

Minutes of the University Materials Council
2000 Spring Meeting, May 24, 2000
Georgetown University Conference Center, Washington, D.C.
12:00 Noon to 4:30 P.M.

Minutes Prepared by:

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Attendees: Robert Bayuzick, Vanderbilt; Aris Cristou, Maryland; Tekeshi Egami, Penn; Katherine Faber, Northwestern (UMC 2nd Vice Chair); Ron Gordon, Alfred; Eric Hellstrom, Wisconsin; N. Jayarama, Cincinnati; Alex King, Purdue; Subhash Mahajan, Arizona; Dave Martin, Michigan; Christopher Ober, Cornell; Don Paul, Texas-Austin; John Rabolt, Delaware; Ashok Saxena, Georgia Tech (UMC 1st Vice Chair); Peter Searson, Johns Hopkins; Richard Tressler, Penn State; John Weaver, Illinois-Urbana; David Williams, Lehigh (UMC Chair); Calvin White, Michigan Tech.

Agenda

Noon	Buffet Lunch
12:45	Approval of minutes of fall meeting
12:50	Committee report on Role of MS&E in Interdisciplinary Research - A. Saxena
2:15	Afternoon Break
2:30	Committee report on Undergraduate Curriculum in MS&E - D. Williams
4:00	Plans for fall meeting
4:15	Hand over of Chair to A. Saxena - Election of New Officers - A. Saxena Nominations are as follows: These names have been chosen by the nominating committee and will be proposed to the full council - other nominations will be solicited from the floor at the May meeting.
	Bob Snyder Ohio State 2nd Vice Chairperson
	Don Paul U. of Texas Member
	Ronald Gordon Alfred U. Member
4:30	Close

The minutes of the Fall Meeting of the UMC, held October 31, 1999, were approved.

MS&E in Interdisciplinary Research

Ashok Saxena reviewed his presentation to the National Materials Advisory Board on May 11 and 12. (See second attachment: UMC-NMAB-forum.ppt) NMAB would like to do the next forum with UMC involved in its organization. The timing for the forum had not been announced by the NMAB. Discussion took place as to what should be recommended to NMAB. Resources are available to the NMAB to do a forum (\$100K), therefore no separate proposals from UMC to NSF etc. are necessary for organizing the forum. It was discussed that the forum needs to be a showcase that might focus, for example, on the next billion dollar industries and other emerging areas. The forum might also be a venue to make the case for materials science and engineering to deans and other university administrators. For this to be effective, however, the appropriate administrators must be in attendance. Also considered for topics are job prospects for MS&E students and the flawed labor statistics. (Bureau of Labor Statistics currently predicting less than average growth for jobs in materials.) Also, the forum might include more of an educational flavor and address what competencies materials students of the future might need. The NMAB report from the forum should be a succinct report that can be used in student recruiting and with deans to make a case for the importance of our discipline.

Action items:

1. *By Fall UMC Meeting, help NMAB define forum. A. Saxena will establish UMC committee for this purpose.*
2. *Define the role of future technologies in MS&E education for forum.*
3. *Use Fall UMC Meeting to review agenda.*

Undergraduate Curriculum in MS&E

Dave Williams reviewed his presentation on “What do we own in MS&E?” that was a part of the Fall, 1999 minutes. He focused on the first year and early second year of the undergraduate curriculum in which MS&E courses could be used as recruiting tools. Two other subcommittees were to examine the core course curriculum and the electives and senior year, respectively, with the aim of assembling a recommended curriculum.

In the first and early second year, there are examples of a variety of service courses among UMC schools. These include general materials courses, the most successful of which use multimedia tools or hands-on labs. (Examples: Penn, Washington) Freshmen seminars have also been effective recruiting tools and to increase awareness about MS&E in small groups. (Examples: Washington, Maryland, Georgia Tech, Northwestern) Reverse engineering courses have also been popular.

The discussion then addressed the relevance of our curriculum to industry. One suggestion is that more integrative courses (e.g. Materials for Energy and Environment) might better prepare our students for changing environments. The advantage of this

approach is that it requires students to use knowledge of many materials simultaneously. The disadvantage is the loss of specialization.

Other discussion points included how to enlarge the MS&E student base. One way to attract students from traditional science backgrounds or from other engineering students is through hybrid courses to accentuate complimentary nature of disciplines. Other departments could teach portions of many courses. Examples: thermodynamics with ME and ChE, mechanical behavior with ME, crystallography with geology and chemistry, statistics and experimental design with IE, process control with ChE and IE, manufacturing/processing with ME/IE, polymer sciences with ChE and chemistry, electronic materials with EE/physics, structures/concrete/joining with CE, and microscopy/diffraction with geology. Minors in Materials Science also serve as a method to effectively enhance enrollments.

Subcommittees on the core curriculum and the technical elective/senior year curriculum did not have report. It was decided that these groups would have a difficult time in defining what would be the “best” curriculum. Often times, these courses are determined by faculty strengths. Instead, we could use the UMC as a forum to describe our best practices. Suggested topics for best practices included integrating computing and modeling throughout the curriculum, dedicated computational materials courses, and incorporating remote experiments

Action items:

- 1. Dave Williams agreed to write up one-page overview of what we own in MS&E.*
- 2. Faber charged to put together program for Fall UMC Meeting on best practices in computation and modeling.*

Officers 2000-2001

The floor was turned over to Ashok Saxena who thanked David Williams for his service to the UMC. Saxena described the priorities for his term of office as UMC chair. They include (1) a membership drive and effort to increase participation in the UMC, (2) Data gathering which includes enrollment, degrees awarded, faculty salaries, research expenditures, graduate student stipends, and interdepartmental interactions, (3) periodic workshops on MSE education, (4) formalized liaison with ABET, NMAB, FMS, education committees of TMS, ASM, ACerS, and MRS, and (5) interactions with funding agencies.

Saxena announced the following slate of officers:

Chair: Ashok Saxena
1st Vice-Chair: Katherine Faber
2nd Vice-Chair: Robert Snyder
Executive Committee: Ronald Gordon and Don Paul

As there were no further nominations from the floor, the slate was accepted by acclamation.

The following individuals were suggested for liaisons to other committees:

ABET	Slade Cargill
FMS	Aris Cristou
NMAB	Henry Rack/ Ashok Saxena

Ashok Saxena proposed, that in the interest of continuity, the immediate past chairs of UMC to continue to serve on the council for the next two years. This was put in the form of a motion and seconded. After discussion, the motion was amended as follows:
Motion: Immediate past chairs, if they are no longer department chairs, will serve as *ex officio*, non-voting members of UMC for two years following their terms of office. The motion passed.

The meeting was adjourned at 4:00 PM.

The next meeting of the UMC will be held on Sunday, October 8, 2000 in St. Louis, MO.