

**E2020 Scholars Evaluation Survey  
for Students in ENGR 110X and ENGR 210X**

Evaluation Report

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## Executive Summary

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Overall, students indicated being very pleased with their experiences in the E2020 Scholars Program. They reported learning about the four pillars: leadership, global issues, systems thinking, and interdisciplinary engineering design. Specifically, students reported learning about themselves, what it means to be a good leader, cultural differences in engineering and business, how systems operate together, and different ways of thinking. They found E2020 to be supportive and helpful, and felt, overall, that their interactions with Peer Mentors, Program Coordinators, and teaching faculty had been useful. Students felt E2020 fit well with their academic program and career interests, and agreed that they had grown through their experiences in E2020.

Students were more critical of certain aspects of E2020. For instance, although students seemed to like using e-mail as a form of communication, several complained about the usage of WebCT as part of the course. Several comments indicated that the course tended to be unorganized at times, especially during the first semester. Some students noted that they would like to have E2020 meet more often in order to cover all pillars more thoroughly and have more opportunities for socialization within the class.

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## Introduction

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The E2020 Scholars Program is funded by and supports the National Science Foundation's Engineer of 2020 initiative as well as the Iowa State College of Engineering 2050 Challenge. E2020 supports both initiatives through scholarship and educational programs designed to teach Engineering students about leadership, help them become more globally aware, develop students' understanding of innovation and entrepreneurship, and see the bigger picture of interdisciplinary and systems design.

This evaluation report summarizes results of a survey administered to E2020 students following the close of the 2010-11 academic year. The survey was administered to students in the 2009 and 2010 E2020 cohorts using course rosters from ENGR 210X (2009 cohort) and ENGR 110X (2010 cohort). The survey was distributed using a web-based survey system and data were collected between June 6 and November 1, 2011. Students received an email message inviting them to participate in the survey as well as six reminder messages. The survey investigated the extent to which E2020 Program objectives and goals were being met and gathered information about students' experiences in the program. Specifically, the survey addressed topics related to E2020 and the four pillars of the program, program faculty and staff, program structure and organization, and overall perceptions of the E2020 Scholars Program.

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## Methodology

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The survey was sent to all 45 students who were enrolled in ENGR 110X and ENGR 210X during the 2010-11 academic year. All 45 students responded to the survey, resulting in a response rate of 100%. The 2009 cohort contained a total of 19 students while the 2010 cohort contained 26 students. The students who participated were asked a series of 20 Likert scale items relating to their experience in E2020. Each Likert scale item was followed by a separate question asking respondents to provide comments to lend insight into their responses. Three additional open-ended questions asked students to provide their opinions on the best aspects of E2020, what should be changed in E2020, and provided space for students to discuss any other thoughts on the E2020 Scholars Program they wished to share.

All survey items were exported from Qualtrics, a web-based survey development program, to Microsoft Excel for data analysis. Analysis involved calculating means, frequencies, and standard deviations for the Likert items and identifying codes and themes within the written comments. Results from the Likert items are presented in Table 1, and the written comments are provided in the appendix. Items were grouped by topic (i.e., the four pillars, program faculty and staff, program structure and organization, and overall perceptions of the E2020 Program) to facilitate reporting.

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## Results

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The following sections provide overviews of student ratings and comments about the four pillars, program faculty and staff, program structure and organization, and E2020 overall. Results from Likert items are also detailed in Table 1.

### **The Four Pillars**

In the 2009 cohort 100% percent of students agreed that the content covered in the scheduled E2020 meetings helped them to understand what the pillar concepts were all about, though students reported learning more about some of the pillars than others. In the 2010 cohort, the number of students agreeing that the content covered helped them understand what the pillar concepts were all about was 92%. While many students in the 2009 cohort agreed that they had learned about leadership (95%) and systems thinking and interdisciplinary engineering design (85%), somewhat fewer indicated that they increased their knowledge and skills related to global awareness (82%) and innovation and creativity (80%). Students in the 2010 cohort were less likely to agree they had increased their knowledge, skills, and abilities in these areas: 81% indicated they increased their knowledge and skills related to systems thinking and interdisciplinary engineering design, 77% indicated they increased their knowledge and skills related to leadership, and 73% agreed they had increased their knowledge and skills related to global awareness, understanding, and cultural adaptation and related to innovation, creativity, and entrepreneurship.

Student comments indicated that they felt that E2020 and the E2020 instructors did a good job of helping students understand the pillars. Twenty-two students' comments (9 in the 2009 cohort and 13 in the 2010 cohort) provided evidence they had benefited from the portion of the class devoted to leadership, noting that they had learned more about themselves and others, had taken leadership roles, and had learned how to be a leader. Students also commented that they liked the activities for the pillars (although some students disliked the coffee plant project). Students also indicated feeling like they had a lot to learn about the pillars, and that certain areas felt rushed.

### **Program Faculty and Staff**

Students agreed that their interactions with Program Coordinators (100% in the 2009 cohort and 92% in the 2010 cohort) and teaching faculty (100% in the 2009 cohort and 92% in the 2010 cohort) were helpful. Students in the 2009 cohort were slightly more likely to agree that both program coordinators and teaching faculty were helpful than were students in the 2010 cohort. Comments indicated that Program Coordinators and teaching faculty were available to them, answered student questions, and provided support to students' learning and development. Students also agreed that the use of teams within the E2020 Program was effective (89% overall), though students in the 2009 cohort (95%) were more likely to agree that teaming was effective than were students in the 2010 cohort (84%). Comments indicated that teaming was helpful since engineers work together in the real world, that teaming helped with study groups, and that teaming was useful in developing their leadership skills. Students in both cohorts were much less likely to agree that their interactions with Peer Mentor(s) were helpful: 47% of students in the 2009 cohort and 62% of students in the 2010 cohort agreed that

peer mentors were helpful. Although some students mentioned that peer mentors were helpful and having peer mentors was enjoyable, some students felt that not a lot of interaction had occurred with peer mentors.

### **Program Structure and Organization**

Students agreed that the teaching format for the required class was satisfactory (95% in the 2009 cohort and 92% in the 2010 cohort) and that the format of E2020 programming was satisfactory (89% in the 2009 cohort and 85% in the 2010 cohort). Many more students in the 2009 cohort (90%) than in the 2010 cohort (77%) agreed that E2020 fit well with their degree program courses, while slightly more students in the 2010 cohort (76%) than in the 2009 cohort (68%) agreed that it complemented their involvement with other academic programs. Students commented that E2020 helped with academics, gave them more opportunities for engagement, helped them adjust to being at Iowa State University. Students appreciated the way the course was formatted to spend time on each pillar and have different teachers for each pillar. Some students were disappointed with the amount learned (they wanted to learn more), the lack of organization of the course, and the formatting of the first semester.

Students offered a mixed opinion regarding the use of WebCT and email, with 74% in the 2009 cohort and 69% of students in the 2010 cohort agreeing that using WebCT and email as communication tools were helpful and should be employed next year. Eight students stated that the use of email was helpful, and students in both cohorts reported that they preferred the use of email over WebCT. Some students responded that WebCT made communication more difficult and one student indicated that WebCT could be more helpful if it was used and



updated regularly by program instructors. Several students pointed out that ISU is now using Blackboard instead of WebCT.

### **Overall Perceptions of the E2020 Program**

One hundred percent of students in the 2009 cohort and 89% of students in the 2010 cohort agreed that their involvement in E2020 had been a positive experience. Students also felt that E2020 had enhanced their educational experience (100% in the 2009 cohort and 81% in the 2010 cohort), that they had grown as persons through their E2020 experiences (100% in the 2009 cohort and 81% in the 2010 cohort), that E2020 was a good fit with their career interests (89% in the 2009 cohort and 92% in the 2010 cohort), they were better prepared to succeed in college because of E2020 (79% in the 2009 cohort and 85% in the 2010 cohort), and that E2020 was a source of support for their educational aspirations (95% in the 2009 cohort and 88% in the 2010 cohort).

Student comments indicated that the opportunities for networking and support provided in E2020 were extremely valuable, and students commented that networking opportunities were the best aspect of the current E2020 Scholars Program. Students also appreciated the learning opportunities, having a creative outlet, learning how to incorporate the four pillars into their work, enhancing their interviewing skills, having people who were willing to answer questions, learning about themselves, learning to work in teams, and that the course was a good fit. Some students also felt that E2020 could be improved upon. Students, for instance, commented that more class time was needed, and that they would like E2020 to have more of a community feeling.

**Table 1. Student Response Frequencies**

	Strongly Disagree		Disagree Somewhat		Neutral		Agree Somewhat		Strongly Agree		Mean	Standard Deviation
	n	%	n	%	n	%	n	%	n	%		
<b>My involvement in E2020 has been a positive experience.</b>	<b>1</b>	<b>2.2</b>	<b>0</b>	<b>0.0</b>	<b>2</b>	<b>4.4</b>	<b>9</b>	<b>20.0</b>	<b>33</b>	<b>73.3</b>	<b>4.62</b>	<b>0.78</b>
2009 Cohort	0	0.0	0	0.0	0	0.0	5	26.3	14	73.7	4.74	0.45
2010 Cohort	1	3.8	0	0.0	2	7.7	4	15.4	19	73.1	4.54	0.95
<b>The format of E2020 programming this year was satisfactory.</b>	<b>0</b>	<b>0.0</b>	<b>0</b>	<b>0.0</b>	<b>6</b>	<b>13.3</b>	<b>24</b>	<b>53.3</b>	<b>15</b>	<b>33.3</b>	<b>4.20</b>	<b>0.66</b>
2009 Cohort	0	0.0	0	0.0	2	10.5	10	52.6	7	36.8	4.26	0.65
2010 Cohort	0	0.0	0	0.0	4	15.4	14	53.8	8	30.8	4.15	0.68
<b>The content covered in the scheduled E2020 meetings helped me to understand what the pillar concepts were all about.</b>	<b>0</b>	<b>0.0</b>	<b>0</b>	<b>0.0</b>	<b>2</b>	<b>4.4</b>	<b>14</b>	<b>31.1</b>	<b>29</b>	<b>64.4</b>	<b>4.60</b>	<b>0.58</b>
2009 Cohort	0	0.0	0	0.0	0	0.0	4	21.1	15	78.9	4.79	0.42
2010 Cohort	0	0.0	0	0.0	2	7.7	10	38.5	14	53.8	4.46	0.65
<b>The teaching format for the required class(es) was satisfactory.</b>	<b>0</b>	<b>0.0</b>	<b>0</b>	<b>0.0</b>	<b>3</b>	<b>6.7</b>	<b>12</b>	<b>26.7</b>	<b>30</b>	<b>66.7</b>	<b>4.60</b>	<b>0.62</b>
2009 Cohort	0	0.0	0	0.0	1	5.3	4	21.1	14	73.7	4.68	0.58
2010 Cohort	0	0.0	0	0.0	2	7.7	8	30.8	16	61.5	4.54	0.65
<b>I have increased my knowledge and developed my skills and abilities related to leadership.</b>	<b>0</b>	<b>0.0</b>	<b>0</b>	<b>0.0</b>	<b>7</b>	<b>15.6</b>	<b>13</b>	<b>28.9</b>	<b>25</b>	<b>55.6</b>	<b>4.40</b>	<b>0.75</b>
2009 Cohort	0	0.0	0	0.0	1	5.3	5	26.3	13	68.4	4.63	0.60
2010 Cohort	0	0.0	0	0.0	6	23.1	8	30.8	12	46.2	4.23	0.82

Note: Strongly Disagree=1, Somewhat Disagree=2, Neutral=3, Somewhat Agree=4, Strongly Agree=5

**Table 1. Student Response Frequencies**

	Strongly Disagree		Disagree Somewhat		Neutral		Agree Somewhat		Strongly Agree		Mean	Standard Deviation
	n	%	n	%	n	%	n	%	n	%		
<b>I have increased my knowledge and developed my skills and abilities related to global awareness, understanding, and cultural adaptation.</b>	<b>0</b>	<b>0.0</b>	<b>2</b>	<b>4.4</b>	<b>6</b>	<b>13.3</b>	<b>18</b>	<b>40.0</b>	<b>19</b>	<b>42.2</b>	<b>4.20</b>	<b>0.84</b>
2009 Cohort	0	0.0	0	0.0	1	5.3	7	36.8	11	57.9	4.53	0.61
2010 Cohort	0	0.0	2	7.7	5	19.2	11	42.3	8	30.8	3.96	0.92
<b>I have increased my knowledge and developed my skills and abilities related to systems thinking, including interdisciplinary engineering design.</b>	<b>0</b>	<b>0.0</b>	<b>0</b>	<b>0.0</b>	<b>7</b>	<b>15.6</b>	<b>16</b>	<b>35.6</b>	<b>22</b>	<b>48.9</b>	<b>4.33</b>	<b>0.74</b>
2009 Cohort	0	0.0	0	0.0	2	10.5	7	36.8	10	52.6	4.42	0.69
2010 Cohort	0	0.0	0	0.0	5	19.2	9	34.6	12	46.2	4.27	0.78
<b>I have increased my knowledge and developed my skills and abilities related to innovation, creativity, and entrepreneurship.</b>	<b>0</b>	<b>0.0</b>	<b>2</b>	<b>4.4</b>	<b>7</b>	<b>15.6</b>	<b>19</b>	<b>42.2</b>	<b>17</b>	<b>37.8</b>	<b>4.13</b>	<b>0.84</b>
2009 Cohort	0	0.0	1	5.3	1	5.3	9	47.4	8	42.1	4.26	0.81
2010 Cohort	0	0.0	1	3.8	6	23.1	10	38.5	9	34.6	4.04	0.87
<b>My involvement in the E2020 Scholars Program has enhanced my educational experience this year.</b>	<b>0</b>	<b>0.0</b>	<b>0</b>	<b>0.0</b>	<b>5</b>	<b>11.1</b>	<b>15</b>	<b>33.3</b>	<b>25</b>	<b>55.6</b>	<b>4.44</b>	<b>0.69</b>
2009 Cohort	0	0.0	0	0.0	0	0.0	11	57.9	8	42.1	4.42	0.51
2010 Cohort	0	0.0	0	0.0	5	19.2	4	15.4	17	65.4	4.46	0.81

Note: Strongly Disagree=1, Somewhat Disagree=2, Neutral=3, Somewhat Agree=4, Strongly Agree=5

**Table 1. Student Response Frequencies**

	Strongly Disagree		Disagree Somewhat		Neutral		Agree Somewhat		Strongly Agree		Mean	Standard Deviation
	n	%	n	%	n	%	n	%	n	%		
<b>I have found the E2020 Scholars Program to be a source of support for my educational aspirations.</b>	<b>0</b>	<b>0.0</b>	<b>0</b>	<b>0.0</b>	<b>4</b>	<b>8.9</b>	<b>16</b>	<b>35.6</b>	<b>25</b>	<b>55.6</b>	<b>4.47</b>	<b>0.66</b>
2009 Cohort	0	0.0	0	0.0	1	5.3	8	42.1	10	52.6	4.47	0.61
2010 Cohort	0	0.0	0	0.0	3	11.5	8	30.8	15	57.7	4.46	0.71
<b>My interactions with the Peer Mentor(s) were helpful.</b>	<b>0</b>	<b>0.0</b>	<b>5</b>	<b>11.1</b>	<b>15</b>	<b>33.3</b>	<b>14</b>	<b>31.1</b>	<b>11</b>	<b>24.4</b>	<b>3.69</b>	<b>0.97</b>
2009 Cohort	0	0.0	2	10.5	8	42.1	6	31.6	3	15.8	3.53	0.91
2010 Cohort	0	0.0	3	11.5	7	26.9	8	30.8	8	30.8	3.81	1.02
<b>My interactions with the Program Coordinator(s) were helpful.</b>	<b>0</b>	<b>0.0</b>	<b>0</b>	<b>0.0</b>	<b>2</b>	<b>4.5</b>	<b>19</b>	<b>43.2</b>	<b>23</b>	<b>52.3</b>	<b>4.48</b>	<b>0.59</b>
2009 Cohort	0	0.0	0	0.0	0	0.0	9	50.0	9	50.0	4.50	0.51
2010 Cohort	0	0.0	0	0.0	2	7.7	10	38.5	14	53.8	4.46	0.65
<b>My interactions with the teaching faculty were helpful.</b>	<b>0</b>	<b>0.0</b>	<b>0</b>	<b>0.0</b>	<b>2</b>	<b>4.5</b>	<b>12</b>	<b>27.3</b>	<b>30</b>	<b>68.2</b>	<b>4.64</b>	<b>0.57</b>
2009 Cohort	0	0.0	0	0.0	0	0.0	6	33.3	12	66.7	4.67	0.49
2010 Cohort	0	0.0	0	0.0	2	7.7	6	23.1	18	69.2	4.62	0.64
<b>Using email and WebCT as communication tools was helpful and should be employed next year.</b>	<b>1</b>	<b>2.2</b>	<b>3</b>	<b>6.7</b>	<b>9</b>	<b>20.0</b>	<b>9</b>	<b>20.0</b>	<b>23</b>	<b>51.1</b>	<b>4.11</b>	<b>1.09</b>
2009 Cohort	0	0.0	2	10.5	3	15.8	5	26.3	9	47.4	4.11	1.05
2010 Cohort	1	3.8	1	3.8	6	23.1	4	15.4	14	53.8	4.12	1.14

Note: Strongly Disagree=1, Somewhat Disagree=2, Neutral=3, Somewhat Agree=4, Strongly Agree=5

**Table 1. Student Response Frequencies**

	Strongly Disagree		Disagree Somewhat		Neutral		Agree Somewhat		Strongly Agree		Mean	Standard Deviation
	n	%	n	%	n	%	n	%	n	%		
<b>The E2020 Scholars Program fits well with my degree program courses.</b>	<b>0</b>	<b>0.0</b>	<b>1</b>	<b>2.2</b>	<b>7</b>	<b>15.6</b>	<b>17</b>	<b>37.8</b>	<b>20</b>	<b>44.4</b>	<b>4.24</b>	<b>0.80</b>
2009 Cohort	0	0.0	0	0.0	2	10.5	9	47.4	8	42.1	4.32	0.67
2010 Cohort	0	0.0	1	3.8	5	19.2	8	30.8	12	46.2	4.19	0.90
<b>The E2020 Scholars Program complemented my involvement with other ISU academic programs related to my degree program.</b>	<b>1</b>	<b>2.3</b>	<b>1</b>	<b>2.3</b>	<b>10</b>	<b>22.7</b>	<b>15</b>	<b>34.1</b>	<b>17</b>	<b>38.6</b>	<b>4.05</b>	<b>0.96</b>
2009 Cohort	1	5.3	0	0.0	5	26.3	6	31.6	7	36.8	3.95	1.08
2010 Cohort	0	0.0	1	4.0	5	20.0	9	36.0	10	40.0	4.12	0.88
<b>The E2020 Scholars Program is a good fit with my career interests.</b>	<b>0</b>	<b>0.0</b>	<b>0</b>	<b>0.0</b>	<b>4</b>	<b>9.1</b>	<b>8</b>	<b>18.2</b>	<b>32</b>	<b>72.7</b>	<b>4.64</b>	<b>0.65</b>
2009 Cohort	0	0.0	0	0.0	2	11.1	2	11.1	14	77.8	4.67	0.69
2010 Cohort	0	0.0	0	0.0	2	7.7	6	23.1	18	69.2	4.62	0.64
<b>I have grown as a person through my E2020 experiences.</b>	<b>0</b>	<b>0.0</b>	<b>1</b>	<b>2.2</b>	<b>8.9</b>	<b>37.8</b>	<b>17</b>	<b>37.8</b>	<b>23</b>	<b>51.1</b>	<b>4.38</b>	<b>0.75</b>
2009 Cohort	0	0.0	0	0.0	0	0.0	9	47.4	10	52.6	4.53	0.51
2010 Cohort	0	0.0	1	3.8	4	15.4	8	30.8	13	50.0	4.27	0.87

Note: Strongly Disagree=1, Somewhat Disagree=2, Neutral=3, Somewhat Agree=4, Strongly Agree=5

**Table 1. Student Response Frequencies**

	Strongly Disagree		Disagree Somewhat		Neutral		Agree Somewhat		Strongly Agree		Mean	Standard Deviation
	n	%	n	%	n	%	n	%	n	%		
<b>The use of teaming within the E2020 program was effective in helping me to learn about each of the four pillars.</b>	<b>0</b>	<b>0.0</b>	<b>0</b>	<b>0.0</b>	<b>5</b>	<b>11.4</b>	<b>9</b>	<b>20.5</b>	<b>30</b>	<b>68.2</b>	<b>4.57</b>	<b>0.70</b>
2009 Cohort	0	0.0	0	0.0	1	5.3	3	15.8	15	78.9	4.74	0.56
2010 Cohort	0	0.0	0	0.0	4	16.0	6	24.0	15	60.0	4.44	0.77
<b>I feel better prepared to succeed in college because of the E2020 Scholars Program.</b>	<b>0</b>	<b>0.0</b>	<b>0</b>	<b>0.0</b>	<b>8</b>	<b>17.8</b>	<b>11</b>	<b>24.4</b>	<b>26</b>	<b>57.8</b>	<b>4.40</b>	<b>0.78</b>
2009 Cohort	0	0.0	0	0.0	4	21.1	5	26.3	10	52.6	4.32	0.82
2010 Cohort	0	0.0	0	0.0	4	15.4	6	23.1	16	61.5	4.46	0.76

Note: Strongly Disagree=1, Somewhat Disagree=2, Neutral=3, Somewhat Agree=4, Strongly Agree=5

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## Conclusion

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Overall, survey results indicate that students were very happy with their experiences in the 2010-2011 E2020 Scholars Program, although students in the 2009 cohort tended to be happier with their experiences in the program than students in the 2010 cohort. Students in both the 2009 cohort (ENGR 210X) and 2010 cohort (ENGR 110X) gave the most positive ratings to E2020 faculty members and program coordinators, as well as the use of teaming in the delivery of the courses. Results indicated that they found E2020 to be supportive and helpful, and felt, overall, that the E2020 Scholars Program fit well with their academic program and career interests, and agreed that their participation in the program enhanced their growth as engineers.

While still very positively rated, the lowest performing items on the survey were related to using email and WebCT for communication, interactions with Peer Mentors, and how well E2020 complemented students' involvement with other ISU academic programs related to their degree program. Student comments noted that while using e-mail as a form of communication worked well, WebCT was a less effective medium. Several comments indicated that the course tended to be unorganized at times, especially during the first semester. Some students noted that they would like to have the E2020 courses meet more often in order to cover all pillars more thoroughly and have more opportunities for socialization within the class. Targeting efforts to improve these areas may help make the E2020 Scholars Program even more beneficial to students.

Students' reported that the best aspects of the current E2020 Program are the opportunities to network with others and to gain experience working in teams. Additionally, one student noted that the program was instrumental in teaching and reinforcing that engineering is both a personality trait and a unique way of thinking. Students' suggestions for improvements centered on course organization and pedagogy, such as meeting times, scheduling times to meet with team members for group projects, and a desire for more or less time or different types of activities for learning the four pillars.



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## Appendix A

### Student Responses to Open-Ended Questions

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#### **My involvement in E2020 has been a positive experience.**

2009 Cohort:

- I have formed lasting friendships while expanding my experience in engineering.
- Before 210X, I did not realize how important the pillars are as an engineer. Through my experiences I have learned how critical they are to becoming a well-rounded engineer.
- I really enjoy the structure of the class.
- The E2020 program has provided me with a network of both students and faculty that have been able to enhance my learning experience at Iowa State. It offers a different perspective as it incorporates members from different disciplines of engineering.
- I've made great connections and developed my thinking relating to the pillars, but I think I could be challenged more and stronger social activities could be planned.
- The activities have really helped me develop in the areas of the four pillars.
- I love E2020. I have met some of my best friends through the program and have been provided useful knowledge and techniques from the class.
- I go to all the meetings and learn and developed social and other engineering related skills and ideas.
- The experience has helped me to realize the importance of developing important skills like leadership, global awareness, systems thinking, and entrepreneurship, which aren't taught in my regular classes.
- I really enjoyed the leadership pillar the most. Also, the entrepreneur pillar is a pillar in which I would like to expand my knowledge. I feel as though I am headed in the right direction to become an entrepreneur after I graduate.
- I have made a lot of friends that I will consider to be my college buddies when I leave ISU and I have gained a lot of resources through the program.

2010 Cohort:

- I have enhanced my skills in the area of the four pillars. I am getting extra training to be an engineer besides the class work.
- I have many distractions of two kids along with a full schedule of classes. I have been unable to focus fully upon it.
- It gave me a chance to meet other engineering students I would not have met otherwise. I also like that I got to meet engineering faculty.

- I enjoyed the program. I liked meeting new people in a small group setting. I also liked having mentors.
- E2020 has been very helpful in my transition to ISU as well as learning about what is happening in the world of engineering today.
- So far the course for E2020 has taught me a great deal about leadership and other major things that will play an important role in my future career.
- I like this program and the team building exercises that are involved. There is a lot of interaction with the other students and it provides a nice relaxed environment for everyone to learn more about themselves and others.
- It has given me the opportunity to expand my network here at ISU by meeting and working with students that have the same interests as me.
- The concepts we learn are interesting and important.
- Not only does the course provide valuable information, it offers guidance and support.
- I have learned about the four pillars and how to relate them to the real world but the best part is the people I have met and been able to interact with.
- It has been educational and has provided me with opportunities that I wouldn't have had otherwise.
- I have found a lot of support and motivation from the E2020 scholars program. At times I was stressed out during the semester and I always found the E2020 class a pleasant place to be.
- I have learned a lot about my future in engineering.
- Haven't really learned anything new.
- The people I've met and the topics covered have been uplifting and beneficial to my educational experience at Iowa State.
- I really enjoy the classroom hands and the different group problems that we do.
- I met new people with different engineering majors but with similar classes and got to know them better.

**The format of E2020 programming this year was satisfactory.**

2009 Cohort:

- I was only here for the first semester so I missed the global awareness and innovation modules but I thought diving deeper into the pillars was a great thing to do.
- I like the discussion format and group work areas.
- The more in-depth projects these past two semesters have been much more beneficial than the first year. I felt as though I better understood the concepts we were covering.

I think it could include a more social aspect as well so our community and network continues to improve.

- It was beneficial to spend a half a semester on each pillar.
- Well structured.
- We tackled all areas that were mentioned and were challenged with an interesting international assignment regarding the water quality in Eastern under-developed countries.
- I felt as though the systems thinking pillar was a bit repetitive this year. I liked how all of the groups in the entrepreneur pillar had to come up with something in same category. It made it easier to see who had the best idea.
- The programming was good, but a lot of the things covered in the different nodes were repeats of the previous year. I understand that it was designed to be more in depth and that it was, but I think more could have been brought to the plate to change it up a little.

#### 2010 Cohort:

- I was able to connect with other engineers outside my specialization. We did a lot of teamwork activities that help build leadership skills.
- I am not sure if I have anything to judge against.
- It was difficult to try and fit all four of the pillars into one semester. It might be better to just try and cover some of them, or to start them during the first semester.
- Sometimes it seemed disorganized, but I understood it was a work in progress.
- It did not take a whole lot of time up but it still made me feel like I was involved and participating.
- I think that this program is set up very well with the four pillars. Each one has its importance and provides us with insight on the things that will make us all better engineers.
- At times the format seemed a little slow, mostly because of how new the program is. For the most part however, the semester flowed smoothly.
- Scheduling for first semester was difficult, but it worked.
- I appreciate that the first part of the course focused on helping students adjust to Iowa State University, rather than placing too much emphasis on the pillars. The second semester was structured well, having three weeks dedicated to each pillar.
- The first semester was not very satisfactory but the format for the second semester was great. Splitting the semester up to provide time for each pillar worked well.
- I think the formatting was decent. Sometimes I felt the time could have been used more productively but overall it was effective.

- I'd hoped to learn more from the E2020 class this year. I feel like our coverage of the leadership pillar was the most thorough. The others were somewhat lacking.
- We covered all the pillars on the program which was good since I didn't know what they all meant!
- There is a lot of outside of class work for a one credit class.
- My first few classes let me know how this class works and what the E2020 program really offers to engineers. I am very happy that I am able to be a part of this program.
- It was a little unorganized at times but the overall goal was good and I felt eventually met.
- I feel like it could have been a little bit more organized.

**The content covered in the scheduled E2020 meetings helped me to understand what the pillar concepts were all about.**

2009 Cohort:

- It was a very thorough investigation of each topic.
- The projects reflected the pillars quite accurately.
- I learned all of the pillars to a degree I felt satisfactory.
- Good coverage of each.
- All things discussed were on topic at all times.
- Again, the systems thinking pillar this year was the same thing we did the previous year.

2010 Cohort:

- I felt as though I learned more about the leadership and global awareness pillars than I did about systems thinking and innovation. I am glad there is a 210 class to get more in-depth in the four pillars.
- I am still vague on how the pillars will affect my real life in a career.
- When I was applying for the scholarship, I only somewhat understood the systems thinking pillar. During class I got a better much understanding.
- Our ENG110X class helped me to understand the four pillars and how they could be applied to engineering.
- All content was good. One activity could be improved however – the coffee plant design project I think could be changed to give a better understanding about the pillar it is concerning. I'm not sure I completely followed what we were supposed to learn from the activity.
- Each teacher made it clear what each pillar meant.

- The concepts in each meeting correlated well with each pillar and really help to convey the idea of each pillar.
- We took the time to look at each individual pillar throughout the semester, and then were able to see how each pillar related to the others.
- The person teaching shared relevant information.
- Each presenter was very knowledgeable in the area they were presenting on and the interaction they required helped the understanding.
- I believe the exercises we did helped me to understand the pillars and apply these situations to real life.
- The coverage of the leadership pillar was the most thorough. The others were somewhat lacking.
- They more so gave one example of each pillar and made us do a project over that one concept.
- In class we took each three weeks as a part of the pillars which are the concepts behind the E2020 program. In doing this I was able to understand fully each pillar.
- The first few pillars were explained well but then I felt the last one was rushed. I would have like to go more in-depth over global issues.

**The teaching format for the required class(es) was satisfactory.**

2009 Cohort:

- Some teaching formats were better than others, specifically the global awareness and leadership pillars
- I liked how down to Earth it was. I liked that it was not a traditional atmosphere with a professor. We were able to be ourselves and really get to know the professors.
- Each guest teacher was very excited about their individual pillar and the exercises and lectures they had planned were fun.
- Sometimes there could have been more direction and guidelines for the projects but overall it was good.
- It was nice with the open format and ability to interact.
- I liked to come to class, the teachers did well.
- Very professional and inviting environment.
- I liked that we would spend a portion of our time discussing the pillars as a group and then break up in teams to look at how they apply to real life.
- The teaching was fine. It would be nice to avoid repetition from the first year.

- Mark is a great guy and is always doing his best to make the meetings entertaining and useful.

#### 2010 Cohort:

- It was nice to have professors come and talk about their pillar and not just have one teacher all the time. These professors are experts in these fields so their advice and teaching is very helpful.
- Teachers have included much involvement.
- I think sometimes we cover material that has already been covered. We went over resume writing and internship stuff for half of first semester, which was helpful, but I also had that in all my other classes. It was too much.
- We had guest teachers. Some were awesome; others were interesting.
- I really enjoyed having a different teacher for each pillar. The only thing I disliked was the fact that we did not get to spend a significant amount of time on each one, but that's what the next three years are for I suppose.
- Mark did a great job of keeping the class in order, and he and the people that he brought in to lecture were very knowledgeable about the subjects that were covered.
- It was great to get an overview of all the pillars.
- Again the first semester was not great, just talking each week was not very helpful, but the second semester was much improved
- Sometimes it seemed a little all over the place but in general it was decent.
- I felt all of our instructors were very appropriate to each pillar we studied and that each of them was very knowledgeable in their field.
- The different teachers that taught us had different teaching styles which made class more interesting.
- For each pillar a different teacher came in to talk about their experiences with the pillar and different background information that made understanding the pillars easier.
- I liked having peer mentors who were not much older than us to answer questions while also having a teacher who was a professor to answer other questions.

#### **I have increased my knowledge and developed my skills and abilities related to leadership.**

#### 2009 Cohort:

- The leadership module was great and I loved the book that we read and discussed in class.
- I've had opportunities in the past to explore and practice leadership skills, and the study of the leadership pillar reinforced those experiences.

- I really learned a lot about myself this semester which is very important in being a leader.
- Reading the book about leadership was the most helpful to me.
- Beth was very good at showing us how to be a good leader.
- Some ideas and patterns of thinking were already possessed but I gained more in E2020.
- I am more confident in myself and taking on leadership positions; I also realized that everyone has a different leadership style.
- I developed most of my leadership skills outside of the scholarship program. E2020 did help me improve my leadership skills though. I became more conscious of what I was doing.
- Beth was a hoot. She by far made leadership the best pillar and I feel like I got the most out of that particular area.

#### 2010 Cohort:

- I still need work, but I can tell I have improved.
- I am a poor leader to begin with so I don't think I have improved much.
- I have learned to work with other people more.
- Not really sure.
- The segment on leadership was helpful in understanding what it means to be a good leader.
- There were many aspects in the class that involved each of us taking a leadership role at some point. I am looking forward to have more opportunities in the upcoming years.
- I learned something new about myself and other not only from the teachers but from the students as well.
- I believe that my leadership skills are improved every time we break into groups and work on projects.
- The class information was helpful to my personal development.
- The presenter on leadership was very impressive in the area of leadership. She not only shared her type/role in leadership she provided ways to help us improve our leadership ability.
- Leadership has been my major goal while at Iowa State and I believe this program helped with that, but I also used external resources to develop these skills.
- As I said before I found the leadership pillar the most thorough and beneficial to me. I have learned a great deal and now know strategies to use in improving my leadership abilities.

- I have learned real-world problems that entail engineering. I haven't touched on these in any of my other classes.
- Didn't really do anything I did not already know.
- Beth did a great job in pointing out the aspects of leadership and I walked away from that pillar with some big take-aways to be applied to my leadership skills.
- Leadership starts with networking, and the networking that I have gained from this program will hopefully help me out in the future!
- We took a survey to tell us what our personality was like and did a couple of group activities but I feel we never had to lead anything.

**I have increased my knowledge and developed my skills and abilities related to global awareness, understanding, and cultural adaptation.**

2009 Cohort:

- I was not here to participate in this module but I think I have improved my knowledge and awareness of it.
- I haven't had much experience with other cultures in the past, and looking at the practical facets of our technical involvement was very enlightening.
- Addressing a problem from another country really forces you to address outside perspectives and elements that you don't normally consider.
- It was useful to have a native from the place we were working on.
- I feel like I am more open to different cultures and the types of differences to expect when I am in a different place.
- I have developed a global vision that has helped me not only with projects in E2020 but also in my other classes. I don't even really think about remembering to do it, I just automatically think how my project will be accepted globally.
- This is a hard pillar to do without leaving the country. Since we all are from different engineering fields, the examples that we use sometimes don't apply to everyone.
- I agree. Being able to converse with someone that was actually from a country that we were doing a project on really gave an insight as to what they are dealing with, how they see the problem, and what can be done without much change to their lifestyle.

2010 Cohort:

- I do realize that global awareness is a huge part of engineering. I wish we could have gone more in-depth.
- Maybe some different views but otherwise my opinions have not been swayed.



- It's hard to learn about different cultures in a classroom. I think it would be more fun to have more hands on experience with this topic.
- I had never considered how engineering can be applied worldwide until this program.
- I now better realize that there are cultural differences in engineering and business.
- I still feel like I have much to learn in this area.
- Before E2020 I did not know very much about these subjects, but E2020 has given me a good foundation now.
- I understand the world of engineering is connected everywhere.
- I understand more about the coffee growing/drying process but otherwise for the global awareness we did not cover much other information.
- This I feel was the pillar that lacked the most for me. This may have been due to it being very close to the end of the semester. The project we did for this pillar did not seem to reflect on the global awareness topic very well because it was too involved in making our "coffee farm" a success more than thinking of cultural factors.
- I now know how engineering relates to the real world.
- I more know what global awareness is, but still knew the concepts covered.
- We learned that we needed to understand different cultures and not actually learn about any specific culture.
- I now understand that engineering somewhere else in the world has a way different meaning then here in Iowa or Minnesota. This is because of different resources such as wind, energy, and natural resources.
- I felt this pillar was rushed and we only did one activity with it that didn't really raise my global awareness of major issues around the world. I would have liked to learn more about recent issues and solutions engineers came up with to help solve them around the world. I also would have liked to learn about potential issues we will be faced with when we start our careers and discuss solutions.

**I have increased my knowledge and developed my skills and abilities related to systems thinking, including interdisciplinary engineering design.**

2009 Cohort:

- Systems thinking was not something I thought I fully understood until I started my co-op. I now realized that is was very, very important to think about all the causes and effects and how decisions affect each other.
- I have always enjoyed logistics and understanding how various operations work. Exercises that Dr. Rehmann assigned us were great practice in looking for and predicting

what part of the operations may need adjustment for a smoother completion of the project.

- The innovation pillar was probably the most helpful for working on interdisciplinary engineering work.
- The more real life projects the better.
- The systems thinking methods were very helpful for other classes.
- I have gained tools such as rich pictures and causal loop diagrams that help me take a systems thinking approach to projects.
- I wish there was a different way we could go over systems thinking. The first year it was really good but we did the same thing the second year.
- I think learning about the rich pictures helped out a lot with getting one to think about more than just the problem at hand.

#### 2010 Cohort:

- I wasn't really sure what systems thinking was before E2020 and I'm still a little fuzzy. All I learned was how to have a rich picture diagram.
- I would like to focus on interdisciplinary design but I don't see how this class can fully develop the idea.
- I didn't have a very good idea of what systems thinking was before this class.
- This was a brand new concept to me; I found it quite interesting.
- I still feel like I have much to learn in this area.
- We spent time discussing systems thinking, but I do not fully understand the concept.
- For this pillar we were able to work in groups and see how one system affects a whole process and relates to many other parts of that system and other systems.
- I learned the use of rich pictures and I hope to learn this pillar more in depth in the coming year.
- I have learned about my personality type and how study more efficiently. I have also learned how to better plan steps to reach goals I have through systems thinking.
- I know what systems thinking is, but that is all I learned that is new.
- I was mostly unfamiliar with this topic going into the program but now I feel I have a good understanding of it with one thing leading to another, and so on.
- We did several activities to help explain this well. They were simple and fun activities but they did make us think.

**I have increased my knowledge and developed my skills and abilities related to innovation, creativity, and entrepreneurship.**

## 2009 Cohort:

- I was not here to participate in this module but I think I have improved my knowledge and awareness of it.
- My interest with innovation really extends only to understanding how a new or improved product will impact the way I work and live. I've not had much interest in developing my own product/service.
- There wasn't as much structure to this problem as others. Trying to run a company with a group of engineers is a very big challenge.
- It was interesting to see the business approach.
- This module could have been better but it is hard to teach innovation. More thought provoking activity and less "story" would have been better.
- Learning how to write a business plan was a big step for me that I really enjoyed. I realized what it takes to be an entrepreneur and the lessons really inspired me to pursue it further.
- This is something that I love doing and I loved participating in this pillar because I am able to be creative and solve problems.
- The entrepreneurship pillar was a lot of the same as what was done in the previous year. I didn't feel as if I gained much more knowledge in this area than what I had learned in 110. I think if a different type of project was done in 210 more areas could have been explored with more knowledge being gained.

## 2010 Cohort:

- Like systems thinking, I wish I had learned more. I only got to meet with the professor for two class periods instead of three which made a huge difference.
- How can creativity be taught? It is just there. Entrepreneurship can only be nudged; without true backing, where can it go?
- I understand the concepts much more, but I didn't increase my skills all that much. I think it is difficult to teach creativity and entrepreneurship. A lot of that has to do with your personality.
- I enjoyed learning about these topics. I feel like I understood their importance better by the end of the semester.
- I still feel like I have much to learn in this area.
- We discussed thinking of creative solutions.
- I learned general ideas about these in the E2020 class but I feel like I learned more about creativity in my CE 105 class.
- This class has motivated me to look into entrepreneurship.

- I learned how to sell a product better and learned to look all the possible questions a consumer might ask.
- This was my favorite part of the program because we got to think outside of the box and learn different ways of thinking of ideas that could be made.
- Again we did several activities to make us think and they helped explain this pillar well.

**My involvement in the E2020 Scholars Program has enhanced my educational experience this year.**

2009 Cohort:

- I had a great time with the teachers and students. I learned things that most other engineering students do not get to learn. I am fortunate for that.
- The approachability of Mr. Laingen and any of the instructors has been very helpful. They've always been willing to offer help of advice with any issue I've brought to them, academic or not.
- It helped me to focus the four pillars into my other work.
- The pillars have helped me work in teams better and approach problems differently.
- E2020 is an experience that adds to my college experience for the better.
- It certainly reminds me that other skills like leadership and systems thinking are worthwhile to pursue outside of just getting good grades in all my classes.
- The leadership and innovation pillars helped my education this year, mostly because I have looked at my studies from the point of view of an entrepreneur. It has made my academics more interesting.
- I have gained a lot of friends through this program and a lot of resources. Through these resources I have been able to better understand the information taught in my classes and develop my social aspect my life as well.

2010 Cohort:

- I feel like I am a more well-rounded engineer. I have enhanced qualities that most engineers ignore.
- I am not sure how my experience has truly affected my learning.
- I enjoy E2020 because it gives me a group of other engineers in the same classes and dealing with the same issues I have in school. It's nice to have a friendly environment.
- Not really sure.

- Very helpful in developing interviewing skills, job searching, internship importance, etc.
- E2020 has given me peers to work with in the last year and also mentors to come to for help.
- The biggest part that E2020 has enhanced is my networking.
- By developing in the 4 areas, I am becoming a better engineer and person.
- It's a good program to keep you thinking but lets you be creative without providing a whole lot of outside of class work.
- I would say it definitely helped, especially when we talked about stress management and such at the beginning of the year.
- I have made friends in the E2020 course that I have worked with on other classes together.
- I am able to relate my courses to real life.
- Did not learn many new concepts.
- The networking and reaching out to other engineering students was a great way to grow and learn with other students.
- I met several people and we helped each other through our freshman year with classes and other social experiences. Most engineering majors have similar classes the first couple of years so it was nice to get help from different people and to see things a different way sometimes.

**I have found the E2020 Scholars Program to be a source of support for my educational aspirations.**

2009 Cohort:

- I have really enjoyed talking with the professors and other students about their experiences and any tips they might have for me in the future.
- It helps develop characteristics that I need.
- I am not sure what this means but I think that if encouraging me to continue with my education and try new things while doing so then yes.
- Very inviting community of people that will listen and be interested in good ideas.
- It has helped guide me to my passion for science.
- I would use the world supplement instead of support. I don't really need help with school, I just need more from school and scholarship program helps me do that.

2010 Cohort:

- When going to my engineering classes, it seems like the only options for jobs are research. E2020 has let me know that there are so many aspects of engineering and I will eventually find something I love.
- I do not have many aspirations except finishing school.
- It's good to have a place where you can meet faculty other than a lecture class!
- I knew that if I needed assistance that they would be willing to help.
- Mark and the peer mentors are very helpful answering any questions we may have.
- I always knew there was someone that would be willing to help me on any questions I had during the year because of this program.
- Employers like to hear about E2020.
- It provides information about all types of engineering and design and how they relate to one another whereas in your main classes you are focused on one area of engineering.
- I felt the fellow students could relate to my classes and understand my educational goals.
- The E2020 program has been very motivational to me because seeing and meeting others that aspire to become strong engineers someday gives me a support base that I could not find anywhere else.
- At the beginning of this course we watched a video about the problems we will encounter in 2050. This video showed me how important I could be to fixing this.
- it is nice to have people to go to when facing problems.
- The program focus on engineering helps me realize that not all classrooms use real life instances like the E2020 program did.
- I have found I can get as much out of this program as I want. There are always people here to answer any questions and if they don't know the answer they know where to direct me to find it. It will be a very nice program to be a part of for the next several years.

### **My interactions with the Peer Mentor(s) was helpful.**

2009 Cohort:

- I don't recall interactions with the peer mentors this year. I am not sure that there are peer mentors for the second year.
- I did not have a lot of interaction with the peer mentors.
- I feel like we're friends, but other than within the classroom, we didn't interact.
- There wasn't a lot of interaction between the peer mentors and my cohort.
- Didn't have much interaction this year.

- I didn't really go to my mentor for much.
- I never really talked to the peer mentors.
- The peer mentors were a lot of fun to be around and helped to keep the class entertaining and productive.

#### 2010 Cohort:

- I did not interact with the peer mentors outside of class much. During class they didn't give much input to the topics.
- I don't talk with them much at all.
- I didn't really talk to the peer mentors all that much. They were nice and friendly, I guess we just didn't use them a whole lot in my class.
- Though they were helpful when I got help, there wasn't "office hours" or a set time when we knew we could meet with them.
- It made the class much more enjoyable when we got to interact with the other students.
- What they did was helpful.
- We have one peer mentor that is very quiet but is easier to talk to, the other peer mentor is more outspoken, which is helpful, but is not the best role model to follow.
- I was never approached by the peer mentors, but I am sure they would be helpful if I needed them.
- I worked with several of my peers on other classes and it helped when I needed someone to study with.
- They really didn't help me learn anything and didn't try to get to know me.
- I did not interact with them outside of class.
- They were there for me.
- It was very nice to have students there to answer questions about things in all different areas. They were very willing to help and it was nice to have them especially during our freshman year.

#### **My interactions with the Program Coordinator(s) was helpful.**

#### 2009 Cohort:

- Mark always gives great advice and is always willing to listen and help whenever possible.
- I received good support and feedback from the coordinator.

- Talked with this person a lot and this person was encouraging.
- They always give good advice and are good facilitators.
- Mark is an awesome individual. He always on time and cares about us all. He always makes sure we are informed of upcoming events that pertain to us and will help us out any way possible.

#### 2010 Cohort:

- I did not see the program instructors a ton. Most of the time they just observed the class.
- I have little interaction with them.
- He's very nice and does his best to make the program a success.
- They were extremely helpful, and they understood that we were each unique individuals.
- They answered all questions I had.
- They taught well and were easy to talk to.
- The program coordinators for the transfer group are very helpful and easy to get along with.
- I enjoyed the enthusiasm that the program coordinators showed and their desire to help us learn and grow was supportive.
- I really liked Mark since he was in my major. He could definitely be someone I go to for help throughout my college years.
- They were there for me.
- It was nice to have a professor that was just here to answer general questions instead of trying to lecture us about a subject. They were very helpful and ran the class smoothly.

### **My interactions with the teaching faculty were helpful.**

#### 2009 Cohort:

- I loved getting to know them and hearing about their experiences.
- Talk with these a lot and they were encouraging.
- It was better for the two pillars that I really enjoyed. The other two were almost boring to me.
- Overall the faculty that have been brought in to teach are a lot of fun. They bring a lot of knowledge and experience to the table and are willing to help any way they can.

#### 2010 Cohort:



- Mark was always friendly and willing to help with whatever I needed. He could answer questions about everything, even if it did not relate to E2020.
- I have gotten some helpful responses to my questions.
- It's wonderful to get to know faculty in a small group.
- I never talked to our visiting teachers one-on-one so I don't have any comments.
- They were all very supportive of everything we did.
- They taught well.
- They are all helpful and are willing to help with anything, within or outside of the E2020 program.
- Like the program coordinators the teaching staff were very enthusiastic and helpful.
- They all got to know me and offered to help whenever I needed it.
- I liked how they were always present so that they were there for me.
- It was nice to have professors to answer questions who weren't trying to lecture and teach us a particular subject.

**Using email and WebCT as communication tools was helpful and should be employed next year.**

2009 Cohort:

- WebCT should not be used next year; I check my e-mail every day, I rarely ever go on WebCT. Sometimes there would be assignments posted in WebCT that hadn't been mentioned in class at all and because I didn't check it that often, most of them were marked late, and I didn't know if we were supposed to do them or not, because no one else I talked to did.
- I felt that WebCT could have been more helpful if it was regularly used and updated.
- Schedules are hard to match up sometimes so email and Blackboard now are the best options.
- I like the convenience that WebCT offers for both receiving and handing in assignments.
- Communication is sometimes a challenge, especially with WebCT. Email works well though.
- WebCT wasn't as effective for me this semester.
- Did not seem like we needed it too much
- I think emails work just as good and I would actually prefer email.
- I didn't use the WebCT email.

2010 Cohort:

- It's a great way to communicate information fast.
- We have switched to Blackboard but it is a localized place for information.
- E-mail is best. WebCT is often ignored because other classes win the attention.
- I feel I learned WebCT and email better through other classes that I was enrolled in, not that E2020 didn't use them also. I had already learned how to use them beforehand.
- Without a doubt email should be used. WebCT however, could go either way. It wouldn't bother me if we did not use it.
- Blackboard.
- It was not used very often so it is hard to say if it was helpful or not.
- Email was more effective than WebCT, so email should definitely continue to be employed.
- Usually any form of communication works well for me.
- Communication was pretty good.
- Not a fan of communication through WebCT, but email is a big help.
- E-mail was used mainly, which I like!
- Emails were very useful because we check them all the time anyway so when some information needed to be sent out I felt that emailing it was very efficient.

### **The E2020 Scholars Program fits well with my degree program courses.**

2009 Cohort:

- I believe that the program has expanded my knowledge of engineering as a whole, but the meeting time is relatively inconvenient. I understand that it is difficult to get 20 peoples' schedules to match up but I try to set my class schedule up so that I can work part time during school and with the E2020 class in the evening it makes it nearly impossible to work on the day we have our meetings.
- I get a chance to learn things in a way that most other engineering students don't.
- The class structure feels more like what I expect a graduate level course to follow, and the group work is what I expect the work experience to be like.
- This should be clarified, it seems like it means does it fit in your schedule, but I think it complements my other courses
- Consumes time like all things that one participates in but still it applies to all walks of engineering.
- Now that I am finally in my degree courses I can use my entrepreneur and leadership skills more.

## 2010 Cohort:

- It fills in the holes of my regular engineering classes. It goes a step beyond the equations and calculations that we do in other classes.
- I am not sure how this truly relates to my chosen career path.
- It's nice to have; it's not really connected to anything in my degree program courses.
- When I was enrolled as an E2020 scholar, it fit my courses and my final goal after college.
- Obviously my major is in an engineering field so everything in the class has been helpful to me.
- It complements my other classes.
- It helps provide a better understanding of all of engineering and design.
- I would say it supplements my degree program courses.
- It teaches me what my other classes don't. Real world connections to my major. I have also gained some friends and been able to network.
- I really like the program because it fits great with my major.
- I feel that it helps any engineer who is looking for a career to help people.
- The class times are somewhat inconvenient. However, I understand that sometimes we have no control over that.

**The E2020 Scholars Program complemented my involvement with other ISU academic programs related to my degree program (e.g., learning community, student club, professional society).**

## 2009 Cohort:

- I am not a part of any other student club or professional society.
- I'm not involved in any other academic programs.
- The content fits well. The time schedule can be challenging to maintain at times, but I think it is worth it.
- Sometimes yes and sometime a distraction.
- I spend most of my time working with my fraternity, but a lot of leadership is involved with my fraternity.

## 2010 Cohort:

- The time of the class interfered with a lot of meetings and activities.
- I have no time for clubs or outside activities.

- I don't think it has really related at all.
- I didn't exactly have other programs for it to balance.
- It has given me more opportunities than I would have previously had.
- The program shares useful information for my other classes.
- It supplemented them.
- I learned a lot about community.
- The program made us join a learning community which I enjoyed.
- It definitely helped me with the academic side of my involvement.

**The E2020 Scholars Program is a good fit with my career interests.**

2009 Cohort:

- I really like the leadership and systems thinking modules.
- I want to start my own company.
- The program focuses a lot on engineer practices and the practices of the future. Since I am an aspiring engineer that will be in the field for the 40 or 50 years this is a great program for just that.

2010 Cohort:

- I like doing things in engineering besides the basic calculations and word problems.
- I don't see how this will fit into my future career.
- I think the leadership fits the most. In my internship with the corps of engineers it definitely helps to have.
- My career goal was heavily focused on changing the future, and I feel that E2020 was showing us where we needed to grow.
- Again I am pursuing an engineering degree so I have no doubt that it is a good fit.
- I will be an engineer in the year 2020.
- I am glad we got to over a bunch of information regarding the career fair because that is something that is important, especially for those who are attending for the first time.
- I hope to work on an international scale someday and the values I learn and will learn in the E2020 program will help me reach that goal.
- It was very motivating!

- Focus on engineering.
- I really want to pursue a career that helps people and deals with world issues. I eventually want to go abroad to work for a while and get experience and I feel this program could help me and lead me in the right direction.

### **I have grown as a person through my E2020 experiences.**

#### 2009 Cohort:

- I used the book given to us about leadership in my co-op when I was in a project management role.
- E2020 has helped me become a great person but it is not solely responsible.

#### 2010 Cohort:

- It has enhanced my skills in the areas of the four pillars.
- I am who I am and more or less set in my ways.
- I think the best part has been learning to work with people and getting more practice at public speaking.
- I don't have any specific situation that says "I grew as a person because of this," but it still was helpful to who I am.
- It has developed me to become a better leader and be more understanding about my surroundings.
- E2020 has taught me many new, helpful things.
- I have grown and learned how to improve as a leader but I hope to do more growing through the E2020 program in coming years.
- This program has helped me open up and communicate better with people.
- Through networking, and through my abilities to understand the pillars.
- I feel I've met new and different people which always helps you grow as a person.

### **The use of teaming within the E2020 program was effective in helping me to learn about each of the four pillars.**

#### 2009 Cohort:

- To a certain extent, smaller teams of four are preferred. Less than that and there is a good possibility you'll be stuck on a team with teammates who don't care and more than that it gets really hard to coordinate schedules to meet outside of class time.

- Teams are great for this stuff.
- This was probably the time where I learned the most. We broke up into teams and we applied the concepts to real life. I don't believe any other teaching method would have been as effective.
- It's much easier to learn when in a group working on a project.
- It helped us all out by getting us to know one another and how to work in a team environment which in itself is part of the four pillars.

#### 2010 Cohort:

- I learned more about some pillars than others.
- I have yet to memorize them, and still have little understanding of their true purpose.
- I think working in teams is always best. You get to know other people and learn how to work with other people.
- I appreciated that they brought in different people to teach each pillar. It provided an in-depth look at each pillar from a personal point of view.
- Although I feel like I have much more to learn I most definitely have a firm grasp on each pillar.
- In teams, we can bounce ideas off each other.
- I probably would not have learned about the pillars were it not for the program.
- Especially with the leadership pillar because knowing how I work as a team as a leader is helpful in developing.
- I learned what they all mean.
- The networking I gained will help me with my schoolwork especially if I need to study with groups.
- Working in teams helped a lot because as an engineer we are almost always going to be working with other engineers on projects so it helps us to prepare for the real world.

#### **I feel better prepared to succeed in college because of the E2020 Scholars Program.**

#### 2009 Cohort:

- I feel that the course is going to help me succeed in the work place but not necessarily college classes.
- Definitely.
- More so in the career world.
- I felt pretty prepared to succeed before coming to college. I do not think that the scholarship program has impacted my preparedness.

#### 2010 Cohort:

- I am more of a well-rounded engineer.
- Not really, I work hard in my curriculum but have not had any influence that I am aware of towards my preparedness.
- I have gained experience in working with people, even some people that are difficult to work with at times.
- The program was helpful when it came to career fairs and resumes, and simply looking at specific qualities needed.
- The program addresses issues other than academics as well. Safety, (police officer guest speaker) and other topics like this.
- It gives me a good resource to use when I am in need.
- E2020 helps me to be more successful in college.
- I feel like I got a lot of information that will help me be better prepared for college.
- It has given me a support base that will help me throughout my coming years.
- I know a different aspect of engineering than my friends learn in class.
- I found out a lot about myself and grow as a person.
- I feel that as working in teams and groups as much as possible is always good because you can always learn things from your other group members no matter what major they are.

#### **What do you think are the best aspects of the current E2020 Scholars Program?**

#### 2009 Cohort:

- The ability to work with other students in different engineering disciplines on topics that are universal to all engineers and will have a big impact and importance in my future endeavors as a successful engineer. Also the coordinators and my fellow scholars are amazing people!
- Classroom environment.
- Getting together with peers that have the same or similar goals in academic achievement has helped me make friends and study groups.
- I really like how we are able to get to know the teachers and have really good open conversations with them.
- Taking half a semester to dedicate to each pillar is a good way to learn more about them and to connect with the respective professors as well.

- The more practical and less intense atmosphere of the class is a relief among my other engineering classes.
- Diverse experiences.
- Getting to work with the other scholars. Addressing important aspects of being an engineer not covered in existing courses.
- Being able to create projects. I also liked the leadership book and evaluation of oneself.
- The four pillars are great, as is everything else.
- Discussions and meeting challenges.
- One of the best aspects is being taught by people that have direct experience with the pillar instead of a single person trying to teach all of them. We focus on the most important aspirations which allow us to go in depth with each.
- I love the entrepreneur pillar and I hope to become an entrepreneur after graduation. I have learned quite a bit about entrepreneurship through the program.
- The best aspects are the people running it, how it ran, and the knowledge that is brought into the room each week.
- I like the students and teachers involved. It is a good place to meet more new people while also learning about important things about engineering.

#### 2010 Cohort:

- The leadership pillar.
- I have never been in any program like this and do not know what may be deemed a good aspect.
- I think the best parts are getting to meet the faculty and other students and having a friendly atmosphere.
- The small group of students that you can meet and bond with, and it is nice to know that you have a network of people.
- Having experienced people to fall back to if there are questions.
- I like being able to connect with other peers in my major and the engineering program as a whole.
- I think that one of the best aspects of the E2020 scholarship program is the way it teaches all of us that engineering is more than just a job or a career that will be obtained after we graduate. It's a personality built and a way of thinking that not everyone has. This program can get you thinking past the books and numbers to make you see that your personality is just as big of a factor as your GPA.
- I feel that the networking side of E2020 is very helpful, but also just understanding how to improve your leadership and how to use your personality and strengths to succeed.
- The focus on being creative, nothing is more important than that.



- Networking with other E2020 people, and learning about the four pillars.
- Working in groups. This gives an idea of how the projects you work on as an engineer will be in the future. It helped get comfortable with the idea of sharing ideas with a small group.
- I really like the support network the program offers. I also feel that the program has excellent instructors and peer mentors.
- The interaction with other students and professors is very worthwhile.
- Connecting with other engineers and having someone there that you can relate to on a personal and educational basis.
- It is structured, but is a relaxed and informal environment. I have found a very good friend as a result of E2020.
- The enthusiasm of instructors to help us students.
- People are friendly and I learned a lot about the world.
- Having people to go to for help.
- Training engineers to be effective leaders, bringing out the talents and skills of the gifted people around them.
- The hands on, and tight-knit of the group.
- I like working in teams and I liked the activities that made us think. I also like the goal which they are pursuing and agree with a lot of what they are trying to teach us.
- The best aspects are the breaking down and explanation of each of the four pillars and how they relate to engineering and how they apply to real world problems.

### **What do you think should be changed in the current E2020 Scholars Program?**

2009 Cohort:

- Trying to turn it into more of a learning community. Trying to organize more social events or take one class every few months or so to just have a relaxing/fun day. I really like everything that the E2020 program offers, but there are times when it is really hard to focus on the material because the group work and presentations always seem to fall on the same week as major exams and it's really hard to coordinate group schedules and take enough time to truly focus on the issues at hand. Either make the class a two hour class or twice a week, so there is more in class time to work on projects or make the assignments have less of a time commitment. There were a lot of times where my group just needed 15-30 more minutes, and we had to try and coordinate 5 different schedules to try and find a time to meet and finish it. More class time would definitely help. Also, and I don't know if this is possible or not, but doing more engineering type

projects. I enjoyed drawing rich pictures for the systems thinking pillar. I think it would be neat to incorporate more of a hands-on aspect to the program – not writing papers like we do in every other class, but working on a project, building something, working through a computer program, etc. I think it would be neat to incorporate a different type of learning and assessment to this class.

- Nothing.
- The meeting time should be changed. It is hard to choose a time that all students have free so maybe have a couple options for times to take the class.
- Nothing.
- I think the first year is a bit ambiguous as to what we are supposed to get out of it.
- More speakers.
- More of a community feeling and being recognized by the college as a whole. Most people don't know we exist. Maybe we could put together a project to present when other clubs do like at VEISHEA.
- Stop having at 5. Any other time (earlier than 5) would be great.
- Nothing.
- There should be less repetitiveness in some of the pillars during the sophomore year.
- What should be changed is that there should be some different activities implemented in 210. A lot of the activities were too similar to those done in 110.
- I think some of the teaching methods are repeated too much. For example, we did the same thing for systems thinking as we did the previous times.

#### 2010 Cohort:

- Go more in depth with each pillar (which is done in 210).
- I am not the right choice to give opinions on this program.
- I just hope we don't spend three weeks talking about career fair stuff again! We covered it way too much last year and I had it in all my other classes. I think there are better uses of our time.
- Probably the peer mentor part. I didn't feel that they were any specific benefit to me. One time I met with Ethan, but otherwise I never did anything specific with them.
- The one project I think could be improved was the coffee plant project. As mentioned earlier, it was a bit hard to follow what we were supposed to learn from the activity.
- I would prefer the class to be in the morning as opposed to night.
- Nothing.
- Overall the layout of E2020 is very good, but every once in a while we do a project that doesn't seem to have much relevance.
- Meet more often.

- Nothing, it works well.
- Sometimes it can seem a bit disorganized and the objectives of an assignment aren't always clearly stated.
- Stronger peer mentors would be helpful.
- Sometimes having the classes smaller. It is hard to concentrate sometimes when there are so many people around and your ideas can't be expressed as you would like.
- The pillars need to be connected more to what we are doing right now. We studied hypothetical real world situations and situations of others, but never really focused on how to apply this knowledge here and now at college.
- A more thorough coverage of each pillar.
- Nothing.
- More new topics that are not common sense.
- I think we should meet more often.
- I think it could be a little more organized and I feel that some things were rushed while other things were drawn out too long so more of a balance.

### **What other comments would you like to make?**

#### 2009 Cohort:

- Keep up the good work.
- Overall, I think that this seminar class brings together everything that I am learning as an engineer. It brings to light aspects of engineering that we also are not able to see in class.
- Good time to meet.
- Going to miss this when I graduate.
- Overall I think this is a wonderful program that teaches students a lot about the practices of an engineer rather than just the tools needed to do math and physics. It's a great place to make new friends and find valuable resources on the campus.

#### 2010 Cohort:

- I really enjoy being a part of the E2020 scholars program. It is making me a more well-rounded engineer and helping me realize all the opportunities I can do with my engineering degree.
- I appreciated the program for my first year of college.
- I feel that E2020 has been a great experience so far, and I look forward to being involved in it for future semesters.

- It was a great year; I'm looking forward to another year!
- E2020 is a wonderful program, and I feel honored to be included in this program.
- Overall I feel this program is good and helpful. There is some room for improvement, but being an experimental class that is understandable.
- I really do appreciate that this program is being made available to me. I feel strongly about addressing a significant global problem someday, and I believe this program will help me.
- This program has been helpful for finding resources I would not have otherwise found that are available on campus.
- The E2020 program helped me a lot this year by giving me a support group that I could rely on and I hope to contribute to the group and make it a support for incoming students next year. The E2020 program has been a great motivator for me as well.
- I enjoy this program very much! Thanks!
- I can see where the program is heading and I like the goals they have for their students.

## Appendix B

### E2020 Scholars Evaluation Survey

#### Default Question Block

Dear E2020 Scholar,

Thank you for your participation in the E2020 Scholars Program. As part of the evaluation of the program, we would like you to complete this on-line survey about your experiences this year and how you think the E2020 Program can be improved. This survey should take approximately 15 minutes of your time.

This survey is part of a National Science Foundation S-STEM funded project that not only pays for your scholarship but also provides funding for staff support, programming and assessment. Your feedback will help us as we work to continually improve the E2020 experience. Your participation is voluntary and your survey responses will be kept confidential. The only people who will have access your individual survey responses are the program evaluators for E2020. Survey results will only be reported as a group, not by individual respondent.

If you have any questions, please contact Andrew Ryder (aryder@iastate.edu) or Dr. Diane Rover (drover@iastate.edu).

Thank you!

Please answer the following questions. Given the experiential learning dimension of the E2020 Scholars Program, please use the comment block following each multiple choice question to expand upon your assessment. Your input is very much appreciated.

1. My involvement in E2020 has been a positive experience.

Strongly Disagree   
  Disagree Somewhat   
  Neutral   
  Agree Somewhat   
  Strongly Agree

Please comment here on your response to question 1.

2. The format of E2020 programming this year was satisfactory.

Strongly Disagree   
  Disagree Somewhat   
  Neutral   
  Agree Somewhat   
  Strongly Agree

Please comment here on your response to question 2.

3. The content covered in the scheduled E2020 meetings helped me to understand what the pillar concepts were all about.

Strongly Disagree   
  Disagree Somewhat   
  Neutral   
  Agree Somewhat   
  Strongly Agree

Please comment here on your response to question 3.

4. The teaching format for the required class(es) was satisfactory.

Strongly Disagree   
  Disagree Somewhat   
  Neutral   
  Agree Somewhat   
  Strongly Agree

Please comment here on your response to question 4.

5. I have increased my knowledge and developed my skills and abilities related to leadership.

Strongly Disagree	Disagree Somewhat	Neutral	Agree Somewhat	Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please comment here on your response to question 5.

6. I have increased my knowledge and developed my skills and abilities related to global awareness, understanding, and cultural adaptation.

Strongly Disagree	Disagree Somewhat	Neutral	Agree Somewhat	Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please comment here on your response to question 6.

7. I have increased my knowledge and developed my skills and abilities related to systems thinking, including interdisciplinary engineering design.

Strongly Disagree	Disagree Somewhat	Neutral	Agree Somewhat	Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please comment here on your response to question 7.

8. I have increased my knowledge and developed my skills and abilities related to innovation, creativity, and entrepreneurship.

Strongly Disagree	Disagree Somewhat	Neutral	Agree Somewhat	Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please comment here on your response to question 8.

9. My involvement in the E2020 Scholars Program has enhanced my educational experience this year.

Strongly Disagree	Disagree Somewhat	Neutral	Agree Somewhat	Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please comment here on your response to question 9.

10. I have found the E2020 Scholars Program to be a source of support for my educational aspirations.

Strongly Disagree	Disagree Somewhat	Neutral	Agree Somewhat	Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please comment here on your response to question 10.

11. My interactions with the Peer Mentor(s) was helpful.

Strongly Disagree	Disagree Somewhat	Neutral	Agree Somewhat	Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please comment here on your response to question 11.

12. My interactions with the Program Coordinator(s) was helpful.

Strongly Disagree	Disagree Somewhat	Neutral	Agree Somewhat	Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please comment here on your response to question 12.

13. My interactions with the teaching faculty were helpful.

Strongly Disagree	Disagree Somewhat	Neutral	Agree Somewhat	Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please comment here on your response to question 13.

14. Using email and WebCT as communication tools was helpful and should be employed next year.

Strongly Disagree	Disagree Somewhat	Neutral	Agree Somewhat	Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please comment here on your response to question 14.

15. The E2020 Scholars Program fits well with my degree program courses.

Strongly Disagree	Disagree Somewhat	Neutral	Agree Somewhat	Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please comment here on your response to question 15.

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16. The E2020 Scholars Program complemented my involvement with other ISU academic programs related to my degree program (e.g., learning community, student club, professional society).

Strongly Disagree    Disagree Somewhat    Neutral    Agree Somewhat    Strongly Agree

              

Please comment here on your response to question 16.

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17. The E2020 Scholars Program is a good fit with my career interests.

Strongly Disagree    Disagree Somewhat    Neutral    Agree Somewhat    Strongly Agree

              

Please comment here on your response to question 17.

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18. I have grown as a person through my E2020 experiences.

Strongly Disagree    Disagree Somewhat    Neutral    Agree Somewhat    Strongly Agree

              

Please comment here on your response to question 18.

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19. The use of teaming within the E2020 program was effective in helping me to learn about each of the four pillars.

Strongly Disagree    Disagree Somewhat    Neutral    Agree Somewhat    Strongly Agree

              

Please comment here on your response to question 19.

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20. I feel better prepared to succeed in college because of the E2020 Scholars Program.

Strongly Disagree    Disagree Somewhat    Neutral    Agree Somewhat    Strongly Agree

              

Please comment here on your response to question 20.

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21. What do you think are the best aspects of the current E2020 Scholars Program?

22. What do you think should be changed in the current E2020 Scholars Program?

23. What other comments would you like to make?

Thank you very much for participating in the survey. Your responses will help improve the E2020 Scholars Program.

Clicking the arrow to advance to the next page will end your survey and submit your answers.