APPENDIX 1

Proposal 1
P.C. Rossin College of Engineering and Applied Science
Summer Course Offering

Lehigh would welcome SEU faculty members to attend and participate in summer course offerings in the P.C. Rossin College of Engineering and Applied Science. SEU faculty would attend the course lectures and aboratories and observe the use of projects and activities to strength the learning outcomes. They would also work with the Lehigh faculty member to develop and delivery one of the lectures later in the course. The goal of this interaction would be that SEU faculty better understand teaching methods used in engineering in the United States.

The summer session courses and schedule are not finalized until early March. However, the college can offer a tentative list of courses at this point in time, noting that some of these courses might not be available. Second summer session courses occur from July 8 through August 13. The following courses are tentatively scheduled:

Summer Session II (June 30- August 7)

CHE 151. Methods of Analysis in Chemical Engineering (3 credits): Fundamental principles of heat transfer. Fourier's law. Conduction, convection and radiation. Analysis of steady and unsteady state heat transfer. Evaporation and condensation. Applications to the analysis and design of chemical processing units involving heat transfer. Prerequisite: CHE 44

MECH 102. Dynamics (3 credits): Particle dynamics, work-energy, impulse- momentum, impact, systems of particles; kinematics of rigid bodies, kinetics of rigid bodies in plane motion, energy, momentum, eccentric impact.

PROPOSAL 2
P.C. Rossin College of Engineering and Applied Science
Description of Accelerated ENGR 5 Course
Prepared by Greg Tonkay, Associate Dean

July 7- August 1

First year engineering students take **ENGR 5 Introduction to Engineering Practice** in the fall of the first year. The course description is as follows:

ENGR 5. Introduction to Engineering Practice (3 credit) First year practical engineering experience; introduction to concepts, methods and principles of engineering practice. Problem solving, design, project planning, communication, teamwork, ethics and professionalism; innovative solution development and implementation. Introduction to various engineering disciplines and degree programs. Mandatory for and open only for first year RCEAS students.

The objectives of this course are for students to learn general engineering competencies like project planning, communication, teamwork, etc. Students also attend lectures given by each department in the college so that they are better prepared to pick a major. Finally, they participate in two design projects offered by the departments. These design projects last for approximately six three-hour sessions. About four hundred students enroll in the course each fall. The design projects admit various numbers of students from twelve to forty, depending on the activity, the amount of equipment available, and the interest of the students.

By removing the department lectures that help students learn about the majors, talking about many of the large group activities rather than actually performing them, and slightly reducing the time for the design project sessions, this course can be condensed into FOUR (4) weeks of intensive, study. Normally, an engineering student participates in two projects. For Southeast University, all faculty will participate in four projects to experience a wider range of activities. Each project will encompass five morning or afternoon sessions. In addition, each SEU faculty member will design and develop an idea for a project from their discipline that could be implemented in a class at SEU. Lehigh faculty will help to guide them through the process of selecting a project and designing one or more activities for them to present.

American Culture and Teaching Pedagogy

Following up on the feedback we received from the SEU faculty leaders in 2013 Lehigh faculty from the College of Arts and Sciences, as well as, the College of Education have been added to the schedule and will be leading classes focusing on topics such as

- Visual Culture through Art and Architecture,
- Gender and Culture through Women Studies,
- American Culture through American Studies,
- Using film documentary as a teaching tool through English, and
- Education Leadership though the College of Education

Tentative Schedule

The schedule format will be to have an AM Session and 1.5 hour off for lunch and then a PM session. The day will start each day at 9:00 a.m. and conclude at 4:00 p.m. There will be homework assignments to be completed in the evening.

Week 1: **Course Philosophy, Management, US Culture, and Pedagogy Issues**: This material will be covered in Week 1. Also during this week orientation will take place regarding how to get around campus and the local community as well as learn how to navigate the Course Info site that will be used throughout the month.

Week 2: In the second week there will be additional offerings of cultural issues and educational leadership. The first engineering project will also occur during this week.

Week 3: The two remaining engineering projects will be completed, one in the morning and one in the afternoon.

Week 4: **Ethics, Pedagogy, and Example Project Development:** In the final week, topics will relate to the work the SEU faculty have accomplished since the start of the course. After experiencing the three projects they will have a better idea of different types of projects, delivery methods, and student deliverables. This will allow them to develop conceptual projects, which they can use at SEU in their own curricula. Also the final classes relating to American Culture will be concluded.

Program Two will conclude with the SEU faculty making presentations on July 31st and the final graduation ceremony being held on August 1st.

Engineering On-Hands Projects

Project 1. "That's My Queue": Engineering Better Queuing Systems: Kids waiting to ride a roller coaster at Disney World, customers waiting for a teller at a bank, soft-drink cans waiting to be filled in a bottling plant -- these are all examples of a queuing system. Queuing systems consist of some sort of "customers" waiting in a queue for some sort of "service." The goal of this project is to model a queuing system in order to evaluate and improve it. Participants will collect and analyze data from a real queuing system of their choice (for example, the university bookstore, a local movie theater, or a dining hall) and will use these data to simulate this system on a computer using simulation software. Participants will then propose a change to the system (e.g., add a server, or change the shape of the queue) and use their simulation model to evaluate the impact of the change.

Project 2. Wireless Sensing: Wireless communication is used by many computer systems for environmental, healthcare, public safety, energy conservation, and social computing applications. In this project, multi-person teams will study how to use the Imote2.Builder kit, then design and implement applications using the Imote2 wireless sensing platform, and summarize the group projects in professional ways. The Imote2.Builder kit includes Crossbow Imote2 hardware modules with embedded computing and wireless communication capabilities, an ITS400 sensor board with a 3D accelerometer, temp/humidity sensor, and light sensor, and the Microsoft .NET Micro Framework software that programs the hardware platform.

Project 3. Water Purification System: Contaminated water is responsible for human illness and death in many developing countries. Low cost purification systems can be designed for use in these situations. In this project, small teams will design and build simple, low cost water purification systems using low cost materials. Then the teams will test how well the systems function.