

College of Information Studies
BSc. in Information Science
Program Self Study Report
February 2017 - June 2017

- 1) **Strategic overview of the program:** its mission and vision, strategic goals (5-10 year time horizon), objectives (key initiatives to be undertaken prior to the next review), and learning outcomes.

Mission

In line with the iSchool's mission, the BSIS program educates tomorrow's information leaders, researchers, and entrepreneurs, who will design new and leverage existing techniques and technologies to solve information challenges of individuals, teams, organizations and communities, and turn information into power to unlock the full potential of human society.

Vision

The BSIS is a STEM program that prepares students to design, develop, and use information and technology to understand, assess, create and manage systems to meet the needs of people, organizations and society in a variety of contexts. Within the next five years, the BSIS program will become a top-five program in its field in the U.S., nationally and globally recognized for the quality of its curriculum, and its graduates. The graduates of the BSIS program will be employed in a wide variety of sectors and areas that are critical to the success of the national and global economy, and will have promising career paths that will allow them realize their full professional potential.

Strategic goals

- Become a top-five bachelor's program in the information science field, catching up to our aspirational peers in terms of several metrics, such as program size, growth, program budget, job placement.
- Secure a very high completion rate, and become the program with the highest completion rate in its field.
- Maintain and improve current diversity metrics, becoming the most diverse program in its field.
- Introduce two more specialization over the next two to five years. (The most likely new specialization areas are cybersecurity and information assurance, and health information/informatics.)
- Develop and launch at least one variation of the program through a campus partnership, such as a "modular major" or "joint dual major".

Objectives

- Secure a >90% completion rate among all students in the program.
- Reach a size of 1000 students in the first five years of the program.
- Graduate >600 individuals in the first five years of the program.
- Reach a >35% female student ratio.
- Reach a >45% underrepresented ethnicity student ratio.
- Reach a >95% completed mandatory advising level.

Learning Outcomes

Program-level learning outcomes

At the completion of this program, students will be able to:

- Demonstrate an understanding of information design and management: the interrelationships among information consumers or creators, information content, and the conduits through which information flows.
- Apply basic principles to the design, development and management of information to meet the needs of diverse users.
- Assess the impact of existing or emerging technologies on information practices and the flow of information.
- Employ state-of-the-art tools and techniques to create, manage, and analyze information.
- Demonstrate an understanding of critical issues including the security, privacy, authenticity, and integrity of information.

Core course learning outcomes

At the completion of the core courses, students will be able to:

- Demonstrate an ability to select, critically evaluate, and apply relevant areas of information science scholarship.
- Produce an original analysis or other scholarly work that reflects a body of knowledge relevant to information science.
- Describe and evaluate the principles of information organization and systems.
- Demonstrate and evaluate the principles of information behavior and user needs.
- Demonstrate the principles, methods and types of leadership and team development within organizations.
- Demonstrate the principles and techniques of database design.
- Demonstrate the principles, evaluation, and implementation of local and wide-area computer networking, including issues of security and ethics.
- Demonstrate the ability to use statistical analysis to make decisions in an information science context.
- Demonstrate understanding and implementation of computer applications using object-oriented techniques, including program design and testing.

- Apply and evaluate principles of user interface design.
- Demonstrate the design and implementation of a system analysis project from inception to completion in a team setting.

Data Science specialization learning outcomes

At the completion of the Data Science specialization, students will be able to:

- Analyze a systemic problem that may impair the sustainable operation of an organization, and develop strategies to solve the problem by making use of modeling and simulation.
- Demonstrate the principles, evaluation, and implementation of a variety of systems and techniques for information organization and representation.
- Demonstrate the principles and techniques for analyzing and evaluating big data sets through clustering, classification, and regression techniques.
- Demonstrate the knowledge and techniques for developing dynamic, database-driven web sites, including acquiring, installing, and running web servers, database servers, and connectivity applications.
- Demonstrate and implement the principles of the visualization of information, including the effects of human perception, the aesthetics of information design, and the mechanics of visual display.

- 2) **Curriculum design, content, and integration:** with explanation of how the curriculum and courses are designed to be a coherent system that meets program goals, objectives and learning outcomes.

Design

The BSIS program consists of 45 credits of major courses, of which 30 credits (10 courses) are core courses, and 15 credits (5 courses) are major electives. Of the 45 credits, at least 30 credits must consist of INST-coded courses.

Content

Core Courses

The following core courses introduce the broad range of disciplines relevant to information science and provide the necessary background and skills for more specialized courses and for employment in the field: Core (10 Courses= 30 credits)

1. INST201 - Introduction to Information Science
2. INST311 - Information Organization
3. INST314 - Statistics for Information Science
4. INST326 - Object-Oriented Programming for Information Science
5. INST327 - Data Modeling and Manipulation
6. INST335 - Teams & Organizations
7. INST346 - Technologies, Infrastructure and Architecture
8. INST352 - Information User Needs and Assessments
9. INST362 - User-Centered Research and Design
10. INST490 - Capstone in Information Science

Major Elective Courses

In addition, all BSIS students are required to complete five information science electives. Sample topics could include (5 courses= 15 credits):

- INST354 - Information for Decision Making
- INST377 - Dynamic Web Applications
- INST414 - Advanced Data Science
- INST447 - Data Sources and Manipulation
- INST462 - Data Visualization
- INST408B - Design and Humanity Disability and Aging

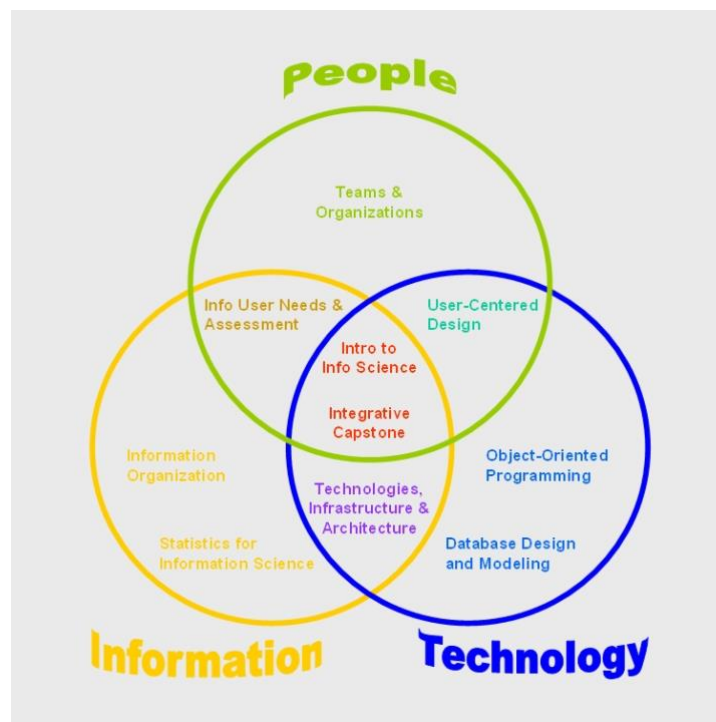
Students may propose relevant upper-level courses from other UMD programs/departments to be considered as major electives. If approved, those courses count toward the proposing students major electives.

Other Courses

The remaining courses may be a combination of iSchool courses and undergraduate courses from other departments or other universities.

Integration

The core courses in the BSIS program cover the intellectual and professional space formed by the intersection of the three areas that are most relevant to information science: People, Information, and Technology.



Each core course corresponds to a core-course level learning outcome, and together with the major electives, they cover the program-level learning outcomes.

3) **Program staffing and resources** (e.g., budget, staff and faculty; facilities) and how these have been deployed to achieve program goals.

All courses in the program are taught by regular, full-time College Park faculty or part-time faculty who have been approved for teaching by the Appointment, Promotion, and Tenure (APT) Committee of the iSchool. Regular, full-time College Park faculty teach a high proportion of the courses. It is planned that the majority of the tenured and tenure/track faculty will participate in delivering the existing courses, and creating new courses. Within the first two to three years of the program, approximately half of the current faculty will play a significant role in delivering the existing courses, and creating new undergraduate courses. The iSchool's web site (<http://ischool.umd.edu/fac-staff>) provides information about all faculty members in the College. The program is managed by the Director of Undergraduate Programs, and the Associate Director of Undergraduate Programs. The Program Director, in collaboration with the Associate Deans, the Director of Academic Programs, other Academic Administrators, and members of the faculty, provides intellectual leadership for the BSIS. The Program Director chairs the Undergraduate Program Committee, which is responsible for determining the academic and pedagogic strategies, setting and reviewing policies for student recruitment and for the courses that make up the program. The Associate Director oversees the management of the program, including planning, outreach, and student services. As of June 2017, the BSIS program has one staff line for an advisor, for which a hire is in progress, as well as a program specialist, and a 20-hour/week graduate assistant. As the program grows, more personnel may be added to the current team.

4) **Program evaluation:** discussion of appropriate indicators that show whether and how well the program is achieving its goals.

Due to the BSIS program being less than one year old, we do not have metrics related to some of the program goals. That is particularly the case regarding completion/graduation rates, since the program will not have any graduates until Spring 2018.

As of early June 2017, the BSIS program has 275 students based on the available official numbers. Since students continue to move into the BSIS major throughout the year, the official numbers are not up-to-date with the internal numbers kept by the program. According to the internal numbers kept by the program, the BSIS program has 290 students as of early June 2017.

The returning BSIS students are required to attend mandatory advising. In Spring 2017, of the 202 returning students 189 attended mandatory advising by the end of the advising window. This translates to almost a 94% advising completion rate. Although this figure is slightly below the program goal, considering that Spring 2017 was a semester while the student culture in the program is still developing, and that the program had to work without an adviser in Spring 2017, the 94% figure looks promising.

We are aware of four students who have left the BSIS major since Fall 2016. One of those students left UMD without taking any courses on this campus. The other three students moved to other majors at UMD, two as of the end of the Fall 2016 semester, and one as of the end of the Spring 2017 semester. These translate roughly to rates of 2% in Fall 2016, and 1% in Spring 2017, based on official major counts.

- 5) **Program accomplishments and challenges:** a summary of areas in which the program is particularly strong and the challenges it faces, as well as any plans to address challenges.

Strengths:

- By providing an integrated, interdisciplinary STEM educational experience with a balance of theoretical knowledge and practical skills, the BSIS offers new opportunities for students interested in applied technology fields who currently are not served by the existing programmatic offerings in computer science, engineering, social sciences, the liberal arts, and humanities.
- BSIS is a very attractive program for a wide range of students, who possess diverse skills, and have diverse career goals. The skills and perspectives students acquire in the program are relevant to the job market.
- The student body of the BSIS program is quite diverse, especially considering that it is a STEM program. As example for the level of diversity, the percentage of female students in the program is 32%, and the percentage of African_american students is 30% as of Spring 2017.
- The BSIS program fits well within the priority growth areas for the campus, and thus gets attention and support from the university administration. Despite being less than a year old, the BSIS program is reasonably well-known on the campus.

Challenges:

- The BSIS program has grown very rapidly, at a rate of more than 100% per semester. As of the end of the Spring 2017 semester, the program has more than 280 students. Onboarding and advising these many students, given the current recourses, have been challenging.
- Several INST course sections fill up during the registration season, and many BSIS students end up being unable to register for some of the courses that need to take according to their course plans. Considering the program growth, the seat scarcity is likely to continue in the future.

- There are challenges in data collection and access. The university systems are quite limited in terms of the kinds of data they provide, and there are certain aspects for which data is not collected almost at all, such as data on student interships.

- 6) **Longitudinal Data** relevant to program effectiveness showing cumulative trends, which may include:
- a) Recruitment effectiveness over time: numbers of acceptances / numbers of invitations or numbers of invitations / numbers of applications.
 - b) Demographic breakdown of students in program by gender, ethnicity, first-generation status, country/state of origin (e.g. in-state vs. out-of-state)
 - c) Program enrollment numbers over time.
 - d) Course offerings, course enrollment, and course evaluations
 - e) Indicators of student accomplishment, such as high school GPA and SAT score averages or students' GPAs at program entry.
 - f) Retention/completion/graduation rate numbers over time: yearly program-level retention and completion, student retention to university, and student graduation rates in appropriate time frames.
 - g) Data on numbers of student internships, study-abroad experiences, research placements, and participation in program-related activities *to the extent that these are relevant to program goals*.
 - h) Data on numbers of graduate employment, subsequent graduate work, and other graduate accomplishments as relevant to the program goals.
 - i) Student satisfaction survey data: all programs should conduct annual student satisfaction surveys using consistent items for program functioning, reputation, and diversity/inclusion. Other items should be tailored to program goals. All programs should report item means, standard deviations and the overall survey response rate.

i) BSIS Majors (Official UMD major counts):

Fall 2016: 92 students

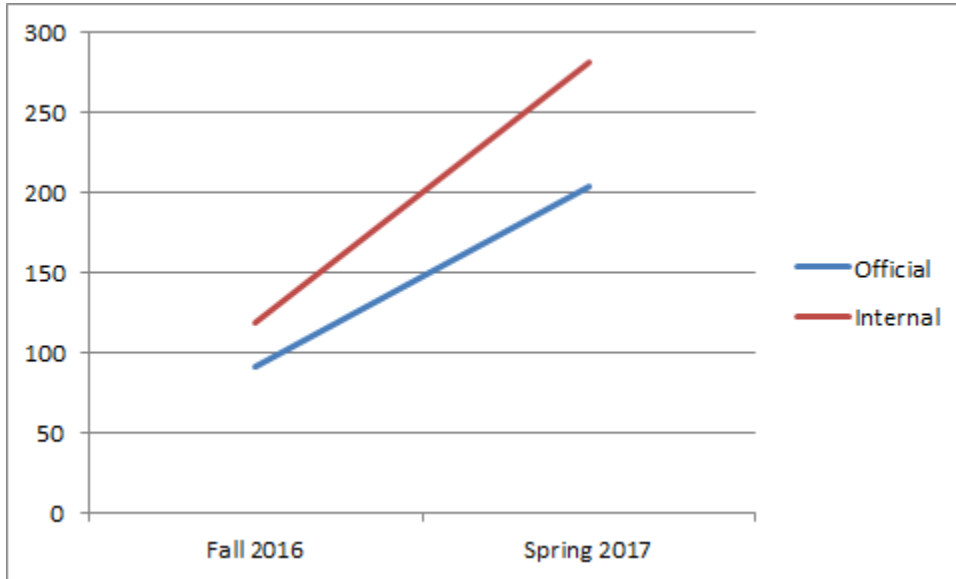
Spring 2017: 204 students

ii) BSIS Majors (Internal BSIS major counts):

Fall 2016: 119 students

Spring 2017: 282 students

Number of Students in the BSIS Major (Official vs Internal numbers)

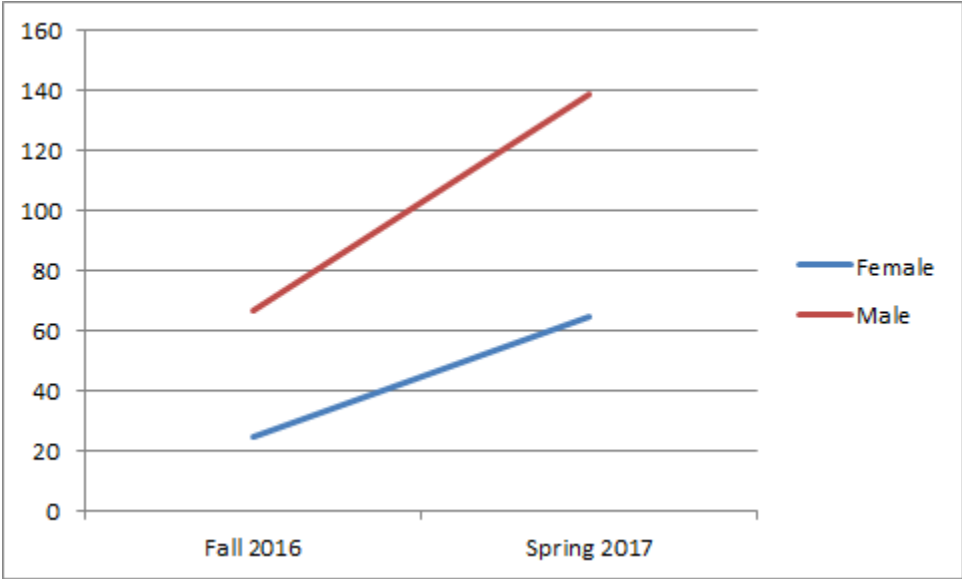


iii) Gender Distribution

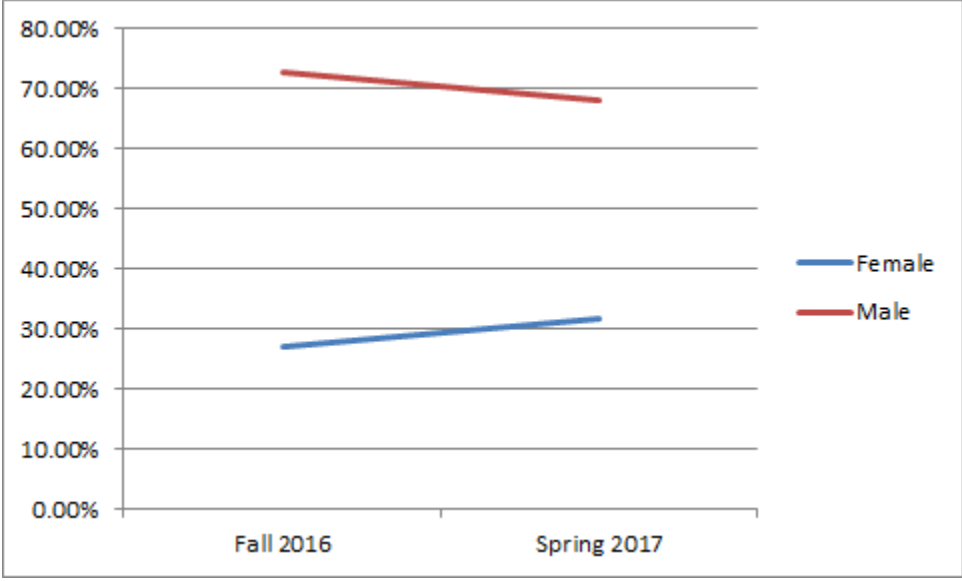
Number and Percentage of Female and Male Students in the BSIS Major

	Count		Percentage	
	Fall 2016	Spring 2017	Fall 2016	Spring 2017
Female	25	65	27.17%	31.86%
Male	67	139	72.83%	68.14%

Number of Female and Male Students in the BSIS Major



Percentage of Female and Male Students in the BSIS Major

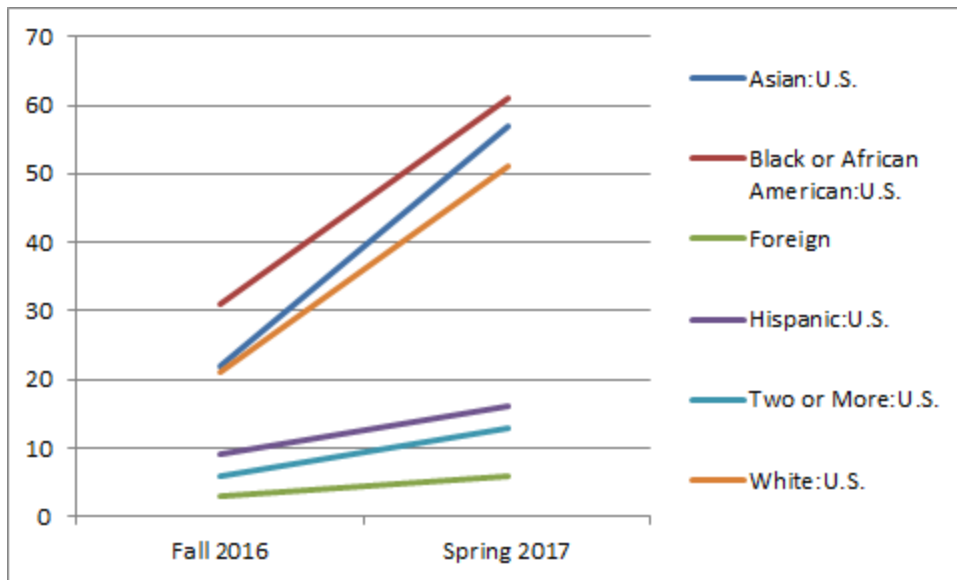


iv) Race Distribution

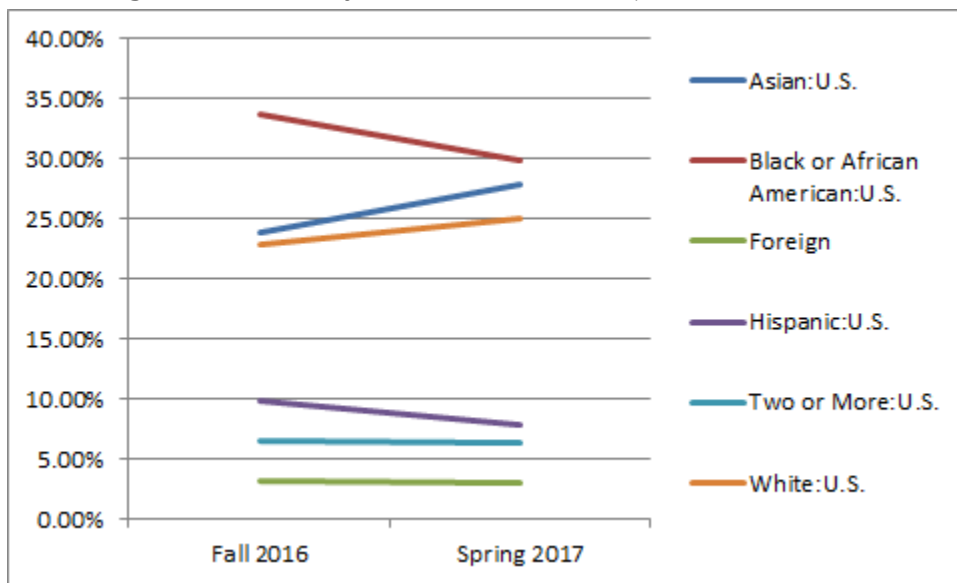
Number and Percentage of Students by Race in the BSIS Major

	Count		Percentage	
	Fall 2016	Spring 2017	Fall 2016	Spring 2017
Asian:U.S.	22	57	23.91%	27.94%
Black or African American:U.S.	31	61	33.70%	29.90%
Foreign	3	6	3.26%	2.94%
Hispanic:U.S.	9	16	9.78%	7.84%
Two or More:U.S.	6	13	6.52%	6.37%
White:U.S.	21	51	22.83%	25.00%
American Indian or Alaska Native:U.S.	0	0	0.00%	0.00%
Native Hawaiian or Other Pacific Islander:U.S.	0	0	0.00%	0.00%
Unknown:U.S.	0	0	0.00%	0.00%

Number of Students by Race in the BSIS Major



Percentage of Students by Race in the BSIS Major



v) Course Sections and Enrollment

Course Sections, Total Enrollment, and Average Enrollment per Section by Semester

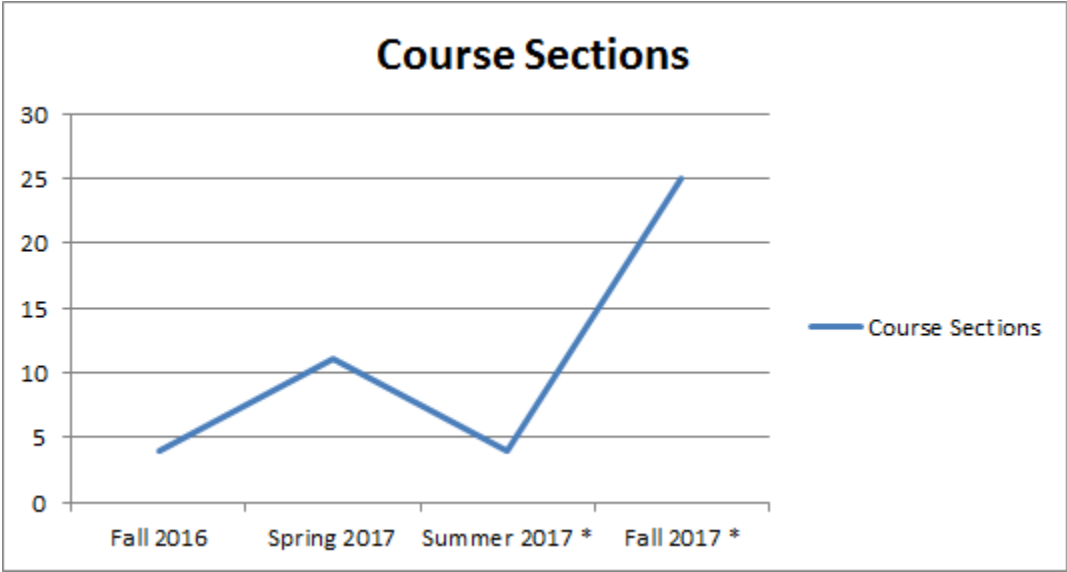
	Fall 2016	Spring 2017	Summer 2017*	Fall 2017*
Course Sections	4	11	4	25

Total Enrollment	189	508	90	907
Average Enrollment	47.25	46.18	22.50	36.28

Excluding Independent Study sections

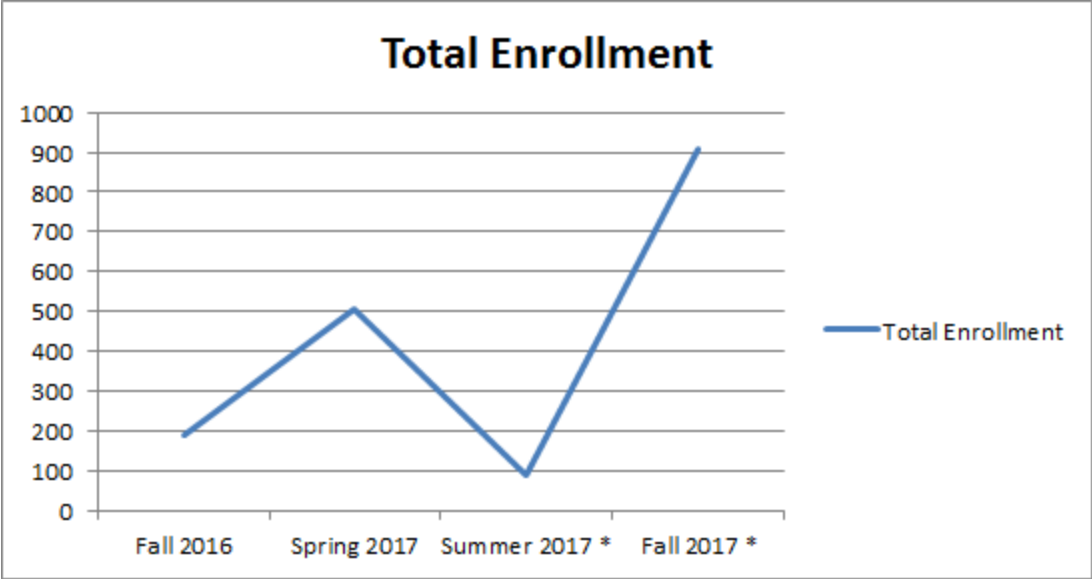
* As of May 29, 2017

Course Sections by Semester



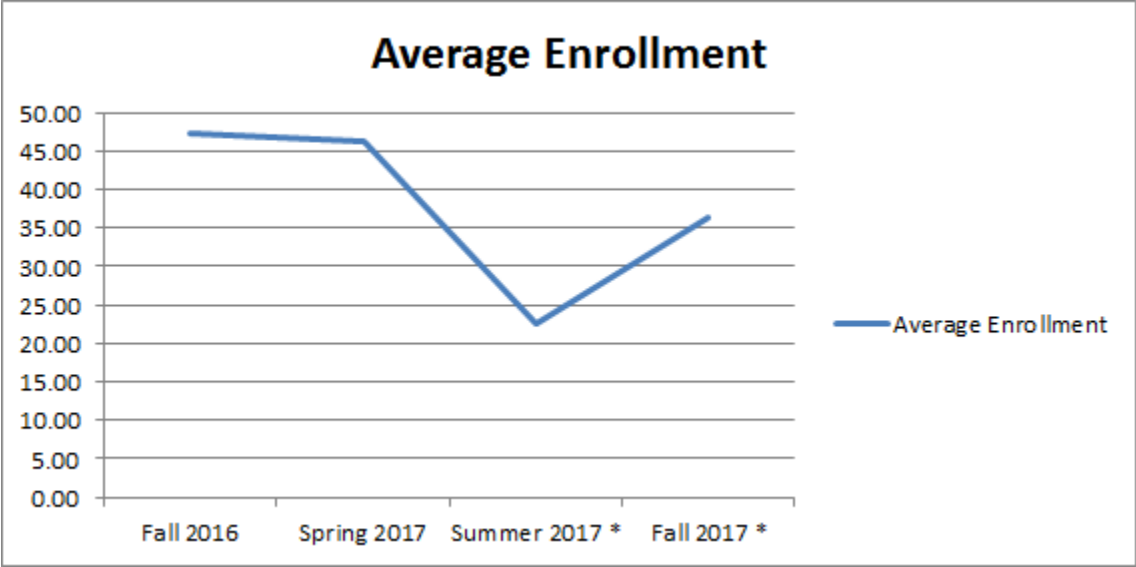
* As of May 29, 2017

Total Enrollment by Semester



* As of May 29, 2017

Average Enrollment per Section by Semester



* As of May 29, 2017