SEEC
Student Enrollment and Engagement through Connections


4.24.2008
SEEC Workshop Agenda – 4.24.2008

11:00 am - Year 1 Update from PIs and O-Team Leaders

**NSF Year 1 Annual Report and Evaluation Activities**

11:30 am – Student Numbers and Benchmarks

12:00pm – (Working Lunch) SEEC Outcomes - Year 1
  • Group Activity on SEEC Contributions for Annual Report
  • Process Evaluation for O-Teams

**Planning for Year 2**

1:00pm - Planning for Year 2 (3, 4, and 5) with Logic Models
  • Logic Model Review (powerpoint)
  • O-Team Working Groups – Logic Models (activity planning)
  • O-Team Logic Model reports

3:50pm – Wrap up and next steps

Workshop Evaluation link will be emailed to you – Please complete.

**Note:** Evaluation/Assessments will be added to Logic Models by the Evaluation O-Team for Year 2. This will take place post workshop.
NSF STEP Grantees Meeting

• March 6-7, 2008
• Poster Session

http://www.eng.iastate.edu/seec/
SEEC Poster

Integrated Recruitment and Retention Objectives

Learning Village
Connected Curriculum
Student-Centered Advising
Coordinated Networking
Evaluation

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SEEC Poster

High School

Year 2

Year 3

Year 4

Year 5

Recruitment → Articulation → Retention

DMACC → Iowa State University

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SEEC Poster

Context Evaluation

Goals

Input Evaluation

Plans

Outcomes

Actions

Process Evaluation

Product Evaluation

Core Values

http://www.eng.iastate.edu/seec/
## NSF STEP Grantees Meeting

### Breakout Sessions

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<th>Presenter(s)</th>
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<td>Recruiting Undergraduate Students</td>
<td>Bruning, McMaken</td>
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<tr>
<td>Programs for Entering Freshmen</td>
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<tr>
<td>Freshman/Soph Seminars &amp; Learning Communities</td>
<td>Jedele, Mickelson</td>
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<td>Gateway Courses</td>
<td>McMaken, Rover</td>
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<td>Mentoring Programs</td>
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<td>Internships &amp; Undergraduate Research</td>
<td>Bruning</td>
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<td>Community College Issues</td>
<td>Darrow, Jedele, Mickelson, Shelley</td>
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<tr>
<td>Transfer/Transition from 2-yr to 4-yr Schools</td>
<td>Darrow, Jedele, McMaken, Mickelson, Shelley</td>
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<td>Effective Project Management</td>
<td>Rover</td>
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<td>Success of the Overall Program</td>
<td>Shelley</td>
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<td>Institutional Transformation</td>
<td>Rover</td>
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<td>Type 2 Roundtable</td>
<td>Bruning, Darrow</td>
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[http://www.eng.iastate.edu/seec/]
NSF STEP Grantees Meeting

- What We Learned
  - Project Management
    - Need for close collaboration between DMACC and ISU, to ensure communication and sharing of data to help the project succeed.
    - Most STEP projects underestimate the time and effort needed for project management. NSF is willing to allow reallocations in a budget to improve project effectiveness.

- Evaluation
  - Evaluation pointers: start early, identify clear measurement goals, define the distribution/frequency (e.g., front-loading, bursts, etc.)
  - A clear, thorough evaluation plan is critical to receiving continued funding and avoiding complications at the third-year project review by NSF.
    - Need specific measureable outcomes, quantitative measures of progress on objectives.
    - Project success depends on evaluation.
NSF STEP Grantees Meeting

• What We Learned (continued)

• Evaluation (continued)
  • Evaluation requires collaboration, and is a shared responsibility among team members and evaluators.
  • The evaluation structure used by projects varies, including internal evaluators, external evaluators, institutional research offices, and external review committees.
  • NSF is interested in numbers, but...
    • Evaluation is about creating a story, not just reading a meter. Need to interpret results, draw conclusions. Numbers are necessary but not sufficient. It is important to understand the context and effect of interventions.
NSF STEP Grantees Meeting

• What We Learned (continued)

• Activities
  • Calculus courses continue to play a critical role in retention, and there are various versions and arrangements being used. Universities are also using aggressive, proactive advising and monitoring of students in calculus.
  • There is considerable interest in the Big 12 STEP Conference.
  • Need to develop systems that track students between institutions.
  • Engineering is a field of study that offers great breadth in career opportunities for graduates; be what you want to be with an engineering degree. Can we market it better to prospective students?
  • We are in a good position to propose a parallel STEP Type II project.

• Institutional Change
  • Need to change the daily conversation, because the daily conversation supports the myths that define the university culture.
  • Need to understand your own environment. Inevitably, one gets “stuck” with change processes, and getting “un-stuck” requires understanding the environment.
  • If change involves faculty development, need to find the so-called “bell cows”.

http://www.eng.iastate.edu/seec/
Learning Village O-Team Update

- First Year Focus: development and enhancement of intra and inter-institutional relationships through the development of the “Learning Village.” Learning Village key accomplishments include:
  - On-site engineering advising for over 25 DMACC students (2-3 hours a week)
  - Established web-based network for connecting DMACC students with ISU advisors/peer mentor
  - 3 new residential and 1 academic undeclared Freshmen ISU College of Engineering learning communities added for F08
  - New ISU Material Science and Engineering learning community added for F08.
  - Class visits by engineering faculty to DMACC pre-engineering classes (>100 students)
  - ISU career fair visits by DMACC pre-engineering students (> 60 students)
  - Development of an eight week engineering orientation class taught at DMACC (n=13)
  - Bimonthly SEEC pre-engineering newsletters (five total)
  - Increased Learning Community opportunities within the College of Engineering
  - Development of podcast materials for learning more about the engineering profession
  - Ultimate Frisbee challenge with integrated ISU/DMACC teams with an engineering presentation of the engineering behind the flight of a Frisbee
Curriculum O-Team Update

- The Connected Curriculum Objective: To redesign the first-year engineering curriculum to enable flexibility and commonality across LCs; and to make selected engineering gateway courses available to DMACC students via distance education.
  - Update during Year 1
    - Emphasize the following attributes of the first-year curriculum: student engagement and success, academic rigor, classroom climate.
    - Evaluate curricular and co-curricular factors that affect 2nd and 3rd year retention.
  - Apply outcomes-based design to first-year engineering courses and identify multiple tracks to achieve outcomes that fit within the learning village.
    - FY Curriculum Review planned for 08-09.
    - Faculty FY Steering Committee being formed.
    - Review of and support for student success factors in coordination with Advising Team and Engineering College Advising Committee.
    - Participating in new university initiative to enhance rigor in the undergraduate curriculum (Spring 2008 launch).
    - Development and exploration of new FY learning experiences for potential use in LCs, e.g., leadership competencies (Engineering Leadership Program), critical thinking skills.

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Curriculum O-Team Update

- Implement interdisciplinary service-learning projects and undergraduate research projects as part of LC programming for 2nd and 3rd year students.
  - To be undertaken in coordination with Learning Village Team and Engineering Learning Communities Task Team.
  - FY service-learning project in Engineering Leadership Program provides a starting point (Spring 2007, Spring 2008).
  - Leveraging of new COE program to facilitate undergraduate research: PERUSE, Providing Experiences in Research for Undergraduate Students in Engineering, http://www.engineering.iastate.edu/peruse.html

- Develop and implement the ACCESS program, Academic Courses for Community Colleges in Engineering Study, an engineering distance education program to offer selected gateway courses in engineering to community college students.
  - Ongoing review of engineering programs of study, transfer guides, and courses on the critical path.
  - Promotion and expansion of ISU-DMACC Cross Enrollment programs.
    - For ISU students: http://www.public.iastate.edu/~registrar/info/crossnroll.html
    - For DMACC students: http://www.dmacc.edu/registration/cross-enrollment.asp

- Summer 2008: distance offerings of EM 274 (Statics) and EM 374 (Mechanics of Materials)
Curriculum O-Team Update

- **Classroom climate**
  - CELT 07-08 TEACH grant on “Improving Classroom Climate” to COE Diversity Affairs
    - Originated with ISU P&S Recruitment/Retention grant, in partnership with CELT and PWSE.
    - Series of three workshops for faculty and staff in the COE on “Enhancing the Climate in Engineering”
      - Workshop 1: Increasing Participation, Leadership, and Community
      - Workshop 2: Women’s Perspectives on the Engineering Classroom
      - Workshop 3: Course Planning to Improve Your Classroom Climate

- **Curricular and co-curricular factors that affect 2nd and 3rd year retention**
  - ISU Retention Task Force: studies, tools, etc.
Advising O-Team Update

- Gathered input from various stakeholders regarding advisors/student needs (advising team meetings, individual meetings with community college faculty and staff, meetings with ISU transfer students, and meetings with outreach/extension personnel);
- Developed resources for Admissions Partnership Program (APP) students including a new web-based informational resources;
- Developed eight week engineering orientation class;
- Developing transfer student guide and web-based materials that can be posted online for print and/or electronic use;
- Developing web-based career development site for pre-engineering students and/or students exploring engineering;
- Developing plans for connecting community college students with ISU's Program for Women in Science and Engineering (PWise) Girlslink eMentoring, WISE and Transfer Learning Communities, Mentornet, and student role model programs;
- The Pathway to a STEM Baccalaureate Degree Project conducted a site visit with the SEEC Project students, faculty, staff, and administrators in order to include key effective practices and stories into the development of the Laanan Pathway2STEM dissemination products;
- ISU career fair visits for 60+ community college students;
- On-site engineering advising for DMACC students (2-3 hours a week) – 20 students
- Provided advising services for APP students – August 1 – July 31, 2007 – 22 students; August 1 – present, 2008 – 13 students;
- Presentation to all of DMACC advising and counseling staff to disseminate transfer advising materials and literature on the engineering majors; and
- Conducted advising meetings with faculty/staff at 5 community colleges.
Networking O-Team Update

1. Established Network Team and appropriate sub-teams
2. Established sub-teams (E-TEC Initiative; Recruitment; Scholarship) and developed action plans
3. Identifying STEM networks and existing connections
4. Hosted E-TEC Summit and conducted survey to access needs
5. Initiating the development of recruitment kits/marketing materials
6. Exploring and determining scholarship strategies and communicating education finance information
NSF Year 1 Annual Report and Evaluation

• How do we measure the overall goal of the project which is....

     “To increase the number of engineering graduates at ISU by 120 per year” (NSF SEEC proposal, p. 2)

• Student numbers and benchmarks
  ✓ How do we define this?
  ✓ What numbers do we pull for annual report?
  ✓ What numbers do we track to be able to demonstrate progress toward our goal.
Baseline Data from Proposal

The goal of the SEEC Project is to increase the number of engineering graduates at Iowa State University by 120 per year. As a baseline for the project, we will use an average of the ASEE 2001-2005 degree data, as shown in Table 1. The ASEE 2005 degree data represents a peak, resulting from peak enrollments in 2001 and 2002. The additional graduates represent an increase of about 15% of total engineering degrees awarded at Iowa State compared to the baseline. Enrollment and graduation data are maintained by ISU’s Office of Institutional Research.

<table>
<thead>
<tr>
<th>Year</th>
<th>African-American</th>
<th>Asian-American</th>
<th>Hispanic</th>
<th>Native-American</th>
<th>Foreign</th>
<th>Caucasian</th>
<th>Other</th>
<th>Men</th>
<th>Women</th>
<th>Total</th>
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<tbody>
<tr>
<td>2001</td>
<td>6</td>
<td>28</td>
<td>9</td>
<td>0</td>
<td>93</td>
<td>555</td>
<td>0</td>
<td>574</td>
<td>117</td>
<td>691</td>
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<tr>
<td>2002</td>
<td>12</td>
<td>31</td>
<td>11</td>
<td>1</td>
<td>68</td>
<td>594</td>
<td>0</td>
<td>607</td>
<td>110</td>
<td>717</td>
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<tr>
<td>2003</td>
<td>9</td>
<td>27</td>
<td>8</td>
<td>1</td>
<td>94</td>
<td>711</td>
<td>0</td>
<td>696</td>
<td>154</td>
<td>850</td>
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<tr>
<td>2004</td>
<td>11</td>
<td>23</td>
<td>14</td>
<td>1</td>
<td>89</td>
<td>608</td>
<td>0</td>
<td>682</td>
<td>144</td>
<td>806</td>
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<tr>
<td>2005</td>
<td>18</td>
<td>32</td>
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<td>672</td>
<td>38</td>
<td>741</td>
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<tr>
<td>Avg.</td>
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<td>28</td>
<td>13</td>
<td>1</td>
<td>85</td>
<td>640</td>
<td>8</td>
<td>666</td>
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More specifically, the numerical goals of SEEC are as follows:

- Increase in graduates (degrees) per year: 120 (15% increase compared to baseline)
- Total graduates per year: approximately 910
  This total would place ISU back in the ASEE top 10 list of schools by degrees awarded. ISU is currently 12th (refer to the table provided as Supplemental). Our goal is to stay in the top 10.
- Increase in diversity of graduates per year: minority graduates by minimum of 10 (20% increase) and women graduates by a minimum of 40 (32% increase)
- Total undergraduate enrollment at the levels of 2001-2002: 4800-4900 undergraduate students

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"Supply Chain" for Increasing a Graduating Class

<table>
<thead>
<tr>
<th>Project Years</th>
<th>Recruitment</th>
<th>Articulation</th>
<th>Retention</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEEC1 2007-2008</td>
<td>Y0</td>
<td>High School</td>
<td>110</td>
</tr>
<tr>
<td>SEEC2 2008-2009</td>
<td>Y1 DMACC</td>
<td>Transfers</td>
<td>110</td>
</tr>
<tr>
<td>SEEC3 2009-2010</td>
<td>Y2 DMACC</td>
<td>ISU</td>
<td>30</td>
</tr>
<tr>
<td>SEEC4 2010-2011</td>
<td>Y3 DMACC</td>
<td>ISU</td>
<td>50</td>
</tr>
<tr>
<td>SEEC5 2011-2012</td>
<td>Y4 DMACC</td>
<td>ISU</td>
<td>150</td>
</tr>
</tbody>
</table>

Only sources contributing to the increase of a single 2012 graduating class are shown. Each graduating class would have a similar "supply chain" and increases.

http://www.eng.iastate.edu/seec/
Measuring Student Numbers and Benchmarks

• Who counts? What students?
• What numbers are we pulling (average, cross sectional, and/or trend)? When do we collect?
  ✓ Average – what years are relevant?
  ✓ Cross sectional – what slice is nice?
  ✓ Trend – what year do we start with? and at what point do we measure impact? (e.g., spring 2000 – 10th day count, how does this compare with DMACC’s counting procedures)

• Who collects the numbers?
  ✓ How is this operationalized? Who talks to whom to get numbers?

• How are we tracking student data?
  ✓ Aggregates or individual level dataset?
  ✓ Which Demographics? (i.e., variables?)

• What complications might arise and how do we resolve?
NSF Annual Report – Year 1 Outcomes

• What contributions has the project made?
  • To the principal discipline
  • Other disciplines in science or engineering
  • The development of human resources
  • The physical, institutional, or information resources that form the infrastructure for research and education
  • Other aspects of public welfare beyond science and engineering, such as commercial technology, the economy, cost-efficient environmental protection, or solutions to social problems?

O-TEAM ACTIVITY

• In O-Team groups brainstorm answers to these questions
• Look at this from 1) an O-Team perspective, and 2) an entire project perspective
• Use the worksheets to record your answers and then transfer to the poster paper
INDIVIDUAL ACTIVITY

• Please complete the process evaluation questionnaire.

• There is an online version of this questionnaire if you prefer to complete online. The url can be forwarded to all of your O-Team members so that everyone can complete an evaluation for year 1.