IUPUI

National Survey of Student Engagement
Report for
School of Engineering and Technology
2018

Welcome to the 2018 School of Engineering and Technology NSSE Report

IUPUI's Vision

To be a leading urban research institution recognized for the success of its students, its advances in health and life sciences, and its intellectual, economic, and cultural contributions to the well-being of the citizens of Indianapolis, the state of Indiana, and beyond.

The National Survey of Student Engagement (NSSE) was developed to document dimensions of quality in undergraduate education and provides information and assistance to colleges, universities, and other organizations to improve student learning. The final NSSE report consists of 12 scales, referred to as Engagement Indicators. These Engagement Indicators are grouped into four over-arching themes: Academic Challenge, Learning with Peers, Experiences with Faculty, and Campus Environment. In addition, NSSE also asks students about their engagement in High Impact Practices (HIPs) and the amount of time they spend engaged in various activities.

The following report is a summary of responses from the School of Engineering and Technology compared to students enrolled in similar programs at other institutions that participated in NSSE. This report uses effect size to quantify differences between your school and peer means. Effect size is a measure of the magnitude of the difference between two means. Effect size differences for the NSSE Engagement Indicators can be interpreted at the number of standard deviations between the mean for your school and the mean for students majoring in similar programs at IUPUI peer institutions. Items are labeled as "Areas of Strength" (an effect size of 0.21 standard deviations greater than the benchmark programs average), "Asset to Protect" (between 0.05 and 0.2 standard deviations), "Issue to be Mindful of" (between -0.05 and -0.2 standard deviations below), and "Opportunity for Improvement" (-0.21 or more below the mean). A total of 97 First-year and 167 Senior students in the School of Engineering and Technology had completed the survey.

Key Highlights Overall

- Thirty-three percent of Senior respondents plan to work more than 20 hours for pay off campus weekly and thirty percent of First Years plan to spend more than 20 hours a week preparing for class.
- Engineering & Technology First Years completed research with faculty at a higher rate than their peers, with 8% more having completed research as a first year.
- There is a large significant difference between Engineering and Technology and Peer group Seniors, with Engineering and Technology Seniors scoring higher on average, for **Reflective and Integrative Learning** & **Effective Teaching Practices** but significantly lower in **Collaborative Learning**.
- There is a large significant difference between IUPUI and Peer group First Years, with Engineering and Technology First Years scoring higher on average, for **Student-Faculty Interactions, Effective Teaching Practices, and Quality of Interactions.**

The table below displays the NSSE Engagement Indicators that are considered "Areas of Strength" and "Opportunities for Improvement" for the School of Engineering and Technology. For more information about the NSSE Engagement Indicators or the NSSE in general, please see http://nsse.indiana.edu/html/engagement_indicators.cfm.

Areas of Strength and Opportunities for Improvement

	Areas of Strength	Opportunities for Improvement
Seniors	Higher-Order Learning Reflective and Integrative Learning Student-Faculty Interaction Effective Teaching Practices Quality of Interactions	Quantitative Reasoning Collaborative Learning Supportive Environment
First Year	Reflective and Integrative Learning Learning Strategies Discussions with Diverse Others Student-Faculty Interaction Effective Teaching Practices Quality of Interactions	Quantitative Reasoning Supportive Environment

Table 1
Academic Challenge
Senior

	N	Mean	Standard Deviation	Peer Mean	Effect Size
Higher-Order Learning [a][1]	**152**	**38.6**	**13.6**	**37.1**	**0.41**
Applying facts, theories, or methods to practical problems or new situations	155	3.23	0.77	3.3	
Analyzing an idea, experience, or line of reasoning in depth by examining its parts	156	3.03	0.88	3.0	
Evaluating a point of view, decision, or information source	155	2.65	0.96	2.4	
Forming a new idea or understanding from various pieces of information	153	2.75	0.93	2.7	
Reflective & Integrative Learning [b][1]	**159**	**34.9**	**12.2**	**31.3**	**1.04**
Combined ideas from different courses when completing assignments	164	2.99	0.78	2.9	
Connected your learning to societal problems or issues	163	2.39	1.00	2.3	
Included diverse perspectives (political, religious, racial/ethnic, gender, etc.) in course discussions or assignments	162	2.15	0.96	1.8	
Examined the strengths and weaknesses of your own views on a topic or issue	160	2.76	0.84	2.5	
Tried to better understand someone else's views by imagining how an issue looks from his or her perspective	160	2.92	0.82	2.7	
Learned something that changed the way you understand an issue or concept	159	2.81	0.79	2.8	
Connected ideas from your courses to your prior experiences and knowledge	158	3.15	0.77	3.0	
Learning Strategies [b][3]	**146**	**34.8**	**14.5**	**35.1**	**-0.08**
Identified key information from reading assignments	147	2.82	0.80	2.8	
Reviewed your notes after class	148	2.70	0.95	2.8	
Summarized what you learned in class or from course materials	147	2.68	0.87	2.7	
Quantitative Reasoning [b][4]	**150**	**31.7**	**16.4**	**33.7**	**-0.50**
Reached conclusions based on your own analysis of numerical information (numbers, graphs, statistics, etc.)	153	2.88	0.89	3.1	
Used numerical information to examine a real-world problem or issue (unemployment, climate change, public health, etc.)	151	2.39	1.01	2.4	
Evaluated what others have concluded form numerical information	151	2.50	0.94	2.5	

[a] 1=Very Little, 2=Some, 3=Quite a bit, 4=Very much
[b] 1=Never, 2=Sometimes, 3=Often, 4=Very Often
[1] Area of Strength [2] Asset to Protect [3] Issue to be Mindful of [4] Opportunity for Improvement

Table 2
Learning with Peers
Senior

	N	Mean	Standard Deviation	Peer Mean	Effect Size
Collaborative Learning [a][4]	**162**	**35.5**	**14.4**	**39.5**	**-1.06**
Asked another student to help you understand course material	165	2.56	0.90	2.8	
Explained course material to one or more students	165	2.88	0.87	3.0	
Prepared for exams by discussing or working through course material with other students	165	2.58	1.00	2.9	
Worked with other students on course projects or assignments	164	3.03	0.90	3.2	
Discussions with Diverse Others [a][3]	**147**	**42.0**	**15.5**	**42.4**	**-0.10**
People from a race or ethnicity other than your own	148	3.16	0.86	3.2	
People from an economic background other than your own	148	3.05	0.91	3.1	
People with religious beliefs other than your own	148	3.14	0.90	3.1	
People with political views other than your own	147	3.07	0.89	3.0	

[a] 1=Never, 2=Sometimes, 3=Often, 4=Very Often
[1] Area of Strength [2] Asset to Protect [3] Issue to be Mindful of [4] Opportunity for Improvement

Table 3
Experiences with Faculty
Senior

	N	Mean	Standard Deviation	Peer Mean	Effect Size
Student-Faculty Interaction [b][1]	**155**	**23.1**	**16.4**	**20.6**	**0.63**
Talked about career plans with a faculty member	157	2.38	0.96	2.2	
Worked w/faculty on activities other than coursework (committees, student groups, etc.)	158	1.91	1.01	1.9	
Discussed course topics, ideas, or concepts with a faculty member outside of class	155	2.14	0.94	2.1	
Discussed your academic performance with a faculty member	156	2.18	0.96	2.0	
Effective Teaching Practices [a][1]	**153**	**38.5**	**13.7**	**34.0**	**1.21**
Clearly explained course goals and requirements	152	3.02	0.79	2.9	
Taught course sessions in an organized way	153	2.95	0.83	2.8	
Used examples or illustrations to explain difficult points	153	3.18	0.77	2.9	
Provided feedback on a draft or work in progress	153	2.69	0.91	2.3	
Provided prompt and detailed feedback on tests or completed assignments	152	2.79	0.93	2.5	

[a] 1=Very Little, 2=Some, 3=Quite a bit, 4=Very much
[b] 1=Never, 2=Sometimes, 3=Often, 4=Very Often
[1] Area of Strength [2] Asset to Protect [3] Issue to be Mindful of [4] Opportunity for Improvement

Table 4
Campus Environment
Senior

	N	Mean	Standard Deviation	Peer Mean	Effect Size
Quality of Interactions [b][1]	**130**	**41.1**	**12.5**	**38.9**	**0.63**
Students	143	5.62	1.20	5.6	
Academic advisors	144	4.81	1.91	4.6	
Faculty	145	5.35	1.43	4.9	
Student Services Staff (career services, student activities, housing, etc.)	108	4.94	1.78	4.6	
Other administrative staff and offices (registrar, financial aid, etc.)	125	4.82	1.68	4.5	
Supportive Environment [a][4]	**141**	**28.8**	**13.3**	**29.8**	**-0.27**
Providing support to help students succeed academically	143	2.89	0.79	2.8	
Using learning support services (tutoring services, writing center, etc.)	143	2.83	0.86	2.6	
Encouraging contact among students from diff. backgrounds (soc., racial/eth., relig., etc)	143	2.53	1.02	2.5	
Providing opportunities to be involved socially	142	2.58	0.91	2.7	
Providing support for your overall well-being (recreation, health care, counseling, etc.)	143	2.49	0.91	2.6	
Helping you manage your non-academic responsibilities (work, family, etc.)	142	1.98	0.99	1.9	
Attending campus activities and events (performing arts, athletic events, etc.)	140	2.13	0.93	2.5	
Attending events that address important social, economic, or political issues	142	2.09	0.88	2.2	

[a] 1=Very Little, 2=Some, 3=Quite a bit, 4=Very much
[b] Stem= "Indicate the quality of your interactions with the following people at your institution"; 1= "Poor", 7 = "Excellent"
[1] Area of Strength [2] Asset to Protect [3] Issue to be Mindful of [4] Opportunity for Improvement
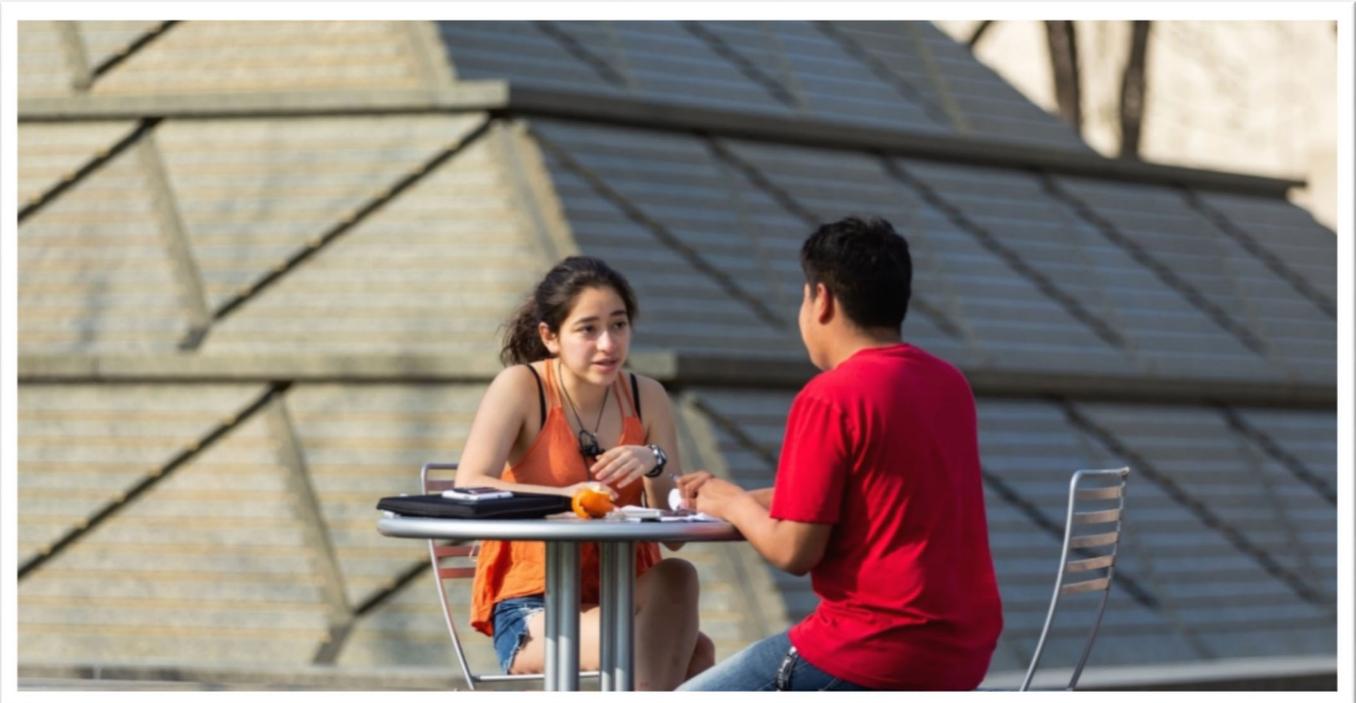
Table 5
Hours per week spent on activities
Senior

|	N	0 Hours per Week	1-5 Hours	6-10 Hours	11-15 Hours	16-20 Hours	21-25 Hours	26-30 Hours	More than 30 hours
					Peer Percentages				
Preparing for class [a]	141	1.4	11.3	22.7	20.6	18.4	6.4	7.1	12.1
	1288	0.9	7.1	14.0	17.8	17.9	15.5	19.2	17.5
Participating in co-curricular activities [a]	141	53.2	26.2	7.8	3.5	2.1	4.3	0.0	2.8
	1284	37.8	30.8	13.7	7.7	4.8	2.8	1.1	1.6
Working for pay on-campus	141	75.2	3.5	7.8	6.4	3.5	2.8	0.0	0.7
	1281	75.2	4.4	6.3	6.0	4.1	2.7	0.4	0.9
Working for pay off-campus [a]	141	32.6	6.4	6.4	8.5	13.5	7.1	2.8	22.7
	1287	49.0	4.4	6.8	7.2	10.7	7.0	4.2	10.7
Doing community service or volunteer work	141	55.3	32.6	3.5	4.3	2.8	0.7	0.0	0.7
	1286	61.5	28.2	4.8	2.6	1.2	0.8	0.2	0.6
Relaxing and socializing	141	6.4	23.4	26.2	22.0	12.1	2.8	3.5	3.5
	1281	3.6	24.5	26.4	19.6	12.0	5.9	2.2	5.8
Providing care for dependents	140	67.1	7.1	3.6	5.7	2.1	2.9	2.9	8.6
	1277	71.7	9.8	4.6	3.0	2.9	1.8	1.2	5.1
Commuting to campus	139	7.9	55.4	20.1	11.5	2.2	0.7	0.0	2.2
	1282	11.1	51.4	22.5	8.9	3.0	1.3	0.4	1.4

[a] Chi-square test revealed statistically significant difference at $\alpha \leq 0.05$.

Table 6
High Impact Practices
Senior

	School of Engineering and Technology Percent "Done"	Peer Percent "Done"	Difference
Service-Learning	42.5% (62)	41% (525)	1.5%
Learning Community	20.5% (30)	30% (389)	- 9.5%
Research with Faculty	23.3% (34)	28% (357)	- 4.7%
Internship or Field Experience	52.4% (77)	56% (719)	- 3.6%
Study Abroad	15.3% (22)	11% (137)	4.3%
Culminating Senior Experience	40.7% (59)	46% (593)	- 5.3%

N included in parentheses

Figure 1
Number of High Impact Practices Completed
Senior
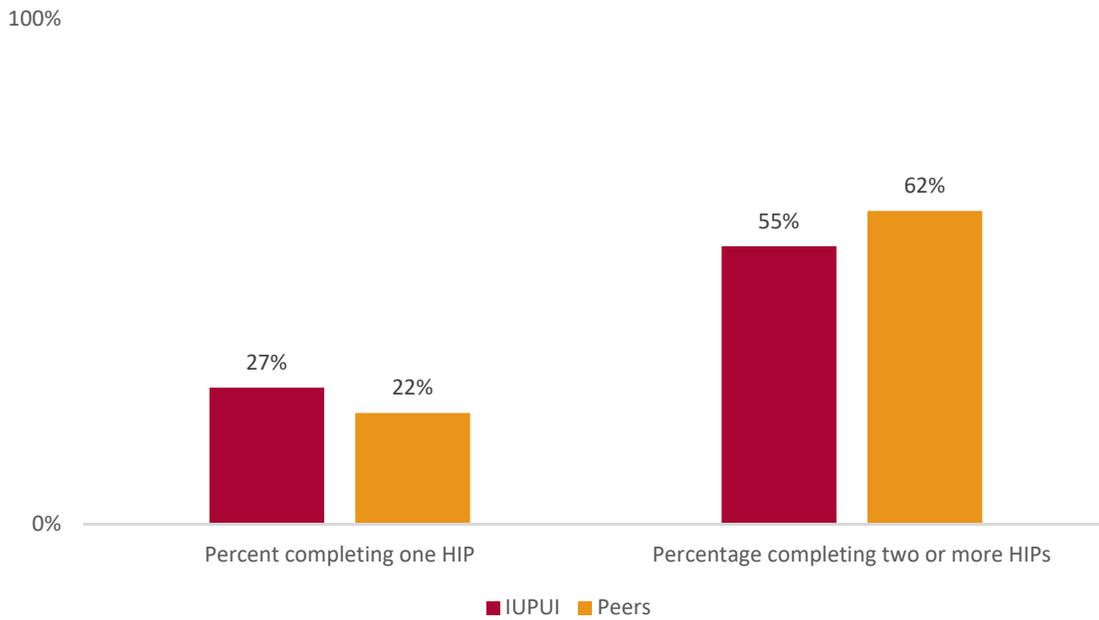
Table 7
Academic Challenge
First Year

	N	Mean	Standard Deviation	Peer Mean	Effect Size
Higher-Order Learning [a]	**79**	**38.1**	**15.2**	**38**	**0.03**
Applying facts, theories, or methods to practical problems or new situations	85	3.05	0.91	3.1	
Analyzing an idea, experience, or line of reasoning in depth by examining its parts	81	2.94	0.90	3.0	
Evaluating a point of view, decision, or information source	80	2.77	0.89	2.7	
Forming a new idea or understanding from various pieces of information	79	2.86	0.87	2.8	
Reflective & Integrative Learning [b1]	**88**	**34.2**	**12.6**	**32.1**	**0.61**
Combined ideas from different courses when completing assignments	95	2.77	0.84	2.6	
Connected your learning to societal problems or issues	94	2.28	0.86	2.3	
Included diverse perspectives (political, religious, racial/ethnic, gender, etc.) in course discussions or assignments	94	2.34	0.98	2.2	
Examined the strengths and weaknesses of your own views on a topic or issue	92	2.76	0.83	2.6	
Tried to better understand someone else's views by imagining how an issue looks from his or her perspective	90	2.97	0.84	2.8	
Learned something that changed the way you understand an issue or concept	88	2.77	0.81	2.8	
Connected ideas from your courses to your prior experiences and knowledge	88	2.99	0.75	3.0	
Learning Strategies [b1]	**74**	**38.4**	**12.2**	**35.9**	**0.70**
Identified key information from reading assignments	74	2.99	0.82	2.8	
Reviewed your notes after class	74	2.92	0.90	2.8	
Summarized what you learned in class or from course materials	74	2.85	0.79	2.7	
Quantitative Reasoning [b4]	**77**	**28.6**	**17.0**	**31.8**	**-0.81**
Reached conclusions based on your own analysis of numerical information (numbers, graphs, statistics, etc.)	78	2.74	0.92	2.9	
Used numerical information to examine a real-world problem or issue (unemployment, climate change, public health, etc.)	78	2.19	1.06	2.4	
Evaluated what others have concluded form numerical information	77	2.35	0.94	2.5	

[a] 1=Very Little, 2=Some, 3=Quite a bit, 4=Very much
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[1] Area of Strength [2] Asset to Protect [3] Issue to be Mindful of [4] Opportunity for Improvement

Table 8
Learning with Peers
First Year

	N	Mean	Standard Deviation	Peer Mean	Effect Size
Collaborative Learning [a2]	**94**	**37.7**	**13.8**	**37.5**	**0.05**
Asked another student to help you understand course material	96	2.85	0.83	2.8	
Explained course material to one or more students	96	3.06	0.77	3.0	
Prepared for exams by discussing or working through course material with other students	95	2.67	0.98	2.8	
Worked with other students on course projects or assignments	94	2.95	0.78	2.9	
Discussions with Diverse Others [a1]	**73**	**44.4**	**13.9**	**41.9**	**0.66**
People from a race or ethnicity other than your own	75	3.21	0.89	3.1	
People from an economic background other than your own	74	3.14	0.82	3.1	
People with religious beliefs other than your own	74	3.30	0.77	3.1	
People with political views other than your own	74	3.14	0.87	3.1	

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[1] Area of Strength [2] Asset to Protect [3] Issue to be Mindful of [4] Opportunity for Improvement

Table 9
Experiences with Faculty
First Year

	N	Mean	Standard Deviation	Peer Mean	Effect Size
Student-Faculty Interaction [b1]	**87**	**21.7**	**14.4**	**18.3**	**0.91**
Talked about career plans with a faculty member	87	2.43	0.96	2.1	
Worked w/faculty on activities other than coursework (committees, student groups, etc.)	87	1.76	0.90	1.7	
Discussed course topics, ideas, or concepts with a faculty member outside of class	86	2.03	0.85	1.9	
Discussed your academic performance with a faculty member	87	2.10	0.88	1.9	
Effective Teaching Practices [a1]	**79**	**39.1**	**13.2**	**35.7**	**0.95**
Clearly explained course goals and requirements	79	3.09	0.74	3.0	
Taught course sessions in an organized way	79	3.03	0.91	2.9	
Used examples or illustrations to explain difficult points	79	3.06	0.85	3.0	
Provided feedback on a draft or work in progress	78	2.76	0.84	2.5	
Provided prompt and detailed feedback on tests or completed assignments	78	2.83	0.90	2.5	

[a] 1=Very Little, 2=Some, 3=Quite a bit, 4=Very much
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[1] Area of Strength [2] Asset to Protect [3] Issue to be Mindful of [4] Opportunity for Improvement

Table 10
Campus Environment
First Year

	N	Mean	Standard Deviation	Peer Mean	Effect Size
Quality of Interactions [b1]	**70**	**43.5**	**10.5**	**40.6**	**0.87**
Students	72	5.44	1.17	5.5	
Academic advisors	72	5.78	1.38	5.0	
Faculty	72	5.31	1.25	5.1	
Student Services Staff (career services, student activities, housing, etc.)	63	5.06	1.64	4.9	
Other administrative staff and offices (registrar, financial aid, etc.)	66	5.18	1.64	4.8	
Supportive Environment [a4]	**70**	**33.9**	**12.7**	**36.1**	**-0.61**
Providing support to help students succeed academically	72	3.06	0.82	3.1	
Using learning support services (tutoring services, writing center, etc.)	72	3.19	0.85	3.1	
Encouraging contact among students from diff. backgrounds	72	2.68	0.89	2.8	
Providing opportunities to be involved socially	71	2.87	0.89	2.9	
Providing support for your overall well-being (recreation, health care, counseling, etc.)	70	2.69	0.88	3.0	
Helping you manage your non-academic responsibilities (work, family, etc.)	70	2.04	0.89	2.4	
Attending campus activities and events (performing arts, athletic events, etc.)	70	2.57	0.88	2.8	
Attending events that address important social, economic, or political issues	69	2.42	0.90	2.5	

[a] 1=Very Little, 2=Some, 3=Quite a bit, 4=Very much
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[1] Area of Strength [2] Asset to Protect [3] Issue to be Mindful of [4] Opportunity for Improvement

Table 11
Hours per week spent on activities
First Year

|	N	0 Hours per Week	1-5 Hours	6-10 Hours	11-15 Hours	16-20 Hours	21-25 Hours	26-30 Hours	More than 30 hours
					Peer Percentages				
Preparing for class	70	0.0	11.4	21.4	21.4	15.7	14.3	10.0	5.7
	773	0.3	6.6	15.9	23.2	20.1	17.3	7.9	8.8
Participating in co-curricular activities	69	34.8	40.6	17.4	4.3	0.0	2.9	0.0	0.0
	771	25.8	37.7	19.8	9.5	3.6	2.9	0.4	0.3
Working for pay on-campus	69	87.0	5.8	2.9	2.9	0.0	1.4	0.0	0.0
	769	86.0	2.3	4.3	3.5	2.2	1.6	0.0	0.1
Working for pay off-campus	69	71.0	4.3	2.9	11.6	2.9	2.9	1.4	2.9
	768	74.5	3.6	4.2	7.2	4.2	3.4	1.7	1.3
Doing community service or volunteer work	69	62.3	33.3	1.4	1.4	0.0	1.4	0.0	0.0
	771	56.0	32.9	6.6	1.9	1.3	1.0	0.1	0.0
Relaxing and socializing	69	1.4	15.9	24.6	23.2	17.4	8.7	1.4	7.2
	770	1.4	17.4	27.8	20.4	15.7	6.8	3.0	7.5
Providing care for dependents	67	80.6	11.9	4.5	1.5	0.0	1.5	0.0	0.0
	768	85.5	6.4	4.0	1.6	1.3	0.8	0.1	0.3
Commuting to campus	69	34.8	47.8	13.0	1.4	1.4	1.4	0.0	0.0
	772	38.3	35.9	14.6	6.5	2.3	1.3	0.4	0.6

[a] Chi-square test revealed statistically significant difference at α ≤ 0.05. None were found to be statistically significant.

Table 12
High Impact Practices
First Year

	School of Engineering and Technology Percent "Done"	Peer Percent "Done"	Difference
Service-Learning	40.8% (29)	46% (356)	- 5.2%
Learning Community	33.8% (24)	34% (261)	- 0.2%
Research with Faculty	12.5% (9)	5% (40)	7.5%
Internship or Field Experience	12.3% (9)	7% (51)	5.3%
Study Abroad	1.4% (1)	2% (18)	- 0.6%
Culminating Senior Experience	2.8% (2)	2% (13)	0.8%

N included in parentheses

Figure 2
Number of High Impact Practices Completed
First Year
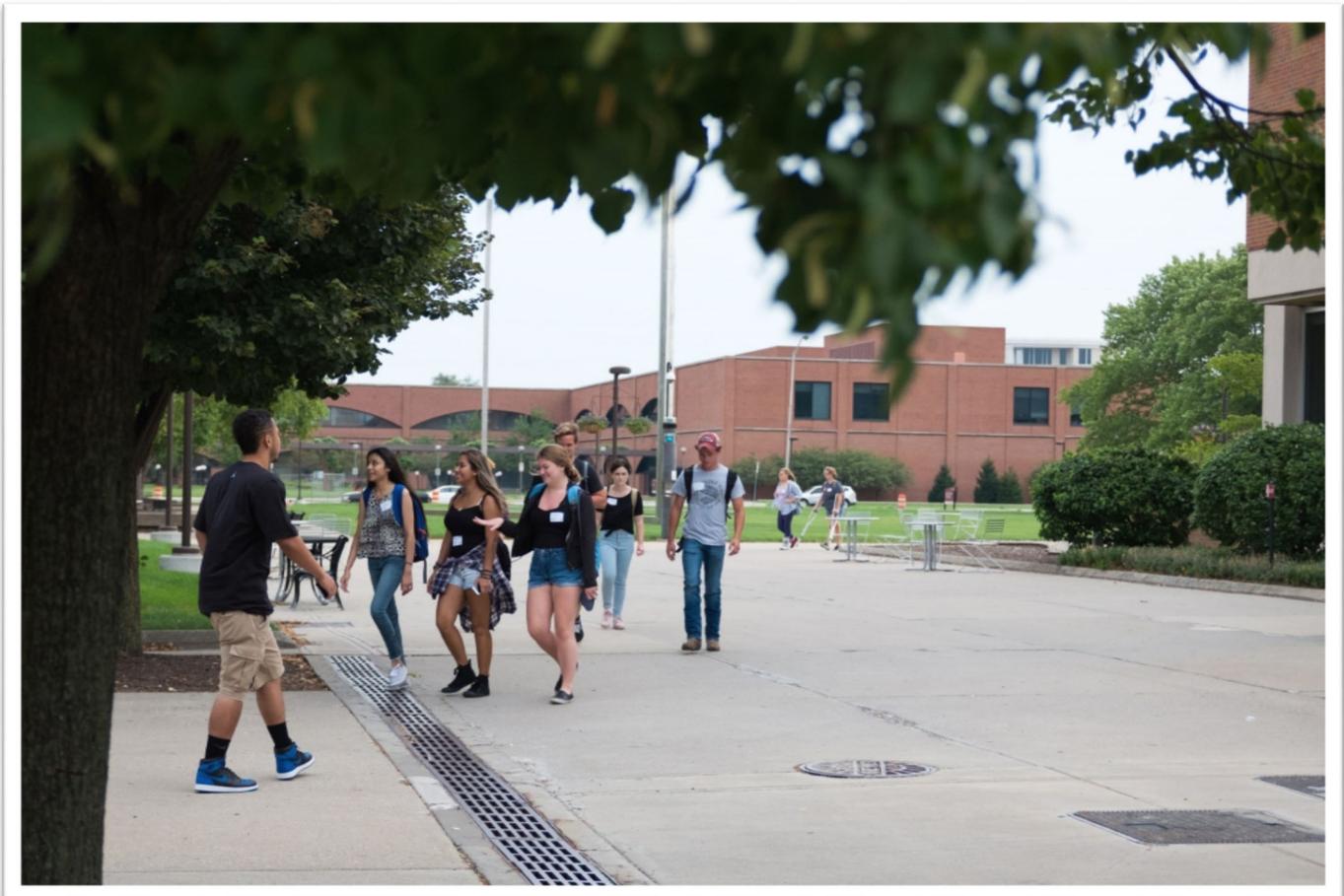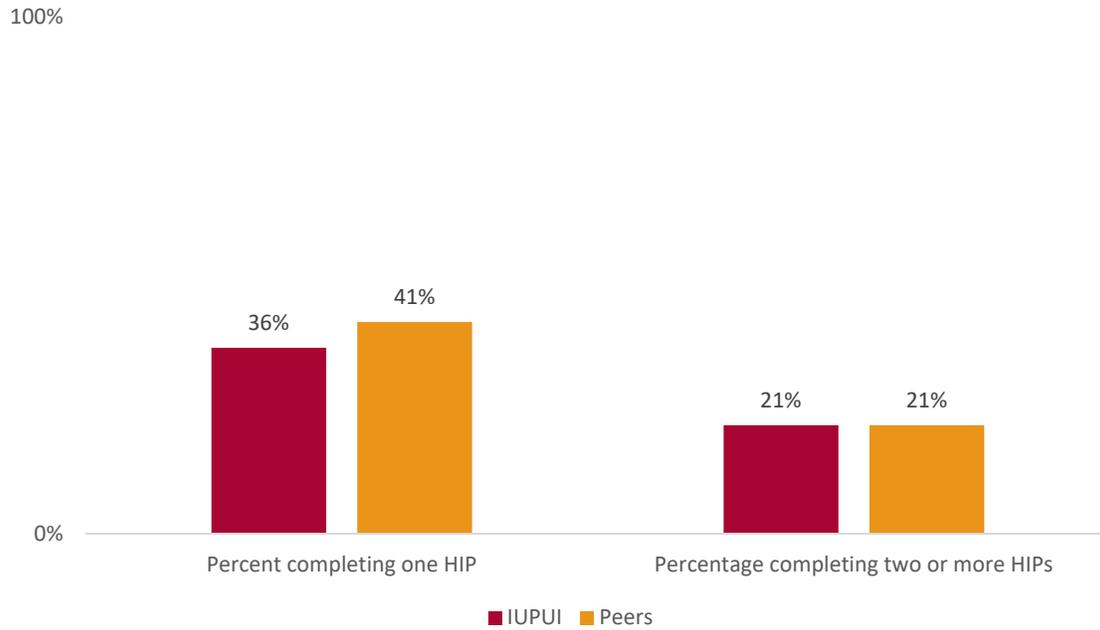
2018 NSSE Report for School of Engineering and Technology

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