First-Year Engagement Plan Submission Form

University Park

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Background. The First-Year Seminar legislation passed by the University Faculty Senate on April 29, 2008, requires that each University Park college and DUS submit a First-Year Engagement plan. The complete Senate legislation is available online at http://senate.psu.edu/agenda/2007-2008/apr29-08agn/appb.pdf parts of the legislation are reproduced in this form.

As your unit’s contact, please briefly provide the information requested below. A lengthy response is not needed if the information can be provided by checking a box, or supplying a sentence or two or a paragraph. However, if your unit’s First-Year Engagement plan does not fit the options in the form below, please contact Yvonne Gaudelius (Associate Dean for Undergraduate Education and co-chair, FYE Committee, ymg100@psu.edu) for alternative instructions. Thank you in advance for your participation in this process.

1. First-Year Seminar characteristics. University Park colleges are required to provide at least one credit of first-year seminar. Does your first-year seminar meet the following criteria? All criteria below (a-e) must be met for the plan to fulfill the legislation.

Enter an X in front of each criterion below (a-e) that is followed by your College/Unit.

X a. taught by tenure-line or other regular, full-time faculty members (not staff or graduate students*) (*the college dean may grant reasonable exceptions, such as for professional practitioners who teach annually but whose appointments are not full-time)

If the college dean plans to grant an exception, please provide explanation in space below. (Please limit your answer to 500 words or less.)

b. taught in the student’s college of enrollment (in other words, you will provide a FYS for all incoming students in your college)

X c. taught in sections of not more than 25 students

X d. academic in content, exemplifying the full weightiness and expectations of University-level coursework (ideally satisfying General Education or other College or Major requirements, though this is not essential)

X e. explicitly address the FYE goals and objectives, which are listed here:

Goals
• Goal 1: to engage students in learning and orient them to the scholarly community from the outset of their undergraduate studies in a way that will bridge to later experiences in their chosen majors, and

• Goal 2: to facilitate students’ adjustment to the high expectations, demanding workload, increased liberties, and other aspects of the transition to college life

Objectives

• Objective 1: to introduce students to University study

• Objective 2: to introduce students to Penn State as an academic community, including fields of study and areas of interest available to students

• Objective 3: to acquaint students with the learning tools and resources available at Penn State

• Objective 4: to provide an opportunity for students to develop relationships with full-time faculty and other students in an academic area of interest to them

• Objective 5: to introduce students to their responsibilities as part of the University community.

2. Credit requirements. How many credits does your required first-year seminar provide? Please answer 1 Credit, 2 Credits, 3 Credits, or Other (For example, different sections provide 1, 2, or 3 credits).

Enter an X

| X | 1 Credit | 2 Credits | 3 Credits | Other |

If you answered “Other” in Question Number 2 above, please provide explanation below. (Please limit your answer to 500 words or less.)

3. Supplemental programming. [This question must be answered unless your unit will require all students to take a 3-credit first-year seminar. If your unit will require all students to take a 3-credit first-year seminar, this question is optional, though responding is encouraged because supplemental programming will help to make your unit’s overall first-year experience richer.]

Identify and briefly describe the additional components (other than the small-class experience) that you plan to offer, such as other courses, special advising programs, intensive orientation experiences, special programs offered by Student Affairs, etc., to meet the goals and objectives of the First-Year Engagement Plan: (Please limit your answer to 500 words or less.)

The College of Engineering first-year engagement plan includes courses and support service and networking activities. Each element is in various stages of development; however a task force will be working through this semester to finalize the components and implementation plan. The FYE task force is chaired by the College’s First-Year Seminar Coordinator, and consists of faculty, students, and staff with experience and knowledge in
the areas of assessment, advising, and mentoring programs. This team will complete their work by May 2009 and begin implementation in Fall 2009 with full implementation by the end of AY 2009/10.

First-Year Seminar - We expect to maintain our successful portfolio of 1-credit First Year Seminars while ensuring that they meet the goals and objectives as spelled out in the new legislation. Additionally, we view the First-Year Seminars as one of the important academic components that enable us to implement the College’s vision for its graduates to become World-Class Engineers. Therefore with leadership from the Leonhard Center for the Enhancement of Engineering Education we have planned a workshop (May 2009) to engage faculty in integrating our World-Class Engineering (WCE) attributes into first-year courses. Several of the WCE goals overlap with FYE goals.

EDSGN courses - In addition to the seminars, one element that has been in place for many years is EDSGN 100, Introduction to Engineering Design, a three-credit six-contact-hour per week class taught by regular faculty members, in classes of no more than 32 students. This award-winning course is currently required for all but two majors within the college, and one of these two majors takes a comparable course, EDSGN 130 (Architectural Engineering). An important feature of the EDSGN 100 course is the requirement to work on a team in response to a client-driven design project.

Support and Networking - The other FYE elements that will be incorporated in the plan involve the support services and networking opportunities. We envision these as occurring throughout the first-year. Some will continue as currently practiced and others will be strengthened or modified per the task force recommendations. Specifically, we will maintain successful programs, such as Major and Minor Nights where students have the opportunity to learn more about the academic programs. Other program elements that will be promoted as part of the FYE include internship or international opportunities and will include opportunities for students to network with other students who have participated in these experiences. The day-planner designed for (and by) engineering students will continue for FYE; whereas the orientation and mentoring program that has had varying degrees of success is being reconfigured. Some of the elements that have been viewed positively by previous students such as design competitions, scavenger hunts, picnics, ice cream socials and presentations by administrators will be considered for inclusion and will be evaluated annually (see assessment plan) to determine the effectiveness of each.

4. How will you accommodate DUS students? You have been provided with data showing a rolling average number of students who have moved from DUS into your academic unit in recent years; briefly indicate how you will accommodate this approximate number. *(Please limit your answer to 500 words or less.)*

We will ensure that sufficient numbers of FYS sections are offered to accommodate projected engineering majors and DUS enrollments. Typically all engineering First-Year Seminars will be open to any first-year student at University Park. The College has historically offered sufficient seminars for all those interested and intends to continue this policy. DUS will be informed of the seminars and will be able to advise their students accordingly. We will continue our practices of providing information and announcements to ensure that students who express interest in our majors will be aware of information sessions as well as opportunities to participate in networking events.
5. **Assessment plan.** How will you assess the extent to which the First-Year Engagement goals and objectives are met? *(Please limit your answer to 500 words or less.)*

Part of the charge to the FYE task force is to develop an assessment plan to gauge the effectiveness of each of the FYE activities in achieving the goals and objectives of the FYE. Part of the assessment will include participation rates for the components that are elective in the FYE, e.g., information sessions, mentoring and networking events. Another portion of the assessment will involve student feedback on the effectiveness of the program elements.

The Engineering Assessment and Instructional Support office, housed in the Leonhard Center, in close cooperation with the FYE task force will develop a survey and administer it annually to all first-year engineering students. Similar to our existing Senior Exit Survey and Alumni Survey, these results will be used for multiple purposes. In this case the survey will explore the effectiveness of the FYE components in meeting the goals defined by the Senate legislation, as well as our goals associated with the WCE vision. The survey results will be used to ensure continuous improvement of the programs.

Specifically related to the FYS, we will collect information about the style (discussion-based, project-based, case-studies), and topical areas of the array of courses. They will be evaluated periodically to determine if there is good balance of topical areas and style to meet the needs of the students. Of particular interest is our ability to offer a repertoire to ensure contemporary topics involving emerging technologies to be available to our students.
This report provides the additional information per the memo dated April 13, 2009. Specifically, more information was requested regarding the introductory EDSGN courses as well as information regarding outcomes from the World-Class Engineering Workshop held on May 12, 2009 by the College of Engineering that are pertinent to the first-year engagement experience as detailed in the Faculty Senate legislation.

Engineering Design

From the original plan, the Engineering Design courses were described briefly as the three-credit (six contact hours per week) courses taught by regular faculty members in classes of no more that 32 students. Annually, EDSGN 100 is taken by more than 1000 first-year students from all engineering majors and EDSGN 130 is taken by approximately 120 pre architectural engineering students. The EDSGN courses are available to DUS, EMS, AG SC, and SCI students.

EDSGN 100 and EDSGN 130 introduce engineering design with specific application to an industry or client-driven project. Throughout the semester students acquire visualization skills to draw and communicate design ideas and concepts; use the design process in the course projects and extend the design process to general problem solving; develop skills to be creative in the solution of problems; develop skills to communicate and summarize ideas, designs and results by means of reports, and presentations, and use the tools for communication; operate within a team by developing organizational skills and effective teamwork strategies.

The introductory engineering design course provides a solid grounding for the students in engineering. Additionally the students build valuable networks with other engineering students as they work on their team-based design project. The students become familiar with the College’s resources, work spaces, and access to information. In particular, they conduct most of their work in the Center for Engineering Design and Entrepreneurship (CEDE) facilities and occasionally are exposed to the Bernhard Gordon Learning Factory. They become familiar with the fundamental contemporary engineering design tools. This course leads to a culminating competition in which one team per section presents their work at the end-of-semester Design Showcase, which includes design projects from all levels of engineering study including the senior capstone courses. The Design Showcase allows students to see firsthand the progression of design in their curriculum.
World-Class Engineer Workshop

The workshop was designed to assist the College address its strategic goal to implement the World-Class Engineer Vision in the undergraduate curriculum. The workshop organizers, Thomas Litzinger, Director of the Leonhard Center, and Andy Lau, Director of the First-Year Seminars, focused their attention on three specific curricular components: first-year seminars, EDSGN 100, and the sophomore mechanics sequence. This report focuses on the first two because of the relevance to the first-year engagement plan.

In spring 2009 a survey of all first-year engineering students was conducted to gather information about the students’ understanding of the World-Class Engineer (WCE) vision. The results of that serve as a benchmark for the current status, and will be used for later assessments of the effectiveness of the curricular changes that will result from workshop. The survey results were shared with the workshop participants so that they could be more aware of the student understanding and perception of the WCE vision, particularly those elements that related to being globally aware.

Each of the 18 commonwealth campuses offering the first year engineering curriculum and each department in the College were invited to send two faculty members who teach the courses considered for redesign with an eye toward the WCE vision. In all, 46 people attended: 19 UP faculty; 19 CC faculty, 8 administrators and staff. The program began with a plenary session which set the stage for the event. Parallel sessions followed to generate ideas for implementing the WCE vision in first-year seminars, EDSGN 100 and the engineering mechanics sequence. The final plenary sessions summarized the ideas and provided the guidelines for submitting proposals for funding from the Leonhard Center to design and implement the curricular changes. Briefly, proposals will be considered for seed funding for up to three years. Teams are encouraged to apply by mid June with the first round of funding being available for fall 2009.

The first-year seminar component of the first-year engagement plan will benefit from the focused support by enabling some of the core themes in the world-class engineer vision to be introduced to the students early in their studies. Examples of the content areas that faculty will be developing that will increase the students’ awareness of the world include: sustainability (via

**WORLD-CLASS ENGINEER VISION**

_Aware of the World:_ World-class Engineers are aware of the global nature of their profession, and the challenges and opportunities that it brings; they are sensitive to cultural differences and the diversity that exists within individual cultures.

_Solidly Grounded:_ World-class Engineers are solidly grounded in the fundamentals of their discipline. This solid grounding allows them to tackle complex, real-world problems and serves as the foundation on which they build their knowledge and expertise through lifelong learning.

_Technically Broad:_ World-class Engineers are conversant with other engineering and scientific disciplines related to their field, allowing them to work on problems that are cross-disciplinary.

_Innovative:_ World-class Engineers create innovative solutions to meet societal needs. They pursue opportunities to apply their skills in both traditional and non-traditional fields such as financial services, health care, and education.

_Effective in Teams:_ World-class Engineers are highly productive members of teams, co-located or geographically dispersed; they communicate effectively within the team and outside of it.

_Successful as Leaders:_ World-class Engineers are strong, ethical leaders at all levels from technical team leader to CEO.
eco/carbon footprint exercises, ecological decision simulations); global/international design (via case studies); energy (via energy investigations for different countries); and quality of life indicators for different countries. Examples of the strategies that faculty will be deploying that will increase the students’ effectiveness in teams include: use of a PSU Survivor Module (students learn about and use campus resources and develop an e-portfolio); use of case studies that expose students to both successful and not-so-successful teams); immerse students in team activities around puzzle solving.

The introduction to engineering design course (EDSGN) component of the first-year engagement plan will benefit from the Leonhard Center support by incorporating more team work, focused instruction on creativity/innovation, and increased exposure to global issues in design. Examples being considered by the workshop participants include:

- Incorporating product design for consumers in another culture – consider consumer interests, regulations, costs, etc., use Breeze to link to international partner institutions;
- Creating a library of video clips of engineering challenges around the world, such as urban traffic (volume of vehicles and noise pollution), clean water, rural and urban infrastructure, etc.;
- Providing open-ended problems with realistic constraints that require ingenuity (e.g., 18 cubic foot refrigerator for the disabled), and then fostering the sharing of ideas;
- Developing resources for students to learn about the characteristics of successful teams and strategies to be successful. One resource could be a video (by students and for students) of vignettes on interventions that work for successful teams;
- Design and implement a team skills assessment to measure professional development of the students.

The workshop and subsequent support from the Leonhard Center will accelerate the creation of projects and resources to assist students gain a deeper understanding of engineering while becoming more effective in working together, more knowledgeable of the college and university resources, more aware of the expectations of the college to become world-class engineers, and more comfortable accessing the tools and engaging with the faculty as they learn about the profession of engineering. Coupled with the co-curricular and advising support that was noted in the earlier report, these two elements (one-credit first-year seminar and the engineering design course) will provide a strong connection for the students to the College of Engineering and will address the objectives of the Faculty Senate legislation.