



How to start your SSR


*Presented at COE/TABEE's SSR Training
January 9-10, 2020*



Assignment 1

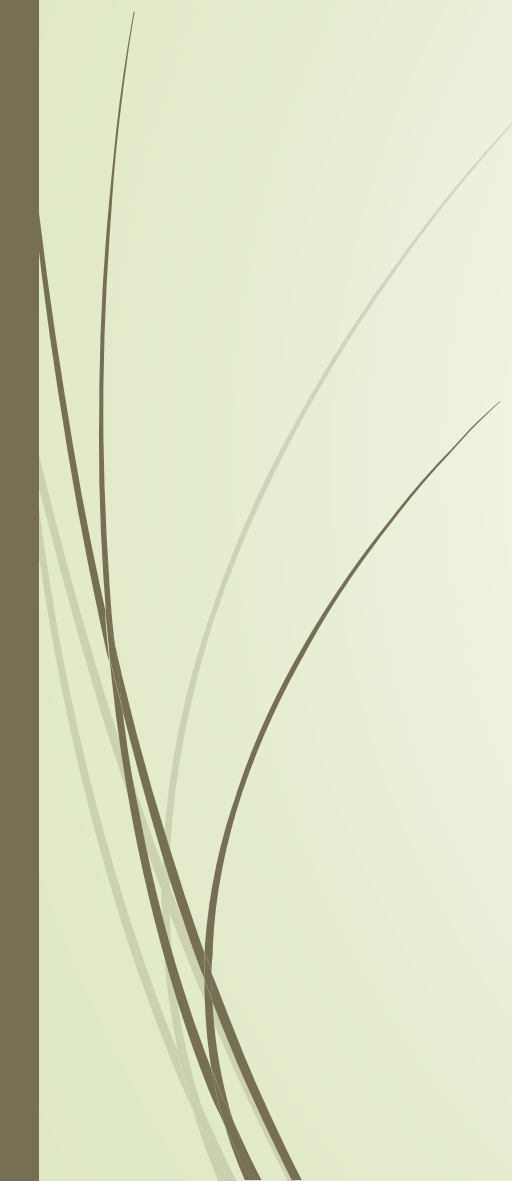
First Page: Contact Person

- ▶ Name and Title
- ▶ Department and Mailing Address
- ▶ E-mail, Phone, and Fax



Assignment 2.

Institutional Background

- **History of the University, Each Faculty and Department**
 - **This section is common for all department, so the Dean Office should take care of this section for uniformity**
- 

Assignment 3. Students

- Discuss how incoming students are being selected
- There are CAS and direct admission for most programs, and, again here, if they are exactly the same for every department, the Dean Office should take care of this section, with additional information provided by each department
- The important information that PEVs are looking for is the number of incoming students versus number of faculty members. Also of interest is the graduation rate (how many students graduate in four years, five years, and six years), or sometimes commonly known as retention rate
- They are also interested in seeing how students' performance are being monitored and advisement given to students, both for academic progress as well as career path



Assignment 4. Checking ABET's General Engineering Requirements

- 4.1 Must have a minimum of 1 year equivalent or at least 30 credits of basic Mathematics and Science
- 4.2 Must have at least One and a half year of Engineering Content in the area of specialty
- 4.3 Must have at least 30 credits of general knowledge
- 4.4 Must have Major Design Experience or Senior Capstone Design Project
- 4.5 Use Table 5.1 Given in the ABET Template



Assignment 5. Setting up Industrial Advisory Board (IAB)

- **Each department should immediately appoint its IAB (or Industrial Advisory Board)**
- **And empower IAB to be a part of formal department administration**
- **Typical IAB consists of former Departmental Alumni, who are currently practicing engineering in the industry**



Assignment 6. Section of PEOs Program Educational Objectives

- 6.1 Identify University Mission Statements
- 6.2 Define Mission Statements of the Faculty (School's Mission), if any
- 6.3 Define Core Values (if any)
- 6.4 Each Department writes their PEOs
 - Definition of PEOs: What graduates are currently doing or practicing three to five years after they completed their degree
 - Generally about 3 to 5 statements
 - Can be categorized into three major subsections of
 - Engineering Practice
 - Career Path
 - Global Citizenship



Writing PEOs for Beginners

- Based on the defined student outcomes of the program, some departments put together their PEOs using the combination of these required skill sets
- While there is no minimum or maximum limit, the number of PEOs that most department typically has is 3 to 6
- Normally, these PEOs can be grouped into 3 categories:
 - Professional Practice
 - Career Development
 - Global Citizenship



Correlation between PEOs and Institutional Missions and Outcomes

- Mapping PEOs with
 - University Mission
 - College Mission (if any)
 - Core Values (if any)

Assignment 7 Student Outcomes

- ABET has set a **minimum requirement of 7 student outcomes**, while **TABEE has 11** (which are what ABET used prior to 2020).
- The following are the 7 student outcomes required by ABET
 - Ability to **apply basic mathematics and science** to solve engineering problems
 - Ability to **design systems**, components, processes, structures, etc. under sets of practical and economic constraints
 - Ability to **design and conduct experiments** to support the design requirements
 - Ability to **communicate effectively**
 - Ability to **practice professionally, responsibly, and ethically**
 - Ability to **work in a team** environment, both as a team leader or a team member
 - Ability to acquire necessary knowledge to continue engineering practice (**lifelong learning**)

Correlation between PEOs and Student Outcomes

Student Outcomes	PEO1	PEO2	PEO3	PEO4
1. Apply Math. And Science to Solve Engineering Problems	x	x		
2. Able to Design System, Component, or Process	x	x		
3. Able to Design and Conduct Experiment to Support Design	x			
4. Able to Communicate Effectively	x			
5. Able to Function as a Team as Team Leader or Member	x	x	x	
6. Practice Engineering Responsively and Ethically		x		x
7. Able to Acquire Additional New Knowledge in Engineering Practice	x		x	



Note on Student Outcomes

- ABET currently requires a minimum of 7 student outcomes
- Each student outcome must be assessed using the combination of **three direct and indirect instruments**
- All weaknesses and deficiencies must be identified with proper supporting evidence
- All weaknesses and deficiencies must be addressed and improved systematically
- The program must show evidence of improvement (data driven improvements)
- Each additional student outcomes added requires supporting evidence and data collection for review and verification



Correlation of Courses with PEOs and Student Outcomes (SOs)

- Select a few courses and map its content with PEOs and SOs (Create a Table).....Need all faculty members in the program to provide these correlations for the courses they teach
- Followed by creating a table showing all SOs that students will attain from all required (core) courses
- These mappings provide PEVs how all required Student Outcomes are attained through the program

Selected Courses for Each SO's Assessment

Student Outcomes	The Two Selected Courses		Exit Survey	Employer Survey
1. Apply Math. And Science to Solve Engineering Problems	Course 1	Course 2	x	
2. Able to Design System, Component, or Process	Course 3	Course 4	x	
3. Able to Design and Conduct Experiment to Support Design	Course 5	Course 6	x	
4. Able to Communicate Effectively	Course 7	Course 8	x	
5. Able to Function as a Team as Team Leader or Member	Course 9	Course 10	x	
6. Practice Engineering Responsively and Ethically	Course 11		x	x
7. Able to Acquire Additional New Knowledge in Engineering Practice	Course 12		x	x

Example of Exit Survey

Student Outcomes	Level of Confidence				
	Low			High
1. Apply Math. And Science to Solve Engineering Problems	1	2	3	4	5
2. Able to Design System, Component, or Process	1	2	3	4	5
3. Able to Design and Conduct Experiment to Support Design	1	2	3	4	5
4. Able to Communicate Effectively	1	2	3	4	5
5. Able to Function as a Team as Team Leader or Member	1	2	3	4	5
6. Practice Engineering Responsively and Ethically	1	2	3	4	5
7. Able to Acquire Additional New Knowledge in Engineering Practice	1	2	3	4	5

Assessment of SO1

- ▶ Select **one** problem from either midterm exam, final exam, or homework from **Course 1** and evaluate students' ability to apply math./sci. to solve the problem.
 - ▶ Result: **55%** of the class can do it
- ▶ Select **one** problem from either midterm exam, final exam, or homework from **Course 2** and evaluate students' ability to apply math./sci. to solve the problem.
 - ▶ Result: **70%** of the class can do it
- ▶ Result of SO1 from Exit is **65%**
- ▶ Assign the weight of **40%** for both courses and **20%** for the exit survey
- ▶ Combine the results of SO1 from the two selected courses and the exit survey
 - ▶ = $0.4(55\%) + 0.4(70\%) + 0.2(65\%) = 63\%$
- ▶ Set appropriate passing threshold as **70%****Fail**.....
- ▶ Identify weaknesses associated with the weak students' performance and take corrective action, and re-assess this SO again to see improvement
- ▶ Present these assessments, corrective action, and improvement in Criteria 4

- 
- 
- **Repeat this process for all 7 Student Outcomes**

Assignment 8 Curriculum

- Check for Compliance
- Use Table 5.1 given in the ABET SSR Template and fill in all courses from the program starting from the first semester to the last semester
- Fill in the number of credits for all courses in the correct column of Basic Math/Sci., Engineering, or General Knowledge
- Add the number of credits in each column and conclude the compliance as required by ABET in each category (Basic Math/Sci., Engineering, and General Knowledge)

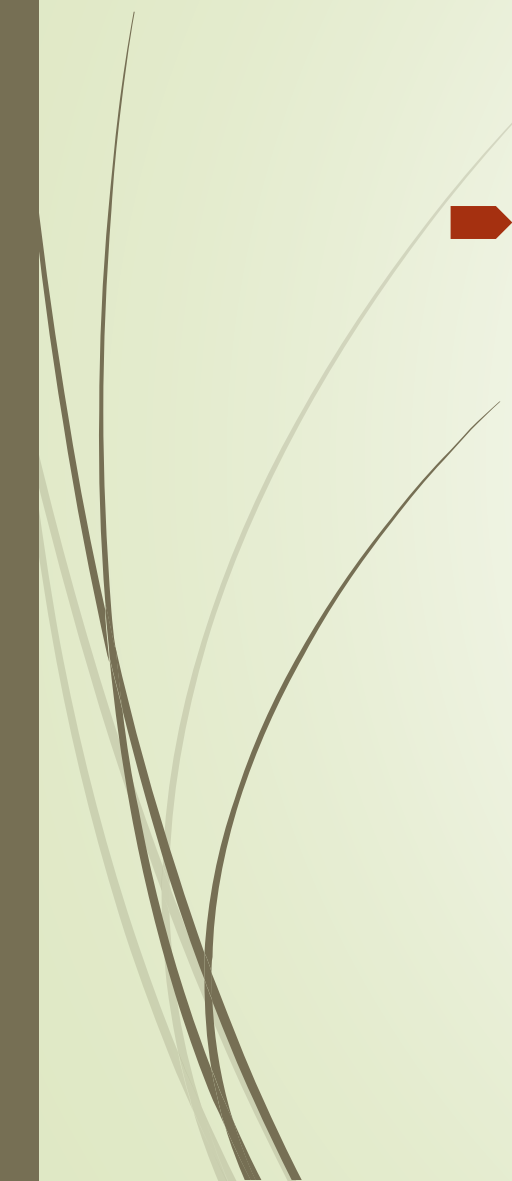


Pre-requisite

- Present diagram or flow chart showing sequence of pre-requisite courses of the program



Assignment 9 Major Design Experience

- Describe the scope and depth of the project(s) assigned to students to evaluate their major design experience
- 



Assignment 10 Faculty

- Use Table 6.1 and 6.2 given in the ABET SSR Template to provide faculty qualification and work load
- 



Assignment 11

Facilities and Institutional Support

- Provide details of equipment and facilities to support the educational program
- Provide details of institutional support allocated by the University to support the program