

Preparing a Successful SSR

Understanding PEOs and the Required Review Process

Association of Thai Professionals in America and Canada

Criterion 2: Program Educational Objectives PEOs

According to ABET, PEOs :

- Are broad statements that describe what graduates are expected to attain within a few years of graduation
- Serve the needs of the program's constituencies
(Students, Parents, Faculty, Alumni, Employers, Respective Professional Societies, Industrial Advisory Board, and Graduate Education Institutions)

Establishing PEOs: PEOs should be

- Consistent with the mission statements, vision statements, and core values of the institution
- Consistent with Student outcomes (discussed in Criterion 3 later)
- Developed, reviewed and vetted by the faculty and key constituencies such as alumni, industry advisory board to properly incorporate their inputs
- Written to clearly state what the graduates will actually do after graduation
- Displayed prominently to be readily available for the public view

Writing Criterion 2: PEOs

- **Mission Statement:** Provide the institutional mission statement.
- **Program Educational Objectives:** List the program educational objectives and state where these can be found by the general public.
- **Consistency of the Program Educational Objectives with the Mission of the Institution:** Describe how the program educational objectives are consistent with the mission of the institution.
- **Program Constituencies:** List the program constituencies. Describe how the program educational objectives meet the needs of these constituencies.
- **Process for Review of the Program Educational Objectives:** Describe the process that periodically reviews the program educational objectives including how the program's various constituencies are involved in this process. **Describe how this process is systematically utilized to ensure that the program's educational objectives remain consistent with the institutional mission, the program constituents' needs and these criteria.**

Compliance with Criterion 2: PEOs

Checklist item for Criterion 2	C,W,D or none
<ul style="list-style-type: none"> Published and consistent with institution's mission, the needs of the program's constituencies, and these criteria 	
<ul style="list-style-type: none"> Documented, systematically utilized, and effective process, involving program constituencies, for the periodic review of the program educational objectives 	
<ul style="list-style-type: none"> Reflect what the program expects its graduate to be able to do in 3-5 years after graduation? 	

PEV will be:

- Focusing on whether the PEOs are published. Consequently, it is important to write acceptable PEOs that state what the graduates will actually do after graduation. They also should be consistent with university's mission statements, as shown. Hence it is imperative to review mission statements as part of criterion 2 and to include them in this part of the SSR
- Looking for evidence that the PEOs have been periodic reviewed involving both faculty and constituents. So some form of alumni input is needed for criterion 2. Most programs have an External Advisory Committee, or Industry Advisory Board, and they could provide useful inputs concerning the PEOs.

How to Develop PEOs to be consistent with University Missions and Core Values

Typical Grouping of Mission Statement

Essentially

- Most institutional mission/vision statements and
- The core values of constituencies

usually boil down to requiring that an engineering program produce graduates with

- Technical Competency
- Professional Development, and
- Citizenship in Global Community

CWRU Example

Mission:

Case Western Reserve University *improves and enriches people's lives* through research that capitalizes on the power of collaboration, and education that dramatically engages our students.

We realize this goal through:

- Scholarship and creative endeavor that draws on all forms of inquiry.
- Learning that is active, creative and continuous.
- Promotion of an inclusive culture of global citizenship.

CWRU Example

Vision:

We aim to be recognized internationally as an institution that *imagines and influences the future*.

Toward that end we will:

- Support advancement of *thriving disciplines as well as new areas of interdisciplinary excellence*.
- *Provide students with the knowledge, skills and experiences* necessary to become leaders in a world characterized by rapid change and increasing interdependence.
- Nurture a community of *exceptional scholars who are cooperative and collegial, functioning in an atmosphere distinguished by support, mentoring and inclusion*.
- Pursue *distinctive opportunities* to build on our special features, including our *relationships with world-class health care, cultural, educational, and scientific institutions in University Circle and across greater Cleveland*.

CWRU Example

Core Values:

- ***Academic Excellence and Impact***
 - Eminence in teaching and research
 - Scholarship that changes lives and deepens understanding
 - Creativity and innovation as hallmarks of our efforts
- ***Inclusiveness and Diversity***
 - Civility and the free exchange of ideas
 - Civic and international engagement
 - Appreciation for the distinct perspectives and talents of each individual
- ***Integrity and Transparency***
 - Academic freedom and responsibility
 - Ethical behavior
 - Shared governance
- ***Effective Stewardship***
 - Strong, ongoing financial planning
 - Emphasis on sustainability
 - Systems that support attainment of our mission

An Example of How to Write PEOs for EE

Poorly written PEOs	Well written PEOs
Graduates are prepared to work in the fields of electrical, electronic, computer and telecommunication engineering	Graduates practice in the fields of electrical, electronic, computer, signal and systems , control and telecommunication engineering
Graduates have the educational background to go to graduate school and do research	Graduates pursue advanced education, research, and development in the fields of electrical, electronic, computer, signal and systems , control and telecommunication engineering
Graduate have leadership and teamwork skills	Graduates participate as leaders on team projects
Graduates are aware of ethics and professional responsibility in the workplace	Graduates conduct themselves in a professional and ethical manner in the workplace

Mapping PEOs to Institutional Mission (Core Values)

Institutional Core Values	PEO 1:	PEO 2:	PEO 3:	PEO 4:
Eminence in teaching and research	✓	✓	✓	✓
Scholarship that changes lives and deepens understanding	✓	✓	✓	
Creativity and innovation as hallmarks of our efforts	✓	✓	✓	
Civility and the free exchange of ideas	✓	✓	✓	✓
Civic and international engagement	✓	✓	✓	✓
Appreciation for the distinct perspectives and talents of each individual	✓	✓	✓	
Academic freedom and responsibility	✓	✓	✓	✓
Ethical behavior				✓
Shared Governance				✓
Provide students with the knowledge, skills and experiences necessary to become leaders in a work characterized by rapid change and increasing interdependence	✓			✓

Example PEOs for EE, CPE

Technical Competence

PEO 1: Graduates **practice proficiently** in the fields of **electrical, electronic, computer, signal and systems, control and telecommunication** engineering

Professional Development

PEO 2: Graduates **engage productively** in high-tech industries, digital economy, healthcare, and business through graduate level studies, cutting edge research and development, and lifelong learning

PEO 3: Graduates **compete effectively** in a world of rapid technological change and assume leadership roles within industrial, entrepreneurial, academic, or governmental environments in the broad context of **electrical, electronic, computer, signal and systems, control and telecommunication** engineering

Citizenship in the Global Community

PEO 4: Graduates **function effectively** as individuals and as members or leaders of multidisciplinary and multicultural teams in a diverse global economy. using their communication and leadership skills

PEO 5: Graduates **act professionally and ethically** in the workplace

Example PEOs for IE

Technical Competence

PEO 1: Graduates apply their technical skills in mathematics, science, and engineering to the solution of complex problems encountered in modern Industrial Engineering practice.

PEO 2: Graduates model, analyze, design, and experimentally evaluate components or systems that achieve desired technical specifications subject to the reality of economic constraints.

Professional Development

PEO 3: Graduates compete effectively in a world of rapid technological change and assume leadership roles within industrial, entrepreneurial, academic, or governmental environments in the broad context of IE

PEO 4: Some graduates who choose to redirect their careers are employed in diverse fields such as healthcare, business, law, computer science, multimedia, and music through graduate level studies and the process of lifelong learning.

Citizenship in the Global Community

PEO 5: Graduates use their communication skills to function effectively both as individuals and as members of multidisciplinary and multicultural teams in a diverse global economy.

PEO 6: Graduates engage in highly ethical and professional practices that account for the global, environmental, and societal impact of engineering decisions.

Example PEOs:
Systems and Control Engineering

Program Educational Objectives:

- PEO 1: Students analyze **multidisciplinary** phenomena and problems using **systems methodology**
- PEO 2: Students use the **systems thinking, critical thinking and problem solving skills** to **design** engineering systems or processes that **respond to societal needs**
- PEO 3: Students perform **systems and control research**
- PEO 4: Students work **effectively, professionally,** and **ethically** in systems and control related professions by developing skills in oral and written **communications, teamwork** and **leadership**

Reviewing and Updating PEOs

Must establish well-defined processes and schedules to

- Periodically review PEOs using inputs from the faculty and key constituencies such as alumni, industrial advisory board, employers, EE graduate schools to assess and evaluate achievement of PEOs
- Use evaluation results to take action to improving achievement of PEOs
- Use evaluation results to take action to revise PEOs to accommodate changing needs of constituencies

PEOs must serve the needs of Constituencies of the Degree Program

Typical Constituencies

- Program Faculty members
- Alumni (2-5 years after graduation)
- Co-op employers
- Employers
- Graduate Schools in closely related fields
- **Industrial Advisory Board**
- Current Student Cohort (Some PEVs recommend not to use this)

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Reviewing and Updating PEOs

Summary of Constituent Input to PEOs

Input Method	Schedule	Constituent
Alumni survey	Every three years	Alumni 2-5 years out
Employer focus group	Every two years during Career Fair	Employers (and recruiters); some are alumni
Senior exit interview	Annually	Students; retrospective discussion of PEOs and their intended career paths
Advisory Council discussions	As needed—available annually	Industrial representatives, employers, alumni
Curriculum Committee meetings	Available as frequently as needed	Faculty and students

Reviewing and Updating PEOs

Summary of Recent Changes in PEOs

Modification	Proposing Constituency	Approval Date
Expand first PEO to include practical application of engineering principles; add PEO on leadership and ability to function in cross-functional teams	Alumni; strongly supported by the Advisory Council	Spring, 2018
Add “global” to the list of communities in which our graduates will serve	Employers	Spring, 2019
Various grammatical and stylistic modifications	Curriculum Committee	Various