Current Academic Courses

TITLE OF PROJECT: Spaceflight Mission Design

CONTACT: Eric Butcher

ABSTRACT: The course re-design will develop an astronautics curriculum at NMSU which focuses on NASA's current and future manned and robotic space missions. Course redesign and curriculum development for the AE 362 "Orbital Mechanics" class will take place during year one. The second year of the project would involve development of a new undergraduate aerospace engineering course "Introduction to Spacecraft Attitude Dynamics and Controls." This course has been approved by the department of Mechanical and Aerospace Engineering, and would become a regularly taught elective class in aerospace engineering. Most importantly, it would add another class in astronautics to AE 362, which is currently the only astronautics-related class offered in the aerospace engineering program. (Other AE courses are currently in aeronautics.) Key features of the class include the use of PowerPoint slides and web-based course notes with links to homepages of relevant NASA missions and assessment of annual changes in student achievement in course projects and exams

TITLE OF PROJECT: Inclusion of Spacecraft Dynamics and Control in Aerospace Engineering Curriculum

CONTACT: Amit Sanyal

ABSTRACT: Introduction of spacecraft dynamics and control as a separate course into the undergraduate aerospace engineering curriculum at New Mexico State University. This would also keep the existing Flight Dynamics and Control course in the curriculum, which is mainly an aircraft dynamics and control course that briefly introduces spacecraft dynamics, as a separate course in aircraft dynamics and control. Another objective of this project is to make the AE undergraduate curriculum more streamlined and easier to follow for students, by not covering several topics of importance in one course. The topic of spacecraft dynamics and control has important differences with aircraft dynamics (or atmospheric flight mechanics), which warrants a separate course in this important area. This is also an important topic given the location of NMSU in Las Cruces and the growth of the space industry (both federal and private/commercial) in this part of New Mexico. The proposed curriculum improvement project could therefore lead to more employment opportunities for NMSU students in the vicinity of the university, which in turn would increase the visibility of NMSU and its Aerospace Engineering program with local aerospace employers.

TITLE OF PROJECT: Distance Education Provided Curriculum in Sustainable Energy Technologies

CONTACT: Tom Jenkins

ABSTRACT: All projections indicate that international, federal, state, and local trends in both the public and private sectors will see increased emphasis on renewable and sustainable energy sources. Those trends are expected to continue, and indeed accelerate over the short-, mid-, and long-terms. This program is intended to introduce a vastly wider audience to the concepts of sustainable energy technologies and spark an interest in the engineering and technologies associated with these concepts. This program designs and implements a distance method of educational curriculum delivery in the area of sustainable energy technologies; which could be used to fulfill a "Viewing a Wider-World" general education requirement. These courses fulfill general education requirements for students who may not have access to traditional on-campus courses and provide knowledge and skills related to Sustainable Energy Technologies to a far-reaching audience. As a distance education delivered course, anyone worldwide could take this course and therefore be exposed to these topics which are associated with engineering and technology.