

Name: Brandon Anderson

Date: 17 Jan 20

### **2019 Cadet Surveys (Completed by Firsties in AY20-2)**

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**Mission:** The mission of the chemical engineering program is to prepare commissioned leaders of character who are proficient in applying chemical and engineering principles to solve problems in a complex operational environment.

**Chemical Engineering Program Objectives:** During a career as commissioned officers in the United States Army and beyond, program graduates:

- Demonstrate effective leadership and chemical engineering expertise.
- Contribute to the solution of infrastructure or operational problems in a complex operational environment.
- Succeed in graduate school or other advanced study programs.
- Advance their careers through clear and precise technical communication.

**Chemical Engineering Student Outcomes:** On completion of the chemical engineering program, our graduates will be able to:

- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- Communicate effectively with a range of audiences.
- Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- Acquire and apply new knowledge as needed, using appropriate learning strategies.
- Understand the chemical engineering curriculum, including:
  - Chemistry,
  - Material and energy balances,
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  - Chemical reaction engineering.
  - Continuous and staged separation operations.
  - Process dynamics and control.
  - Modern experimental and computing techniques.
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Date: \_\_\_\_\_

**Part I. Student Outcomes.** Check the box that most closely represents your opinion.

The cadets who graduated last year have demonstrated that they	Strongly Disagree	Neutral	Strongly Agree
• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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• Acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Understand the chemical engineering curriculum.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program objectives are consistent with the needs of the Army.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program curriculum supports the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program outcomes are consistent with the program mission and objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a robust process for periodically assessing the achievement of its objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a process for periodically assessing the achievement of its outcomes.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
The survey methods used by the program are effective.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
The cadets in the program are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets have input into the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets are satisfied with the courses in the program.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
The faculty are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The faculty contributed to the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

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**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

- Another math class, or take away Engineering math and replace it with one that emphasizes what we need like Laplace transforms

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

N/a

Please add any addition comments that you would like to make below.

CH459 should be 4.5 credit hours and that's a fact

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The faculty contributed to the development of the program objectives.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

yes, the classes are perfect. There aren't any additional courses I would add to the curriculum, we have them all!

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

yes, the right questions are being asked, we have a fantastic "top-tier" program @ West Point.

Please add any addition comments that you would like to make below.

West Point Chemical Engineering is one of the most professional and knowledgeable environments for an undergraduate degree.

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Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

I think removing some of the MC classes and replacing them with courses directly related to Chemical Engineering would help us relate concepts back to Chemical Engineering rather than mechanical engineering

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

No

Please add any addition comments that you would like to make below.

The members of the Chem E department are really great. They care about the well being, education, and professional development of each and every student.

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**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

It would be nice to add the elective of physical chemistry

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

Does the time allotted for courses represent how much time you work outside of class?

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Faculty is the best I've seen at the Academy. Everyone has a unique personality and cares for cadets

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- Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- Communicate effectively with a range of audiences.
- Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- Acquire and apply new knowledge as needed, using appropriate learning strategies.
- Understand the chemical engineering curriculum, including:
  - Chemistry,
  - Material and energy balances,
  - Safety and environmental factors,
  - Thermodynamics of physical and chemical equilibria,
  - Heat, mass, and momentum transfer,
  - Chemical reaction engineering.
  - Continuous and staged separation operations.
  - Process dynamics and control.
  - Modern experimental and computing techniques.
  - Process design.

Name: Payton Boylston

Date: 17 JAN 20

**Part I. Student Outcomes.** Check the box that most closely represents your opinion.

The cadets who graduated last year have demonstrated that they	Strongly Disagree	Neutral	Strongly Agree
	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Communicate effectively with a range of audiences.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Understand the chemical engineering curriculum.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Name: Peyton Boylston

Date: 17 JAN 20

**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
The program objectives are consistent with the needs of the Army.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
The program curriculum supports the program objectives.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
The program outcomes are consistent with the program mission and objectives.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
The program has a robust process for periodically assessing the achievement of its objectives.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
The program has a process for periodically assessing the achievement of its outcomes.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
The survey methods used by the program are effective.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
The cadets in the program are aware of the program objectives.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
The cadets have input into the development of the program objectives.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
The cadets are satisfied with the courses in the program.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
The faculty are aware of the program objectives.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
The faculty contributed to the development of the program objectives.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Name: Payton Boyston

Date: 17 JAN 20

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

I think it would be really cool to create a capstone course for chemical engineers so we can work with other majors on a project

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

Is there sufficient time in our schedules to meet all student outcomes?

Please add any addition comments that you would like to make below.

I wish we would take more engineering courses earlier on in our cadet career

Name: Michael Clark

Date: \_\_\_\_\_

### **2019 Cadet Surveys (Completed by Firsties in AY20-2)**

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- Write your name and date on the top of each page.
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- Complete Part 2 of the survey, which covers program objectives. For this part of the survey, we are interested in your opinions on the relevance of the objectives and their consistency with the Academy mission and needs of the Army.
- The surveys are due by End of hour Friday 17 January 2020.
- There are some free-form questions on the last page for you to comment on the quality of the curriculum, the meeting itself or any other items you would like us to address.
- We will consolidate the data and include it in our program assessment, to be reviewed by the faculty and advisory board in a separate meeting.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

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- Advance their careers through clear and precise technical communication.

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  - Continuous and staged separation operations.
  - Process dynamics and control.
  - Modern experimental and computing techniques.
  - Process design.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Part I. Student Outcomes.** Check the box that most closely represents your opinion.

The cadets who graduated last year have demonstrated that they	Strongly Disagree	Neutral	Strongly Agree
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• Communicate effectively with a range of audiences.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• Acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• Understand the chemical engineering curriculum.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	€ <input checked="" type="checkbox"/>	€ <input type="checkbox"/>	€ <input type="checkbox"/>
The program objectives are consistent with the needs of the Army.	€ <input type="checkbox"/>	€ <input checked="" type="checkbox"/>	€ <input type="checkbox"/>
The program curriculum supports the program objectives.	€ <input type="checkbox"/>	€ <input type="checkbox"/>	€ <input checked="" type="checkbox"/>
The program outcomes are consistent with the program mission and objectives.	€ <input type="checkbox"/>	€ <input type="checkbox"/>	€ <input type="checkbox"/>
The program has a robust process for periodically assessing the achievement of its objectives.	€ <input type="checkbox"/>	€ <input type="checkbox"/>	€ <input checked="" type="checkbox"/>
The program has a process for periodically assessing the achievement of its outcomes.	€ <input type="checkbox"/>	€ <input type="checkbox"/>	€ <input checked="" type="checkbox"/>
The survey methods used by the program are effective.	€ <input type="checkbox"/>	€ <input type="checkbox"/>	€ <input checked="" type="checkbox"/>
The cadets in the program are aware of the program objectives.	€ <input type="checkbox"/>	€ <input type="checkbox"/>	€ <input checked="" type="checkbox"/>
The cadets have input into the development of the program objectives.	€ <input checked="" type="checkbox"/>	€ <input type="checkbox"/>	€ <input type="checkbox"/>
The cadets are satisfied with the courses in the program.	€ <input type="checkbox"/>	€ <input checked="" type="checkbox"/>	€ <input type="checkbox"/>
The faculty are aware of the program objectives.	€ <input type="checkbox"/>	€ <input type="checkbox"/>	€ <input checked="" type="checkbox"/>
The faculty contributed to the development of the program objectives.	€ <input type="checkbox"/>	€ <input type="checkbox"/>	€ <input checked="" type="checkbox"/>

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

The classes that we take are unique in that they are in various departments giving us a unique skillset, unmatched by any other program here at USNA

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

N/A

Please add any addition comments that you would like to make below.

Remove ChemE-1 students from MT384, it does not have any application to our program aside from 2-3 lessons of the entire course. Most Cadets would also like to see changes to the MC320 MC311 courses.

Name: Matthew DiBiase

Date: 17 JAN 19

### **2019 Cadet Surveys (Completed by Firsties in AY20-2)**

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- The surveys are due by End of hour Friday 17 January 2020.
- There are some free-form questions on the last page for you to comment on the quality of the curriculum, the meeting itself or any other items you would like us to address.
- We will consolidate the data and include it in our program assessment, to be reviewed by the faculty and advisory board in a separate meeting.

Name: Matt Dibolt

Date: 17 JAN 19

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  - Chemical reaction engineering.
  - Continuous and staged separation operations.
  - Process dynamics and control.
  - Modern experimental and computing techniques.
  - Process design.

Name: Cliff DobieDate: 17 JAN 19**Part I. Student Outcomes.** Check the box that most closely represents your opinion.

The cadets who graduated last year have demonstrated that they	Strongly Disagree	Neutral	Strongly Agree
• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Communicate effectively with a range of audiences.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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• Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Understand the chemical engineering curriculum.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Name: Matt DiBiaseDate: 17 JAN 19**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	€	€	€ <input checked="" type="checkbox"/>
The program objectives are consistent with the needs of the Army.	€	€	€ <input checked="" type="checkbox"/>
The program curriculum supports the program objectives.	€	€	€ <input checked="" type="checkbox"/>
The program outcomes are consistent with the program mission and objectives.	€	€	€ <input checked="" type="checkbox"/>
The program has a robust process for periodically assessing the achievement of its objectives.	€	€	€ <input checked="" type="checkbox"/>
The program has a process for periodically assessing the achievement of its outcomes.	€	€	€ <input checked="" type="checkbox"/>
The survey methods used by the program are effective.	€	€	€ <input checked="" type="checkbox"/>
The cadets in the program are aware of the program objectives.	€	€	€ <input checked="" type="checkbox"/>
The cadets have input into the development of the program objectives.	€	€	€ <input checked="" type="checkbox"/>
The cadets are satisfied with the courses in the program.	€	€	€ <input checked="" type="checkbox"/>
The faculty are aware of the program objectives.	€	€	€ <input checked="" type="checkbox"/>
The faculty contributed to the development of the program objectives.	€	€	€ <input checked="" type="checkbox"/>

Name: Cliff DrBorel

Date: 17 JAN 18

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

I think we need another course on building our computational skills with numerical techniques, etc

Overall, yes

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

The survey answered all my questions & thoughts

Please add any addition comments that you would like to make below.

In general, the Chem E. department is great but lacks Summer AIAD enrichment opportunities. I have found that we are 2<sup>nd</sup> class in the department to Life Science majors in this regard.

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  - Chemical reaction engineering.
  - Continuous and staged separation operations.
  - Process dynamics and control.
  - Modern experimental and computing techniques.
  - Process design.

**Part I. Student Outcomes.** Check the box that most closely represents your opinion.

The cadets who graduated last year have demonstrated that they	Strongly Disagree	Neutral	Strongly Agree	
• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• Communicate effectively with a range of audiences.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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• Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• Understand the chemical engineering curriculum.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	€	€	€
The program objectives are consistent with the needs of the Army.	€	€	✓ €
The program curriculum supports the program objectives.	€	€	€ ✓
The program outcomes are consistent with the program mission and objectives.	€	€	€ ✓
The program has a robust process for periodically assessing the achievement of its objectives.	€	€	✓ €
The program has a process for periodically assessing the achievement of its outcomes.	€	€	✓ €
The survey methods used by the program are effective.	€	€	✓ €
The cadets in the program are aware of the program objectives.	€	€	€ ✓
The cadets have input into the development of the program objectives.	€	€	€ ✓
The cadets are satisfied with the courses in the program.	€	€	✓ €
The faculty are aware of the program objectives.	€	€	€ ✓
The faculty contributed to the development of the program objectives.	€	€	€ ✓

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

I think our core courses for the major are great, but I think we need to add electives within our department because it would be more useful to gain a deeper knowledge in a subset of chemical engineering instead of taking an intro class in a different department.

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

I thought the questions were good. Maybe include more specific questions on the relationship between the classes we take and accomplishing the program objectives (ie Does MC311 support our program objectives?)

Please add any addition comments that you would like to make below.

N/A

Name: Fung, Jason

Date: 17 JAN 2020

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Name: Fung, Jason

Date: 17 JAN 2020

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  - Continuous and staged separation operations.
  - Process dynamics and control.
  - Modern experimental and computing techniques.
  - Process design.

Name: Fung JasonDate: 17 JAN 2020**Part I. Student Outcomes.** Check the box that most closely represents your opinion.

The cadets who graduated last year have demonstrated that they	Strongly Disagree		Neutral		Strongly Agree	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
• Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
• Communicate effectively with a range of audiences.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
• Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
• Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
• Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
• Acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
• Understand the chemical engineering curriculum.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Name: Fung, Jason

Date: 17 JAN 2020

**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	€	€	€
The program objectives are consistent with the needs of the Army.	€	€	€
The program curriculum supports the program objectives.	€	€	€
The program outcomes are consistent with the program mission and objectives.	€	€	€
The program has a robust process for periodically assessing the achievement of its objectives.	€	€	€
The program has a process for periodically assessing the achievement of its outcomes.	€	€	€
The survey methods used by the program are effective.	€	€	€
The cadets in the program are aware of the program objectives.	€	€	€
The cadets have input into the development of the program objectives.	€	€	€
The cadets are satisfied with the courses in the program.	€	€	€
The faculty are aware of the program objectives.	€	€	€
The faculty contributed to the development of the program objectives.	€	€	€

Name: Fay Jason

Date: 17 JAN 2020

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

I think these classes are the right classes.

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

Maybe include specific questions about the classes in the curriculum.

Please add any addition comments that you would like to make below.

**2019 Cadet Surveys (Completed by Firsties in AY20-2)**

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**Instructions**

- Write your name and date on the top of each page.
- The second page of this handout contains a listing of program objectives and student outcomes. Please read this page to become oriented to the process.
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- Complete Part 2 of the survey, which covers program objectives. For this part of the survey, we are interested in your opinions on the relevance of the objectives and their consistency with the Academy mission and needs of the Army.
- The surveys are due by End of hour Friday 17 January 2020.
- There are some free-form questions on the last page for you to comment on the quality of the curriculum, the meeting itself or any other items you would like us to address.
- We will consolidate the data and include it in our program assessment, to be reviewed by the faculty and advisory board in a separate meeting.

Name: Kyle Garwick

Date: 17 JAN 20

**Mission:** The mission of the chemical engineering program is to prepare commissioned leaders of character who are proficient in applying chemical and engineering principles to solve problems in a complex operational environment.

**Chemical Engineering Program Objectives:** During a career as commissioned officers in the United States Army and beyond, program graduates:

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- Contribute to the solution of infrastructure or operational problems in a complex operational environment.
- Succeed in graduate school or other advanced study programs.
- Advance their careers through clear and precise technical communication.

**Chemical Engineering Student Outcomes:** On completion of the chemical engineering program, our graduates will be able to:

- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- Communicate effectively with a range of audiences.
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- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- Acquire and apply new knowledge as needed, using appropriate learning strategies.
- Understand the chemical engineering curriculum, including:
  - Chemistry,
  - Material and energy balances,
  - Safety and environmental factors,
  - Thermodynamics of physical and chemical equilibria,
  - Heat, mass, and momentum transfer,
  - Chemical reaction engineering.
  - Continuous and staged separation operations.
  - Process dynamics and control.
  - Modern experimental and computing techniques.
  - Process design.

**Part I. Student Outcomes.** Check the box that most closely represents your opinion.

The cadets who graduated last year have demonstrated that they	Strongly Disagree		Neutral		Strongly Agree	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
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• Acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
• Understand the chemical engineering curriculum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Name: Kyle Garwick

Date: 17JAN20

**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	€	€	€
The program objectives are consistent with the needs of the Army.	€	€	€ €
The program curriculum supports the program objectives.	€	€	€ €
The program outcomes are consistent with the program mission and objectives.	€	€	€
The program has a robust process for periodically assessing the achievement of its objectives.	€	€	€ €
The program has a process for periodically assessing the achievement of its outcomes.	€	€	€ €
The survey methods used by the program are effective.	€	€	€ €
The cadets in the program are aware of the program objectives.	€	€	€
The cadets have input into the development of the program objectives.	€	€	€ €
The cadets are satisfied with the courses in the program.		€	€ €
The faculty are aware of the program objectives.	€	€	€
The faculty contributed to the development of the program objectives.	€	€	€

Name: Kyle Garwick

Date: 17 JAN 20

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

MC312 should be taken over from Mech + transformed into a transport class, MC311 can remain in curriculum as it effectively introduces many concepts.

- MC312 is ~11 lessons of Material, + then 29 lessons focused on lab writing.
  - We already do this with CH459

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

Right Questions are being asked.

Please add any addition comments that you would like to make below.

N/A

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Name: Gascoigne, T

Date: 17 Jan 20

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  - Heat, mass, and momentum transfer,
  - Chemical reaction engineering.
  - Continuous and staged separation operations.
  - Process dynamics and control.
  - Modern experimental and computing techniques.
  - Process design.

Name: Gascoigne, TDate: 17 Jan 20**Part I. Student Outcomes.** Check the box that most closely represents your opinion.

The cadets who graduated last year have demonstrated that they	Strongly Disagree	Neutral	Strongly Agree
• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
• Communicate effectively with a range of audiences.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
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• Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Understand the chemical engineering curriculum.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Name: Gascoigne, TDate: 19 Jan 20**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program objectives are consistent with the needs of the Army.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program curriculum supports the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program outcomes are consistent with the program mission and objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a robust process for periodically assessing the achievement of its objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a process for periodically assessing the achievement of its outcomes.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The survey methods used by the program are effective.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets in the program are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets have input into the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets are satisfied with the courses in the program.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The faculty are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The faculty contributed to the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Name: Gascigne T

Date: 17 Jan 20

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

The engineering math course (MA364/365) does a poor job in teaching concepts that are relevant in Chemical Engineering. That course is catered to teaching the M.E's heat transfer, and there is little instruction on computer coding. There needs to be a Chem E math course that focuses on coding in MMA and solving ODEs & PDEs.

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

Yes; though it is difficult to infer on how effective the class of 19 is on solving societal issues or communicating.

Please add any addition comments that you would like to make below.

Instead of taking MC312 we can add an additional Chem E course in design or process engineering.

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Name: Jay Goni

Date: 17-Jan

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  - Continuous and staged separation operations.
  - Process dynamics and control.
  - Modern experimental and computing techniques.
  - Process design.

**Part I. Student Outcomes.** Check the box that most closely represents your opinion.

The cadets who graduated last year have demonstrated that they	Strongly Disagree	Neutral	Strongly Agree
	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
• Communicate effectively with a range of audiences.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
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• Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
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• Acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
• Understand the chemical engineering curriculum.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program objectives are consistent with the needs of the Army.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program curriculum supports the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program outcomes are consistent with the program mission and objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a robust process for periodically assessing the achievement of its objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a process for periodically assessing the achievement of its outcomes.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The survey methods used by the program are effective.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets in the program are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets have input into the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets are satisfied with the courses in the program.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
The faculty are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The faculty contributed to the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Name: Jay Gohil

Date: 17 Jan

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

- Get rid of MC312
- Allow CJT in Jsd. mean to validate MASES
- Add more chemE specific Electives (water purification, material, petroleum, medical application)
- I really enjoyed Controls, Research, & ChemE Lab

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

- This is a good survey

Please add any addition comments that you would like to make below.

- Create more chemE specific electives

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**Part I. Student Outcomes.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree	
			€	€
The cadets who graduated last year have demonstrated that they			€	€
• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	€	€	€	€
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• Understand the chemical engineering curriculum.	€	€	€	€

**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	€	€	€ (€)
The program objectives are consistent with the needs of the Army.	€	€ (€)	€
The program curriculum supports the program objectives.	€	€	€ (€)
The program outcomes are consistent with the program mission and objectives.	€	€	€ (€) €
The program has a robust process for periodically assessing the achievement of its objectives.	€	€	€ (€)
The program has a process for periodically assessing the achievement of its outcomes.	€	€	€ (€)
The survey methods used by the program are effective.	€	€	€ (€) €
The cadets in the program are aware of the program objectives.	€	€	€ (€)
The cadets have input into the development of the program objectives.	€	€ (€)	€ €
The cadets are satisfied with the courses in the program.	€	€	€ (€)
The faculty are aware of the program objectives.	€	€	€ (€)
The faculty contributed to the development of the program objectives.	€	€	€ (€)

Name: Christopher Gourin

Date: 17 JAN 20

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

Yes, the classes we take give us a comprehensive understanding of the demands of Chemical Engineering

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

I think the availability & quality of electives needs to be evaluated

Please add any addition comments that you would like to make below.

Name: Alex Hamilton

Date: \_\_\_\_\_

### **2019 Cadet Surveys (Completed by Firsties in AY20-2)**

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- Communicate effectively with a range of audiences.
- Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
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- Acquire and apply new knowledge as needed, using appropriate learning strategies.
- Understand the chemical engineering curriculum, including:
  - Chemistry,
  - Material and energy balances,
  - Safety and environmental factors,
  - Thermodynamics of physical and chemical equilibria,
  - Heat, mass, and momentum transfer,
  - Chemical reaction engineering.
  - Continuous and staged separation operations.
  - Process dynamics and control.
  - Modern experimental and computing techniques.
  - Process design.

**Part I. Student Outcomes.** Check the box that most closely represents your opinion.

The cadets who graduated last year have demonstrated that they	Strongly Disagree	Neutral	Strongly Agree
• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
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• Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Understand the chemical engineering curriculum.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program objectives are consistent with the needs of the Army.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program curriculum supports the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program outcomes are consistent with the program mission and objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a robust process for periodically assessing the achievement of its objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a process for periodically assessing the achievement of its outcomes.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The survey methods used by the program are effective.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets in the program are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets have input into the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets are satisfied with the courses in the program.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The faculty are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The faculty contributed to the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Name: Alex Hamilton

Date: \_\_\_\_\_

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

Thermodynamics was better in our department  
and it might not be necessary to take 2 other thermodynamic  
classes in mech.

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

Yes, N/A

Please add any addition comments that you would like to make below.

Teachers in the department are  
great.

Name: Holman, John

Date: 12 Jan 20

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Name: Holeman

Date: 17 Jan

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Name: HolemanDate: 17 Jan**Part I. Student Outcomes.** Check the box that most closely represents your opinion.

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• Acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Understand the chemical engineering curriculum.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Name: HolmanDate: 17 Jan**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	€	€	€
The program objectives are consistent with the needs of the Army.	€	€	€
The program curriculum supports the program objectives.	€	€	€
The program outcomes are consistent with the program mission and objectives.	€	€	€
The program has a robust process for periodically assessing the achievement of its objectives.	€	€	€
The program has a process for periodically assessing the achievement of its outcomes.	€	€	€
The survey methods used by the program are effective.	€	€	€
The cadets in the program are aware of the program objectives.	€	€	€
The cadets have input into the development of the program objectives.	€	€	€
The cadets are satisfied with the courses in the program.	€	€	€
The faculty are aware of the program objectives.	€	€	€
The faculty contributed to the development of the program objectives.	€	€	€

Name: Holman

Date: 17 Jan

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

The courses generally meet the requirements. Perhaps IT 205 should be replaced by a chem E focused Programming class. CH485 did not seem like a valuable or applicable course.

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

A more candid questionnaire asking chemE's what they thought they learned after the CH series courses have finished may give value & perspective to how certain assessments ~~are~~ are made (ie. how grading is prioritized)

Please add any addition comments that you would like to make below.

The ~~filler~~ Shaver Method is grossly ineffective for engineers, especially chemE's, more blatant answers and processes should be made transparent.

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• Understand the chemical engineering curriculum.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
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The cadets in the program are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets have input into the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets are satisfied with the courses in the program.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The faculty are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The faculty contributed to the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

Yes, I believe that we are teaching the right courses.  
I would like to see a Chinese version of MC311  
and MC312 to replace MC311 and MC312.

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

Yes, please continue to ask similar questions for next year's survey. This will help the survey be more consistent.

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	Strongly Disagree	Neutral	Strongly Agree	
			€	€
The cadets who graduated last year have demonstrated that they			€	€
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• Understand the chemical engineering curriculum.	€	€	€	€

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	€	€	€ <input checked="" type="radio"/>
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## Open questions.

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

I like the classes taught.

CH 364 was great.

CH 485 was very confusing and I genuinely did not like this class

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

I think you could make surveys

anonymous ~~if~~ to get more candid feedback.

Otherwise I think what ChemE usually does for surveys is very effective.

Please add any addition comments that you would like to make below.

ChemE is a great program. I really like it. I wish classes were less tedious and had less busy work. I also wish assignments were slightly easier, but changed year-to-year so we were less reliant on old problem sets/Chegg.

I wish Chegg solutions earned students a "0%" grade.

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The cadets who graduated last year have demonstrated that they	Strongly Disagree	Neutral	Strongly Agree
	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
• Communicate effectively with a range of audiences.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
• Acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
• Understand the chemical engineering curriculum.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program objectives are consistent with the needs of the Army.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program curriculum supports the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program outcomes are consistent with the program mission and objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a robust process for periodically assessing the achievement of its objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a process for periodically assessing the achievement of its outcomes.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The survey methods used by the program are effective.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets in the program are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets have input into the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets are satisfied with the courses in the program.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The faculty are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The faculty contributed to the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Name: Detmaz Marbach

Date: 17 JAN 20

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

In general we are in the right classes however I believe that MC312 is a little unimportant because we learn the important things for Chemical Engineers in Thermodynamics. Oddly MA364 only has one of the applicable topics while we could use more time learning Mathematics or other programming / coding.

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

You should ask how classes outside of CLS prepared us. For example, did MC311/MC312 help with CH, etc.

Please add any addition comments that you would like to make below.

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- The surveys are due by End of hour Friday 17 January 2020.
- There are some free-form questions on the last page for you to comment on the quality of the curriculum, the meeting itself or any other items you would like us to address.
- We will consolidate the data and include it in our program assessment, to be reviewed by the faculty and advisory board in a separate meeting.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

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**Chemical Engineering Program Objectives:** During a career as commissioned officers in the United States Army and beyond, program graduates:

- Demonstrate effective leadership and chemical engineering expertise.
- Contribute to the solution of infrastructure or operational problems in a complex operational environment.
- Succeed in graduate school or other advanced study programs.
- Advance their careers through clear and precise technical communication.

**Chemical Engineering Student Outcomes:** On completion of the chemical engineering program, our graduates will be able to:

- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- Communicate effectively with a range of audiences.
- Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- Acquire and apply new knowledge as needed, using appropriate learning strategies.
- Understand the chemical engineering curriculum, including:
  - Chemistry,
  - Material and energy balances,
  - Safety and environmental factors,
  - Thermodynamics of physical and chemical equilibria,
  - Heat, mass, and momentum transfer,
  - Chemical reaction engineering.
  - Continuous and staged separation operations.
  - Process dynamics and control.
  - Modern experimental and computing techniques.
  - Process design.

Name: Sawyer Madsen

Date: 17JAN20

**Part I. Student Outcomes.** Check the box that most closely represents your opinion.

The cadets who graduated last year have demonstrated that they	Strongly Disagree	Neutral	Strongly Agree
• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
• Communicate effectively with a range of audiences.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
• Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Understand the chemical engineering curriculum.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	€	€	€
The program objectives are consistent with the needs of the Army.	€	€	€
The program curriculum supports the program objectives.	€	€	€
The program outcomes are consistent with the program mission and objectives.	€	€	€
The program has a robust process for periodically assessing the achievement of its objectives.	€	€	€
The program has a process for periodically assessing the achievement of its outcomes.	€	€	€
The survey methods used by the program are effective.	€	€	€
The cadets in the program are aware of the program objectives.	€	€	€
The cadets have input into the development of the program objectives.	€	€	€
The cadets are satisfied with the courses in the program.	€	€	€
The faculty are aware of the program objectives.	€	€	€
The faculty contributed to the development of the program objectives.	€	€	€

Name: Sawyer Madsen

Date: 17 JAN 20

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

I believe the right classes are being taught. However, I think it would be greatly beneficial to provide MC311 and MC312 within the CLS department

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

The right questions are being asked, but prior to the survey next year there should be a clear explanation of how program objective #1 is being assessed

Please add any addition comments that you would like to make below.

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Name: Mark Weiler

Date: 17 JAN

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  - Heat, mass, and momentum transfer,
  - Chemical reaction engineering.
  - Continuous and staged separation operations.
  - Process dynamics and control.
  - Modern experimental and computing techniques.
  - Process design.

**Part I. Student Outcomes.** Check the box that most closely represents your opinion.

The cadets who graduated last year have demonstrated that they	Strongly Disagree	Neutral	Strongly Agree
• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Communicate effectively with a range of audiences.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
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• Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
• Acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
• Understand the chemical engineering curriculum.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Name: ManwilerDate: 17 JAN**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program objectives are consistent with the needs of the Army.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program curriculum supports the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program outcomes are consistent with the program mission and objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a robust process for periodically assessing the achievement of its objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a process for periodically assessing the achievement of its outcomes.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The survey methods used by the program are effective.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
The cadets in the program are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets have input into the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets are satisfied with the courses in the program.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The faculty are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The faculty contributed to the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Name: Mannveer

Date: 17JAN

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

I think the current curriculum is great, but could provide greater benefit to its graduates by adding:

- computer programming/software classes in exchange for the civil/electrical engineering classes

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

Yes! No improvements...

Please add any addition comments that you would like to make below.

Great program as a result of the dedicated faculty working day-to-day to give students the best opportunity to learn!

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Name: \_\_\_\_\_

Date: \_\_\_\_\_

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  - Process design.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Part I. Student Outcomes.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The cadets who graduated last year have demonstrated that they			
• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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• Acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• Understand the chemical engineering curriculum.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	€	€	€ <input checked="" type="checkbox"/>
The program objectives are consistent with the needs of the Army.	€	€ <input checked="" type="checkbox"/>	€
The program curriculum supports the program objectives.	€	€	€ <input checked="" type="checkbox"/>
The program outcomes are consistent with the program mission and objectives.	€	€	€ <input checked="" type="checkbox"/>
The program has a robust process for periodically assessing the achievement of its objectives.	€	€	€ <input checked="" type="checkbox"/>
The program has a process for periodically assessing the achievement of its outcomes.	€	€	€ <input checked="" type="checkbox"/>
The survey methods used by the program are effective.	€	€	€ <input checked="" type="checkbox"/>
The cadets in the program are aware of the program objectives.	€	€ <input checked="" type="checkbox"/>	€
The cadets have input into the development of the program objectives.	€	€	€ <input checked="" type="checkbox"/>
The cadets are satisfied with the courses in the program.	€	€	€ <input checked="" type="checkbox"/>
The faculty are aware of the program objectives.	€	€	€ <input checked="" type="checkbox"/>
The faculty contributed to the development of the program objectives.	€	€	€ <input checked="" type="checkbox"/>

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

I think DACS should encourage cadets to take electives such as ME472 (Energy conversion Systems) and other classes that reinforce key Chemical Engineering topics.

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

No. I think that the current survey is good and fair.

Please add any addition comments that you would like to make below.

Overall, I like the structure of the classes. I would say one improvement is having a better CH485 and CH367 (heat & mass and process controls) teaching method.

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  - Continuous and staged separation operations.
  - Process dynamics and control.
  - Modern experimental and computing techniques.
  - Process design.

Name: Moor

Date: \_\_\_\_\_

**Part I. Student Outcomes.** Check the box that most closely represents your opinion.

The cadets who graduated last year have demonstrated that they	Strongly Disagree	Neutral	Strongly Agree
• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Communicate effectively with a range of audiences.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• Understand the chemical engineering curriculum.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Name: Moorano

Date: \_\_\_\_\_

**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	€	€	€ <input checked="" type="checkbox"/>
The program objectives are consistent with the needs of the Army.	€	€	€ <input checked="" type="checkbox"/>
The program curriculum supports the program objectives.	€	€	€ <input checked="" type="checkbox"/>
The program outcomes are consistent with the program mission and objectives.	€	€	€ <input checked="" type="checkbox"/>
The program has a robust process for periodically assessing the achievement of its objectives.	€	€	€ <input checked="" type="checkbox"/>
The program has a process for periodically assessing the achievement of its outcomes.	€	€	€ <input checked="" type="checkbox"/> €
The survey methods used by the program are effective.	€	€	€ <input checked="" type="checkbox"/> €
The cadets in the program are aware of the program objectives.	€	€	€ <input checked="" type="checkbox"/> €
The cadets have input into the development of the program objectives.	€	€	€ <input checked="" type="checkbox"/> €
The cadets are satisfied with the courses in the program.	€	€	€ <input checked="" type="checkbox"/> €
The faculty are aware of the program objectives.	€	€	€ <input checked="" type="checkbox"/> €
The faculty contributed to the development of the program objectives.	€	€	€ <input checked="" type="checkbox"/> €

Name: Mosby

Date: \_\_\_\_\_

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

Yes, all of the courses have prepared us in some way. We will see the results after adding our own control class

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

Yes

Please add any addition comments that you would like to make below.

Name: Jdaya Green

Date: 17 JAN 2020

### **2019 Cadet Surveys (Completed by Firsties in AY20-2)**

This is your annual cadet survey for the 2019 program assessment, and it is extremely important for ABET accreditation. The survey is designed to do three things. First, it provides documentation that you have been made aware of the performance of our previous cadets on our student outcomes. Second, it serves to document your opinions of that performance. Third, it allows us to use your collective opinions to help identify areas where we might need improvement. The surveys are based on the data presented to you. The completed surveys are due at the end of this period (17 January 2020).

#### **Instructions**

- Write your name and date on the top of each page.
- The second page of this handout contains a listing of program objectives and student outcomes. Please read this page to become oriented to the process.
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- The surveys are due by End of hour Friday 17 January 2020.
- There are some free-form questions on the last page for you to comment on the quality of the curriculum, the meeting itself or any other items you would like us to address.
- We will consolidate the data and include it in our program assessment, to be reviewed by the faculty and advisory board in a separate meeting.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Mission:** The mission of the chemical engineering program is to prepare commissioned leaders of character who are proficient in applying chemical and engineering principles to solve problems in a complex operational environment.

**Chemical Engineering Program Objectives:** During a career as commissioned officers in the United States Army and beyond, program graduates:

- Demonstrate effective leadership and chemical engineering expertise.
- Contribute to the solution of infrastructure or operational problems in a complex operational environment.
- Succeed in graduate school or other advanced study programs.
- Advance their careers through clear and precise technical communication.

**Chemical Engineering Student Outcomes:** On completion of the chemical engineering program, our graduates will be able to:

- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- Communicate effectively with a range of audiences.
- Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
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- Understand the chemical engineering curriculum, including:
  - Chemistry,
  - Material and energy balances,
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  - Heat, mass, and momentum transfer,
  - Chemical reaction engineering.
  - Continuous and staged separation operations.
  - Process dynamics and control.
  - Modern experimental and computing techniques.
  - Process design.

Name: Aldaya Queen

Date: \_\_\_\_\_

**Part I. Student Outcomes.** Check the box that most closely represents your opinion.

The cadets who graduated last year have demonstrated that they	Strongly Disagree	Neutral	Strongly Agree
• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Communicate effectively with a range of audiences.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
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• Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Understand the chemical engineering curriculum.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program objectives are consistent with the needs of the Army.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program curriculum supports the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program outcomes are consistent with the program mission and objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a robust process for periodically assessing the achievement of its objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a process for periodically assessing the achievement of its outcomes.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The survey methods used by the program are effective.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets in the program are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets have input into the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets are satisfied with the courses in the program.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The faculty are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The faculty contributed to the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Name: Adaya Duley

Date: \_\_\_\_\_

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

Yes, the right courses are being taught. The only additional course that I would add if necessary would be a programming/software course for in depth teaching of CHEMAD and MMA.

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

Yes, right questions are asked. No suggestions.

Please add any addition comments that you would like to make below.

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The cadets who graduated last year have demonstrated that they	Strongly Disagree	Neutral	Strongly Agree
• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
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• Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Understand the chemical engineering curriculum.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program objectives are consistent with the needs of the Army.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program curriculum supports the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program outcomes are consistent with the program mission and objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a robust process for periodically assessing the achievement of its objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a process for periodically assessing the achievement of its outcomes.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The survey methods used by the program are effective.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/> <input type="radio"/>
The cadets in the program are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets have input into the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets are satisfied with the courses in the program.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The faculty are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The faculty contributed to the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

I think that future students would benefit from a math class that is taught within the department. For example, this would entail applying engineering math concepts solely to chemical engineering problems.

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

I think that the questions effectively encapsulate the West Point chemical engineering experience.

Please add any addition comments that you would like to make below.

I think it may be useful to introduce computing in other programs other than mathematica, such as Matlab.

Name: John A. Stephen

Date: 17 Jan 20

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Name: John A. Stephen

Date: 17 Jan 20

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  - Chemical reaction engineering.
  - Continuous and staged separation operations.
  - Process dynamics and control.
  - Modern experimental and computing techniques.
  - Process design.

Name: John A. StephenDate: 17 Jan 20**Part I. Student Outcomes.** Check the box that most closely represents your opinion.

The cadets who graduated last year have demonstrated that they	Strongly Disagree		Neutral		Strongly Agree	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
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• Communicate effectively with a range of audiences.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
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• Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Understand the chemical engineering curriculum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Name: John R. StephenDate: 17 Jan 20**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program objectives are consistent with the needs of the Army.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
The program curriculum supports the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program outcomes are consistent with the program mission and objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a robust process for periodically assessing the achievement of its objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a process for periodically assessing the achievement of its outcomes.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The survey methods used by the program are effective.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets in the program are aware of the program objectives.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
The cadets have input into the development of the program objectives.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
The cadets are satisfied with the courses in the program.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
The faculty are aware of the program objectives.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
The faculty contributed to the development of the program objectives.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Name: John A. Stephen

Date: 17 Jan 20

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

The right courses are being taught, especially with the addition of CH 367, but the Chem. E. department needs to replace MC 311 & MC 312 & teach their own version.

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

I think the questions are thorough, but if you add a question asking about our overall satisfaction with the department & curriculum I think you'd see overwhelmingly positive responses.

Please add any addition comments that you would like to make below.

This program & department has done an excellent job teaching the curriculum while allowing us to learn how to think & solve problems like engineers.

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	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	€	€	€ <input checked="" type="radio"/>
The program objectives are consistent with the needs of the Army.	€	€ <input checked="" type="radio"/>	€
The program curriculum supports the program objectives.	€	€	€ <input checked="" type="radio"/>
The program outcomes are consistent with the program mission and objectives.	€	€	€ <input checked="" type="radio"/>
The program has a robust process for periodically assessing the achievement of its objectives.	€	€	€ <input checked="" type="radio"/>
The program has a process for periodically assessing the achievement of its outcomes.	€	€	€ <input checked="" type="radio"/>
The survey methods used by the program are effective.	€	€ <input checked="" type="radio"/>	€
The cadets in the program are aware of the program objectives.	€	€ <input checked="" type="radio"/>	€
The cadets have input into the development of the program objectives.	€	€	€ <input checked="" type="radio"/>
The cadets are satisfied with the courses in the program.	€	€	€ <input checked="" type="radio"/>
The faculty are aware of the program objectives.	€	€	€ <input checked="" type="radio"/>
The faculty contributed to the development of the program objectives.	€	€	€ <input checked="" type="radio"/>

Name: Alecia Thornton

Date: 17 January 2020

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

I believe so. I've been applying to grad schools and looking at their curriculum and it seems like I'll be prepared for their courses.

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

Please add any addition comments that you would like to make below.

Name: Tussing, Joseph

Date: 01/17/20

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- We will consolidate the data and include it in our program assessment, to be reviewed by the faculty and advisory board in a separate meeting.

Name: Tussing, Joseph

Date: 01/17/20

**Mission:** The mission of the chemical engineering program is to prepare commissioned leaders of character who are proficient in applying chemical and engineering principles to solve problems in a complex operational environment.

**Chemical Engineering Program Objectives:** During a career as commissioned officers in the United States Army and beyond, program graduates:

- Demonstrate effective leadership and chemical engineering expertise.
- Contribute to the solution of infrastructure or operational problems in a complex operational environment.
- Succeed in graduate school or other advanced study programs.
- Advance their careers through clear and precise technical communication.

**Chemical Engineering Student Outcomes:** On completion of the chemical engineering program, our graduates will be able to:

- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- Communicate effectively with a range of audiences.
- Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- Acquire and apply new knowledge as needed, using appropriate learning strategies.
- Understand the chemical engineering curriculum, including:
  - Chemistry,
  - Material and energy balances,
  - Safety and environmental factors,
  - Thermodynamics of physical and chemical equilibria,
  - Heat, mass, and momentum transfer,
  - Chemical reaction engineering.
  - Continuous and staged separation operations.
  - Process dynamics and control.
  - Modern experimental and computing techniques.
  - Process design.

Name: Tussing, Joseph

Date: 01/17/20

**Part I. Student Outcomes.** Check the box that most closely represents your opinion.

The cadets who graduated last year have demonstrated that they	Strongly Disagree	Neutral	Strongly Agree
• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• Communicate effectively with a range of audiences.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• Acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• Understand the chemical engineering curriculum.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Name: Tussing, JosephDate: 01/17/20**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program objectives are consistent with the needs of the Army.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program curriculum supports the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program outcomes are consistent with the program mission and objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a robust process for periodically assessing the achievement of its objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a process for periodically assessing the achievement of its outcomes.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The survey methods used by the program are effective.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
The cadets in the program are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets have input into the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets are satisfied with the courses in the program.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The faculty are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The faculty contributed to the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Name: Tussing, Joseph

Date: 01/17/20

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

I don't think taking MC300, especially as a firstie, was particularly beneficial to my education as a chemical engineer (though I recognize the value it has added to my diverse knowledge-set). I think a better course would be a process/project operations/management.

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

I was a little confused on why we were assessing the previous graduating class. I did not interact with them often directly, so most of my opinions are based on what the instructors have said about them.

Please add any addition comments that you would like to make below.

Thank you for the best major at West Point!

**2019 Cadet Surveys (Completed by Firsties in AY20-2)**

This is your annual cadet survey for the 2019 program assessment, and it is extremely important for ABET accreditation. The survey is designed to do three things. First, it provides documentation that you have been made aware of the performance of our previous cadets on our student outcomes. Second, it serves to document your opinions of that performance. Third, it allows us to use your collective opinions to help identify areas where we might need improvement. The surveys are based on the data presented to you. The completed surveys are due at the end of this period (17 January 2020).

**Instructions**

- Write your name and date on the top of each page.
- The second page of this handout contains a listing of program objectives and student outcomes. Please read this page to become oriented to the process.
- Review the data pertaining to the achievement of our 2019 program graduates and complete Part 1 of the survey, which pertains to student outcomes. For Part 1, your replies should be based on the data presented.
- Complete Part 2 of the survey, which covers program objectives. For this part of the survey, we are interested in your opinions on the relevance of the objectives and their consistency with the Academy mission and needs of the Army.
- The surveys are due by End of hour Friday 17 January 2020.
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Name: \_\_\_\_\_

Date: \_\_\_\_\_

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  - Process dynamics and control.
  - Modern experimental and computing techniques.
  - Process design.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Part I. Student Outcomes.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The cadets who graduated last year have demonstrated that they			
• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
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• Acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
• Understand the chemical engineering curriculum.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program objectives are consistent with the needs of the Army.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program curriculum supports the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program outcomes are consistent with the program mission and objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a robust process for periodically assessing the achievement of its objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a process for periodically assessing the achievement of its outcomes.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The survey methods used by the program are effective.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets in the program are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets have input into the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets are satisfied with the courses in the program.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The faculty are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The faculty contributed to the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Name: \_\_\_\_\_

Date: \_\_\_\_\_

### Open questions.

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

Yes, right classes. There are no course that I can think of that should be added. I'm glad we have control process controls and thermodynamics.

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

A question that could be added:  
How confident are the students in their abilities to join the workforce?  
Or other questions along the lines of confidence and understanding of future job opportunities

Please add any addition comments that you would like to make below.

I appreciate that the teachers often relate what we learn in class to what happens in the work force. Our teachers are very kind, encouraging, and supportive. Our department is great and I am happy to be a part of it.  
I think the faculty takes our survey responses and concerns seriously and actually work to make changes.

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**Part I. Student Outcomes.** Check the box that most closely represents your opinion.

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• Acquire and apply new knowledge as needed, using appropriate learning strategies.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
• Understand the chemical engineering curriculum.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

**Part II. Program Objectives.** Check the box that most closely represents your opinion.

	Strongly Disagree	Neutral	Strongly Agree
The program objectives are consistent with the USMA mission.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program objectives are consistent with the needs of the Army.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program curriculum supports the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program outcomes are consistent with the program mission and objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The program has a robust process for periodically assessing the achievement of its objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
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The survey methods used by the program are effective.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
The cadets in the program are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets have input into the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The cadets are satisfied with the courses in the program.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
The faculty are aware of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
The faculty contributed to the development of the program objectives.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Name: KIMI WAUKER

Date: 17 JAN 20

**Open questions.**

Are we teaching the right classes? Based on the assessment data or on your personal opinion, is there a course that the program should add to the curriculum?

There are certain classes that should be replaced. Primarily those taught in the mechanical engineering department. It would be beneficial to substitute MEL312 for a computational modeling class.

Are we asking the right questions? Do you have any suggestions to improve the survey for next year?

Please add any addition comments that you would like to make below.