer Science:

3. Engineering and Computer Science (6 credit hours)
Including:
CS 151L: Computer Programming Fundamentals for Non-Majors (3)

And 3 credit hours selected from:
CE 202: Engineering Statics (3)
ECE 203L: Circuit Analysis I (3)
ECE 213: Circuit Analysis II (3)
ECE 238L: Computer Logic Design (4)
ME 160L: Mechanical Engineering Design I (3)
ME 260L: Mechanical Engineering Design II (3)
**Other engineering courses specified in the B.S. degree plan of interest may be substituted, if offered by UNM–LA.

Proposed Revision:

3. Engineering and Computer Science (6 credit hours)
Including:
CS 151L: Computer Programming Fundamentals for Non-Majors (3)

And 3 credit hours selected from:
CE 202: Engineering Statics (3)
CE 160L: Civil Engineering Design (3)
ECE 203L: Circuit Analysis I (3)
ECE 213: Circuit Analysis II (3)
ECE 238L: Computer Logic Design (4)
ME 160L: Mechanical Engineering Design I (3)
ME 260L: Mechanical Engineering Design II (3)
**Other engineering courses specified in the B.S. degree plan of interest may be substituted, if offered by UNM–LA.

Rationale: This addition of CE 160L will allow students planning to transfer to UNM-Albuquerque to take the courses which will be required by the Civil Engineering department beginning in the Fall 2009.

Under Physical/Natural Sciences:

Current Physical/Natural Sciences:

4. Physical/Natural Sciences (12 credit hours)
CHEM 121L: General Chemistry (4)
PHYC 160: General Physics (3)
PHYC 160L: General Physics Laboratory (1)
PHYC 161: General Physics (3)
PHYC 161L: General Physics Laboratory (1)

No Change

Under Mathematics and Statistics:

Current Mathematics and Statistics:

5. Mathematics and Statistics (12 credit hours)
MATH 162: Calculus I (4)
MATH 163: Calculus II (4)
MATH 264: Calculus III (4)

No Change

Under Humanities:

Current Humanities:

6. Humanities (6 credit hours)
Select any UNM Core Curriculum courses in this area.

No Change

Proposed Revision: Add

7. Fine Arts (3 credit hours)
Select any UNM Core Curriculum course in this area, or substitute one additional course from the core curriculum in either Humanities or Social & Behavioral Sciences.

The newly developed New Mexico Engineering Transfer Module and HED require a total of 15 credit hours in Humanities & Fine Arts and Social & Behavioral Sciences. This addition as a requirement rather than an elective will meet that new requirement.

Under Social and Behavioral Sciences:

Current Social and Behavioral Sciences:

8. Social and Behavioral Sciences (6 credit hours)
Including:
ECON 105: Introductory Macroeconomics (3)

Select one other UNM Core Curriculum course in this area.

No Change

Under Other:

Current Other:

8. Other (18 credit hours)

To complete the required number of hours for this degree, other courses (18 credit hours) may be chosen from:

Writing and Speaking

ENGL 219: Technical writing (3)

Engineering and Computer Science

CE 202: Engineering Statics (3)
ECE 203L: Circuit Analysis I (3)
ECE 213: Circuit Analysis II (3)
ECE 238L: Computer Logic Design (4)
ME 160L: Mechanical Engineering Design I (3)
ME 260L: Mechanical Engineering Design II (3)

*Note: Other engineering courses specified in the B.S. degree plan of interest may be substituted, if offered by UNM–LA.

Physical/Natural Sciences

CHEM 122L: General Chemistry (4)
EPS 101: How the Earth Works–An Introduction to Geology (3)
PHYC 167: Problems in General Physics (1)
PHYC 168: Problems in General Physics (1)
PHYC 262: General Physics (3)
PHYC 267: Problems in General Physics (1)

Foreign Language (Maximum of 3 credit hours)

Select any UNM Core Curriculum course in this area.

Fine Arts (Maximum of 3 credit hours)

Select any UNM Core Curriculum course in this area.

Proposed Revision:

8. Other (**12 credit hours)**

To complete the required number of hours for this degree, other courses (**12 credit hours**) may be chosen from the following if not already counted in degree program:

Engineering and Computer Science

CE 160L: Civil Engineering Design (3)
CE 202: Engineering Statics (3)
ECE 203L: Circuit Analysis I (3)
ECE 213: Circuit Analysis II (3)
ECE 238L: Computer Logic Design (4)
ME 160L: Mechanical Engineering Design I (3)

ME 260L: Mechanical Engineering Design II (3)
ME 217: Energy, Environment & Society (3)

Note: Other engineering courses specified in the B.S. degree plan of interest may be substituted, if offered by UNM–LA.

Physical/Natural Sciences

CHEM 122/124L: General Chemistry II (3)/General Chemistry II Lab (1)
EPS 101: How the Earth Works–An Introduction to Geology (3)
PHYC 167: Problems in General Physics (1)
PHYC 168: Problems in General Physics (1)
PHYC 262: General Physics (3)
PHYC 267: Problems in General Physics (1)

Foreign Language (Maximum of 3 credit hours)
Select any UNM Core Curriculum course in this area.

Rationale: Credit hours and choices of electives are changed to reflect the change of ENGL 219, the addition of CE 160L, ME 217 (new courses in the Civil and Mechanical Engineering departments) and moving 3 credit hours of Fine Arts from elective to requirements.

Budgetary and Faculty Load Implications
Associate of Science in Pre-Engineering

Shifting ENGL 219 from elective to required will have no impact on the budget. The course is already being taught regularly, and most students in this degree program already elect to take this course.

Addition of Fine Arts requirement: This addition has been shifted from elective to require and will have no impact on the budget as these courses are already listed and being taught.

Addition of CE 160L as an elective will impact the budget minimally. The software being required for CE 160L is already required in other technical courses being taught on campus. The course will be taught alternately with ME 160L, so there will be no increase in the number of engineering course sections being taught. The addition of ME 217 will also be minimal increase since it will be offered on demand only.

Faculty Load:

No new faculty will be required since we already have faculty qualified to teach CE 160L and ME 217 on campus.

Addition of these 2 options should help attract students to the program and allow for preparation for transfer to additional degree programs.