Some Experiences with Co-op Educational Outcome Assessment and Advisory Boards

Brian W. Randolph
UT Engineering Facts & Figures

• Six Departments
  – Bioengineering
  – Chemical and Environmental Engineering
  – Civil Engineering
  – Electrical Engineering and Computer Science
  – Engineering Technology
  – Mechanical, Industrial and Manufacturing Engineering

• 22 Academic Degree Programs
  – 12 Bachelors, 8 Masters, & 2 PhD degrees
UT Engineering Co-op Program

- Mandatory co-op program for BS in Engineering students (~2300) with intensive career guidance and integrated professional development. Optional for BS in Engineering Technology students (~1100).
- Minimum 1 year of full-time co-op work experience required to graduate.
- Work begins in sophomore year and alternates with class semesters.
## Cooperative Experience Plans

### Plan A

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>Course Work</td>
<td>Course Work</td>
<td></td>
</tr>
<tr>
<td>Year 2</td>
<td>Course Work</td>
<td>Coop Exp.</td>
<td>Course Work</td>
</tr>
<tr>
<td>Year 3</td>
<td>Coop Exp.</td>
<td>Course Work</td>
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<tr>
<td>Year 4</td>
<td>Course Work</td>
<td>Coop Exp.</td>
<td>Course Work</td>
</tr>
<tr>
<td>Year 5</td>
<td>Course Work</td>
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### Plan B

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Spring</th>
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<tbody>
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The College-based Career Development Center identifies and cultivates placement opportunities for our students.
Engineering Career Development Center

- Eight person staff, plus student workers.
- All professional staff have corporate HR experience. Most have degrees in educ.
- Students divided by majors. Employers served by staff ‘account managers.’
- Staff co-teach Professional Development courses with department faculty.

Largely self funded through course fee.
## Placement Outcomes

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
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<td>Spring</td>
<td>354</td>
<td>352</td>
<td>386</td>
<td>399</td>
<td>417</td>
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<tr>
<td>Summer</td>
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<td>591</td>
<td>605</td>
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<td>324</td>
<td>338</td>
<td>344</td>
<td>363</td>
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<td>Annual</td>
<td>1180</td>
<td>1281</td>
<td>1335</td>
<td>1348</td>
<td>~1400</td>
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Employment Services vs. Professional Development Process?

Prior to co-op interviews, students complete employer-identified ‘marketable skills’ coursework and a discipline-specific course in professional development that teaches communication skills, professional conduct, ethics and employer expectations. Employer participation is integral to the course.
Framework for Outcome Assessment

• Consider a broad view regarding assessment: student outcomes, employer needs, institutional goals, political capital, program sustainability, recruiting, benefactor relations, etc.
• Identify key metrics that impact accreditation, program services, funding decisions and/or strategic goals.
• Spread out modes of assessment to reduce ‘survey fatigue’ and match the granularity needed.
• Store and distribute data in forms that support review, analysis and action.
• Assess the assessment to streamline future processes.
Data Storage and Retrieval

• UT utilizes CSO Research Interfase™ software to manage resumes, student information, employer information, placements and salaries.

• Reports can be designed and run to provide Excel sheets for a variety of users.

• Every CDC employee is trained to use the database.

• On-line evaluations now via Qualtrics.
Employer Evaluation Interface

The College of Engineering

Employer Evaluation

Student Information:
- Student First Name:
- Student Last Name:
- Student's Major:

Co-Op Information:
- Semester of Co-Op (e.g., "Spring 2012"): [Input]
- Start Date (e.g., 2012-01-01): [Input]
- End Date (e.g., 2012-05-31): [Input]
- Supervisor (Evaluator) Name:
- Supervisor Title:
- Supervisor Email:
- Company Name:
- Company Address:
- City:
- State:
- Zip Code:

Qualitative Analysis:
Describe major accomplishments and contributions of the student:

What is your overall evaluation of the work done by the student? Note any major strengths and weaknesses:

Quantitative Analysis:
The student demonstrated:
- An ability to apply mathematics, science, and/or engineering:
- An ability to design experiments:
- An ability to conduct experiments:
- An ability to analyze and interpret data:
- An ability to design a system, component or process to meet a desired need:
- An ability to function on a multi-disciplinary team:
- An ability to identify engineering problems:
- An ability to formulate engineering problems:
- An ability to solve engineering problems:
- An understanding of professional and ethical responsibilities:
- An ability to communicate with others effectively:
- An understanding of how his/her work and the company impact society:
- An understanding of the need to learn more than just what they learned in school:
- An awareness of how current events affect the company:
- The ability to use modern engineering tools (computers/software, etc.):

Future Employment:
Is the student returning to work at your company?
Comments:

Do you plan to hire other UT co-op and/or graduates in the future?
Have you or do you intend to discuss this evaluation with the co-op student?
### Quantitative Analysis:

The student demonstrated:

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Student Evaluation Interface
**Employer Feedback and Advisory Boards**

- Consider direct and indirect collection of employer feedback.
- Build from existing programmatic committees and boards at multiple levels.
- Consider every employer interaction an opportunity to educate about co-op.
- Collect evidence of implemented feedback and share it with employers.
A dialog at the executive level to identify win-win linkages between corporations, our students & graduates, faculty and programs.

A venue to redefine engineering education that supports operational level corporate needs such as technical preparation, diversity, communication skills, project management, leadership, etc.
UT Engineering National Visiting Advisory Board

Academia
- California Maritime Academy
- Carnegie Mellon University
- Case Western Reserve University
- Northeastern University
- University of California Los Angeles
- University of Maryland
- The University of Toledo

Industry
- The Andersons, Inc.
- ARCADIS
- B&E Jackson Engineers, Inc.
- Camp, Dresser, McKee, Inc.
- Dunbar Mechanical, Inc.
- FirstEnergy Corp.
- Glasstech, Inc.
- GRC Corporation
- Harmon Sign Company
- Industrial Engineering Technology, Inc.
- Innotolio, Inc.
- Koester Corporation
- Levin Capital Strategies, LP
- LNC Group
- McMaster Motor Company
- Owens Corning
- Selection Resource, Inc.
- Sensor Systems, LLC
- SSOE Group
- US Venture Partners

National Laboratory
- NASA Glenn Research Center
Contributors to Program Sustainability

• Fee-based co-op registrations with designated account for Career Development Center.
• Increased placement volume has required hiring an additional Assistant Director and clerk in late 2014.
• Capital investments to expand the Engineering Career Development Center.
• Fall and spring career fairs with significant growth in attendance and placements.
• Curricular moves to require co-op in additional programs.
Engineering Career Development Center Expansion

NEW/REMODELED AREA = 1016ft²

1st Floor Nitschke Hall
Engineering Career Expo

Engineering Career Development Center hosts two Career Expo’s each year.

138 companies participated in the Spring 2015 Career Expo.

669 engineering students and alumni participated.
For more information contact:

Brian W. Randolph, PhD, PE
Executive Associate Dean of Academic Affairs
Professor of Civil Engineering
Tel: (419) 530-8044/8000
brian.randolph@utoledo.edu

Vickie Kuntz, PhD
Director, Engineering Career Development Center
Tel: (419) 530-8054
vkuntz@eng.utoledo.edu

Please visit our Career Development Center website at www.eng.utoledo.edu/coop/