

New Mexico Tech Office of Academic Affairs

December 2008

NEW MEXICO INSTITUTE OF MINING AND TECHNOLOGY

MEETING OF THE FACULTY SENATE

Tuesday, December 2, 2008

4:00 PM

Workman 101

MINUTES

1. **Call to order.** Dr. Dave Burleigh, Chair, called the meeting to order at 4:02 p.m.
2. **Approval of the minutes of November 4, 2008.** A motion was made and seconded to approve the minutes of Nov. 4, 2008. There was no discussion and the motion passed.
3. **Announcements.** None.
4. **Committee Reports.**

a. Academic Standards and Admissions Committee – M. Pullin (see attachments). Dr. Pullin moved to amend the undergraduate academic probation and suspension policy in the New Mexico Tech calendar as proposed by the committee; Dr. Tom Kieft seconded the motion. Pullin used a Power Point presentation to explain the proposed change, which basically would provide a mechanism to get students help early in the process. Under the proposal, an academic warning would be issued to students with a GPA lower than 2.0. “The changes force students to get help sooner, without changing the criteria for academic probation or suspension,” Pullin said. According to statistical averages, 3 percent of students are suspended each semester, and 10 percent are on probation. Elaine DeBrine-Howell, Director of the Academic Resource Center (ARC), described an “intervention packet” being developed for students. It includes a self-assessment form; a “solutions for success” component giving the student’s advisor a basis to understand what went wrong, so he/she is not starting from scratch; and an action plan, somewhat quantifiable, whereby the student is advised to reflect on the problem. The student would have to sign and date the plan, which would be forwarded to the Academic Standards and Admission Committee. “This is new, and more work for you depending on the number of advisees you have, but we will be offering workshops throughout the semester, such as test anxiety,” said DeBrine-Howell. Added Pullin: “ARC can devise a plan based on what does, and does not, work.” The new policy would start in Fall 2009.

As part of the discussion, it was noted that students must be aware of financial aid issues in formulating their action plans (students who fall below 12 credit hours may be in danger of losing their financial aid). Dr. John McCoy asked if the committee had considered lowering the intervention GPA to a 1.7 or 1.9. “We did not,” responded DeBrine-Howell. “We’ll probably have to go back and refine it, but at present, we have no ‘have-to’s’ with probation,” she said. Ina

Crawford of the Registrar's Office said that under the proposed policy, students would receive warning letters along with their letters of probation. As explained by Dr. Peter Gerity, Academic Affairs vice president, the first semester students post a GPA below 2.0, they would get the warning letter, whereas as things currently stand, it could be two or three semesters before they would face formal suspension. Burleigh then called for the question on Pullin's motion to add an academic warning to the probation and suspension policy. The motion passed unanimously.

- **Old Business.** None.

- **New Business.**

a. Council of Chairs Meeting

On behalf of the Council of Chairs, Dr. Gerity presented the following curriculum changes:

a. Physics Changes.

Dr. Westpfahl moved to:

Add: Physics 340, Introduction to Quantum Theory, as a prerequisite for Physics 411, Thermodynamics and Statistical Physics.

The reason for this change is that the modern approach to thermal physics is to derive the thermal properties of matter from its quantum properties.

The motion passed.

- **Management Curriculum Changes.**

Dr. Gerity on behalf of the Management Department, proposed

Delete BCS 209 (3) as a requirement for the Associate of Science in Business degree.

The motion passed.

- **Biology Curriculum Changes.**

Dr. Kieft proposed the following minor revision to the description of a new course, BIOL 487, which was approved by the Faculty Senate at the October 3rd meeting. The revised description matches the description for BIOL 587 that was approved by the Graduate Council.

Revised course description:

BIOL 487, 487L Advanced Virology, 3-4 crs, 3 cl hrs, 3 lab hrs

Prerequisite: BIOL 431 or 531

An in-depth study of one or two viruses, e.g., HIV, Ebola, influenza; viral vectors for gene therapy; and herpes of hemorrhagic fever viruses. The laboratory section of the course will include viral propagation in tissue culture and methods to investigate the molecular biology of viral infection.

The motion passed.

- **Earth and Environmental Science Changes.**

Dr. Aster moved to adopt the following changes:

ERTH Changes:

- Please delete the word "Advanced" from the title ERTH 453 and replace it by "Intermediate".
- 2. Add this sentence to the beginning of the description for ERTH 453: "Builds on basics of structural geology taught in ERTH 203."

Environmental Science Change:

1. In the requirements for the Bachelor of Science in Environmental Science with Geology Option, "ERTH 403" should be changed to "ERTH 405" in the required course list (p. 92).

HYD Changes:

Change One:

ERTH 442, Vadose Zone Processes, 1 cr, 1 cl hr

Prerequisite: ERTH 440

Offered Spring Semester

Multiphase flow, potentials and water retention, transient flow problems, plant/water uptake.

Change to:

ERTH 442, Vadose Zone Processes, 1 cr, 1 cl hr

Prerequisite: ERTH 440

Offered Spring Semester

Physics of unsaturated flow in porous media, multiphase flow, potentials and water retention, unsaturated hydraulic conductivity, transient flow problems.

Change Two:

Semester 8 (Spring 11) (p77)

1 ERTH 441 drop aquifer mech, add hydrogeology

Semester 8 (Spring 12)

1 ERTH 441 drop aquifer mech, add hydrogeology

The motion passed.

- **Mechanical Engineering Change.**

Dr. Bakhtiyarov moved to:

Change the course title for MENG 405L:

Old: Instrumentation, Measurement, and Process Control Laboratory

New: Dynamic Systems and Controls Laboratory

The motion passed.

- **Electrical Engineering Curriculum Changes.**

Dr. Teare moved for adoption of the following:

Course Listing Changes

EE231, 231L Digital Electronics, 4cr, 3cl, 3lab hrs

Corequisites: ES111, CS111, EE231 and EE231L are corequisites of each other.

EE443L Intermediate Control Theory Lab, 1cr, 3cl hrs

Corequisites: EE443 or MENG405 (Add in:): or permission of instructor.

Revised depth requirement.

The catalog currently reads:

While fulfilling the General Degree Requirements (page 54), Electrical Engineering students must also satisfy a depth requirement in the humanities or social sciences. Each Electrical Engineering student is required to take at least nine credit hours in a single area chosen from the following. Three of the credit hours must be 300-level or above.

1. Literature (including SPAN 352)
2. Philosophy
3. History
4. Economics (ES 316 is excluded)
5. Psychology
6. A single foreign language that is not the student's native language. *Note: Lower-division language courses do not fulfill the humanities requirement*

Students may substitute sequences in Art History or Music after obtaining the consent of the Electrical Engineering Department.

Revision to read:

While fulfilling the General Degree Requirements (page 54), Electrical Engineering students must also satisfy a depth requirement in the humanities or social sciences. Each Electrical Engineering student is required to take at least nine credit hours in a single area with three of the credit hours at the 300-level or above and be chosen from one of the following areas:

1. Political Science
2. Philosophy
3. History
4. Psychology

Courses from other Humanities or Social Science areas may be used to complete the general degree requirements, but cannot be used to satisfy the Electrical Engineering Department's depth requirement.

Dr. Dezember read a statement from the Humanities Department stating the hardship of offering the number of courses required by Electrical Engineering in just those four disciplines. There was no modification to the motion by Dr. Teare. The motion passed as presented.

- **Mineral Engineering Curriculum Change.**

Dr. Mojtabai asked for approval for the following changes for Mineral Engineering:

Bachelor of Science in Mineral Engineering

Minimum Credit Hours Required – 133 - 132

In addition to the General Degree Requirements, the following courses are required:

- MATH 231 (4), 335 (3)
- ES 110 (2), 111 (3), 201 (3), 216 (3), 302 (3), 332 (3), ES 303 or 347
- EARTH 101 & 103L, 203 (4)
- ME 101 (1), 220 (3), 320 (2), 340 (3), 360 (3), 380 (6), 410 (3), 419 (2), 420 (3), ME 422 (3), 440 (2), 442 (4), 462 (3), 470 (1), 471 (2)
- Technical Elective (3), Elective (3)

Bachelor of Science in Mineral Engineering with Emphasis in Explosive Engineering

Minimum Credit Hours Required – 141

In addition to the General Degree Requirements, the following courses are required:

- MATH 231 (4), 335 (3)
- ES 110 (2), 111 (3), 201 (3), 216 (3), 302 (3), 332 (3), ES 303 or 347
- EARTH 101 & 103L, 203 (4)
- ME 101 (1), 220 (3), 320 (2), 340 (3), 360 (3), 380 (6), 410 (3), 419 (2), 420 (3), ME 422 (3), 440 (2), 442 (4), 462 (3), 470 (1), 471 (2)
- Technical Elective (3), Elective (3)
- Three courses from: ChE 475 (3), ME 434 or ME 535 (3), MENG 441 (3), ME 545 (3), MENG 545 (3)

Students are strongly encouraged to do their senior design project in the area of Explosive Engineering or related projects.

Minor in Mineral Engineering

Minimum credit hours required – 19

Chosen from the following courses:

ME 220 (3), ME 320 (2) or ES 316 (3), ME 340 (3), ME 360 (3), ME 380 (6), ME 410 (3), ME 419 (2), ME 420 (3), ME 422(3), ME 435 (3), ME 440 (2), ME 442 (4), ME 462 (3).

Sample Curriculum for the Bachelor of Science in Mineral Engineering

Semester 1

- 1 ME 101 (introduction to mineral engineering)
- 4 EARTH 101 & 131L (principals)

- 4 MATH 131 (calculus)
- 4 CHEM 121 & 121L (general)
- 3 ENGL 111 (college English)
- 2 ES 110 (introduction to engineering)

18

Semester 2

- 3 ES 111
- 4 MATH 132 (calculus)
- 4 CHEM 122 & 122L (general)
- 3 ENGL 112 (college English)
- 3 Social Science/Humanities

17

Semester 3

- 5 PHYS 121 & 121L or 131 & 131L (general)
- 4 MATH 231 (calculus)
- 3 ES 201 (statics)
- 3 Social Science/Humanities

15

Semester 4

- 5 PHYS122 & 122L or 132 & 132L (general)
- 4 EARTH 203 (Earth's Crust)
- 3 ES 216 (Fluids)
- 3 ME 220 & 220L (surveying and map preparation)
- 2 ME320 (economic analysis)

17

Semester 5

- 3 ES 302 (strength of materials)
- 3 ES 347 (thermodynamics) or
ES 303 (dynamics)
- 3 ME 360 & 360L (exploration and field mapping)
- 3 ME 340 (geostatistics and mineral evaluation)
- 3 ENGL 341 (technical writing)
- 3 Social Science/Humanities

Semester 6

- 6 ME 380 & 380L (mine systems)
- 3 ME 462 (mineral deposits)
- 3 ME 420 & lab (soil mechanics)
- 3 ME 422 & lab (rock mechanics)

Semester 7

- 1 ME 470 (senior design I)
- 3 ME 410 & 410L (environmental issues)
- 3 MATH 335 (applied analysis)
- 3 Technical Elective
- 2 ME 440 (mine ventilation)
- 3 Humanities/Social Science

Semester 8

- 2 ME 471 (senior design II)
- 2 ME 419 (mineral and natural resources law)
- 4 ME 442 & 442L (applied geomechanics)
- 3 ES 332 (electrical engineering)
 - 3 Social Science/Humanities
- 3 Social Science/Humanities

The motion passed.

- **Humanities Changes.**

Dr. Dezember moved for adoption of the Humanities Changes.

Catalog Additions:

ANTH 101, Introduction to Cultural Anthropology, 3 cr, 3 cl hrs

An introduction to the science of Cultural Anthropology, its terminology, theory, practice and subject matter. Students are encouraged to engage with other cultures to find similarities and connections, not differences and separation. Studies human beings, their social

and cultural institutions, beliefs, and practices around the world and next door, creating a medley of adaptations to common problems.

ANTH 302, Food and Culture, 3 cr, 3 cl hrs

Food is more than just nutrition; in every culture, past and present, food is central to building and maintaining economic and political systems, social relationships among family members and between friends and enemies, religious taboos, ethnic identities, and gender norms. The trade in food stuffs is at the heart of colonization and globalization; the lack of food is at the heart of labor migrations and the horrors of malnutrition and starvation; and the science of food causes biogenetic engineering to choose between creating profit for some or life for many. This class examines these issues, ranging from seemingly universal meals to mass-produced hamburgers, and counting the human, animal, and environmental costs of each.

ANTH 303, Race and Ethnic Relations, 3 cr, 3 cl hrs

An overview of most “racial” and ethnic groups of Americans. Provides a theoretical framework to explore their histories and critical current issues and a space to enjoy the advantages of a multicultural philosophy. Focuses on the heterogeneous character of all ethnic groups, especially in regard to gender and class; attempts to define common issues that can only be solved in unison.

ANTH 320, Anthropology of Sex and Gender, 3 cr, 3 cl hrs

Cross-listed as WGS 320

A survey of the varieties of sex and gender definitions and roles in historical and contemporary human cultures. The study of sex assignment, gender definitions and roles in their association to stratified or equitable access to economic, political, and ideological resources and monopolies. Exploration of the parallels and differences between gender, race, and class. Topics include: gendered division of labor, female and male socialization, violence against women as male entertainment and female punishment, gender universals and generalities.

WGS 301, Introduction to Women’s Studies, 3 cr, 3 cl hrs

This thematically organized course introduces issues important to women and men as gendered beings. Exploration of such cultural areas as the economy, politics, sexualities, medicine, religions, and more, both in their American context as well as in comparison to other cultures.

WGS 320, Anthropology of Sex and Gender, 3 cr, 3 cl hrs

Cross-listed as ANTH 320

A survey of the varieties of sex and gender definitions and roles in historical and contemporary human cultures. The study of sex assignment, gender definitions and roles in their association to stratified or equitable access to economic, political, and ideological resources and monopolies. Exploration of the parallels and differences between gender, race, and class. Topics include: gendered division of labor, female and male socialization, violence against women as male entertainment and female punishment, gender universals and generalities.

PHIL 315, Philosophy of Digital Communication, 3 cr, 3 cl hrs

Prerequisite: ENGL 112 or consent of instructor; Cross-listed as TC 315

A philosophical and historical overview of the shift to digital modes of communication; explores

the impact of this digital shift on culture, identity, communication, education, art, medicine, ethics, community, and the production of knowledge.

TC 315, Philosophy of Digital Communication, 3 cr, 3 cl hrs

Prerequisite: ENGL 112 or consent of instructor; Cross-listed as PHIL 315

A philosophical and historical overview of the shift to digital modes of communication; explores the impact of this digital shift on culture, identity, communication, education, art, medicine, ethics, community, and the production of knowledge.

PHIL 342, Philosophy of Bioethics, 3 cr, 3 cl hrs

Prerequisite: ENGL 112 or consent of instructor

Exploration of ethical issues embedded in medicine and related activities; focuses on broad areas including: the physician/patient relationship, the media's influence on medicine, the role of the pharmaceutical industry, gene therapy, cloning and stem cell research, organ transplantation, human and animal research, reproductive technologies, and the global allocation of resources.

ENGL 360, Advanced Public Speaking, 3 cr, 3 cl hrs

Prerequisite: English 242 or consent of instructor

Theory and practice of ethical and professional speech communication. Researching, writing and presenting professional presentations. Designing and using effective visuals, including posters and electronic presentation aids. Conducting group presentations and discussions on ethical and cross-curriculum issues in historical, cultural and workplace context.

PS 1XX Introduction to Political Science, 3 cr, 3 cl hrs

An introduction to political ideas, events and institutions. Explores the relationships between politics and society; examines the interdependence of citizenship and community life; investigates the complex interaction between values, issues and political behavior.

Catalog Changes:

The present text reads:

HIST 162, Europe in the 20th Century, 1914-2000, 3 cr, 3 cl hrs

Explores the history of the twentieth century in Europe, examining the great watersheds of the last century in Europe, from World War I to the fall of the USSR and the rise of the European Union. Several case-studies and problems help students understand the legacy of the 20th century and the problems we face today.

It should read:

HIST 162, Europe in the 20th Century, 1914-2000, 3 cr, 3 cl hrs

Explores the great watersheds of the last century in Europe, from World War I to the fall of the USSR and the rise of the European Union. Several case-studies help students understand the legacy of the 20th century and the problems we face today.

Page 97, under English Courses currently reads:

English courses numbered 300 and above, with the exception of ENGL 341, may be used to fulfill the Humanities portion of the General Degree Requirements (page 54).

It should be changed to read:

The following courses—except ENGL 103, ENGL 111, ENGL 112, ENGL 341—may be used to fulfill the Humanities portion of the General Degree Requirements (page 54).

Page 98:

Add the following to HUMA 151
Cross-listed as TC 151

Add the following to HUMA 211
Cross-listed as TC 211

Page 99:

Delete the following to PHIL 231
Prerequisite: ENGL 112 or consent of instructor

The motion passed.

- **Materials Engineering Changes**

Dr. McCoy moved to adopt a new course:

MATE 472 – Advanced Transport Phenomena, 3 cr, 3 cl hrs

Prerequisite: ES 216 and 350 or MATE 314 or consent of instructor

Advanced topics in momentum, heat, and mass transfer. Newtonian and non-Newtonian fluid behavior and laminar flow problems, elementary turbulent flow concepts, energy balance applications in incompressible fluid flow, flow and v accuum production. Fourier’s law and thermal conductivity of materials, steady state and time dependent heat conduction, application in solidification , elementary convective heat transfer. Diffusivity of materials, diffusion in gases, liquids and solids and through porous media, time dependent diffusion, and interphase mass transfer.

Dr. Chen has agreed to change the course description of their course to match MATE 472. The motion passed.

- **New Business.**

- b. Graduate Council Meeting**

Below are catalog changes approved by the Graduate Council as presented by Dr. Johnson.

EARTH AND ENVIRONMENTAL SCIENCE

Change In Prerequisite And Course Description

HYD 532, Vadose Zone Dynamics, 1 cr, 1 cl hr

Prerequisite: EARTH 440, EARTH 442, HYD 510 or consent of instructor

Offered Spring Semester

Physical processes governing fluid, heat, and gas transport through the vadose zone.

Application of the model HYDRUS1D for the evaluation of water flow and contaminant transport through the vadose zone.

Physical processes governing fluid, solute, heat, and gas transport through the vadose zone; plant water uptake; applications of the model HYDRUS1D for the evaluation of these physical processes.

Change In Course Description

HYD 534, Introduction to Remote Sensing, 3 cr, 2 cl hrs, 3 lab hrs

Prerequisite: PHYS 122 or 132 or consent of instructor

Introduction to the theory and practical use of remotely sensed satellite images. Principles of radiation physics; sensor systems; data acquisition; image analysis; classification schemes.

Remote sensing applications to atmospheric sciences, hydrology, mineral and oil exploration, natural hazards monitoring, and land and resources management. Laboratory exercises deal primarily with computer analysis of remotely-sensed images with some field exercises. Shares lecture/lab with EARTH 434, but is graded separately. Introduction to the theory and practical use of remotely sensed satellite images. Principles of radiation physics; sensor systems; data acquisition; image analysis; classification schemes. Remote sensing applications to atmospheric sciences, hydrology, mineral and oil exploration, natural hazards monitoring, and land and resources management. Laboratory exercises using ERDAS Imagine deal primarily with computer analysis of remotely-sensed images with some field exercises. Shares lecture/lab with EARTH 434, but is graded separately. (Same as GEOL/GEOP 534)

New Class

HYD 535, Engineering and Science Applications of Vadose Zone Modeling, 1 cr, 1 cl hr

Prerequisite: EARTH 440, EARTH 442, HYD 510 or consent of instructor

Application of the HYDRUS models in 1, 2, and 3-dimensions, and COMSOL Multiphysics, for the evaluation of variably saturated flow and transport. After an introduction to the HYDRUS models, hydrology and engineering students will work on their own HYDRUS application dealing with typical geotechnical, agricultural, and ecohydrological simulations including slope stability, drainage through tailings and rock piles, hazardous waste migration, soil moisture controls on evapotranspiration and vegetation growth.

The motion passed.

Biology Catalog Changes - The Biology Department proposes the following five year B.S./M.S. degree program in Biology:

Five Year Program: Biology B.S./Biology M.S.

Exceptionally well motivated students may earn both BS and MS degrees in Biology in five years. The student fulfills the requirements for a BS degree in four years and for an MS degree the following year. A minimum of 160 credit hours are required to complete both degrees. The MS degree requires the completion of a thesis based on the student's own research.

Students may apply for the BS/MS program at the end of their 4th semester. Admission is contingent on their having a GPA of at least 3.0, and on the acceptability of their proposed course of study. Students with upper division standing may also apply, with the same requirements for admission.

Students in the five-year program must apply for graduate standing, normally in their 6th semester. Once admitted to the graduate program, the student spends his or her 8th semester as a dual registered student. During their senior year, the student must select a graduate advisory committee and formalize his or her graduate research topic. Once admitted to the graduate program, a student may apply for financial support via research assistant or teaching assistant positions.

The motion passed.

7. Adjournment. Burleigh adjourned the meeting at 5:03 p.m.

*Respectfully submitted,
Debby Olguin and Valerie Kimble*

November 2008

MEETING OF THE FACULTY SENATE

Tuesday, November 4, 2008

4:00 PM

Workman 101

MINUTES

1. **Call to order.** In his first act as new chair of the Faculty Senate, Dr. Dave Burleigh called the meeting to order at 4:01 p.m., after declaring a quorum.
2. **Approval of the minutes of October 7, 2008.** A motion was made by Dr. Dave B. Johnson and seconded by Dr. Rick Aster to approve the minutes of October 7, 2008. There was no discussion and the motion passed.

3. **Announcements.**

1. **Registrar Luz Barreras.** Barreras introduced Raelene Rohrbaugh as the new Admin. II Secretary for the Office of the Registrar, so that faculty can “put a face to the voice.”

1. **President Daniel H. López.** Dr. López briefed the group on the current status of the financial forecast that is affecting institutes of higher learning across the nation. The state’s cash balance was severely depleted with the cost of this year’s special session and the \$160 million in rebates. “As revenues continued to decline, people got nervous,” López said, adding that experience has taught him to try to prepare for any actual curtailment, should the situation worsen. The university could accommodate a 5- to 7-percent cut in cash balances on the collegiate side. “It will be interesting to see how things unfold at the Legislative session in January,” said López. He said he hoped revenues would be sufficiently stabilized to support a flat budget, or one with modest increases. López also explained that the current hiring freeze only affects positions tied to the state’s general fund. However, he added, people may see some new hires. Positions essential to the mission of the university, such as that of the recently vacated Purchasing Director, will be filled; and other positions, such as for research scientists, that are tied to fixed-price contracts. He then distributed copies of a letter from State Sen. Tim Jennings, president pro tem of the Legislature, urging institutions of higher learning to pare back spending and to prepare for a worst-case scenario reduction-in-force. “The prudent thing to do is what we’re doing, accumulating reserves to meet a curtailment,” López said. Staff is being asked to redistribute work, which can be a challenge for a small university with limited positions. “I’ve been at this for 37 years, and in that time went through two major layoffs, which was no fun,” he said. “We want to avoid layoffs at all costs; it hurts the core mission of the university.” A program for early retirement is another option to explore. López invited suggestions – “I’m willing to look at options.” Aster suggested two: changes in tuition, and more complete overhead recovery. The president explained how raising tuition is a double-edged sword and politically unpopular; and that the university is already doing everything possible to secure the highest overhead rate recovery.

1. **Dr. Peter F. Gerity.** Gerity reminded faculty that Dec. 1 is the last day to submit honorary degree nominations to Academic Affairs. Any nomination would then be forwarded to the Honorary Degree Awards Committee. Members are Drs. Sharon Sessions, Rebecca Reisse and Bhaskar Majumdar.

1. **Dr. Rick Aster.** Aster announced an open house from 4-7 p.m. on Thursday, Nov. 20, to celebrate the 10th anniversary of IRIS-PASSCAL.

4. **Committee Reports**

1. **Nominating Committee – Approval of Committee Membership (see attachment) – N. Mojtabai.** “You have the list,” said Dr. Mojtabai. He then moved for approval of the new list of committee assignments, followed by a second from Dr. Johnson. The motion passed.

1. **New Business.**
2. **Council of Chairs Meeting -- October 3, 2008 (Minutes attached).** Gerity noted that changes approved at the Council of Chairs meeting on Oct. 31 would not come before the Faculty Senate until the December meeting, to allow members sufficient time to review proposed curriculum changes. The proposed changes that follow were approved at the chairs’ meeting of Oct. 3.

Dr. Tom Kieft introduced proposed changes for Biology, including the addition of new classes as follows:

New courses:

BIOL 444 Evolutionary Biology, 3 cr., 3 cl hrs

Prerequisites: BIOL 311, BIOL 344.

The mechanisms and implications of biological evolution. Topics include population genetics, adaptation and natural selection, fossil evidence, and evolutionary medicine.

BIOL 487, 487L Advanced Virology, 3–4 cr, 3 cl hrs, 3 lab hrs

Prerequisite: BIOL 431 or 531

An in-depth study of one or two viruses, e.g., HIV, Ebola, influenza; viral vectors for gene therapy; and herpes or hemorrhagic fever viruses. The laboratory section of the course will include viral propagation in tissue culture and methods to investigate the molecular biology of viral infection.

Changes in course descriptions:

BIOL 351, Physiology I, 3 cr, 3 cl hrs

Prerequisite: BIOL 112; 331

~~Principles and mechanisms of vertebrate function, emphasizing mammalian systems. Includes membranes, receptors, muscle and nerve function, water and ion homeostasis, and cardiovascular physiology.~~

Principles and mechanisms of vertebrate function, emphasizing mammalian systems. Includes homeostasis, membranes, receptors, muscle and nerve function, sensory systems and the regulation and function of hormones.

BIOL 352, Physiology II, 3 cr, 3 cl hrs

Prerequisite: BIOL 351

~~Continuation of BIOL 351. Includes respiratory, gastrointestinal, and reproductive physiology.~~

Continuation of BIOL 351. Includes cardiovascular, respiratory, water and ion homeostasis, gastrointestinal, and reproductive physiology.

BIOL 353L, Experimental Physiology I, 2 cr, 1 cl hr, 3 lab hrs

Corequisite: BIOL 351

~~Development of physiology techniques to investigate transport and contraction mechanisms, and cardiovascular physiology.~~

~~Students will design some experiments.~~

Students will quantify and interpret physiologic responses in humans. Experiments will involve the nervous, sensory, and muscular systems. A portion of this course will include gross anatomy.

BIOL 354L, Experimental Physiology II, 2 cr, 1 cl hr, 3 lab hrs

Prerequisite: BIOL 351, 353L

~~Corequisite~~Corequisite: BIOL 352

~~Continuation of BIOL 353L. Experiments involve respiratory, reproductive, and digestive physiology. Students will design some experiments.~~

Continuation of BIOL 353L. Students will quantify and interpret physiologic responses in humans. Experiments will involve the cardiovascular, renal, and respiratory systems. A portion of this course will include gross anatomy.

Course deletions:

~~BIOL 355, 355L, Embryology, 2-3 cr, 2 cl hrs, 3 lab hrs~~

~~Prerequisite: BIOL 112~~

~~A study of the development of the organs of the chick and pig.~~

~~Also explores the mechanisms of differentiation and mammalian reproduction.~~

~~BIOL 356, 356L, Developmental Biology, 2-3 cr, 2 cl hrs, 3 lab hrs~~

~~Prerequisites: BIOL 331, 333~~

~~Explores the mechanisms of embryonic development, differentiation, and cancer.~~

-

~~BIOL 447, Limnology and Oceanography, 3 cr, 3 cl hrs~~

~~Prerequisite: BIOL 344~~

~~Ecology of lakes and oceans with an emphasis on species interactions and ecosystem ecology.~~

~~BIOL 466, Biotechnology, 4 cr, 1 cl hr, 9 lab hrs~~

~~Prerequisites: BIOL 333 and consent of instructor~~

~~A research-oriented course using modern biological techniques to explore fundamental principles in biology in collaboration with a biology faculty member.~~

Delete laboratory portion of course:

~~BIOL 431, 431L, Virology, 3-4 cr, 3 cl hrs, 3 lab hrs~~

~~Prerequisite: BIOL 331~~

~~Corequisite: BIOL 311~~

~~Molecular biology of viral infection, replication, and pathogenesis. Animal viruses emphasized.~~

Course name change:

BIOL 437, ~~Infection and Immunity~~ Immunology, 3 cr, 3 cl hrs

Prerequisite: BIOL 341

Study of human infectious disease and the immune system.

Pathogenic microorganisms and mechanisms of pathogenicity. Innate and acquired immune responses. Immunochemistry, cellular immunity, and immunopathology.

Kieft moved to accept the curriculum changes for Biology, followed by a second from Johnson. The motion passed.

Dr. Rick Aster, Earth and Environmental Science. Aster proposed the following catalog changes for the E&ES Department:

ERTH Changes:

1. Please delete the word "Advanced" from the title ERTH 453 and replace it by "Intermediate".
2. Add this sentence to the beginning of the description for ERTH 453: "Builds on basics of structural geology taught in ERTH 203."

Environmental Science Change:

1. In the requirements for the Bachelor of Science in Environmental Science with Geology Option, "ERTH 403" should be changed to "ERTH 405" in the required course list (p. 92).

HYD Changes:

Change One:

ERTH 442, Vadose Zone Processes, 1 cr, 1 cl hr

Prerequisite: ERTH 440

Offered Spring Semester

Multiphase flow, potentials and water retention, transient flow problems, plant/water uptake.

Change to:

ERTH 442, Vadose Zone Processes, 1 cr, 1 cl hr

Prerequisite: ERTH 440

Offered Spring Semester

Physics of unsaturated flow in porous media, multiphase flow, potentials and water retention, unsaturated hydraulic conductivity, transient flow problems.

Change Five:

Semester 8 (Spring 11) (p77)

1 ERTH 441 drop aquifer mech, add hydrogeology

Semester 8 (Spring 12)

1 EARTH 441 drop aquifer mech, add hydrogeology

Aster moved to accept the changes, followed by a second. Gerity noted that changes to the Geophysics Option portion of proposed catalog changes reflected a change brought by Dr. Dezember before the Council of Chairs, in that a Humanities course was incorrectly named. The motion passed.

Dr. Sayavur Bakhtiyarov, Mechanical Engineering. Dr. Bakhtiyarov introduced the following catalog changes for his department:

Add new course:

1. **MENG 302L, Mechanics of Materials Laboratory, 1 cr, 3 lab hrs**

Corequisite: ES 302

Experiments in mechanics of materials, testing methods, and measurement techniques.

Remove:

1. **MENG 300L, Solid Mechanics Laboratory, 1 cr, 3 lab hrs**

Revise:

1. **Change the course title for MENG 352L:**

Old: “Basic Engineering Programming Concepts”

New: “Instrumentation, Measurement, and Process Control Laboratory”

1. **Change the course credits for MENG381, MENG382, MENG481, and MENG482:**

Old: MENG 381, Junior Engineering Design Clinic I, 1 cr, 3 lab hrs

MENG 382, Junior Engineering Design Clinic II, 1 cr, 3 lab hrs

MENG 481, Senior Engineering Design Clinic I, 2 cr, 6 lab hrs

MENG 482, Senior Engineering Design Clinic II, 2 cr, 6 lab hrs

New: MENG 381, Junior Engineering Design Clinic I, 2 cr, 1 cl hr, 3 lab hrs

MENG 382, Junior Engineering Design Clinic II, 2 cr, 1 cl hr, 3 lab hrs

MENG 481, Senior Engineering Design Clinic I, 3 cr, 1 cl hr, 6 lab hrs

MENG 482, Senior Engineering Design Clinic II, 3 cr, 1 cl hr, 6 lab hrs

1. **Change the minimum credit hours required and the technical elective requirement:**

Old: *Minimum credit hours required—135*

Technical Electives: Six hours from upper-division courses chosen by the student with the faculty advisor’s approval.

New: *Minimum credit hours required—136*

Technical Electives: Three hours from upper-division courses chosen by the student with the faculty advisor's approval.

1. Change the sample curriculum:

Old:

Sample Curriculum for the Bachelor of Science in Mechanical Engineering

Semester 1

- 3 ENGL 111 (college English)
- 4 MATH 131 (calculus)
- 4 CHEM 121 & 121L (general)
- 2 MENG110/ES 110 (intro.)
- 3 Social Science

16 Total credit hours

Semester 2

- 3 ENGL 112 (college English)
- 4 MATH 132 (calculus)
- 5 PHYS 121 & 121L (general)
- 3 ES 111 (computer engr.)
- 3 Humanities

18 Total credit hours

Semester 3

- 3 Social Science
- 4 MATH 231 (calculus)
- 4 CHEM 122 & 122L (general)
- 3 ES 201 (statics)
- 4 MATE 202 & 202L (intro to materials)

18 Total credit hours

Semester 4

- 3 MATH 335 (ordinary differential equations)
- 5 PHYS 122 & 122L (general)
- 3 MATH 283 (Statistics)
- 3 ES 216 (fluid mechanics)
- 3 ES 302 (mechanics of materials)

17 Total credit hours

Semester 5

- 3 MENG 305 (engineering analysis)
- 3 ES 303 (dynamics)
- 3 MENG 304 (advanced strength of materials)
- 3 ES 347 (thermodynamics)
- 1 MENG 300L (solids lab)
- 1 MENG 381 (junior design)
- 3 ENGL 341 (technical writing)

17 Total credit hours

Semester 6

- 3 ES 332 (electrical circuits)
- 3 MENG 421 (finite element analysis & design)
- 1 MENG 351L (fluids lab)
- 1 MENG 352L (engineering programming)
- 1 MENG 382 (junior design)
- 3 ES316 (engineering economics)
- 3 ES 350 (heat & mass transfer)
- 3 Technical Elective

18 Total credit hours

Semester 7 (Take FE exam)

- 2 MENG 405 (system dynamics & controls)
- 1 MENG 405L (controls and instrumentation)
- 3 MENG 451 (machine design)
- 2 MENG 481 (senior design)
- 3 MENG 441 (dynamics & vibration)
- 3 Humanities
- 3 Social Science

17 Total credit hours

Semester 8

- 3 MENG 431 (fluid/thermal systems)
- 3 MENG 483 & 483L (mechatronics)
- 2 MENG 482 (senior design)

- 3 Technical Elective
- 3 Humanities/Social Science

14 Total credit hours

New:

Sample Curriculum for the Bachelor of Science in Mechanical Engineering

Semester 1

- 3 ENGL 111 (college English)
- 4 MATH 131 (calculus)
- 4 CHEM 121 & 121L (general)
- 2 MENG110/ES 110 (intro.)
- 3 Social Science

16 Total credit hours

Semester 2

- 3 ENGL 112 (college English)
- 4 MATH 132 (calculus)
- 5 PHYS 121 & 121L (general)
- 3 ES 111 (computer engr.)
- 3 Humanities

18 Total credit hours

Semester 3

- 3 Social Science
- 4 MATH 231 (calculus)
- 4 CHEM 122 & 122L (general)
- 3 ES 201 (statics)
- 4 MATE 202 & 202L (intro to materials)

18 Total credit hours

Semester 4

- 3 MATH 335 (ordinary differential equations)
- 5 PHYS 122 & 122L (general)
- 3 MATH 283 (Statistics) or MATH 332 (vector analysis)
- 3 ES 216 (fluid mechanics)

- 3 ES 302 (mechanics of materials)
- 1 MENG 302L (mechanics of materials lab)

18 Total credit hours

Semester 5

- 3 MENG 305 (engineering analysis)
- 3 ES 303 (dynamics)
- 3 MENG 304 (advanced strength of materials)
- 3 ES 347 (thermodynamics)
- 2 MENG 381 (junior design)
- 3 ENGL 341 (technical writing)

17 Total credit hours

Semester 6

- 3 ES 332 (electrical circuits)
- 3 MENG 421 (finite element analysis & design)
- 1 MENG 351L (fluids lab)
- 1 MENG 352L (instrumentation and measurement lab)
- 2 MENG 382 (junior design)
- 3 ES316 (engineering economics)
- 3 ES 350 (heat & mass transfer)

16 Total credit hours

Semester 7 (Take FE exam)

- 2 MENG 405 (system dynamics & controls)
- 1 MENG 405L (controls and instrumentation)
- 3 MENG 451 (machine design)
- 3 MENG 481 (senior design)
- 3 MENG 441 (dynamics & vibration)
- 3 Humanities
- 3 Social Science

18 Total credit hours

Semester 8

- 3 MENG 431 (fluid/thermal systems)
- 3 MENG 483 & 483L (mechatronics)

- 3 MENG 482 (senior design)
- 3 Technical Elective
- 3 Humanities/Social Science

15 Total credit hours

6. Revise the statement (page 156):

A) Old:

“The mechanical engineering program at New Mexico tech offers the students hands-on laboratory experience in fluid mechanics, solid mechanics, vibrations and mechatronics”.

New:

“The mechanical engineering program at New Mexico tech offers the students hands-on laboratory experience in fluid and thermal sciences, mechanics of materials, vibrations, mechatronics, dynamic systems and controls, instrumentation, measurement, and process control”.

B) Old:

In addition to the General Degree Requirements (page 54), the following courses are required:
MATH 283 (statistics)

New:

In addition to the General Degree Requirements (page 54), the following courses are required:
MATH 283 (statistics) or MATH 332 (vector analysis)

7. Remove:

Prerequisite MATH 332 for MENG 441 (Dynamics and Vibrations in Structural Design) (p. 160).

Corequisite MATH 332 for MENG381 (Junior Engineering Design Clinic I) (p. 160).

(Same as MENG405L) under ES 405L (p. 159).

(Same as ES405L) under MENG 405L (p. 160).

Add new course:

1. **EXPL 189 - Introduction to Pyrotechnics and Explosives, 2 cr, 1 cl hr, 3 lab hrs**

Prerequisites: none.

This course will introduce the student to the subjects of pyrotechnics and explosives in a hands-on, laboratory setting. This course encompasses subjects including basic combustion chemistry, the physical chemistry of energetic materials, and some test instrumentation. The course is based primarily in the laboratory, however, two days will be spent at the Energetic Materials Research and Testing Center working with high explosives. This course also will include a design project.

Bakhtiyarov moved to accept the catalog changes, followed by a second. The motion passed.

1. **New Business.**

1. **Graduate Council Meeting – October 21, 2008 (Minutes attached).** Graduate Dean Johnson brought catalog changes approved by the Graduate Council to the Faculty Senate for approval. They are as follows and by department:

Earth and Environmental Science

Proposed New M.S. Hydrology Option in “Petroleum and Geofluids”

Recent trends in prices for petroleum products have driven a resurgence of activity in the extractive industry. Graduates of earth science programs are now in high demand by petroleum companies and receive excellent starting salaries. Graduates with qualifications to model the dynamics of petroleum fluids and water in oilfields are particularly well qualified for these jobs.

In order to help meet student needs for education in this area, the Earth & Environmental Science Department wishes to explore a new M.S. program in “Petroleum and Geofluids”. This program would build on current strengths in sedimentary geology, subsurface flow dynamics and modeling, and petroleum engineering to offer a degree that should increase graduate enrollment while requiring the teaching of only one new course: HYD 571 Advanced Topics in Hydrology: Geofluids Modeling. This course will be taught by Dr. Mark Person, the new hire in the Hydrology Program. The program will offer two options: one in petroleum fluids and one in environmental topics. The objective is to offer students flexibility in the event of a downturn in employment in either of these industries.

The proposed curriculum is listed below:

Required Courses

ERTH 440 (4) Hydrological Theory and Field Methods

ERTH 441 (1) Aquifer Mechanics

ERTH 460 (3) Subsurface and Petroleum Geology
HYD 508 (3) Flow and Transport in Hydrological Systems
HYD 510 (3) Quantitative Methods in Hydrology
HYD 571 (3) Advanced Topics Hydrology: Geofluids Modeling
HYD 592 (2) Graduate Seminar
HYD 591 (6) Thesis

Petroleum Option (select at least 9 hours)

ERTH 325 (3) Near-Surface Geophysics
ERTH 445 (3) Exploration Seismology
GEOL 547 (3) Depositional Systems and Basin Analysis
GEOP 546 (3) Reflection Seismic Data Interpretation
PETR 370 (3) or ERTH 370 Formation Evaluation
PETR 345 (3+1) Reservoir Engineering I
PETR 445 (3) Reservoir Engineering II
PETR 546 (3) Advanced Formation Evaluation

Environmental Option (select at least 9 hours)

ERTH 325 (3) Near-Surface Geophysics
CHEM/ERTH 422 (3+1) Environmental Chemistry
GEOL 509 (3) Soil Geomorphology
HYD 507 (3) Hydrogeochemistry
HYD 532 (1) Vadose Zone Dynamics
HYD 538 (3) Advanced Geographic Information Systems
HYD 541 (1) Water Resources Management
HYD 544 (1) Groundwater Remediation
HYD 546 (3) Contaminant Hydrology
HYD 547 (3) Hydrological Modeling
HYD 558 (3) Environmental Tracers in Hydrology

Johnson moved to accept catalog changes for E&ES as proposed. Dr. Bowman seconded the motion. During a short discussion that followed, Aster, chair of E&ES, said the new MS option in Petroleum and Geofluids was a broadening of available options developed in conjunction with Petroleum Engineering. A new course, HYD 571, Advanced Topics in Hydrology: Geofluids Modeling, will be taught by Dr. Mark Person, a new faculty member in Hydrology. When put to a vote, the motion passed.

Biology

Addition to description:

BIOL 587, 587L Advanced Virology, 3–4 cr, 3 cl hrs, 3 lab hrs

Prerequisite: BIOL 431 or 531

An in-depth study of one or two viruses, viral vectors for gene therapy; and herpes or hemorrhagic fever viruses. The laboratory section of the course will include viral propagation in tissue culture and methods to investigate the molecular biology of viral infection. Shares lecture and lab with BIOL 487, 487L, but is graded separately and

additional graduate-level work is required.

Course deletions:

BIOL 502, Introduction to Research, 1 cr, 1 cl hrs

Prerequisite: Graduate-level standing

Basic principles of biological research. Graduate Office

BIOL 551, Membranes and Intracellular Signals, 3 cr, 3 cl hrs

Prerequisite: Graduate-level standing or consent of instructor

Discussion of composition, structure, and synthesis of cell membranes. Properties and kinetics of plasma membrane receptors, generation and actions of second messengers.

BIOL 552, Physiology of Hormones, 3 cr, 3 cl hrs

Prerequisite: Graduate-level standing or consent of instructor

A study of the synthesis, secretion, transport, and action of hormones. Emphasis will be on the mechanisms of the action of hormones. Includes a special laboratory project.

BIOL 566, Biotechnology, 4 cr, 1 cl hr, 9 lab hrs

Prerequisite: BIOL 333 or consent of instructor

A research-oriented course in which students use modern biological techniques to explore fundamental principles in biology in collaboration with a biology faculty member. Graduate students present a public seminar.

Course name changes:

BIOL 537, Infection and Immunity Immunology, 3 cr, 3 cl hrs

Prerequisite: BIOL 341

Study of human infectious disease and the immune system. Pathogenic microorganisms and mechanisms of pathogenicity. Innate and acquired immune responses. Immunochemistry, cellular immunity, and immunopathology. Shares lecture with BIOL 437, but is graded separately and additional graduate-level work is required.

New course:

BIOL 544 Evolutionary Biology, 3 cr., 3 cl hrs

Prerequisites: BIOL 311, BIOL 344; graduate standing or consent of instructor.

The mechanisms and implications of biological evolution. Topics include population genetics, adaptation and natural selection, fossil evidence, and evolutionary medicine. Shares lecture with BIOL 444, but is graded separately and additional graduate-level work is required.

Johnson moved to accept the catalog changes for Biology as proposed, followed by a second from Dr. Borchers. The motion passed.

Materials Engineering

New Five Year Program: Materials Engineering BS/Materials Engineering MS

The degrees of MS and BS in Materials Engineering may be achieved in five years by fulfilling the requirements for a BS degree and a MS degree in the following year

upon satisfying the requirements for either the Thesis or Independent Study Option. A minimum of 161 credit hours are required to complete both degrees. To be considered for this program students typically apply at the end of their sophomore year. Admission is contingent upon their having a 3.0 GPA and the acceptability of their proposed course of study. Students with upper division standing may apply but acceptance will be conditional.

Students in the 5-year program must apply for graduate standing, normally in their 6th semester. Graduate admission will be contingent upon adherence to the approved program of study and a 3.0 minimum overall cumulative GPA. Graduate status will be granted upon fulfillment of the requirements for the BS degree.

Change in the Number of Credits

MATE 592 Materials Engineering Graduate Seminar, 1 - 2cr, 1 - 2cl hrs 1 cr., 1 cl hr.

Prerequisite: Graduate standing or consent of instructor

Seminar presentations by students, faculty and outside speakers. Discussion of topics of technical interest, and of global, societal, and ethical issues related to materials engineering.

Johnson then moved to accept proposed changes for Materials Engineering, followed by a second from Borchers. Dr. McCoy, department chair, said the changes “put into the catalog what we’re already doing for students.” The motion passed.

Mineral Engineering

New Courses

ME 506 Soil Mechanics, 3 cr, 2 cl hrs, 3 lab hrs

Prerequisites: Consent of Instructor

Phase relationships, soil classification, clay mineralogy, compaction, flow of water in soils, seepage, effective stress, Mohr circle, stress-strain relationships and failure criteria, Mohr-Coulomb failure criterion, shear strength, consolidation, and consolidation settlement.

ME 508 Rock Mechanics, 3 credits, 2 cl hrs, 2 lab hrs

Prerequisite: Consent of Instructor

Mechanical properties of intact rock and rock masses, Classification of rock masses for engineering purposes, Rock failure criteria, In situ stress measurement techniques, Rock deformability. Laboratory work consists of Sample preparation, Point load test, Brazilian test, Uniaxial test, Triaxial test, Direct Shear test.

Change the title and description of the following course:

ME 540, Numerical Methods in Geotechnical Engineering Computer Application in Geotechnical Engineering, 3 cr, 3 cl hrs

Prerequisites: Soil Mechanics, Rock Mechanics, and basic computer skills

Introduction to matrix, finite difference, and finite element methods with application to

various problems in geomechanics, including the design of foundations, steady state seepage, slope stability, and underground excavations.

Computer programming using MATLAB, image processing and its applications in geotechnical engineering, introduction to finite difference and finite element methods with applications to various problems in geomechanics including steady seepage, consolidation, slope stability, design of foundations, and underground excavations.

Specializations

Specialization in Geotechnical Engineering

At least 12 credits selected from ME 512, ME 515 or MENG 515, ME 517 or MENG 517, ME 520, ME 525, ME 531, ME 532, ME 535, ME 537, ME 540, ME 561. Other courses can be substituted with the approval of the research advisor and committee.

At least 12 credits selected from ME 506, ME 508, ME 512, ME 515 or MENG 515, ME 517 or MENG 517, ME 520, ME 525, ME 531, ME 532, ME 534, ME 535, ME 537, ME 540. Other courses can be substituted with the approval of the research committee and the department.

Specialization in Explosive Engineering

At least 12 credits selected from ME 512, ME 515 or EM 515, ME 517 or EM 517, ME 520, ME 534, ME 545, ME 548, ME 549 or EM 549, ME 550, ME 552, ME 553 or EM 553, ME 556, ME 570, CHEM 540. Other courses can be substituted with the approval of the research advisor and committee.

At least 12 credits selected from ME 534, ME 545, ME 546 or MENG 546, ME 548, ME 549 or MENG 549, ME 550 or MENG 550, ME 553 or MENG 553. Other courses can be substituted with the approval of the research committee and the department

Johnson moved to accept the proposed changes for Mineral Engineering, followed by a second from McCoy. The motion passed.

Mathematics

Rename Math 582: from Statistical inference to Linear Statistical Models with Applications. Course contents replaced by new (see below) in catalog page 114. Why: Inference topics is included in our math 483 course.

Math 582, Statistical Inference Linear Statistical Models with Applications, 3 cr, 3 cl hrs.

Prerequisite: MATH 483 or Consent of instructor.

Topics include limit theorems and convergence concepts, maximum likelihood estimator, sufficiency and completeness, Neyman Pearson lemma, Cramer Rao inequality, likelihood ratio test, uniformly most powerful tests, and inference for regression models.

An in-depth study of regression and analysis of variance models. Topics include multiple regressions and model building, analysis of residuals, analysis of variance as regression analysis, generalized linear models, generalized linear mixed models, nonlinear models, multi-factor models with equal and unequal sample sizes, random and fixed effects models, randomized complete block designs, and analysis of covariance. The statistical packages SAS and Minitab will be used for data analysis.

Course Objectives: The purpose of this class is to learn basic statistical methods through the use of linear model theory and regression. Various types of analysis of variance will be introduced from General Linear Model's framework. One-way, two-way, higher-order ANOVA and ANCOVA will be discussed from within subjects, between-subjects, mixed designs. Simple effects (simple main effect, simple comparisons, marginal comparisons, and interaction contrasts) analyses will be covered. Issues of equal and unequal sample sizes will be discussed along ANOVA diagnostics and remedial measures (e.g., transformation and weighted least square). In addition, we will implement approaches to simulation and the statistical analysis of data through the use of software, mainly SAS. Finally, this course will provide a solid foundation for a future research and understanding of statistical models. The student will be expected to apply the techniques on weekly homework assignments, a midterm project, and a final project.

NEW COURSE: This course has been taught many years as Math 583: Topics in probability and Statistics. This course will be offered either fall or spring as needed by graduate students.

Math 588, Advanced Data Analysis, 3 cr, 3 cl hrs

Prerequisite: MATH 483 or Consent of instructor.

Topics include. Linear regression, inferential tools for regression, model checking and refinement, experimental Design, repeated measures and other multivariate responses, comparisons of proportions or odds, logistic regressions and power Analysis. Principal components and factor analysis are also introduced.

Objectives:

This course aims to provide students with in-depth knowledge of as well as hands-on experience with important statistical methods for analyzing quantitative data through statistical package SAS. This course is design for those in Mathematics or other fields that need to use Statistical methods to analyze data from experiments and observational studies and who need to communicate the results to others. It is intended as a course for students who are preparing to design, implement, analyze, and report their research. You will improve your understanding of statistical reasoning, measures of uncertainty, the general tools, and the spirit of statistical data analysis, which will be useful for a wide range of problems.

1. New Business.

1. Proposed Academic Calendar – D. Johnson (see attachment). The academic calendar process included consultation with the Graduate Student Association and

included input from Student Association President Dylan Merrigan, Johnson said. The proposed calendar covers the period from 2010 through 2015, and generally follows the established basic pattern from previous years. Johnson moved to accept the proposed calendar, with the inclusion of Martin King Jr. Day being marked as an academic holiday, but not a staff holiday, on the third Monday in January. Johnson added that the SA would like to not commit to the depicted Spring Break schedule beyond the calendar for the next catalog. Dr. Cormack seconded the motion. The proposed calendar will continue to provide 79 contact days if spring semester registration day is abandoned. Dr. Stone said the 2013-2014 year only allows for one week between Thanksgiving and the end of the fall semester, and he stressed the importance of maintaining two full weeks before finals. Stone then offered an amendment to the motion that the fall semester start one week later. Both Johnson and Cormack accepted the amendment. Dr. Sonnenfeld noted that Spring Break for Socorro schools is seemingly set at random. "We have tried to coordinate Spring Break, but (the public schools) could not even tell us when their Spring Break is for 2010," replied Johnson. Aster then suggested that a collegial letter be sent to the public schools' superintendent and board. Barreras noted that moving the fall semester means that the Registrar's Office has a shorter period in which to process grades, and that the issue affects Financial Aid as well. A future option would be a shorter summer session, said Johnson, an issue that needs to be discussed broadly among faculty, and that it may be an agenda item at a later date. Bowman said he found it disheartening that staff had to take vacation days during the Christmas break. The reasoning behind that decision, responded López, is that staff is provided with other vacation days throughout the year. "We can move vacation days around, but we can't give more than what has been sanctioned (by the state)."

1. **Old Business.** None.
2. **Adjournment.** It was moved and seconded to adjourn the meeting, which Burleigh did at 4:43 p.m.

*Respectfully submitted,
Valerie Kimble*

October 2008

MEETING OF THE FACULTY SENATE

Tuesday, October 7, 2008

4:00 PM

Workman 101

MINUTES

1. **Call to order.** Dr. Dave Westpfahl, Chair, called the meeting to order at 4:03 p.m. at the conclusion of a brief Institute Senate meeting.
2. **Approval of the minutes of September 2, 2008.** A motion was made and seconded to approve the minutes of Sept. 2, 2008. There was no discussion and the motion passed.
3. **Announcements.**
 1. **Dishonesty Report from Graduate Office – D. Johnson.** Dr. Johnson reported two incidents involving four students of violating the university's academic ethics policy during the 2007 – 2008 academic year. The total reflected fewer incidents than in previous years, he said.
 2. **Dr. Peter Gerity, Vice President for Academic Affairs.** Dr. Gerity extended an invitation to Faculty Senate members to attend the Student Forum which was to follow at 5:30 p.m., also in Workman 101. "The last time, the staff and faculty outnumbered the students, he said. Gerity then introduced Sara Grijalva as the new coordinator for enrollment management for the Office of the Registrar.
 3. Ina Crawford from Registrar, in response to a question from Westpfahl, reported that the university has 22 student veterans receiving benefits, and that the Veterans Administration requires that their attendance in class be documented. Noting that it would be impossible to take in attendance in larger classes, Crawford asked faculty to notify the Registrar's Office if they notice these students missing quizzes or classes. Johnson suggested that a list identifying the students be sent to their instructors, followed by a suggestion from Dr. Richard Sonnenfeld to identify veterans on the attendance lists. "They are coded, but you can't see it on the web view," responded Crawford, adding that she would work with ISD on the issue.
 4. Sephanie Wical announced that the Skeen Library was offering two lectures, the first on Wednesday, Oct. 8, from 3-4 p.m. in the Tripp Conference Room featuring a trainer from IEEE. A second lecture will be a demonstration of Engineering Village/Compendex at 10 a.m., followed by an overview ScienceDirect updates starting at 11:15 a.m.
 5. Dr. Van Romero, Vice President for R&ED, announced that the Magdalena Ridge Observatory (MRO) single-telescope is up and functioning. "It's doing incredible work to date," he said. He asked faculty to submit proposals to buy viewing time that include

opportunities for student. “We’re trying to use LANL money to purchase telescope time,” he added.

4. **Committee Reports.**

1. **Nominating Committee – Vote on Officers & Slate of Nominations for Officers and Committee Assignments.** Westpfahl noted that the slate of candidates presented at the September meeting would now be voted on. Aafloy then passed out paper ballots to Faculty Senate members, and she and Crawford volunteered to tally them. Those running for election will know the results today, he noted, while others will be contacted in the future to become candidates. He encouraged faculty to run for offices, noting the benefits of learning the overall workings of Tech. Dr. Bill Stone then moved to accept the slate of nominations for officers and committee assignments, followed by a second from Dr. Fred Phillips. The motion passed.

5. **Old Business.** None.

6. **New Business.**

1. **Council of Chairs Meeting.** Gerity reported that several curriculum changes approved at the Council of Chairs meeting on Oct. 3 will be presented for approval. One change: The Humanities Department decided its General Degree Requirements harmonized with the articulation matrix, and it would wait on those proposed changes. Dr. Mary Dezember, Humanities chair, requested that ENGL 242, Speech, be changed to count for GDR; that the SS (Social Science) category be changed to Cultural Anthropology (ANTH) and Women’s and Gender Studies (WGS), appropriately; and that MUS 389, Composition, be moved out of “Music Performance Courses” and moved to “Music Courses” (page 98). In proceeding with proposed changes to the Technical Communication curriculum, Dezember presented the changes that follow.

TC 361 (Digital Media Design) course: Change course numbering to TC 461 Change Prerequisites to: TC 251 (which we are proposing be renumbered as TC 351)/ or consent of TC faculty Existing Catalog Description: Evaluation and design of computer-based information, primarily focusing on hypertext and hypermedia. Includes discussion of theories of information design and technology. Final project requires design, completion, and presentation of a digital text. *Revised Catalog Description: This course builds on the skills students learn in Web Design, providing the necessary tools and experience to build large-scale, complex websites and applications. Through the course text, lectures, discussion of theories of information design and technology, hands-on projects, and self-paced tutorials, students will explore and learn how to appropriately select from the many technological options available for designing large-scale digital projects.*

TC 251 (Practicum) course: Change course name from *Practicum* to *Web Design* Change course numbering to TC 351 Add Prerequisite: TC 151 (*currently no prerequisites are in place) Existing Catalog Description: Practical experience in support skills for the technical communicator. Possible subjects of individual practice are photography, technical illustration, computer graphics, video-taping, print media, layout and design, and project management. The course may be repeated for credit whenever the topic changes. Visiting lecturers from industry will present some topics. *Revised Catalog Description: This course introduces students to the fundamentals of web design, including principles of usability, aesthetics, and interactivity. Students will learn and apply current web design theories and relevant technology tools to practical course projects.* DeZemmer then moved to accept the changes, followed by a second from Johnson. There was no discussion, and the motion passed.

In the absence of Mineral Engineering chair, Dr. Navid Mojtabai (who did arrive later), Gerity presented the proposed department curriculum changes that follow.

Delete ME 420, Soil and Rock Mechanics, 4 cr. **New Courses ME 420, Soil Mechanics, 3 cr, 2 cl hrs, 3 lab hrs** Prerequisite ES 302, ES 216 Phase relationships, soil classification, clay mineralogy, compaction, flow of water in soils, seepage, effective stress, Mohr circle, stress-strain relationships and failure criteria, Mohr-Coulomb failure criterion, shear strength, consolidation, and consolidation settlement.

ME 422, Rock Mechanics, 3 cr, 2 cl hrs, 3 lab hrs Prerequisite ES 302 Mechanical properties of intact rock and rock masses, Classification of rock masses for engineering purposes, Rock failure criteria, In situ stress measurement techniques, Rock deformability. Labs consist of Sample preparation, Point load test, Brazilian test, Uniaxial test, and Triaxial test. Gerity made a motion to approve the changes, followed by a second from Dr. Anwar Hossain. There was no discussion, and the motion passed. At Gerity's request, Dr. Scott Teare presented proposed changes to the curriculum for Electrical Engineering that follow. "To enroll in an Electrical Engineering Department class, a student must pass the prerequisites of the course with a grade of C- or better. In addition, a student must be in good academic standing and have declared electrical engineering as a major to enroll in EE382 and EE481." Be revised to read: To enroll in an Electrical Engineering Department class, a student must have passed the prerequisites for the course. In addition, a student must be in good academic standing and have declared electrical engineering as a major to enroll in EE382 and EE481. Teare made a motion to approve the changes, followed by a second from Johnson. There was no discussion and the motion passed.

Dr. Mark Cal, chair for the Civil and Environmental Engineering Department, first presented the proposed changes for Civil Engineering that follow.

New Courses:

CE 401 – Finite Element Analysis for Civil Engineers, 3 cr, 3 cl hrs

Prerequisite: CE 302 or consent of instructor

Introduction to finite element analysis (FEA) for Civil Engineering students. Students will learn the fundamentals of FEA, and they will learn to use software packages to analyze complex structures. Topics include: 1-D systems, trusses, 2-D problems, axis-symmetric solids, beams, frames, and some types of 3-D problems.

Instructor: Dr. Andrew Budek

Program Changes

- Revise ME 420 (Soil Mechanics and Lab) from 2 cr. to 3 cr. in the list of required courses. This change is due to a course restructuring by Mineral Engineering.
- Add ME 422 (Rock Mechanics and Lab, 3 cr.) to the list of required courses. This change is due to a course restructuring by Mineral Engineering.
- Remove MENG 300 (Solid Mechanics Lab, 1 cr.) from the list of required courses. Structural labs will be added to the course content of CE 406 (Design of Steel Structures) and CE 408 (Design of Concrete Structures) to compensate for the loss of lab content to the CE curriculum. A separate lab section will not be offered for CE 406 and 408, but rather labs will be integrated into the course content, where relevant. Additional lab content will also be added to ME 420 and ME 422.
- Remove MENG 351 (Fluid and Thermal Systems, 1 cr.) from the program curriculum. The prerequisites have changed to include many courses not taken by CE students, and much of the content is no longer relevant to the CE program.
- Remove MENG 421 (Finite Element Analysis and Design, 3 cr.) from the list of required courses. CE 401 will be substituted for MENG 421. The content in CE 401 will be more relevant to CE students.
- Add CE 401 to the list of required courses.

Total minimum program hours remain at 132.

Cal made a motion to approve the changes, followed by a second from Dr. Rick Aster. There was no discussion and the motion passed.

Cal then presented the proposed changes for Environmental Engineering that follow.

Program Changes

- Remove ENVE 407 (Soil Mechanics, 2 cr.) from the list of required courses. This change is due to a course restructuring by Mineral Engineering.
- Add ME 420 (Soil Mechanics and Lab, 3 cr.) to the list of required courses. This change is due to a course restructuring by Mineral Engineering.

Deleted Courses

- Delete ENVE 407 (Soil Mechanics, 2 cr.) from list of Environmental Engineering courses. This course has always been cross-listed as ME 420, and it met for half of the semester. In addition to the ME course restructuring mentioned previously, this course has always been taught by Mineral Engineering faculty, and the ENVE program does not have the faculty expertise to teach it.

Total minimum program hours change from 134 to 135.

Cal then made a motion to approve the changes, followed by a second from Dr. John Wilson. There was no discussion and the motion passed.

Gerity told faculty there would be one more opportunity to submit curriculum changes for the academic year. “Get any additional items in to Debby and we’ll try to get one more meeting in.

Following Gerity’s comments, Aafloy announced that there was a tie in the balloting. She then distributed ballots to members who had arrived late at the meeting.

1. **New Business.**
2. **Graduate Council Meeting (minutes attached).** Graduate Dean Johnson first announced that new graduate programs are being made available to all, before being considered on a statewide basis. New Mexico Tech has had two requests from NMSU, the first for an MS program in Bioinformatics, which he asked Dr. Rebecca Reiss of the Biology Department to review. The second is a graduate program in Latin American and Border Studies with options in geology, geophysics and anthropology, among others. “This would be an ideal opportunity to identify potential places for collaboration,” which the state likes to see, Johnson said. He asked interested departments to send him an email. Johnson then presented the proposed changes from the Earth & Environmental Sciences Department that follow.

Change 1

HYD 532, Vadose Zone Dynamics, 1 cr, 1 cl hr

Prerequisite: EARTH 440, HYD 510

Change to:

HYD 532, Vadose Zone Dynamics, 1 cr, 1 cl hr

Prerequisite: EARTH 440, EARTH 442, HYD 510 or consent of instructor

Change 2

HYD 542, Hillslope Hydrology, 1 cr, 1 cl hr

Prerequisite: EARTH 440

Change to:

HYD 542, Hillslope Hydrology, 1 cr, 1 cl hr

Prerequisite: EARTH 440, EARTH 442, HYD 510, HYD 532 or consent of instructor

Change 3

Drop: HYD 531 Hydrogeology, 1 cr, 1 cl hr

Add: HYD 531 Aquifer Mechanics, 1 cr, 1 cl hr

The course descriptions will remain the same.

GEOL Changes:

1. Please delete the word "Advanced" from the title Geol 553, and replace it by "Intermediate".
2. Add this sentence to the beginning of the description for Geol 553: "For entering graduate students lacking undergraduate structural geology background."
3. Add this to end of prerequisites for Geol 553: "or consent of instructor".

Johnson made a motion to approve the changes, followed by a second from Dr. Hamdy Soliman. There was no discussion and the motion passed.

Johnson then presented the proposed changes from the Civil and Engineering Department that follow.

The Environmental Engineering graduate program at New Mexico Tech provides a unique educational and research experience in the engineering and science of the natural environment and environmental protection. The plan of study and research is suited to each individual, drawing upon the strengths of the student, taking advantage of program capabilities, and complementing research activities within and outside New Mexico. Depending upon resource

availability, students may choose an area of specialization or they may pursue a broad environmental engineering education. A thesis or independent study project is required to complete the degree. General requirements common to all Master of Science degree curricula also apply.

Admission to the Master of Science in Environmental Engineering program requires competence in mathematics, chemistry, biology, physics, and engineering science comparable to the Bachelor of Science in Environmental Engineering. The department chair, or an advisory committee, will evaluate the scholastic record of every entering student to determine whether any deficiencies exist in their educational background. For example, students entering the program without an engineering degree may be required to take additional course work in such areas as fluid mechanics, heat and mass transfer, and differential equations before being granted a M.S. in Environmental Engineering. It is up to the student and his or her graduate committee to determine the specific plan of study for the student after the first semester of graduate work. Transfer credit for courses taken at another accredited institution will be evaluated on an individual basis.

Thesis Option

A total of 30 credit hours are required for a M.S. in Environmental Engineering, which must include a minimum of 18 credit hours of ENVE Environmental Engineering coursework, and 6 credit hours of ENVE 591 (thesis). All students, regardless of specialization, must take ENVE 501 (3) and ENVE 503 (3). All students must take a minimum of 15 credit hours of 500-level Environmental Engineering courses. In addition to the required courses, students may specialize in one of several areas (listed below). Courses for the broad ENVE track will be offered at least once within a two-year period. Courses for the other areas of specialization will be offered upon sufficient demand.

Recommended Course Sequences for Areas of Specialization:

- Broad—ENVE 413 (4), 501 (3), 503 (3), 512 (3), 520 (3), 521 (3), 591 (6), technical electives (6)
- Water Quality Engineering and Science—ENVE 501 (3), 503 (3), 510 (3), 511 (3), 512 (3), 591 (6), technical electives (9)
- Hazardous Waste Engineering—ENVE 501 (3), 503 (3), 520 (3), 521 (3), 522 (3), 591 (6), technical electives (9)
- Air Quality Engineering and Science—ENVE 413 (3), 501 (3), 503 (3), 530 (3), 535 (3), 591 (6), technical electives (9)

Independent Study Option

A student may petition the department with the approval of the Department Chair to pursue a Master of Science degree with an independent study option. Candidates for the non-thesis Master of Science option must complete a minimum of 30 credit hours, of which 3 credit hours must be independent study (ENVE 590), and a minimum of 18 credit hours must be 400- or 500-level Environmental Engineering lecture or laboratory courses. All students must take a minimum of 15 credit hours of 500-level Environmental Engineering courses, and an additional 3 credits of 400- or 500-level Environmental Engineering courses (18 credits total). The student's course of study must be approved by the student's advisory committee, and it must fulfill the other requirements of the M.S. in Environmental Engineering degree program with the exception of 6 credit hours of thesis (ENVE 591).

Johnson made a motion to approve the proposed changes, followed by a second from Dr. Brian Borchers. There was no discussion and the motion passed.

Dr. Richard Sonnenfeld asked to bring a matter to the attention of the Faculty Senate regarding the state of the Psychology Department. Sonnenfeld said he was told that a department could not operate with less than three faculty. The search for a replacement Psychology faculty member has been terminated with the university hiring freeze with no reauthorization to resume the search, which could mean the end of the department with a pending retirement, he said. Sonnenfeld then made the following motion: "The faculty senate respectfully requests that Dr. López authorize a search for a tenure track position in the psychology department during the current academic year." Dr. Phillips seconded the motion.

"There is no intent to eliminate the Psychology major or degree," responded Gerity during the subsequent discussion. "If we need part-time help, then that's open. Hopefully, we'll be able to reopen the position in the next year," he said. Regarding the issue of minimum faculty, Gerity said the policy applies to departments with national certifications, such as ABET. "It's mainly enforced by accreditation bodies," he said. Gerity noted that the university in recent history operated with only one full-time faculty member in Mechanical Engineering and Mineral Engineering until the ranks could be filled. "We have to have faculty to teach a wide enough range, which in our case works out to three," responded Dr. Robert Holson, Psychology Department chair. "I don't think this is the right move," said Solimon, noting the assurance from Gerity. He moved to table the motion based on Gerity's response. Aster seconded the motion. The vote was 27 for the motion to table and 13 against it. Noting the need for a two-third majority to override, Solimon's motion passed.

By this time, the ballot results were in. "The vote was very close," said Westpfahl in announcing the new officers: Dr. David Burleigh, chair; Dr. Tom Engler, vice chair; and Dr. Brian Borchers, parliamentarian. Dr. Robert Cormack moved that the Senate thank Westpfahl for his service, followed by a second from Phillips. The motion passed, followed by a round of applause.

1. **Adjournment.** A motion was made and seconded to adjourn the meeting. The motion passed, and the meeting was adjourned at 4:40 p.m.

*Respectfully submitted,
Valerie Kimble*

September 2008

NEW MEXICO INSTITUTE OF MINING AND TECHNOLOGY

MEETING OF THE FACULTY SENATE

Tuesday, Sept. 2, 2008

4:00 P.M.

Workman 101

MINUTES

1. **Call to order.** Dr. Dave Westpfahl, Chair, called the meeting to order at 5:02 p.m.
2. **Approval of the minutes of May 16, 2008.** A motion was made and seconded to approve the minutes. There was no discussion and the motion passed.
3. **Announcements.**
 1. **President Daniel H. López.** President López briefed the Faculty Senate on the financial crisis facing institutions of higher learning nationwide, and stressed the importance of academic departments sticking to their budgets. He also addressed the issue of travel, saying that the institute's cutback on travel will not affect travel on contracts, or travel funds tied to research, but was enacted to do away with unnecessary trips. In reply to a faculty question, López said New Mexico Tech faces no cutbacks at the moment, but that he cannot control some budget elements, such as rising costs associated with energy, health care and Risk Management. The good news is that New Mexico is one of only two states with a cash surplus, and that, unless the 2009 Legislature funds the formula at less than 100 percent, the university stands to gain significantly in I&G monies. "If we can create a modest cash balance, we can avoid layoffs down the road," he said. Also cited were new accounting regulations, which, López acknowledged, sometimes work at cross-purposes to the organization. Anna McLain is working on the issue, he added.
 1. **Academic Affairs – P. Gerity.** Gerity reminded faculty of the Council of Chairs meeting at noon on Friday, Sept. 5; and that nominations for full professor must be submitted on Sept. 30. The academic side is facing a \$350,000 deficit in benefits – but there was good news. Enrollment is at 1885 "and we may see 1900 when the smoke clears," he said. Credit hours are up, and the graduate student head count

saw an increase of 8.5 percent. If the Legislature gives New Mexico Tech the money it's earned, we'll be in good shape, Gerity said.

1. **Introduction of New Faculty and Staff – Various.**
2. Dr. Richard Sonnenfeld introduced Dr. David Meier in Physics.
3. Dr. Andrew Sung introduced two replacement faculty in Computer Science, Dr. Song Fu and Dr. Jun Zheng.
4. Dr. Her-Yuan Chen introduced Dr. Michael Riley in Chemical Engineering.
5. Dr. Mary Dezember introduced Dr. Terry Brown Davidson as a new lecturer in the Humanities' writing program, and the wife of Dr. Iver Davidson, EODI director.
6. Registrar Luz Barreras introduced Ina Crawford as the new coordinator for data analysis and reporting.
7. Associate Vice President for Student and University Relations, Melissa Jaramillo Fleming, announced that Chelsea Buffington is the new director for Student Services, and has assumed duties as the head of the International and Exchange Program in addition to her responsibilities as director of Career Services. Jaramillo-Fleming also introduced Dylan Merrigan and Jay Herrera as Student Association president and vice president respectively.
8. Shasta Marrero, president of the Graduate Student Association, introduced herself in the absence of Graduate Dean, Dr. Dave Johnson.

3. Announcements, Cont.

d. Dishonesty Reports – D. Johnson and S. Zeman. Zeman announced that the university had four cases during Fall 2007 which the instructors dealt with; and 10 cases in Spring 2008. One student was failed, and Zeman declined a request for academic suspension in one of the cases because it was the student's first offense.

f. Registrar Office Update – S. Zeman. Restructuring the Office of the Registrar is continuing with the philosophy of streamlining processes and increased responsiveness to students and faculty. Zeman is working with the Graduate Office and EODI to maximize aspects of BanWeb. "We're looking to improve room assignments," he said, adding that Ina Crawford is working with the Distance Education interface with Banner. Zeman said he welcomed feedback and suggestions.

g. Dr. Van Romero. The Vice President for R&ED announced that the Dean of Engineering at Texas Tech will be on campus this week, and he asked engineering chairs to meet with him after the meeting.

h. Ruth Stoddard. The Director of Residential Life announced that she and Counselor Lorie Borden have been asked by Dr. Ricardo Maestas, V.P. for Student and University Relations, to co-chair an early intervention team. If students are displaying disrupting behaviors, "We'd like to hear about them," Stoddard said.

e. Library – O. Ellard. Ellard announced the acquisition of 33 databases to the Library's collection, a diverse list, bringing the total number of online journals to 30,635, with access off-campus with a TCC log-in. Six years ago, he said, the Library's

collection of journals was exclusively in print form and totaled 600. The Library has replaced a platform it shared through Los Alamos National Laboratory with the Web of Science® platform at a savings of \$10,000, Ellard said.

4. Committee Reports.

a. Nominating Committee – Slate of Nominations. Dr. Navid Mojtabai noted the difficulties on the Nominating Committee in the absence of two standing members. He has, however, recruited Dr. Westpfahl and Dr. Sue Dunston to serve on the committee, and asked faculty to let him know if they want to stay on committees or volunteer for others. Mojtabai also announced the following slate of Faculty Senate candidates for 2008 - 2009: Chair – Dr. Rick Aster and Dr. David Burleigh; Vice Chair – Dr. Tom Engler and Dr. Hamdy Solimon; and Parliamentarian – Dr. Richard Sonnenfeld and Dr. Brian Borchers. A vote will be taken at the next meeting in October.

5. Old Business. None

6. New Business

1. **Approval of Summer 2008 Graduates – L. Barreras.** At the request of Registrar Barreras, Westpfahl moved this item forward in the agenda. A motion was made and seconded to approve the list of graduates, and the motion passed unanimously. The list of Summer 2008 graduates now will go on to the Board of Regents for final approval.

7. Adjournment. A motion was made and seconded to adjourn the meeting at 5:02 p.m. The motion passed.

*Respectfully submitted,
Valerie Kimble*

May 2008

NEW MEXICO INSTITUTE OF MINING AND TECHNOLOGY

MEETING OF THE FACULTY SENATE

Friday, May 16, 2008

10:00 A.M.

Workman 101

MINUTES

1. **Call to order.** Dr. Dave Westpfahl, Chair, called the meeting to order at 10:02 a.m.

2. **Approval of the minutes of April 1, 2008.** A motion was made and seconded to approve the minutes of April 1, 2008. The motion passed.
3. **Announcements.**
 - a. **Report from the Retention Task Force Group – S. Zeman, P. Gerity & R. Maestas.**

Zeman spoke to overall initiatives since the Task Force was launched by President López in January, 2006; while Maestas addressed data analysis. Among measures implemented to improve fall-to-fall retention:

 - Learning/Living communities, beginning with 36 freshmen in Fall 2007 (“Early data looks positive,” said Zeman.)
 - First Living Community with 18 students in Baca Hall, Fall 2007
 - Plans underway for third annual Convocation, August 2008
 - Pre-College program
 - Early Intervention Team (meets weekly to identify at-risk students; also reviewing current student policies, particularly as applies to suspension issues)
 - On-campus workshops featuring national speakers
 - Data analysis

Maestas provided a one-page summary analyzing data pertaining to three different classes, as conducted by graduate student Norelle Shlanta, in trying to determine what factors can predict third-semester retention using a logistical regression. Maestas noted that the equation does not account for 69 percent of other variables. In reply to a question, he said the correlation between student success and high school GPA is moderate to weak, adding, “We ran the regressions by class.” Dr. Brian Borchers commented that first-semester success is a better predictor, “and points us in the direction of doing more with students who do badly their first semester. Maestas said that before drawing any conclusions, we need a better understanding of what causes retention, and what causes dropouts. In reply to a suggestion from Dr. Richard Sonnenfeld that academic advisors be included in the Early Intervention Team, Maestas said advising is one aspect under review, first moving toward professional advisors.

- **P. Gerity.** The VPAA announced incoming chairs: Dr. Rick Aster replaces Dr. Rob Bowman in Earth and Environmental Sciences; Dr. Mary Dezember replaces Dr. Doug Dunston in Humanities; Dr. John McCoy will replace Dr. Deidre Hirschfeld in Materials and Metallurgical Engineering; and Dr. Hen-Yuan Chen will do double duty as chair for both Petroleum Engineering and Chemical Engineering, the latter as replacement for Dr. Don Weinkauff. Gerity also announced the death of Dr. Dave Norman while leading graduate students on a field trip in Ghana. He noted how extremely rewarding it was to have alumni in the area jump in to help in every possible way. The students, he added, decided to stay in Ghana and finish what they had started, and alumni took good care of them during the transition. Gerity said Tech would honor the wishes of Norman’s family in foregoing a service on campus; but that all are invited to services Sunday evening and

Monday morning at San Miguel Church. Every loss from our small community is significant, Gerity added.

- **New Business. (This item was moved to later in the agenda.)**
- **Committee Reports.**
- **Honorary Degrees and Awards Committee – S. Session.** Committee member Dr. Andy Campbell announced that four categories were to be filled, beginning with the Langmuir Award. In all cases, nominations were moved and seconded by a member of the Faculty Senate. The results were as follows:
 - **Langmuir Award** – Yanyan Guo, second year doctoral student in the Chemistry Department;
 - **Brown Award** – David Limmer, a senior graduating in Chemical Engineering;
 - **Cramer Awards** – Katharine Dahm, a senior graduating in Environmental Engineering; and Joseph Fernandez, a senior graduating in Electrical Engineering; and
 - **Founder’s Award** – Norelle Shlanta, graduating with an M.S. in Mathematics.

4. New Business.

a. Approval of the May 2008 Graduates (The final list was provided at the meeting.) *(This item was moved to follow Committee Reports.)* It was moved and seconded to include Andrea Lutz on the list of graduates. Dr. David Raymond noted that Lutz did not qualify for the Astrophysics Option, but she did qualify for a B.S. in Physics. Registrar Luz Barreras accepted to accept Lutz as such. The motion passed.

Dr. Weinkauff then made a special appeal from the Chemical Engineering Department to substitute a second-semester Spanish course, not required, for a required Humanities credit, for senior Ryan Rettinger. The Registrar’s Office interpreted the policy correctly, Weinkauff said, but without the substitution, Rettinger won’t graduate, and he asked for clarification. He noted that the issue had become before the Faculty Senate two years ago, and that he had lost track of it. Dr. Lynda Walsh of the Humanities Department replied that foreign language courses being considered a separate category from “humanities” electives was an issue for debate. The absence at the meeting of Dr. Doug Dunston, Humanities Chair, meant that only department representatives at the meeting were Walsh, Dezember and Zeman, all of whom agreed to make the substitution. The motion passed 39 – 1. Barreras said after the vote that the issue needs to be brought before the committee on General Degree Requirements. Dr. Andy Campbell, in casting the single nay vote, noted the lack of activity on behalf of the petitioner over the two years that had passed since the issue first came before the Faculty Senate.

Dr. Michael Heagy alerted the Senate to the title “Dr.” preceding the name of doctoral candidate, in the proposed commencement list. Dr. Raymond said was inappropriate to list a title before it had been earned. It was moved and seconded to remove the “Dr.” preceding candidate Begay’s

name. The motion passed. It was then moved and seconded to approve the graduation list as amended. The motion passed.

- **Old Business.**
 - **Council of Chairs Items – P. Gerity. Chemistry Curriculum Changes.** Dr. Gerity announced that the Council of Chairs had approved Catalog changes for the Chemistry Department, and presented the changes below for Faculty Senate approval.

Eliminate CHEM 103 AND 104

Add

CHEM 109, Introduction to Chemistry, 3 cr, 2 cl hrs, 4 lab hrs

Prerequisite: MATH 101

An overview of the fundamental concepts in chemistry. Topics will include a discussion of the classification of matter, the fundamental laws of chemical combination, the atomic theory and chemical bonding. The stoichiometry of chemical reactions will be presented. Several types of chemical reactions will be discussed; including precipitation reactions, oxidation-reduction reactions and acid-base reactions. Topics in organic and biochemistry will also be considered. Lectures will include numerous examples and demonstrations of chemical principles. Extensive laboratory exercises will further illustrate concepts discussed during the lecture hours.

Chemistry is proposing to cross list several 500 and 400 level courses to provide greater choice in classes at the undergrad work load and so we can offer more 500 level classes.

New courses at 400 level in yellow.

New or renumbered courses at 500 level in grey.

CHEM 512/412, Advanced Topics in Analytical Chemistry, 3 cr, 3 cl hrs

Prerequisite: CHEM 311, 411, or consent of instructor

Offered on sufficient demand

Study of special topics not otherwise treated in analytical chemistry. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 513/413, Separation Science, 3 cr, 3 cl hrs

Prerequisite: CHEM 331, 411, or consent of instructor

Offered on sufficient demand

Theory and practice of separation science. Topics include selective mass transport, extraction, chromatography, and electrophoresis. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 522/422, Environmental Chemistry, 3 cr, 3 cl hrs

Prerequisites: Any two of the following: CHEM 311, 331, or 333

Offered on sufficient demand

Application of chemical principles to the study of the environment. Includes natural processes and pollution problems related to water, air, and soil. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 522L/422L, Environmental Chemistry Laboratory, 1 cr, 3 lab hrs

Corequisite: CHEM 522/422; a lab usage fee is charged

Offered on sufficient demand

Laboratory experiments related to the principles in CHEM 522/422. The graduate and undergraduate versions of the course will differ in the assignments and exams.

CHEM 523/423, Applied Spectroscopy, 3 cr, 3 cl hrs

Discussions of mass spectrometry, fluorescence, Nuclear Magnetic Resonance (NMR), X-ray (XPS, X-ray diffraction, solid state spectroscopy), Infrared (IR), Ultraviolet/Visible spectroscopic methods and techniques, as applied to chemical and biological problems, including structure elucidation, medical diagnostics, molecular sensors. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 525/425, Molecular Quantum Mechanics, 3 cr, 3 cl hrs

Prerequisite: CHEM 331, 332, or consent of instructor

Offered on sufficient demand

Molecular structure; theories of the chemical bond; perturbation and variation methods; electronic and magnetic properties of molecules. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 526/426, Chemical Spectroscopy, 3 cr, 3 cl hrs

Prerequisite: CHEM 331, 332, or consent of instructor

Offered on sufficient demand

Principles and applications of electronic, molecular, and spin spectroscopies, laser spectroscopy; transitions; elements of group theory; quantitative correlations and analytical chemistry. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

Chem 527/427, Molecular Reaction Dynamics, 3 cr, 3 cl hrs

Prerequisite: CHEM 331, 332, or consent of instructor

Offered on sufficient demand

Techniques in studies of chemical reaction rates. Topics commonly include: rate laws, collision theory, mechanistic studies, transition state theory, fast reactions, chemical oscillations, transport theory, and transport coefficients. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 528/428, Advanced Topics in Physical Chemistry

Study of special topics not otherwise covered in physical chemistry.

CHEM 531/431, Chemistry of Aquatic Systems, 3 cr, 3 cl hrs

The thermodynamics and aqueous chemistry of natural waters, with emphasis on groundwater. Chemical equilibrium concepts, surface chemistry, redox reactions, and biochemistry. The interaction of water with the atmosphere and geologic materials. Basic concepts applied to problems of groundwater quality evolution, water use, and groundwater contamination. Shares lectures with EARTH 407 but is graded separately. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 532/432, Atmospheric Chemistry, 3 cr, 3 cl hrs

Chemistry of the atmosphere. Important chemical reactions and their effects on surface and ground water. Effects of anthropogenic inputs on the atmosphere, climate change. Distribution of chemical species in the atmosphere, etc. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 533/433, Global Biogeochemical Cycles, 3 cr, 3 cl hrs

Human activity is increasing the rate of addition of materials to the environment, resulting in changes to the earth's climate. The transformation and movement of natural and anthropogenic sources of chemical substances between reservoirs in a global context. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 544/444, Advanced Topics in Organic Chemistry

Prerequisite: CHEM 333, 334 or consent of instructor

Offered on sufficient demand

Study of special topics not otherwise covered in organic chemistry. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 546/446, Polymer Chemistry, 3 cr, 3 cl hrs

Prerequisite: CHEM 333, 334 or consent of instructor

Offered on sufficient demand

Study of the preparation, properties, and uses of macromolecules. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 547/447, Medicinal Chemistry, 3 cr, 3 cl hrs

Molecular-level mechanisms of drug action and rational drug design. Material is drawn from the recent primary literature. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 550/450, Physical Organic Chemistry, 3 cr, 3 cl hrs

Physical aspects of organic chemistry. Emphasizes reaction mechanisms, reaction kinetics, and electronic theories. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

This is merely a renumbering of 546 to 550 to allow the undergrad version to have the same last to numerals.

CHEM 549/449, Organometallic Chemistry, 3 cr, 3 cl hrs

Organometallic chemistry of the main group and transition elements. Ligand classification and molecular orbital description of bonding in organometallic complexes. Structure, bonding, synthesis, and properties of transition metal compounds and their derivatives. Organometallic complexes as catalysts. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 554/555, Research Proposal Writing, 1 cr 1st semester and 2 cr 2nd semester

Students will choose a research topic, survey related literature and write an original research proposal in the first semester. In the second semester, the student will present a public seminar on the written proposal. Following the seminar, the student will defend the proposal to his or her dissertation or thesis committee. Both CHEM 554/555 will be offered concurrently in Fall and Spring semesters. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

A motion was made and seconded for approval. The motion passed.

b. Graduate Council Items – D. Johnson. Johnson went through a detailed list of Catalog changes on behalf of the Chemistry Department. The changes were approved at the March and April 2008 meetings of the Graduate Council, and were as follows:

Deletions

Additions

Chemistry Catalog Changes**Graduate Program**

Students entering any chemistry graduate program must take entrance examinations within a week after their first registration. If deficiencies are determined, appropriate undergraduate coursework will be suggested. The student's course of study must be approved by the student's advisory committee and must fulfill the general degree requirements for the respective advanced degree.

Master of Science in Chemistry

A minimum of 30 credit hours is required. These hours should be distributed as follows:

Coursework: 24 credit hours

- 500-level chemistry courses 15 cr hrs minimum
- CHEM 501 plus two courses chosen from any two of the following five groupings: CHEM 513 or 526; CHEM 521 or 523; CHEM 524 or 525; CHEM 531 or 532; CHEM 545 or 546 CHEM 500, 529, 530, 581, 590 cannot be used to fulfill this requirement.

- CHEM 529, 530 (Seminar) 2 cr hrs
- CHEM 581 (Directed Study) 2 cr hrs maximum
- 400-level chemistry courses 6 cr hrs maximum
- 300-level chemistry courses 3 cr hrs maximum
- Upper-division/500-level courses from 6 cr hrs another department

Thesis 6 credit hours

The student's advisory committee may also allow additional 500-level courses chosen from another department, depending on the student's program needs. Credits earned in these 500-level courses may also fulfill the 15-hour 500-level requirement with advisory committee approval. The requirement for a Master of Science degree should be completed within three (3) calendar years of the date of first registration. Special cases may be considered as outlined in the New Mexico Tech Graduate Guide. M.S. students are required to take CHEM 529 or 530 for credit for at least two semesters and to register as auditors for other semesters.

A minimum of 12 credit hours of 500-level chemistry course is required. CHEM 529 and 530 do not count towards this requirement. Additionally students must take 6 credit hours at the 300, 400 or 500-level and above from other departments. The student should consult with their committee and advisor when developing a course plan.

M.S. students are required to take CHEM 529 and 530 for credit for at least two semesters and to register as auditors for other semesters.

Johnson moved to accept the changes on behalf of the Graduate Council and the Council of Chairs. Dr. Lorie Liebrock seconded the motion.

Johnson then introduced the following changes for M.S. options, and moved that they be approved. The motion was seconded.

Master of Science in Chemistry with Biochemistry Option

Students earning a Master of Science degree in Chemistry can receive a Biochemistry Option through cooperation with the Biology Department. The requirements for the biochemistry option are the same as those for a Master of Science in Chemistry, except that:

- A minimum of six (6) credit hours of the 15 credit hours minimum of 500-level chemistry classes must be selected from CHEM 521, 523, and 547.
- A maximum of two (2) credit hours of CHEM 581 or BIOL 581 (directed study) may be used toward the degree.

- A minimum of six (6) credit hours of upper-division/500-level courses in biology, selected from the following, must be completed: BIOL 331, 333, 351, 352, 356, 488, 501, 552, 588.
- Students interested in such a program should consult their advisor and the pre-medical advisor.

Students earning a Master of Science degree in Chemistry can receive a Biochemistry Option through cooperation with the Biology Department. The requirements for the biochemistry option are the same as those for a Master of Science in Chemistry, except that:

- Six (6) credit hours of the 12 credit hours minimum of 500-level chemistry classes must be from CHEM 521 and 547.
- A maximum of three (3) credit hours of CHEM 581 or BIOL 581 (directed study) may be used towards the degree.
- A minimum of six (6) credit hours of upper-division/500-level courses in biology, selected from the following, must be completed: BIOL 331, 333, 351, 352, 356, 488, 501, 552, 588.
- Students interested in such a program should consult their advisor and the pre-medical advisor.
- -

-

During discussion, Johnson noted that no concerns were aired at the March meeting about revisions to the Master's program; however, the request was returned to the Chemistry Department for quite a few other changes. Dr. Oliver Wingenter, department chair, said discussions go back to January.

The motion passed.

Finally, Johnson introduced the following changes to the doctoral program in Chemistry, noting that the changes include structures for both students with, and without, an M.S. degree. He moved that they be accepted. Dr. Michael Pullin seconded the motion.

Doctor of Philosophy in Chemistry

Students of exceptional ability may pursue a program leading to the doctoral degree. The prospective doctoral candidate will develop a broad yet focused background in chemistry and related fields and prove his ability to do independent research. An early assessment of the student's ability is achieved through the candidacy examination to be completed by the end of the second year. Research fields appropriate for the Ph.D. candidate are all major areas of chemistry. Current specializations include atmospheric, analytical, climate change, environmental, medicinal, pharmaceutical, theoretical, and green chemistry, as well as spectroscopic techniques and nanomaterials. Interdisciplinary programs with other science departments, such as physics or biology, can be pursued.

No Prior Master's Degree

A minimum of 72 semester hours is required. These hours should be distributed as follows:

Coursework: 48 cr hrs

- 500-level chemistry courses 21 cr hrs minimum
- CHEM 501 plus three courses chosen from any three of the following five groupings: CHEM 513 or 526; CHEM 521 or 523; CHEM 524 or 525; CHEM 531 or 532; CHEM 545 or 546.
- CHEM 500, 529, 530, 581, 590 cannot be used to fulfill this requirement.
- CHEM 529, 530 (Seminar) 4 cr hrs
- CHEM 581 (Directed Study) 6 cr hrs maximum
- 300-level chemistry courses 3 cr hrs maximum
- 400- and 500-level courses from 6 cr hrs another department

Dissertation (CHEM 595): 24 credit hours

For Ph.D. students with no prior M.S. degree, the Ph.D. degree should be completed within six calendar years of the first registration.

A minimum of 50 credit hours is required. These hours are distributed as follows:

- 500-level chemistry courses 21 cr hrs minimum
- CHEM 529, 530 (Seminar) 2 cr hrs
- CHEM 554, 555 (Proposal writing) 3 cr hrs
- CHEM 595 (Dissertation): 24 credit hours

Students may substitute up to 6 credit hours of courses at the 300-level and above from other departments. Additional 500-level courses from other departments may be used in place of 500-level chemistry courses, upon approval of student's advisory committee

Prior Master's Degree in Chemistry

A minimum of 42 additional credit hours is required. Students with M.S. degrees other than in chemistry will be considered on an individual basis. In recommending courses to be taken, the student's M.S. coursework will be considered. In most cases, the hours should be distributed as follows:

Coursework: 18 cr hrs

- 500-level chemistry courses 12 cr hrs minimum
- CHEM 501 plus three courses chosen from any three of the following five groupings: CHEM 513 or 526; CHEM 521 or 523; CHEM 524 or 525; CHEM 531 or 532; CHEM 545 or 546. CHEM 500, 529, 530, 581, 590 cannot be used to fulfill this requirement.
- CHEM 529, 530 (Seminar) 3 cr hrs
- CHEM 581 (Directed Study) 3 cr hrs maximum
- 400-level chemistry courses unlimited

- 400- and 500-level courses from 6 cr hrs maximum another department
- Dissertation (CHEM 595) 24 cr hrs

Students entering the Ph.D. program with a master's degree in chemistry must pass the entrance examinations. The requirements for a Ph.D. degree should be completed within four calendar years of the date of the first registration after completion of the M.S. degree.

A minimum of 38 credit hours is required. These hours are distributed as follows:

- 500-level chemistry courses 9 cr hrs minimum
- CHEM 529, 530 (Seminar) 2 cr hrs
- CHEM 554, 555 (Proposal writing) 3 cr hrs
- CHEM 595 (Dissertation): 24 credit hours
- Students may substitute up to 3 credit hours of courses at the 300-level and above from other departments. Additional 500-level courses from other departments may be used in place of 500-level chemistry courses, upon approval of student's advisory committee.

Chemistry is proposing to cross list several 500 and 400 level courses to provide greater choice in classes at the undergrad work load and so we can offer more 500 level classes.

New courses at 400 level in yellow.

New or renumbered courses at 500 level in grey.

CHEM 512/412, Advanced Topics in Analytical Chemistry, 3 cr, 3 cl hrs

Prerequisite: CHEM 311, 411, or consent of instructor

Offered on sufficient demand

Study of special topics not otherwise treated in analytical chemistry. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 513/413, Separation Science, 3 cr, 3 cl hrs

Prerequisite: CHEM 331, 411, or consent of instructor

Offered on sufficient demand

Theory and practice of separation science. Topics include selective mass transport, extraction, chromatography, and electrophoresis. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 522/422, Environmental Chemistry, 3 cr, 3 cl hrs

Prerequisites: Any two of the following: CHEM 311, 331, or 333

Offered on sufficient demand

Application of chemical principles to the study of the environment. Includes natural processes and pollution problems related to water, air, and soil. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 522L/422L, Environmental Chemistry Laboratory, 1 cr, 3 lab hrs

Corequisite: CHEM 522/422; a lab usage fee is charged

Offered on sufficient demand

Laboratory experiments related to the principles in CHEM 522/422. The graduate and undergraduate versions of the course will differ in the assignments and exams.

CHEM 523/423, Applied Spectroscopy, 3 cr, 3 cl hrs

Discussions of mass spectrometry, fluorescence, Nuclear Magnetic Resonance (NMR), X-ray (XPS, X-ray diffraction, solid state spectroscopy), Infrared (IR), Ultraviolet/Visible spectroscopic methods and techniques, as applied to chemical and biological problems, including structure elucidation, medical diagnostics, molecular sensors. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 525/425, Molecular Quantum Mechanics, 3 cr, 3 cl hrs

Prerequisite: CHEM 331, 332, or consent of instructor

Offered on sufficient demand

Molecular structure; theories of the chemical bond; perturbation and variation methods; electronic and magnetic properties of molecules. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 526/426, Chemical Spectroscopy, 3 cr, 3 cl hrs

Prerequisite: CHEM 331, 332, or consent of instructor

Offered on sufficient demand

Principles and applications of electronic, molecular, and spin spectroscopies, laser spectroscopy; transitions; elements of group theory; quantitative correlations and analytical chemistry. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

Chem 527/427, Molecular Reaction Dynamics, 3 cr, 3 cl hrs

Prerequisite: CHEM 331, 332, or consent of instructor

Offered on sufficient demand

Techniques in studies of chemical reaction rates. Topics commonly include: rate laws, collision theory, mechanistic studies, transition state theory, fast reactions, chemical oscillations, transport theory, and transport coefficients. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 528/428, Advanced Topics in Physical Chemistry

Study of special topics not otherwise covered in physical chemistry.

CHEM 531/431, Chemistry of Aquatic Systems, 3 cr, 3 cl hrs

The thermodynamics and aqueous chemistry of natural waters, with emphasis on groundwater. Chemical equilibrium concepts, surface chemistry, redox reactions, and biochemistry. The interaction of water with the atmosphere and geologic materials. Basic concepts applied to problems of groundwater quality evolution, water use, and groundwater contamination. Shares lectures with EARTH 407 but is graded separately. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 532/432, Atmospheric Chemistry, 3 cr, 3 cl hrs

Chemistry of the atmosphere. Important chemical reactions and their effects on surface and ground water. Effects of anthropogenic inputs on the atmosphere, climate change. Distribution of chemical species in the atmosphere, etc. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 533/433, Global Biogeochemical Cycles, 3 cr, 3 cl hrs

Human activity is increasing the rate of addition of materials to the environment, resulting in changes to the earth's climate. The transformation and movement of natural and anthropogenic sources of chemical substances between reservoirs in a global context. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 544/444, Advanced Topics in Organic Chemistry

Prerequisite: CHEM 333, 334 or consent of instructor

Offered on sufficient demand

Study of special topics not otherwise covered in organic chemistry. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 546/446, Polymer Chemistry, 3 cr, 3 cl hrs

Prerequisite: CHEM 333, 334 or consent of instructor

Offered on sufficient demand

Study of the preparation, properties, and uses of macromolecules. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 547/447, Medicinal Chemistry, 3 cr, 3 cl hrs

Molecular-level mechanisms of drug action and rational drug design. Material is drawn from the recent primary literature. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 550/450, Physical Organic Chemistry, 3 cr, 3 cl hr5

Physical aspects of organic chemistry. Emphasizes reaction mechanisms, reaction kinetics, and electronic theories. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

This is merely a renumbering of 546 to 550 to allow the undergrad version to have the same last to numerals.

CHEM 549/449, Organometallic Chemistry, 3 cr, 3 cl hrs

Organometallic chemistry of the main group and transition elements. Ligand classification and molecular orbital description of bonding in organometallic complexes. Structure, bonding, synthesis, and properties of transition metal compounds and their derivatives. Organometallic complexes as catalysts. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

CHEM 554/555, Research Proposal Writing, 1 cr 1st semester and 2 cr 2nd semester

Students will choose a research topic, survey related literature and write an original research proposal in the first semester. In the second semester, the student will present a public seminar on the written proposal. Following the seminar, the student will defend the proposal to his or her dissertation or thesis committee. Both CHEM 554/555 will be offered concurrently in Fall and Spring semesters. The graduate and undergraduate versions of the course will differ in the assignments and exams, while sharing the same lectures.

The motion passed.

7. Adjournment. A motion was made and seconded to adjourn the meeting. The motion passed, and the meeting was adjourned at 11:30 a.m.

*Respectfully submitted,
Valerie Kimble*

April 2008

NEW MEXICO INSTITUTE OF MINING AND TECHNOLOGY

MEETING OF THE FACULTY SENATE

Tuesday, April 1, 2008

4:00 P.M.

Workman 101

MINUTES

1. **Call to order.** Dr. Dave Westpfahl, Chair, called the meeting to order at 4:05 p.m.
2. **Approval of the minutes of March 4, 2008.** A motion was made and seconded to approve the minutes. The motion passed unanimously.
3. **Announcements.**

Dr. Peter F. Gerity announced that academic contracts will be out on April 15, and faculty have a 30-day window in which to return the signed contracts to the Office for Academic Affairs. He explained that 25 percent is taken off the top of the 3 percent salary pool and used for tenure promotions and promotions to full professor, with the balance returned to the pool. Gerity said President López accepted a recommendation to roll the pool into the salary template because the

pool is so small this year. After promotions, Chairs will receive the final merit percentages by the end of the week. The academic contracts will run from August 11, 2008 to May 17, 2009, a week before fall classes start, to catch up with the payroll cycle. Otherwise, Gerity said faculty would not receive their first payroll check for a full month.

Gerity cited the recent publicity garnered by Paul Krehbiel, Bill Rison and Ron Thomas, and graduate student Harald Edens, in the journal *Nature Geoscience* and in a front-page article by John Fleck in the *Albuquerque Journal*; an article on Penny Boston's successful search for microbes in a miles-deep cave in Mexico, as featured in the *Santa Fe New Mexican*; and the discovery of a fossil at the Bosque del Apache publicized by local and state media.

Ken Minschwaner returned to the topic of merit raises, suggesting that a larger percentage be taken from the salary pool to deal with compression and inversion issues; and that perhaps the merit plan needs to be revisited. Gerity replied that he was open to having a task force revisit the template, but warned that raises will continue to be low for the foreseeable future. "They won't jump 10 percent anytime soon," he said. Faculty in some fields are being paid higher starting salaries because of the competition from industry. It's market-driven, he said. John Wilson, like Minschwaner a member of the committee that last reviewed the merit policy, volunteered to revisit the plan.

Richard Sonnenfeld reported on a meeting of faculty from physics, chemistry and E&ES with Peter Gerity and Lonnie Marquez to discuss the need for an ongoing budget line-item to support the recruitment of graduate students. With approval from Dr. Lopez, Lonnie Marquez agreed to start this line item for the 2008-2009 year at \$50,000 a year, institute-wide. The funds would be administered by Graduate Dean Dave Johnson. Sonnenfeld said departments should respond to the call for proposals from the Graduate Dean. In general, proposals specify how they would use the money to increase the number and quality of the graduate students they enroll. Wilson noted that the E&ES Department has been doing its own recruitment for some time on an ad hoc basis, which goes beyond having teaching assistants, he said. Gerity commented that some universities earmark overhead research funds in their line-item budgets for recruitment.

Sharon Sessions announced that she had collected 30 signatures on a petition to make the Children's Center program available children less than two years. Even down to six months to 18 months would be a huge relief for young faculty. Gerity agreed that expanding the program would be a benefit, but raised issues of licensing, certification, staff and facilities that would require financing. He urged that supporters carefully analyze the issue, and suggested that Sessions meet with Ricardo Maestas, the university administrator who oversees the center. On that subject, Elaine DeBrine-Howell asked that anyone with outdated computers donate them to the day care center in Playas.

4. Committee Reports

a. Ad Hoc Committee on Conferral of Special Degrees (attachment)

Graduate Dean Dave Johnson introduced revisions to a proposal on granting degrees out of the current sequence. Scott Zeman introduced the proposal at last month's meeting. Johnson explained that many employers, particularly in government, now require a degree showing the

date of completion, even before a job can be offered. Clearly, changes are needed to be responsive to the students, he said. The attachment outlined three proposals: 1. Routine Degree Approval Process, adding an August degree date to accommodate summer completions; 2. Special Approval Process; and 3. Electronic Faculty Consent, intended to result in approval response times of two months or less. Johnson moved to adopt the first and third parts of the proposal. Brian Borchers seconded the motion. During the discussion that followed, Johnson said the process was not one of self-identification, that degree audits would be performed, and that the changes won't solve everything, there still was the matter of having regental approval, perhaps through special teleconference meetings. "If we miss someone, the second part of the motion will help pick up the pieces," he said. Richard Sonnenfeld proposed a friendly amendment requiring a quorum for degree approval, which Johnson did not accept. Gerity suggested entrusting department chairs as a legal quorum; and Johnson added that the first line of defense would be the student's advisor, whose signature is required on the intent-to-graduate form. The motion passed on a 27 – 2 vote.

Johnson then moved to accept the second part of the proposal, the Special Approval Process, which would benefit graduate students who complete degree requirements out of sequence. The motion was seconded by Dr. Lorie Liebrock. Bill Stone stated that there would be as many as seven approval dates a year. We have six or seven already, responded Gerity, with the MST pool. The Special Approval Process includes special batch deadlines – two weeks prior to the next regularly scheduled regents meeting in Spring and Fall; and at the close of registration for the summer session. The names of students approved by this process will be immediately presented to the Board of Regents. The date of degree for those approved will be the date when approval was made by the Regents. The motion passed unanimously.

1. **Old Business** – None.

1. **New Business** – None.

1. **Adjournment.** Westpfahl adjourned the meeting at 5:05 p.m.

Respectfully submitted,

Valerie Kimble

March 2008

**JOINT MEETING OF THE INSTITUTE SENATE &
THE FACULTY SENATE**

Tuesday, March 4, 2008

4:00 P.M.

Workman 101
MINUTES OF THE FACULTY SENATE

Call to order. Dr. Westpfahl, Chair, called the Faculty Senate to order at 4:10 p.m. after the adjournment of the Institute Senate. He called for approval of the Faculty Senate Minutes of February 5, 2008.

Approval of the minutes of February 5, 2008 meeting. The minutes were approved by a motion made by Dr. Johnson and a second by Dr. Bowman.

Announcements. Dr. López gave a brief history of the supercomputer that was funded at \$14 million last year by the Legislature. These funds did not cover operational costs so the computer has been sitting at Intel for a year. The operating funds are being requested this year from the Legislature through House Bill 2. There are many problems mixing educational monies with industry monies. Dr. Lopez has deep concerns about this issue. He is waiting for the Governor and the Legislature to iron out the difficulties before moving forward on Tech's commitment to the project.

Dr. López gave a brief summary on outcomes of this year's Legislative Session:

-2% raise package for higher education, plus .75 increase to ERB.

Dr. López hopes to increase the raise pool to 3%

-Tech will receive \$12 million next year over the base, of which \$8.5 million is capitol outlay

-\$25,000 for the Bureau of Geology

-\$400,000 matching funds for PRRC

-\$40,000 for Science Fair and Science Olympiad

-\$30,000 for ICASA

-\$50,000 for Aerospace

-\$1 million for endowment funds for endowed chairs

-\$54,000 for improvements to the bathrooms at the Golf Course

-\$16,700 for CAVE & KARST

- \$250,000 was requested for a one-time budget increase for GRC but it was reduced significantly

Dr. Gerity announced that this year's Commencement Ceremony will be at 10:00 a.m. instead of 11:00 a.m. The Faculty Senate will meet at 10:00 a.m. on Friday, and engineering faculty will meet at 9:30 a.m. to decide on the Cramer Awards. Registrar, Ms. Barrerras, reported that they have cancelled all Thursday night final exams, and grades for all graduating students must be submitted by 5:00 p.m. on Thursday. She encouraged all faculty to check the final exam schedule on-line.

New Business

Council of Chairs Meeting:

Final Exam Policy: Dr. Gerity reported that the SA President, Josh Asplen, attended the Council of Chairs Meeting stating that the SA is reviewing the Final Exam Policy (<http://externalweb.nmt.edu/aaffairs/finalexam.html>). The students are reporting that there are many violations of the existing policy. Dr. Gerity asked that the department chairs remind faculty of the policy and to help enforce it.

Curriculum Changes for Mathematics: Dr. Hossain, moved to adopt the curriculum changes for Mathematics which were passed by the Council of Chairs. The motion was seconded.

Summary of changes in the Requirements for the B.S. Degree in Mathematics:

1. Replaced the senior sequences with the mathematics electives;
2. Delete the “electives to 37 credit hours” section;
3. Rephrase the requirement of 18 credit hours of approved coursework in a single subject other than mathematics.

Reasons for the proposed changes:

1. The senior sequence requirement does not provide sufficient exposure to senior level mathematics neither in breadth nor in depth.
2. The requirement of a minimum of 37 credit hours in mathematics courses numbered 200 or above is equivalent to the requirement of one additional mathematics elective course.
3. The requirement of 18 credit hours of approved coursework in a single subject other than mathematics: the requirement does not specify who approves the course work;
4. Students are not exposed to statistics.

Dr. Sonnenfeld asked how the change in the 37 credit hours for electives would affect the Physics majors that are double majors. Dr. Hossain stated that it would not be a major change. The motion passed to approve the above changes.

Conferral of Degrees in Special Cases: Dr. Zeman moved to adopt the following steps in conferring special degrees:

- The major department will bring the degree forward upon completion;
- The degree goes to the Registrar for a degree audit;
- With concurrence of the chair of the Faculty Senate;
- The recommendation goes to the Vice President for Academic Affairs to grant the degree.
- The Vice President for Academic Affairs will then make the recommendation to the President;
- The President will bring it before the Board of Regents at the earliest possible time.

Dr. Johnson seconded the motion. Dr. Zeman reported that a number of cases have come up recently since 911 that require the graduating student to have the conferral of the degree and the date reported on their official transcript. In many of the incidents, the students were unable to even receive a formal offer from an employer until the transcript noted such a date and degree on it. Many questions were raised and a lengthy discussion followed. A suggestion was made to have the approval process three times a year after completion of each semester, summer, fall and spring. Dr. Johnson and Dr. Gerity both expressed that students are graduating at various times

of the year, sometimes three weeks after the May commencement which would hold up the granting of a degree until the end of the summer session in late August.

Dr. Borchers made a motion to table the original motion and have an ad hoc committee review the problem and return with a solution by the April Faculty Senate Meeting. The motion to table was seconded. A vote was taken and the motion passed 17 to 13. Dr. Westpfahl, Chair, of the Faculty Senate appointed the following members to the ad hoc committee: B. Borchers, O. Wingenter, D. Johnson, P. Gerity, L. Barreras, and I. Davidson.

Graduate Council Meeting:

Dr. Johnson moved for adoption of a new course from Earth and Environmental Science:

GEOP5XX – Volcano Geophysical Field Methods, 1-3 cr

Prerequisites: EARTH 483 or equivalent; MATH 131/132 or equivalent; consent of instructor

Offered summers (yearly)

An intensive field and lab computer-based class to teach the principles of hardware installation, data collection, digital signal processing, and analysis of geophysical data in an active volcanic environment. Studies will be grounded in seismic data acquisition and may also include infrasound, geodesy, thermal, and gas sensing surveys.

The motion was seconded by Dr. Bowman and passed unanimously.

A motion was made and seconded to adjourn. The meeting was adjourned at 5:00 p.m.

Respectfully submitted,

Debby Olguin

February 2008

NEW MEXICO INSTITUTE OF MINING AND TECHNOLOGY

MEETING OF THE FACULTY SENATE

Tuesday, Feb. 5, 2008

4:00 P.M.

Workman 101

Call to order. Dr. Westpfahl, Chair, called the meeting to order at 4:05 p.m. by calling for approval of the Faculty Senate Minutes of December 4, 2007.

Approval of the minutes of Nov. 6, 2007 meeting. The minutes were approved following a motion by Dr. Johnson and a second by Dr. Borchers.

Announcements

The following new faculty and professional staff were introduced:

Dr. Jeff Johnson, Assistant Professor of Geophysics
Dr. Clint Lanier, Assistant Professor of Technical Communication
Dr. Bin Lim, Assistant Professor of Mechanical Engineering
Dr. Karim Salehpoor, Assistant Professor of Mechanical Engineering
Ms. Ruth Stoddard, Director of Auxiliaries and Residential Life

And Assistant Dean of Students on Judicial Student Matters

A round of applause was given to welcome them to New Mexico Tech.

Dr. Gerity gave a brief report on the spring enrollment, stating that the graduate headcount is up 12% over last year, up 2% on undergraduate headcount and 1% overall on credit hours. Most important, fall to spring retention is up to 92% over last year's 90%.

Dr. Gerity introduced Cathi Van Fleet as a new member of the Academic Affairs and R&ED Office. He announced that there will be a Council of Chairs Meeting on Friday, February 8th at 12 noon and lunch will be provided.

Dr. Gerity gave a brief Legislative update which he started off by saying that "it may or may not be factual after today."

- Compensation package is at 2% and Dr. López is hoping to bring it up to 3%
- Geobond of 8 Million, plus the 4 Million we already have to complete the infrastructure, hot water loop, etc.
- Planning money for the Geology building and the Wellness Center
- Endowment of 5 Million is being split, giving Tech 1 million
- Increase of 1.7% to the New Mexico retirement pool
- Increase in the GRC funds
- Additional monies for the MST Program

Dr. Romero also spoke on Legislative updates, asking faculty to encourage their state representatives to support the Governor's science initiatives such as the Lambda Rail, the supercomputer project, and the energy innovation fund. These projects are taking a hit

Dr. Westpfahl announced that the Faculty Senate Spring 2008 membership list is posted on the Academic Affairs website and asked that department chairs look over the list to make sure everyone is listed.

Dr. Sonnenfeld asked for an explanation of the endowed chair package from the Legislature. Dr. Gerity explained that it is used to attract faculty by receiving private donations and the State will match those funds 1 for 1. If departments are interested, Dr. Gerity encouraged them to work with the Office of Advancement.

Dr. Aster asked Dr. Romero about the proposed increase in GRC funding. Dr. Romero stated that in previous years, GRC did not receive additional funds to cover salary increases. The increase that they are asking for this year would bring the budget in line with current salaries and proposed increases. Dr. Romero also reported that many of the special projects are currently under attack at the Legislature, and we are not sure what will be funded at the end of the session.

Committee Reports

Honorary Degree and Awards Committee – Dr. Sharon Sessions stated that a motion and second was given at the December Faculty Senate Meeting to grant an Honorary Degree, a PhD in Business Management, for Steve S. Torres. Dr. Van Romero spoke to his nomination, stating that Steve Torres was a dedicated Regent for 30 years during the “good” and “bad” times at Tech. Steve Torres was a Socorro resident at the time and fostered a good relationship between the city and the Tech community. Dr. Wilson also spoke on behalf of the nomination, stating that after reading supporting letters from Drs. Colgate and Lattman, he felt that the granting of this honorary degree was of great merit. A question was raised by Dr. Sonnenfeld as to whether it was appropriate to grant an honorary degree in an area in which New Mexico Tech does not award ordinary degrees. Many assured him that it has been done in the past at Tech and at other institutions. The motion passed unanimously and will now go before the Board of Regents.

Old Business

Dr. Romero presented a draft *Policy on Additional Faculty Compensation* last semester. At that time, he was asking for Regent and faculty input. The Regents are in support but are asking for an endorsement by the Faculty Senate. Dr. Romero asked for a consensus from this body. He summarized the proposed policy. Previously when this matter was first discussed, the issue of equity was brought up and it was again raised. Drs. Gerity and Romero both encouraged interdisciplinary proposals. Dr. Stone raised the issue of rewarding those for research and de-valuing the importance of teaching. Dr. Romero stated that this is a way to reward the faculty member. They will still be working the same amount of hours on teaching and research, just being paid more money. Dr. Gerity reported that other universities have been using similar compensation policies for many years and they have proven to be very helpful in attaining and attracting faculty. Dr. Liebrock made a motion in support of this policy. Dr. Aster seconded the motion. A friendly amendment was made by Dr. Sonnenfeld to state that the Faculty Senate is in support of the policy, but does have concerns of equity opportunities for both faculty and staff. The motion as amended passed 35 to 2 opposed. The policy as amended will be taken to the Board of Regents.

New Business

Ms. Baca Rivet made a motion to approve the December 2007 listed as distributed. Dr. Johnson seconded the motion. The December 2007 graduation list was approved unanimously.

Dr. Romero thanked Dr. Teare for serving on the MRO review panel.

Dr. Romero brought up the discussion of a “near train wreck” that occurred recently when several faculty asking for matching funds from the administration came at the last minute. He is requesting that a committee be formed to review and draft procedures for requesting matching funds. Dr. Borchers called the entire process old-fashioned and a paper maze. Another issue to be looked at is, when a granting agency requires only a specific number of proposals to be submitted from one institution, that a procedure be in place to allow us to know how many proposals are being written. Dr. Wilson suggested that the existing Budget & Research Committee serve as that committee. Dr. Borchers so moved that these issues be reviewed by the Budget and Research Committee. The motion was seconded and passed.

Adjournment

There was a motion and a second to adjourn. The meeting adjourned at 4:50 p.m.

Respectfully submitted,

Debby Olguin

2/11/08