

ENGINEERING NEWS

APRIL 2005

Dean's Message



Dr. Ray Mankbadi

This newsletter contains a summary of a major accomplishment of the faculty within the College of Engineering, the integration of all curricula into the College of Engineering culture. As the second year of the formation of the College of Engineering comes to a close we now have a Mission, Vision, and Guiding Principles of the College of Engineering at the Daytona Beach campus. In addition, the College has established commonalities

throughout the curricula and aerospace-related strengths in all degrees that support the mission and vision of Embry-Riddle.

The curriculum committee of the College serves a vital role in all curricula issues that have influence over the college. Each member is a representative of their respective degree and a voice of the College. The members developed the guiding statements for the college and iterated through several revisions based on comments from the faculty and students.

The curricula and course offerings in every degree provide unique aerospace-related strengths while meeting the requirements of individual degree accreditation requirements. The aerospace-related strengths support the mission of the university

and the mission of the college. The article inside this newsletter highlights the work of the curriculum committee to develop a mission, vision, and to help programs identify strength areas. These strength areas are built into the curriculum with varying amount of courses, depending on the degree. Some degrees meet the strength areas through upper-level course offerings available to all students in the college.

The work completed in the past two years will help support the College of Engineering as we move forward to improving student education, improving opportunities to faculty and students, and as the university shapes the agenda of aviation and aerospace. The faculty and members of the curriculum committee are to be commended for their hard work in tasks accomplished this year. ■

Hurricane in a Wind Tunnel

This March the Aerospace Engineering Department wind tunnel lab was used to film several experimental sequences for a PBS-TV special on how hurricane winds interact with the roofs of houses. In the opening shot, the wind tunnel and the two model houses were introduced by John Junco of New Horizon Construction, a 1990 ERAU graduate and the host of the special. Then Professor Chuck Eastlake was the on-camera commentator for a sequence in which he explained the lifting effect of the pressure measurements while they were being made at four locations on the roof of a model house at hurricane wind speed.

This was followed by a demonstration

of a second house model, which had a hinged roof that could be allowed to "blow off" as the wind speed increased. The final sequence shows one of the houses in the smoke tunnel, a different piece of equipment from the other wind tunnel, so that the lifting nature of the flow over the roof is clearly visible, explained again by Mr. Junco.



Dr. Chuck Eastlake

Graduate Teaching Assistant Dae Won Kim assisted by running the tunnel and shop manager Don Bouvier built the houses and installed them in the tunnel. The show is scheduled to air in June, currently intend to be finalized into a four-hour series.

By Dr. Chuck Eastlake ■

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College of Engineering Curriculum Committee



Dr. Howard Curtis

Shortly after formation of the College of Engineering in fall of 2002, Dean Ray Mankbadi appointed an interim committee to deal with curriculum issues. The membership comprised seven faculty: three from Aerospace Engineering (Howard Curtis (chair), Yechiel Crispin and Lakshman Naayanaswami); two from Computer and Software Engineering (Farahzad Behi and Tim Wilson); and one each from Civil Engineering (Mark Fugler) and Engineering Sciences (Glenn McNutt). The College of Engineering Curriculum Committee began functioning in January 2003 and has become a permanent fixture. Early on, Chris Grant became the Civil Engineering representative, and Axel Rohde recently replaced Glenn McNutt from Engineering Sciences. The Committee is certain to undergo further changes in personnel and structure with the advent of Electrical and Mechanical Engineering.



Dr. Farahzad Behi

The Curriculum Committee acts upon curriculum proposals submitted by

departments within the College of Engineering as well as tasks assigned by the Dean. The Dean solicits the Committee's advice on proposals from other colleges if there appears to be a conflict or interference with the mission of the College of Engineering.

The Committee arrived at the beginning of the end of Engineering Technology programs at Embry-Riddle. The proposal to eliminate the Avionics Engineering Technology program because of dwindling enrollments had already been attested by January 2003. At the same time, and for the same reason, the Aircraft Engineering Technology (ACET) program was under intense scrutiny. The Committee supported its transformation into an EAC/ABET accreditable Mechanical Engineering program that did not overlap the mission of Aerospace Engineering. The ACET program is presently in the final stages of being "taught out."

New Degrees

In January 2003, Dean Mankbadi charged the Curriculum Committee to seek faculty input and come up with a list of accreditable engineering programs that would be "good business" for the University to offer (in addition to its current programs: Aerospace Engineering, Civil Engineering, Computer Engineering, Software Engineering and Computer Science). Eventually, the Committee arrived at five possibilities:

- Bioengineering
- Aircraft Systems Engineering,
- Electrical Engineering
- Mechanical Engineering
- Environmental Engineering

A year later, in the spring of 2004, the Committee approved proposals

for adding Electrical Engineering and Mechanical Engineering. Bioengineering has been put "on hold" pending the development of a strong life sciences component in the College of Arts and Sciences.

Commonality

Another issue handed to the Curriculum Committee in spring 2003 was that of the common freshman year for all students in the College of Engineering. This was a matter of some debate, including a videoconference with counterparts at the Prescott campus. Finally, in November 2003, after compromises by all departments on both campuses, a proposal went forward which led to the inclusion of the Common Engineering Freshman Year for the first time in the 2004-2005 catalog. Central to the achievement of this objective were the creation of a common Introduction to Engineering course and a common Introduction to Computing course.



Dr. Lakshman Narayanaswami

To achieve further commonality among the College of Engineering programs, during the current academic year the Curriculum Committee approved proposals from Aerospace, Civil, Computer, Mechanical and Software Engineering to establish a common general education core for all. The Committee also forwarded its recommendation to streamline the vertical outlines of the engineering curricula by establishing a flexible

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list of non-technical electives applicable to all College of Engineering programs. Finally, the Committee approved a Civil Engineering proposal that yields a common sophomore year for Aerospace, Civil and Mechanical Engineering. These changes will appear in the 2005-2006 catalog.

At the beginning of the 2003-2004 academic year, Dean Mankbadi charged the Committee with drafting a vision statement for the College of Engineering. Drafts of a mission statement, vision statement and a set of guiding principles were presented to the faculty. They were sent to departments for feedback and were discussed in several College of Engineering faculty meetings throughout the year. By October 2004, the faculty-approved mission and vision statements were finalized as follows:

Mission

“The mission of the College is to be the focus of engineering education on this [the Daytona Beach] campus and to produce graduates with the educational foundation, intellectual skills and practical experience to enable their success as practitioners, researchers and leaders in rapidly evolving technology fields including aerospace, transportation, electronics and computing.”



Dr. Chris Grant

Vision and Program Strengths

“We aspire to be a comprehensive engineering college recognized as both a leader in undergraduate engineering education and a provider of high quality graduate education

and research, each of our programs having unique aerospace-related strengths.”

The aerospace-related strengths for the various programs in the College of Engineering are as follows:

- Aerospace Engineering: Aeronautics, astronautics and propulsion.
- Computer Engineering: New course approved by the Committee, “Autonomous Vehicles.”
- Mechanical Engineering: New courses approved by the Committee, “Introduction to Robotics” and “High Performance Land Vehicles.”
- Electrical Engineering: Telecommunications track and systems engineering track.
- Civil Engineering: Aviation infrastructure and space launch systems.
- Software Engineering: New course approved by the Committee, “Computing in Aerospace and Aviation”.

The Curriculum Committee approved several substantial proposals from the Computer and Software Engineering Department, including:

- (1) Major modifications of both the Computer and Software Engineering programs
- (2) Establishing two five-year programs leading to:

(a) the Bachelor of Science in



Dr. Tim Wilson

Computer Engineering and the Master of Software Engineering

(b) the Bachelor of Science in Software Engineering and the Master of Software Engineering



Dr. Yechiel Crispin

In connection with the change from TLU’s to credit hours in workload evaluation, the Curriculum Committee approved the increase in credit hours of EGR120-Graphical Communications from 2 to 3 and does not oppose the AE Department proposal to increase the credit hours of its senior-level design courses (AE420, 421, 427, 445, 435 and 440) from 3 to 4.



Dr. Axel Rohde

As can be seen without listing many other details that have been attended to, the College of Engineering Curriculum Committee has spent the past two years working on curriculum issues and initiatives in an effort to help the faculty and the Dean realize our objective of having the College of Engineering recognized as one of the best in the nation.

By Dr. Howard Curtis ■

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Embry-Riddle Hosts National Robot Combat Competition

Robots from California to Puerto Rico and everywhere in between converged on Embry-Riddle Aeronautical University the weekend of April 2-3 for Battle Beach III, a national-level robot combat tournament.



Dr. Darris White

The two-day Robot Fighting League national qualifying event featured several weight classes, from five ounces to 340 pounds. Media from TBS, RC Driver magazine, Servo magazine and local newspapers covered the event.

Robot combat is a burgeoning sport, with more than 90 competitions held in North America in the past two years. The sport boasts an impressive level of technology and action in the arena.



Aneurysm

"This informal, free event allowed fans to mingle with builders and learn more about the latest advances," said Dr. Darris White, assistant professor of Mechanical Engineering.

Embry-Riddle's Mechanical Engineering program and the university's chapter of the Society of Automotive Engineers



The Hate Tank

teamed with Brian Nave, president of Battle Beach LLC, to stage the event. Nave is the co-host of the student robotics television series "Robot Rivals" on the Do It Yourself Network.



Runner Up: Toro

The competition was held in the Lehman Engineering and Technology Center and was timed to coincide with Embry-Riddle's "Sneak Preview" admitted student open house. Students, faculty, and prospective students were able to view the robots and competition throughout the weekend event. Live video was streamed throughout the Engineering Building to allow viewing of the competition for contestants and visitors to campus.

Details of the robot tournament can be found at www.battlebeach.com. Most North American events are listed at www.buildersdb.com and the Robot Fighting League's website at www.botleague.com. ■



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