10-31-2016

Annual IMPACT Report 2016: A report by the IMPACT Data Collection and Analysis Team

IMPACT Management Team

IMPACT Assessment Team

IMPACT:
Instruction Matters: Purdue Academic Course Transformation

(updated 10/31/2016)[1]

INTRODUCTION

The mission of IMPACT is to redesign foundational courses to create student-centered teaching and learning environments. This is accomplished by using research-supported strategies to engage students in their own learning. Expected outcomes are increased engagement and competence, which leads to improved student success and course completion. In turn, this drives retention and graduation rates.

- IMPACT is primarily a faculty development program, using a cohort-based model built around a strong faculty learning community (FLC).
- IMPACT is a partnership among CIE, ITaP, Libraries, DE, and DLRC, with support from the President's and Provost's Offices.
- IMPACT Faculty Fellows work with redesign teams from CIE, ITaP, and Libraries to:
  - Identify course-specific learning outcomes.
  - Map those learning outcomes to course activities and assignments (papers, exams, homework, projects, etc.).
  - Select an appropriate redesign model for their particular course, taking into account content, discipline, course size, faculty preferences, and abilities.
- The five general transformation models[2] and their approximate rate of use within AY2016:
  - Online Only (~11%)
  - Replacement Active (~17%)
  - Replacement Traditional (~3%)
  - Supplemental Active (~37%)
  - Supplemental Traditional (~32%)

THE SCOPE OF IMPACT

By Faculty and Courses

Between the first IMPACT FLC in summer 2011 and the current FLC in fall 2016:

- 12 FLCs[3] were offered.
- IMPACT FLCs may include up to 30[4] participants per semester.

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[1] Updates based on the content and format in the 8/7/2016 version of the report with the same title. Most differences between these versions based on data gathered during an audit of the IMPACT data, managed by the OIRAE. During this audit, TLT staff directly contacted IMPACT Fellows, confirming or correcting the IMPACT sections and transformations used for ~97% of the possible cases. Verification of IMPACT data continues.

[2] The five general transformation models are characterized based on three questions:

	Online-Only	Replacement Active	Replacement Traditional	Supplemental Active	Supplemental Traditional
Q1. Does section have any face-to-face in-class time?	No	Yes	Yes	Yes	Yes
Q2. Does the section include any decrease of face-to-face in-class time?	Yes	Yes	Yes	No	No
Q3. Either: • Does lecturing occur less than 50% of the in-class time? • Is active learning used more than 50% of the in-class time?	Yes	Yes	No	Yes	No

[3] FLCs Offered in: Summer 2011, Spring 2012, Fall 2012, Spring 2013, Fall 2013, Spring 2014, Fall 2014, Spring 2015, Summer 2015, Fall 2015, Spring 2016, and Fall 2016.

[4] The average IMPACT cohort size has been 20 Fellows, with a range of 10 to 28.

- 234 FLC participants[5] redesigned, or have pending resigns, for 11 of the 12 colleges/schools[6] at Purdue. These redesigns include:
  - 225 unique courses[7] redesigned during participation in the IMPACT FLC.
  - 113 additional unique courses[8] were redesigned, or have pending redesigns, by 73 IMPACT Fellows outside of their participation in the IMPACT FLC.

The scope of IMPACT will continue to grow as more courses are transformed.

- In fall 2015, 141 unique courses had at least one IMPACT section offered[9].
- In fall 2015, 15.8% of all TT/NTT faculty[10] assigned to teach 10000-49999 numbered courses taught at least one IMPACT section of a course.
- In fall 2015, approximately 5.8% of 10000-49999 numbered courses[11] included at least one IMPACT section.

Appendix 1 is a list of IMPACT courses, Fellows, and cohorts.

By Students

Between fall 2011 and spring 2016, students' exposure to IMPACT included 43,909 distinct students, which is 68.2% of students registered for at least one course during these terms[12].

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[5] An FLC participant is counted only once, regardless of the number of times s/he participated in the IMPACT FLC. IMPACT Fellows participating more than once include:

- Faculty transforming additional course(s).
- Faculty wishing to "refresh" the transformation of the same course.

[6] At least one IMPACT course in all colleges/schools except Veterinary Medicine.

[7] A course is counted only once, regardless of the number of IMPACT Fellows who transformed the course. A course is also counted only once if:

- The course was renamed (ex: EAS10400 is now EAPS10400, but both courses are tracked as EAPS10400 in analysis of the data.)
- Multiple courses are cross-listed. (ex: PHIL23000 and REL23000 are cross-listed, but tracked and reported as the single course "PHIL23000&REL23000."

Each course counted if it ever had, continues to have, or has pending IMPACT transformations.

[8] Courses transformed outside of the IMPACT FLC by IMPACT fellows are known as "IMPACT Influenced" courses. (In some communication, these courses were previously referred to as "IMPACT Drift.")

During the audit of IMPACT data, many Fellows reported applying what they learned in the FLC to other courses, but not completing a course transformation. These cases are not tracked in the data. From a DLRC survey of IMPACT Fellows, 88% of survey respondents reported the experience of being an IMPACT faculty fellow has influenced the way in which they teach other courses.

[9] By academic year and term, the following shows the count of IMPACT courses with at least one IMPACT section offered.

Academic Year	Fall	Spring	Summer
2011-2012	7	12	3
2012-2013	31	40	14
2013-2014	61	72	25
2014-2015	106	103	42
2015-2016	141	151	tbd

[10] The rate of fall 2015 faculty teaching undergraduate IMPACT courses is based on the count of IMPACT faculty Fellows teaching at least one IMPACT section, divided by the total number of faculty teaching. This excludes instructors who are Graduate Teaching Assistants, and faculty not listed as an instructor for any course numbered 10000-49999.

[11] The rate of courses with at least one IMPACT section offered within an academic period accounts for cross-listing of courses in both the numerator and denominator. For example, if ABC10100 and ABC10200 are cross-listed within fall 2015, the "course" ABC10100|ABC10200 count for one course; however, if ABC10100 is also offered without cross-listing, then ABC10100 and ABC10100|ABC10200 are counted as two courses. Hence, the denominator used in this rate is an approximation.

[12] Count based on students (43909 from fall 2012 through spring 2016) registered for any one or more gradable section of an IMPACT course numbered between 10000 and 49999. Rate based on the count of students with IMPACT experience, divided by the total number of students (64384, from fall 2012 through spring 2016) registered for one or more gradable section of any course numbered between 10000 and 49999.

The rate of students exposed to IMPACT increases within each subsequent academic year. Of the students registered for at least one undergraduate course during fall 2015 and spring 2016:

- 72.6%[13] were exposed to IMPACT for at least one undergraduate course during fall 2015 or spring 2016.
- 96.2%[14] were exposed to IMPACT for at least one undergraduate course at some point between fall 2011 and spring 2016.

KEY FINDINGS FROM ASSESSMENT OF IMPACT

IMPACT Fellow Perceptions[15]

Based on pre-FLC and post-implementation surveys, IMPACT Fellows report significant increases[16] in their agreement with the following statements regarding their targeted course:

- I have been able to create clear learning objectives for my course (89%)
- I have been able to identify appropriate instructional technology for this course (70%)
- I am satisfied with the support I get from my teaching assistants (64%)
- I am satisfied with my current teaching approaches (49%)
- I am satisfied with the methods that I currently use to assess student learning (47%)

After the first implementation of their course transformation, IMPACT Fellows report significant improvements[17] in students' behaviors and outcomes in the course based on their agreement with the following statements:

- Students are engaged in the course (63%)
- Students are active in the course (69%)
- Most students in the course demonstrate critical thinking skills (50%)
- Most students in the course demonstrate information literacy skills (40%)
- Most students in the course demonstrate good study habits (40%)
- Students are often distracted by technological gadgets (12%)

[13] Counts and rates of students enrolled in at least one undergraduate course *within* the academic period, exposed to IMPACT *within* the same academic period:

Academic Year	Students Exposed to IMPACT within AY	
	Count	Rate
2011-2012	6147	19.2%
2012-2013	13564	43.3%
2013-2014	17631	57.6%
2014-2015	20269	66.6%
2015-2016	22107	72.6%

[14] Of the 30461 students enrolled in at least one UG course during fall 2015 or spring 2016, 29304 students enrolled in at least one IMPACT course between fall 2012 and spring 2016.

[15] Faculty perceptions based on data gathered, analyzed, and reported by DLRC staff in the internal report "Annual Report Briefing 2016, Cumulative Analysis." Data collection includes surveys, focus groups, and interviews with IMPACT FLC participants.

Results from an OIRAE study based on interviews of successful IMPACT Fellows will be available later this semester.

[16] Statistically significant increases as $p<.05$. The percentage indicates the rate or survey participants who "Agreed" or "Strongly agreed" with the statement in the post-test survey.

[17] The percentage indicates the rate or survey participants who "Agreed" or "Strongly agreed" with the statement. For the statement, "Students are often distracted by technological gadgets" a decrease in percentage showed improvement. For the remaining statements, improvement was demonstrated by an increased percentage.

Sustaining IMPACT

Of the 225[18] courses transformed during the IMPACT FLC:

- 71% (159) of the courses have at least one active IMPACT transformed section, or the iterations are paused until either the course is offered again or the IMPACT Fellow teaches/coordinates the course again.
- 12% (26) of the course have their first transformation pending.
- 10% (23) of the courses have had IMPACT transformations end.

Based on a survey of IMPACT Fellows, 45% indicate they felt "completely supported" by their department and colleagues in the course redesign process. Responses related to sustainability and transferability are more complex. Although none of the faculty reported their redesign as "unsustainable" or "mostly unstainable", only 35.4% believe their course redesign is "sustainable." Sustainability was defined as "changes that you feel you could maintain without exerting a SIGNIFICANT among of additional effort beyond what was required to transform and initially implement the course." Faculty were asked to identify all challenges to sustainability they have encountered. Challenges identified by at least 20% of faculty were:

- Lack of time allocated for teaching duties (31%)
- Lack of teaching assistants (25%)
- Lack of access to appropriate learning spaces (23%)
- Negative reactions from students (21%)

Student Academic Performance

When comparing students' mean final grades from multiple courses, statements about students' academic performance, demonstrate weak effects. Analyses about students' academic performance should be done by course, section, or IMPACT fellow. For example, consider Table 1, which compares the mean final grades for IMPACT and non-IMPACT students within the same semester, for courses where both IMPACT and non-IMPACT sections were offered. The results are mixed, likely varying based on the grading practices of each course.

[18] Three additional transformed courses no longer exist. The status for remaining courses is not known.

Table 1. Comparison of Mean Final Grades for Undergraduate Courses between Non-IMPACT and IMPACT Experiences within the Same Academic Period (Regardless of Instructor or Fellow)[19]

Academic Period	Count of Courses	Within the Academic Period			Comparison of IMPACT & Non-IMPACT Courses			
			Mean		Difference in *Mean*			*Eta*
		IMP?	Final Grade	*SD*	(positive is "good")	*t*	*p*	Squared
Fa 2011	5	Yes	2.81	0.31	+0.421	2.96	0.037	0.686
		No	2.39	0.07				
Sp 2012	5	Yes	2.67	0.26	-0.017	0.06	0.957	0.001
		No	2.69	0.62				
Su 2012	0							
Fa 2012	10	Yes	2.93	0.53	+0.174	0.87	0.397	0.077
		No	2.76	0.36				
Sp 2013	12	Yes	2.76	0.45	-0.086	0.48	0.639	0.020
		No	2.85	0.43				
Su 2013	2							
Fa 2013	16	Yes	2.93	0.47	+0.094	0.52	0.607	0.018
		No	2.83	0.55				
Sp 2014	23	Yes	2.97	0.50	+0.112	0.72	0.474	0.023
		No	2.86	0.55				
Su 2014	2							
Fa 2014	22	Yes	3.06	0.46	+0.059	0.44	0.664	0.009
		No	3.00	0.44				
Sp 2015	23	Yes	3.02	0.42	+0.101	0.71	0.481	0.022
		No	2.92	0.53				
Su 2015	6	Yes	3.00	0.28	-0.370	1.79	0.105	0.389
		No	3.37	0.42				
Fa 2015	28	Yes	3.15	0.45	-0.037	0.30	0.763	0.003
		No	3.19	0.45				
Sp 2016	32	Yes	3.11	0.48	+0.037	0.32	0.751	0.003
		No	3.08	0.44				
All	186	Yes	3.00	0.46	+0.040	0.81	0.421	0.009
		No	2.96	0.49				

[19] Table 1 constructed based on only courses with IMPACT and non-IMPACT sections of the same course within the specified academic period. Non-IMPACT cases include those that were or were not set up to be control sections.

For an alternate perspective, Table 2 shows mean final grades by iteration, for courses with both pre-IMPACT and IMPACT iterations. While all iterations show positive gains over pre-IMPACT, none of the comparisons are statistically significant.

Table 2. Comparison of Mean Final Grades for Undergraduate Courses between Pre-IMPACT and IMPACT Iterations (Regardless of Instructor or Fellow)[20]

	Within the Iteration			Comparison to Pre-IMPACT Iteration			
Iteration	Count of Courses	*Mean* Final Grade	*SD*	Difference in *Mean* (positive is "good")	*t*	*p*	*Eta* Squared
Pre-IMPACT	114	3.02	0.45	--	--	--	--
1	114	3.06	0.45	+0.048	0.80	0.424	0.003
2	74	3.09	0.42	+0.075	1.16	0.247	0.007
3	60	3.05	0.42	+0.029	0.42	0.672	0.001
4	42	3.12	0.41	+0.105	1.39	0.169	0.012
5	27	3.13	0.45	+0.111	1.16	0.254	0.010
6	20	3.09	0.45	+0.076	0.70	0.489	0.004
7	15	3.18	0.42	+0.161	1.39	0.181	0.015
8	12	3.08	0.47	+0.059	0.42	0.683	0.001

For select courses, IMPACT vs non-IMPACT experiences show more meaningful differences in final grades.

Student Centeredness

The student centeredness rating for a section is based on students' perceptions of the learning climate[21] established by the instructor. As shown in Table 3, 79.4% of the surveyed sections of IMPACT courses have higher student-centered learning environments.

Table 3. Student Centeredness by Section and Transformation Type, Spring 2014 to Spring 2016

	IMPACT Transformation													
	Online Only		Replacement				Supplemental							
			Active		Traditional		Active		Traditional		Unknown		Total	
SC Level	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Low	4	57.1	14	12.1	1	12.5	30	21.3	34	24.6	4	33.3	87	20.6
High	3	42.9	102	87.9	7	87.5	111	78.7	104	75.4	8	66.7	335	**79.4**
Total	7		116		8		141		138		12		422	

IMPACT transformation models vary in actual implementation by the instructor and course. Many other factors, besides the transformation model, likely affect students' perceived level of student-centeredness. For further inquiry, we may consider any measurable factors, such as course level, enrollment size, or learning space characteristics.

[20] Table 2 based on only courses with pre-IMPACT iterations and IMPACT iterations, regardless of the academic period when the course was taught. The Pre-IMPACT cases are based on a compilation of up to three pre-IMPACT iterations.

[21] The six learning climate items from the IMPACT student survey are:

- I feel that my instructor provides me choices and options.
- I feel understood by my instructor.
- My instructor conveyed confidence in my ability to do well in the course.
- My instructor encouraged me to ask questions.
- My instructor listens to how I would like to do things.
- My instructor tries to understand how I see things before suggesting a new way to do things.

The scale used for all six items is:
1 = Strongly Disagree; 2 = Disagree; 3 = Somewhat Disagree;
4 = Neither Agree nor Disagree;
5 = Somewhat Agree; 6 = Agree; 7 = Strongly Agree

The student centeredness rating for a section is established based only on students who complete the survey, and when certain criteria[22] are met. For an alternate perspective, Table 4 and Table 5 are based on students' individual responses, regardless of the IMPACT course and criteria used to determine student centeredness ratings for sections. Table 4 shows 81.4% of individual cases from survey participants rate their course with high student centeredness.

Table 4. Student Centeredness by Student and Transformation Type, Spring 2014 to Spring 2016

	IMPACT Transformation													
	Online Only		Replacement				Supplemental				Unknown		Total	
			Active		Traditional		Active		Traditional					
SC Level	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Low	195	39.2%	623	14.6%	99	18.2%	1232	17.8%	1749	18.7%	348	28.9%	4246	18.6%
High	303	60.8%	3634	85.4%	446	81.8%	5694	82.2%	7601	81.3%	856	71.1%	18534	81.4%
Total	498		4257		545		6926		9350		1204		22780	

Matching individual cases from the student survey to students' performance in the course, Table 5 shows small statistically significant positive correlations between students' student centeredness rating and their mean final grade value.

Table 5. Correlation of Student Centeredness to Final Grade, Spring 2014 to Spring 2016[23]

		IMPACT Transformation						
		Online Only	Replacement		Supplemental		Unknown	Total
			Active	Traditional	Active	Traditional		
Mean Student Centeredness, By Final Grade	Overall	4.6	5.5	5.3	5.4	5.4	4.9	5.4
	A+/A/A-	5.0	5.7	5.5	5.6	5.6	5.3	5.6
	B+/B/B-	4.6	5.4	5.2	5.2	5.3	4.8	5.2
	C+/C/C-	4.4	5.2	5.0	5.0	5.1	4.3	5.0
	D+/D/D-	4.3	5.1	4.7	5	4.9	3.9	4.8
	F	3.9	5.3	4.7	4.6	4.7	4.2	4.7
Correlation	*r*	.185	.140	.184	.174	.199	.262	.190
	n	495	4197	542	6877	9287	1189	22587
	p	<.001	<.001	<.001	<.001	<.001	<.001	<.001

Learning Spaces

The September 2016 OIRAE Briefing[24] summarized a recent study completed by the OIRAE, DLRC, and Libraries. Some study participants, who are also IMPACT Fellows, expressed concerns regarding the mismatch between

[22] A section is evaluated for "student-centeredness" if the section meets two criteria:

- At least a 25% response rate for the post-test, AND
- At least 15 responses to the post-test.

A section will have no student-centeredness designation if either criterion is not met. For sections meeting the criteria, the student-centeredness rating for a section is based on:

- If N = total number of survey participants for the section,
- And H = number of survey participants with a Learning Climate mean score greater than 4,
- Then the student-centeredness rating is H/N, reported as a percentage between 0% and 100%.

A section is then:

- Designated as "low student-centeredness" if H/N is less than 75%.
- Designated as "high student-centeredness" if H/N is 75% or higher.

[23] The *n's* in Table 5 are lower than Table 4 because Table 5 is based on only the cases where students earned a final grade with a numerical equivalent. For example, any student who earned a "W" in a course appears in Table 4 but not in Table 5.

[24] See: https://www.purdue.edu/oirae/briefings.html

their course transformation and the space to which they are assigned. Select recommendations within this study[25] may address the match of IMPACT Fellows' transformation models to learning spaces.

Peer Institutions

Searchable information available from 28 AAU institutions regarding STEM education reform[26] shows Purdue's IMPACT program has characteristics similar to other programs, but suggests Purdue is the only large, public institution focusing on all of the institutional elements identified by the AAU network.

To further determine how IMPACT compares to other redesign programs at peer institutions, a brief survey was sent to colleagues in the AAUDE and BTAA[27]. Eight colleagues from nine of the responding institutions indicated they possess a course redesign program; however, all programs appear to differ based on characteristics of the institution. While Purdue University appears to be among the largest in scope of courses, instructors, or students, the survey shows data are not tracked similarly enough to make conclusive statements about scope.

[25] See: https://www.purdue.edu/oirae/documents/White_Papers/Report-LS_FGs-2016-09-29-Final.pdf

[26] See: https://stemedhub.org/groups/aau/framework

[27] AAUDE: American Association of Universities Data Exchange, http://aaude.org/
BTAA: Big Ten Academic Alliance, http://www.btaa.org/home

Appendix 1. Courses, Fellows, and IMPACT Cohorts

Course(s)	Fellow	Cohort
AAE20400	Yu, Wenbin	Spring 2014
AAE25100	Grant, Michael J.	Spring 2016
AAE25100	Marais, Karen	Fall 2012
AAE33300	Alexeenko, Alina	Spring 2014
AAE35200	Sangid, Michael D.	Fall 2013
AAE35200	Tomar, Vikas	Fall 2012
ABE20500	Mcmillan, Sara K.	Fall 2016
AD12500	Vanzee, Lisa A.	Spring 2015
AD20100	Vickers, Heather G.	Influenced
AD25500	Vickers, Heather G.	Spring 2015
AD38300	Dossin, Catherine	Spring 2015
AD38400	Dossin, Catherine	Influenced
AGEC20300	Gunderson, Michael A.	Spring 2013
AGEC21700	Deboer, Lawrence P.	Spring 2013
AGEC32700	Katare, Bhagyashree	Spring 2016
AGEC32700	Yeager, Elizabeth A.	Spring 2014
AGEC35200	Dobbins, Craig L.	Spring 2014
AGEC41100	Dobbins, Craig L.	Spring 2014
AGEC43000	Gunderson, Michael A.	Influenced
AGR20100	Morris, Pamala V.	Fall 2013
AGRY12000	Bowling, Laura C.	Spring 2016
AGRY25500& NRES25500	Graveel, John G.	Fall 2011
AGRY25500& NRES25500	Mashtare, Michael L.	Fall 2016
AGRY25500& NRES25500	Van Scoyoc, George E.	Fall 2011
AGRY32000	Dilkes, Brian P.	Fall 2011
AMST10100	Fouche, Rayvon D.	Fall 2015
AMST20100	Fouche, Rayvon D.	Influenced
AMST60100	Fouche, Rayvon D.	Influenced
ANSC10200	Russell, Mark A.	Fall 2013
ANTH20100	Lindsay, Ian C.	Spring 2014
ANTH20500	Zanotti, Laura C.	Spring 2015
ANTH39200	Zanotti, Laura C.	Influenced
AT14400	Dillman, Brian G.	Fall 2015
AT36302	Stanley, David L.	Summer 2015
BCHM30700	Hart, Orla M.	Spring 2016
BCHM30900	Hart, Orla M.	Influenced
BCM10001	Koch, Daphene C.	Spring 2013
BCM17500	Cabral, Jessica E.	Summer 2015
BCM21500	Koch, Daphene C.	Spring 2016
BCM30101	Dib, Hazar N.	Influenced
BCM34500	Jenkins, James L.	Influenced
BCM37500	Dib, Hazar N.	Spring 2016
BCM45500	Orczyk, Joseph J.	Influenced
BCM45701	Jenkins, James L.	Fall 2015
BCM47500	Orczyk, Joseph J.	Spring 2014
BCM48701	Benhart, Bradley L.	Fall 2016
BIOL11000& BIOL11200	Bos, David H.	Spring 2014
BIOL11100& BIOL11300	Bos, David H.	Influenced
BIOL13100	Pelaez, Nancy	Fall 2011
BIOL23000	Bartlett, Edward L.	Fall 2012
BIOL24100	Springer, Joshua C.	Fall 2014
BIOL32800	Gardner, Stephanie M.	Fall 2013
BIOL58010	Pelaez, Nancy	Influenced
BME39500	Rundell, Ann E.	Spring 2012
BME49000	Rundell, Ann E.	Influenced
BTNY30100	Loesch-Fries, Loretta S.	Spring 2012
BTNY30100	Martyn, Raymond D.	Spring 2012
BTNY30100	Woloshuk, Charles P.	Spring 2012
CE22200& CEM20100	Cai, Hubo	Fall 2015
CE23100	Zavattieri, Pablo D.	Fall 2013
CE33100	Weiss, William J.	Fall 2013
CE34000	Troy, Cary D.	Fall 2013
CE34300	Troy, Cary D.	Fall 2013
CE35000& EEE35000	Blatchley, Ernest R.	Spring 2014
CE35000& EEE35000	Hua, Inez	Fall 2013
CE35000& EEE35000	Nies, Loring F.	Influenced
CE35500& EEE35500	Nies, Loring F.	Spring 2012
CE36100	Fricker, Jon D.	Fall 2016
CE39800	Ukkusuri, Satish V.	Fall 2013
CE47000	Liu, Judy	Fall 2014
CE47400	Prakash, Arun	Fall 2015
CE52200	Cai, Hubo	Influenced
CE54300	Troy, Cary D.	Influenced
CE57000	Prakash, Arun	Influenced
CE59700	Cai, Hubo	Influenced
CGT10101	Connolly, Patrick E.	Summer 2015
CGT11000	Miller, Craig L.	Influenced
CGT11800	Garcia, Esteban	Summer 2015
CGT14100& CNIT14100	Morales, Carlos R.	Summer 2015
CGT16300	Miller, Craig L.	Spring 2012
CGT17207	Vorvoreanu, Mihaela	Influenced
CGT17208	Vorvoreanu, Mihaela	Influenced
CGT21500	Benes, Bedrich	Spring 2016
CGT21500	Whittinghill, David M.	Spring 2013
CGT21708	Vorvoreanu, Mihaela	Influenced
CGT24100	Hassan, Raymond P.	Spring 2014
CGT25600	Vorvoreanu, Mihaela	Spring 2013
CGT27207	Vorvoreanu, Mihaela	Influenced
CGT27208	Vorvoreanu, Mihaela	Influenced
CGT32100	Garcia, Esteban	Influenced
CGT34000	Hassan, Raymond P.	Influenced
CGT34100	Adamo-Villani, Nicoletta	Spring 2016
CGT34500	Whittinghill, David M.	Influenced
CGT35300	Chen, Yingjie	Spring 2014
CGT35300	Glotzbach, Ronald J.	Fall 2016
CGT37000	Chen, Yingjie	Influenced
CGT37000	Hassan, Raymond P.	Influenced
CGT37108	Vorvoreanu, Mihaela	Influenced
CGT37207	Vorvoreanu, Mihaela	Influenced
CGT37208	Vorvoreanu, Mihaela	Influenced
CGT44200	Hassan, Raymond P.	Influenced
CGT44500& CNIT49900	Whittinghill, David M.	Influenced
CGT44500& CNIT49900	Whittinghill, David M.	Spring 2013
CGT45600	Chen, Yingjie	Spring 2014
CGT51200	Vorvoreanu, Mihaela	Influenced
CGT58100& MET58100	Garcia, Esteban	Influenced
CHE20500	Boudouris, Bryan W.	Spring 2015
CHE21100	Boudouris, Bryan W.	Influenced
CHE30600	Martinez Sainz, Enrico	Spring 2015
CHE43500	Martinez Sainz, Enrico	Influenced
CHM11100	Towns, Marcy H.	Influenced
CHM11200	Towns, Marcy H.	Influenced
CHM11500	Towns, Marcy H.	Fall 2011
CHM11600	Davidson, Amy L.	Fall 2011
CHM11600	Simpson, Garth J.	Fall 2014
CHM11600	Wasserman, Adam	Fall 2014
CHM12600	Wirth, Mary J.	Fall 2011
CHM22400	Wirth, Mary J.	Influenced
CHM37000	Huang, Libai	Fall 2015
CHM37400	Huang, Libai	Influenced
CHM62100	Simpson, Garth J.	Influenced
CHM62900	Wirth, Mary J.	Influenced
CLPH87200	Kaakeh, Yaman	Fall 2012
CNIT10500	Ravai, Guity	Influenced
CNIT15500	Ravai, Guity	Fall 2013
CNIT15501	Ravai, Guity	Fall 2013
CNIT17500	Ravai, Guity	Influenced
CNIT17600	Hansen, Raymond A.	Summer 2015
CNIT18000	Barlow, Victor M.	Summer 2015
CNIT24000	Yang, Baijian	Influenced
CNIT24200	Yang, Baijian	Fall 2014
CNIT28000	Magana, Alejandra J.	Fall 2013
CNIT39200	Rayz, Julia M.	Fall 2016
CNIT45500	Rawles, Phillip T.	Fall 2016

Course(s)	Fellow	Cohort
COM10000	Deutsch, Pamela G.	Spring 2015
COM11400	Natt, Jane G.	Spring 2015
COM20400	Boyd, Joshua E.	Spring 2015
COM21700	Morgan, Melanie	Fall 2013
COM25300	Boyd, Joshua E.	Influenced
COM31400	Deutsch, Pamela G.	Influenced
COM31800	Collins, William B.	Fall 2011
COM32400	Morgan, Melanie	Influenced
COM32500	Faris, Jeralyn L.	Fall 2013
COM33200	Osman, Douglas C.	Fall 2014
COM49500	Boyd, Joshua E.	Influenced
CS11000	McFall, Gary T.	Spring 2012
CS15900	Crum, William N.	Spring 2012
CS23500	McFall, Gary T.	Spring 2012
CSR30000	Harmon, Sarah	Fall 2015
CSR31500	Acharya, Lalatendu	Spring 2016
CSR40400	Liu, Sandra S.	Fall 2015
CSR41500	Liu, Sandra S.	Influenced
CSR59000	Liu, Sandra S.	Fall 2015
EAPS10400	Michalski, Greg M.	Spring 2014
EAPS10900	Tung, Wen-Wen	Influenced
EAPS11100	Haq, Saad S.	Spring 2014
EAPS30900	Tung, Wen-Wen	Spring 2016
EAPS31200	Shepardson, Daniel P.	Spring 2016
EAPS32700	Welp-Smith, Lisa R.	Fall 2015
EAPS50900	Tung, Wen-Wen	Influenced
ECE20100	Peroulis, Dimitrios	Spring 2012
ECE26400	Lu, Yung-Hsiang	Fall 2012
ECE27000	Brown, Cordelia M.	Spring 2012
ECE27000	Meyer, David G.	Spring 2012
ECE30500	Bermel, Peter A.	Fall 2015
ECE31100	Melloch, Michael R.	Fall 2016
ECE36200	Meyer, David G.	Spring 2012
ECE36900	Bagchi, Saurabh	Spring 2013
ECE47700	Meyer, David G.	Influenced
ECET17700	Herrick, Robert J.	Fall 2013
ECET17900	Richardson, Jeffrey J.	Fall 2014
ECET22400	Honchell, Jeffrey W.	Spring 2015
ECET22400	Huston, Davin H.	Influenced
ECET22900	Widmer, Neal S.	Spring 2015
ECET27900	Huston, Davin H.	Influenced
ECET32100	Mcnally, Helen A.	Fall 2016
ECET35901	Huston, Davin H.	Influenced
ECET38001	Donaldson, Shirl E.	Spring 2015
ECET38001	Panigrahi, Suranjan	Influenced
ECET43000& ECET43100& MET40100	Berry, Frederick C.	Fall 2016
ECET49900& MET28400	Panigrahi, Suranjan	Spring 2014
ECET49900& MET28400	Richards, Grant P.	Influenced
ECON21000	Blanchard, Kelly H.	Fall 2012
ECON21000	Van Kammen, Benjamin J.	Spring 2014
ECON25100	Blanchard, Kelly H.	Influenced
ECON32500	Van Kammen, Benjamin J.	Influenced
ECON36000	Van Kammen, Benjamin J.	Influenced
EDCI27000	Newby, Timothy J.	Spring 2012
EDPS10500	Hurt, Sheila F.	Fall 2013
EDPS23500	Yough, Michael S.	Spring 2013
EDPS26500	Begeske, Jasmine L.	Spring 2014
EDST20010	Della Sala, Matthew R.	Spring 2015
EEE25000	Whelton, Andrew J.	Fall 2016
ENGL10600	Bay, Jennifer L.	Spring 2015
ENGR10300	Meyer, David G.	Influenced
ENGT18000& ENGT18100	Huston, Davin H.	Summer 2015
ENGT18000& ENGT18100	Richards, Grant P.	Spring 2013
ENTM10500	Neal, Jonathan J.	Fall 2013
ENTM20600	Oseto, Christian Y.	Spring 2014
ENTM21000	Mason, Linda J.	Spring 2015
ENTM22810	Stamper, Trevor I.	Spring 2016
ENTM22820	Stamper, Trevor I.	Fall 2016
ENTM22830	Stamper, Trevor I.	Spring 2015
ENTM29500	Neal, Jonathan J.	Influenced
ENTM31100	Kaplan, Ian	Fall 2014

Course(s)	Fellow	Cohort
ENTM33500	Oseto, Christian Y.	Influenced
FNR34100	Flaherty, Elizabeth A.	Spring 2016
FNR34800	Flaherty, Elizabeth A.	Spring 2016
FNR48800	Prokopy, Linda S.	Fall 2015
FS36100	Oliver, Haley F.	Influenced
FS36200& FS55301	Oliver, Haley F.	Fall 2012
FS36200& FS55301	Oliver, Haley F.	Influenced
FS62000	Oliver, Haley F.	Influenced
GER28000	Sundquist, John D.	Fall 2014
GRAD59000	Lynch, Cyndi D.	Spring 2014
GS10000	Kauper, Nancy L.	Fall 2015
GS10100	Kauper, Nancy L.	Influenced
GS17700	Downing, Brenda K.	Spring 2012
HDFS21000	Friedman, Elliot M.	Spring 2014
HDFS21000	Taylor, Zoe E.	Spring 2014
HDFS28000	Watkins, Natasha D.	Spring 2014
HDFS31200	Friedman, Elliot M.	Influenced
HDFS33200	Taylor, Zoe E.	Influenced
HIST10300	Mitchell, Silvia Z.	Fall 2015
HIST10400	Fleetham, Deborah L.	Spring 2012
HIST10400	Gray, William G.	Fall 2013
HIST30200	Fleetham, Deborah L.	Influenced
HIST30200	Mitchell, Silvia Z.	Influenced
HIST31700	Fleetham, Deborah L.	Influenced
HIST31800	Fleetham, Deborah L.	Influenced
HONR19901	Allen, Emily L.	Spring 2013
HONR29900	Stonebraker, Ilana R.	Influenced
HTM21200	Day, Gordon J.	Spring 2014
HTM29100	Behnke, Carl A.	Spring 2016
HTM29101	Behnke, Carl A.	Spring 2016
HTM29102	Behnke, Carl A.	Spring 2016
HTM37000	Day, Gordon J.	Influenced
HTM39900	Day, Gordon J.	Influenced
HTM49200	Behnke, Carl A.	Spring 2016
HTM49900	Sydnor, Sandra B.	Spring 2015
IE34300	Johnson, David R.	Fall 2016
IE48600	Duffy, Vincent G.	Spring 2016
IE49000	Martinez, Ramses	Fall 2016
IT22600	Clase, Kari L.	Fall 2013
IT22700	Clase, Kari L.	Spring 2014
IT23000	Scott, Regena L.	Fall 2012
IT34500	Elliott, Stephen J.	Fall 2014
IT43400	Scott, Regena L.	Influenced
IT44600	Laux, Chad M.	Spring 2016
IT45000	Sutton, Mathias J.	Fall 2015
IT49000& IT59000	Laux, Chad M.	Influenced
IT50700	Clase, Kari L.	Influenced
IT50700	Sutton, Mathias J.	Influenced
IT50800	Clase, Kari L.	Influenced
IT53500	Clase, Kari L.	Influenced
IT54000	Elliott, Stephen J.	Influenced
IT54500	Elliott, Stephen J.	Influenced
IT57100	Clase, Kari L.	Influenced
IT58100	Elliott, Stephen J.	Influenced
IT58100	Scott, Regena L.	Influenced
IT62100	Elliott, Stephen J.	Influenced
LA11700	Barbarash, David M.	Fall 2016
LA32500	Appold, Melinda M.	Fall 2016
MA13900	Figueroa, Renee J.	Spring 2015
MA15300	Devlin, Patrick M.	Fall 2014
MA15400	Delworth, Timothy J.	Fall 2011
MA15555	Delworth, Timothy J.	Spring 2015
MA15800	Norris, David M.	Fall 2014
MA16010	Delgado, Huimei	Fall 2014
MA16020	Davis, Owen K.	Spring 2015
MA16100	Wiles, Benjamin C.	Fall 2013
MA16200	Chen, Kuan-Hua J.	Fall 2014
MCMP20400	Aditya, Animesh V.	Spring 2015
MCMP20500	Aditya, Animesh V.	Influenced
ME20000	Sojka, Paul E.	Spring 2016
ME27000	Nauman, Eric A.	Spring 2012
ME27400	Krousgrill, Charles M.	Fall 2011
ME32300	Koslowski, Marisol	Fall 2015
ME32300	Zhao, Kejie	Spring 2016

Course(s)	Fellow	Cohort
ME57000	Zhao, Kejie	Influenced
ME57700	Nauman, Eric A.	Influenced
MET11100	Efendy, Eddy	Summer 2015
MET14400	Denton, Nancy L.	Fall 2015
MET16200	Kraebber, Henry W.	Spring 2015
MET21300	French, Richard M.	Spring 2012
MET21300	French, Richard M.	Fall 2016
MET24500	Garcia Bravo, Jose M.	Spring 2015
MET24500	Rakita, Milan	Spring 2015
MET34600	Wang, Xiaoming	Fall 2016
MET45100	Kraebber, Henry W.	Influenced
MET50300	French, Richard M.	Influenced
MET52700	Clase, Kari L.	Influenced
MET58100	French, Richard M.	Influenced
MET58100	Huston, Davin H.	Influenced
MGMT17500	Dugan, Mary M.	Spring 2013
MGMT17500	Kirkwood, Harold P.	Spring 2013
MGMT17500	Stonebraker, Ilana R.	Spring 2013
MGMT19000	Stonebraker, Ilana R.	Influenced
MGMT20000	Trax, Rebecca P.	Spring 2013
MGMT29500	Landis, Maureen L.	Fall 2012
MGMT36100	Kalish, Julia A.	Fall 2012
MGMT38200	Dejoie, Roy M.	Fall 2012
MGMT39000	Dejoie, Roy M.	Influenced
MGMT48400	Makadok, Richard J.	Fall 2016
NUPH49100	Weatherman, Kara D.	Fall 2015
NUPH49200	Weatherman, Kara D.	Influenced
NUPH49300	Weatherman, Kara D.	Influenced
NUPH49500	Weatherman, Kara D.	Influenced
NUR10800	Simpson, Vicki L.	Spring 2012
NUR21801	Kuebler, Sandra J.	Fall 2015
NUR22001	Kirby, Kristen F.	Fall 2015
NUR22201	Richards, Elizabeth A.	Spring 2013
NUR22301	Chang, Chyi-Kong K.	Spring 2012
NUR22301	Thorlton, Janet R.	Spring 2012
NUR31401	Walters, Becky S.	Spring 2014
NUR41401	Spoerner, Deborah A.	Fall 2014
NUR41601	Nagle, Amy M.	Fall 2014
NUR61100	Spoerner, Deborah A.	Influenced
NUR62400	Thorlton, Janet R.	Influenced
NUR63200	Thorlton, Janet R.	Influenced
NUTR30300	Burgess, John R.	Fall 2012
OLS57900	Clase, Kari L.	Influenced
PHIL23000& REL23000	Purpura, Ashley M.	Spring 2015
PHIL26000	Yeomans, Christopher L.	Spring 2014
PHYS17200	Hirsch, Andrew S.	Spring 2012
PHYS17200	Hirsch, Andrew S.	Fall 2016
PHYS21800	Todd, Brian A.	Fall 2012
PHYS27200	Carlson, Erica	Spring 2015
POL10100	Chapman, Valeria S.	Fall 2015
POL10100	Mccann, James A.	Fall 2011
POL13000	Clark, Ann M.	Fall 2013
POL14100	Woods, Dwayne	Influenced

Course(s)	Fellow	Cohort
POL23500	Woods, Dwayne	Spring 2013
POL30000	Waltenburg, Eric N.	Spring 2014
POL37200	Waltenburg, Eric N.	Influenced
POL41100	Browning, Robert X.	Spring 2014
POL41300	Clawson, Rosalee A.	Spring 2012
POL42900	Waltenburg, Eric N.	Influenced
PSY12000	Hollich, George J.	Fall 2011
PSY23500	Hollich, George J.	Spring 2016
PSY29200	South, Susan C.	Influenced
PSY34200	South, Susan C.	Spring 2014
PSY35000	Rollock, David	Spring 2016
REL20000	Purpura, Ashley M.	Influenced
SA10925	Chen, Yingjie	Influenced
SFS21000	Hallett, Steven G.	Influenced
SFS21100	Hallett, Steven G.	Influenced
SFS30200	Hallett, Steven G.	Spring 2016
SFS31300	Hallett, Steven G.	Influenced
SFS31500	Hallett, Steven G.	Influenced
SOC10000	Burbrink, Mary J.	Spring 2012
SOC10000	Hillis, Rolden S.	Fall 2012
SOC41900	Hoffmann, Elizabeth A.	Fall 2014
SPAN10100	Neary-Sundquist, Colleen A.	Fall 2013
SPAN33000	Hart, Patricia	Fall 2016
SPAN40100	Tenorio, Cecilia I.	Fall 2013
STAT11300	Gundlach, Ellen	Spring 2012
STAT30100	Cayon, Laura	Spring 2013
STAT35000	Sellke, Sarah H.	Fall 2013
STAT50100	Colver, Tadd N.	Fall 2014
STAT50300	Qin, Tiantian	Spring 2014
TECH12000	Connolly, Patrick E.	Fall 2012
TECH12000	Koch, Daphene C.	Fall 2012
TECH12000	Laux, Dawn D.	Fall 2012
TECH12000	Mentzer, Nathan	Fall 2012
TECH69700	Vorvoreanu, Mihaela	Influenced
THTR20100	Ebarb, Joel R.	Fall 2012
THTR20100	Fliotsos, Anne L.	Fall 2012
THTR35300	Huston, Davin H.	Influenced
TLI11100	Schmidt, Edie K.	Spring 2013
TLI11100	Elliott, Stephen J.	Summer 2015
TLI11100	Schmidt, Edie K.	Influenced
TLI21300	Lybrook, Daniel O.	Fall 2013
TLI21300	Lybrook, Daniel O.	Influenced
TLI21400	Scott, Regena L.	Influenced
TLI25400	Hurt, Andrew C.	Fall 2014
TLI26500	Asunda, Paul A.	Spring 2016
TLI45700	Naimi, Linda L.	Fall 2016
TLI52100	Clase, Kari L.	Influenced
TLI52200	Clase, Kari L.	Influenced
TLI52400	Clase, Kari L.	Influenced
WGSS28000	Boisseau, Tracey J.	Fall 2015
WGSS28000	Cooky, Cheryl A.	Fall 2013