  Educational Objectives Report

Lunch w/ Faculty, Students, and Career Service Director

  Student Session
  Faculty Discussion
  Board Session

Wrap-up: Recs, Actions, and Ownership
  Adjourn
Departmental Activity Report

Purpose: Overview and Progress on Achieving Program Goals

• Update on previous year Program and Educational goals
• Enrollment
• Assess quality of freshmen: Avg. ACT and Math Placement Scores
• Assess Administrative Support: Financial et al.
• Statement on Facilities: Benchmark and Plans
• Statement on Faculty Development: Teaching, Research, Service

• Suggest Recommendations: Corrective Actions and Correction of Objectives/metrics
Departmental Activity Report

Purpose: Overview and Progress on Achieving Program Goals

- Update on previous year Program and Educational goals:
  - Enrollment: plateaued 70 -75 students
  - Assess quality of freshmen: Avg. ACT
  - Assess Administrative Support: Financial et al.: Need space. Need 0.5 FTE
  - Statement on Facilities: Benchmark and Plans: Resources needed
  - Statement on Faculty Development: Teaching, Research, Service

- Suggest Recommendations: Corrective Actions and Correction of Objectives/metrics
Departmental Activity Report

Purpose: Overview and Progress on Achieving Program Goals

Recommended Actions for 2003-2004

✓ Continue and Improve Assessment Process: Close Loops
➢ Secure additional lab space for growing research and faculty needs. (since 2001)
➢ Increase to 4.0 FTE faculty within the program. (since 2003)
➢ Reinvigorate freshmen recruiting plan (website redesign, meet w/ admissions)
✓ Continue to develop grantsmanship and teaching skills of younger faculty.
✓ Formalize Materials Engineering graduate credit hour awards for ChE faculty
➢ Develop new 5 year plan (January 2005 for Dept. Activity Report)

Vital Goals
Departmental Activity Report

Purpose: Overview and Progress on Achieving Program Goals

Recommended Actions for 2003-2004

- Continue and Improve Assessment Process: Close Loops
  - Secure additional lab space for growing research and faculty needs.
  - Increase to 4.0 FTE faculty within the program.
  - Reinvigorate freshmen recruiting plan
- Continue to develop grantsmanship and teaching skills of younger faculty.
- Attain the highest publication rate of programs on campus (SCI pubs/FTE yr)
- Increase research expenditures by 10% (k$ expenditures)
- Formalize Materials Engineering graduate credit hour awards for ChE faculty
- Develop new 5 year plan
Chemical Engineering Faculty
New Mexico Institute of Mining and Technology

Dr. Don Weinkauf
PhD. - Chemical Engineering
University of Texas at Austin

Dr. Bob Bretz
PhD - Biochemical Engineering
Texas A&M University

Dr. Junhang Dong
PhD - Chemical Engineering
Naijing University

Dr. H. Samuel Jeon
PhD - Chemical Engineering
Brooklyn Polytech

John Marshall
BS - General Engineering
New Mexico Tech

Dr. Tom Bickel
PhD. Chemical Engineering
University of Texas at Austin

Dr. Mark Cal
PhD - Environmental Engineering
University of Illinois

Dr. Doug Dunston
MS Physics - Cal Berkeley
DMA - Music - Claremont

Dr. Robert Lee
PhD. Chemical Engineering
University of Michigan

Dr. John McCoy
PhD. Physical Chemistry
University of Pennsylvania

Dr. Visiting Appointment
Or Dr. Sabbatical Leave
Or Mr. Early Dow Retirement
Enrollment Trends

- Total ChE
- F'98 5 Yr Plan
- Freshman
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300-400 level credits increasing, grad in decline

Goal: Increase grad credit hrs to 90/yr by Fall 2006
5 year avg: FTE/Budget = 143% in an UG non-service program!!
Budget and FTE Return

Can’t expect much more growth 100-400 level course FTE return

Need to grow FTE return by maximizing grad credit hours

Goal: 90 cr hrs/yr by Fall 2006
Consolidated Lab & Office Space to NW corner MSEC (2000)

Maintain EMRTC Enclosed Padsite

New faculty no space increase

Desperately need more space in MSEC!!
MSEC Space Study

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<th>Sq Ft. Dept.</th>
<th>Sq. Ft. per Fac</th>
<th># Faculty</th>
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<th>Undergrad</th>
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<td>32</td>
<td>97</td>
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Grad figure for PET/ChemE includes 7 grads housed in ChemE working for ChemE profs. Post docs and Visiting Faculty not assessed.

EES occupies 55% more space per faculty to run a similar to smaller sized department.

No decisions are ever made on a per capita basis - it’s the number of voices. ChemE is growing in a small cage next to NMTech’s 900 lb. Gorilla.
## EES Space Utilization

Banner Analysis of Enrollments in each large 2nd Floor MSEC Room

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<th>mineralogy 253</th>
<th>petrology 241</th>
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** class sizes over 16 in MSEC 259 reflect that 2 lab sections are taught in the same afternoon (2-4pm and 4-6pm)
No New Space Allocated in 2003

Overflow: PRRC & into undergrad 259

75% of our undergrad Students have research Experience on campus

Need Space.
Facilities and Planning

UO Lab Development/Improvement Plan

The current UO Lab offers four experiments:
(1) **Double-tube heat exchanger**: convective heat transfer coefficient in turbulent flow region.
(2) **Air condition system/humidifier**: mass balance, energy balance, psychrometric calculations.
(3) **PEM Fuel Cell System**: Operation of fuel cell systems (single cell and stack); energy efficiency; determination of kinetic parameters for the cathodic reaction.
(4) **Gas absorption column**: equilibrium-based separation process; determination of number of overall gas-phase transfer units (NOG), the height of one overall gas-phase transfer unit (HOG), and the overall gas-phase capacity coefficient \( (k_Ga) \).

**One-year plan:**
The homemade absorption column does not give data good enough for calculations. One year plan is to replace the current absorption column with a commercial unit (example: $45,000 from Armfield).

**Five-year plan:**
(1) Replace the current absorption column with a well-engineered absorption unit (2004);
(2) Restore and improve the pipe line friction unit;
(3) Establish a membrane (N2/O2 gas) separation unit to demonstration of rate-based separation process. (≈$40,000)
NMTech Scholarly Publication Rates
3 Year Running Average (2001-2003)

source: McCoy's Materials Engineering Assessment Data
Recommended Actions: Department

1. **Carry Over:** Carry out plan to increase “bodies” involved with Chemical Engineering students (FTE = 4.0) Owner: Weinkauf/Gerity

2. **Carry Over:** Initiate “Real” Space and Utilization Dialogue with all Dept’s in building - Owner: Strategic Planning Committee (Weinkauf) / President

3. **Carry Over:** Reinvigorate Freshmen Recruiting Plan - Goal of 20 New ChE Fall 2005 - Owner: Jeon/Dong

4. **Continue to Develop** Graduate Component of Work - Goal 90 Credit Hrs/Yr by Fall 2006 - Owner: ChE Faculty

5. **Continue to Assess Program and Assessment Plan:** Owner: Advisory Board/ChE Faculty


7. **Develop 5 Year Plan.** Owner: ChE Faculty Due January 2005.
Educational Objectives
Educational Objectives:

1. Develop complete engineers who can: solve problems, innovate, experiment, be resourceful, and champion ideas through effective communication.

2. Engender an understanding of the broad reach of a modern Chemical Engineering education and the array of knowledge required to implement solutions which will benefit our society.

3. Provide a conduit to successful careers in the spectrum of fields which benefit from a command of the principles of Chemical Engineering.

4. Foster a life long love of learning, opening doors to graduate study and enabling graduates to adapt to changes and opportunities in the profession.
Educational Objectives Report:

1. Summarize FE exam results
2. Update placement statistics
3. Recent Graduate Survey Results
4. Alumni Survey Results (every 3 years)
5. Summarize: Outside review of design presentations
7. Summarize: General Degree Requirement Assessment (broad education)
Fall 2001 FE Exams: 12 students
Fall 2002: 21 students
Fall 2003: 29 students
Fall 2003: 29 students

- Mathematics and Thermodynamics
- 66% of all ChE’s Pass
- Spring 2003 Exams Lost by State
FE Exam Math Diagnostic Test

- Algebra
- Trigonometry
- Geometry
- Probability & Statistics
- Integration/Differentiation
- ODE
- Numerical method

Comfortable factor (%)
2003-04 FE Exam Chem E Results
Comparison with Univ. of S. Alabama (required)

Historically Tech ChemE’s pass at 70% rate
Historically Univ. S. Alabama (6 yr. ABET accreditation) - 70%
NMT 2003-04 pass 12/15 pass at 80% rate
NMT ChemE Subject ‘03-’04: 7/8 (88% rate)
2003-04 FE Exam Chem E Results
Comparison with Univ. of S. Alabama (required)
Report on placement of our 2003-04 graduates  
(page 19 EOR)

Effect of Moving ChE 326 to 3rd Semester  
(page 11 EOR)

Report on Enhancing Statistics and Probability  
(Page 13 EOR)

Outside Review of Sr. Designs  
(Page 20 EOR)

General Degree Requirements Assessment Panel  
(Page 20 EOR)
Recommended Actions: Educational Objectives

1. Adjust the curriculum to reinforce students exposure to Numerical Methods in the Junior and Senior years. (Owner: Jeon)

2. Incorporate Design of Experiments into the Unit Operations Laboratory. (Owner: Dong)

3. Learn from other schools effective methods of teaching assessment and modes to improve teaching effectiveness (Owner: Weinkauf)

4. Provide a more complete examination of the low FE exam scores in Process Equipment Design and suggest course of action (Owner: Bretz)

5. Conduct the scheduled 5-10 year review of alumni and gage success of Educational Objective #4 (Owner: Weinkauf).
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