

**New Undergraduate Program (Majors, Minors, Sequences) Proposal  
Illinois State University - University Curriculum Committee**

**Program Department** Sociology

**Initiator** Ryan Gray

**Phone** 438-3425

**Initiator Department** Sociology

**Coauthor(s)** Joan Brehm (jmbrehm@ilstu.edu)

**Title of New Program** Major in Data Science, Social Demographic/Public Policy Anal

**Submission Date** Wednesday, January 4, 2023

**Email** krgray2@ilstu.edu

**Campus Address** 4660 Sociology and Anthropology

**Version** 1 **ID** 422

**Proposed Starting Catalog Year** 2024-2025

**1. Proposed Action**

New Major

New Minor

✓ New Sequence

More than 50% of courses in this program are Distance Education

**Sequence Major**

Data Science

**2. Provide Undergraduate Catalog copy for new program.**

**Major in Data Science, Social Demographic/Public Policy Analysis Sequence**

**Degree Offered: B.S.**

Students in this sequence will apply data science to understanding dynamics of population size and change and to the process of understanding, predicting, and evaluating policy implications.

**Major Requirements**

Minimum required credit hours: 85

- IT 168 Structured Problem Solving (4)
- IT 179 Introduction to Data Structures (3)
- IT 180 C++ (1)
- IT 279 Algorithms and Data Structures (3)
- IT 348 Introduction to Machine Learning (3)
- MAT 145 Calculus I (4)
- MAT 146 Calculus II (4)
- MAT 147 Calculus III (4)
- MAT 175 Elementary Linear Algebra (4)
- MAT 260 Discrete Mathematics (4)
- MAT 350 Applied Probability Models (4)
- MAT 351 Statistics and Data Analysis (4)
- MAT 355 Generalized Linear Models and Predictive Modeling (4)
- POL 231 Public Administration (3)
- POL 232 Politics and Public Policy (3)
- POL 138 Quantitative Reasoning in Political Science ~~(OR)~~
- POL 106 United States Government and Civic Practices ~~(FCL)~~ (recommended to fulfill prerequisite)
- POL 330 Problems of Public Administration (3)
- SOC 108 Contemporary Social Problems in a Global Perspective ~~(SS)~~
- SOC 220 Global Social Change: Introduction to Macrosociology (3) ~~(AMALH)~~
- SOC 264 Racial, Social Class, and Gender Inequality (3)
- SOC 260 Wealth, Power, and Prestige: The Haves and the Have Nots (3)
- SOC 362 Population (3)

Take one of the following:

- POL 309 Data Analysis and Data Visualization in Political Science (this is the recommended course for this sequence) (3)
- CTK 302 Computer Programming for Creatives (3)
- IT 352 Data and Information Visualization (3)

Take one of the following:

- PHI 234 Business Ethics (3)
- MKT 236 Business Ethics, Social Responsibility, and Sustainability (3)
- IT 214 Social, Legal, and Ethical Issues in Information Technology (3)

Take one of the following:

- IDS 398.05 (3 credit hours)
- IDS 388 (3 credit hours)

**3. Provide a description for the proposed program.**

The IDS Data Science major prepares students with the technical knowledge and computational skills to meet current and future problem solving and analysis of large data sets. The IDS Data Science major is an interdisciplinary major with three core areas of curricula including: 1) mathematics and statistics, 2) information technology and computer science, and 3) an applied sequence for contextual application in an area linked to the future career path of the student. The sequences include 1) Big Data and Computational Intelligence, 2) Business Analytics, 3) Population Health, 4) Social Demographic/Public Policy analytics, and 5) Individualized Plan of Study.

The core curriculum will include 32 credit hours of Mathematics courses (20 hours basic and 12 hours advanced courses), 14 credit hours of Information Technology courses, one ethics course, one data visualization course, and one capstone/internship course. The capstone course will be an instructor led course to complete an applied data science project from an external partner. As an alternative to the campus-based capstone project course, students may elect to complete an externally based internship for the equivalent of a 3-credit hour course. The sequence will consist of five to seven additional courses. The proposal provides for five sequences including: 1) Big Data and Computational Intelligence, 2) Business Analytics, 3) Population Health, 4) Social Demographic/Public Policy analytics, and 5) Individualized Plan of Study.

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**4. Provide a rationale of proposed program.**

An increase in employer demand and a large number of relevant job postings indicate strong need for program graduates. In the last 12 months, employers posted a high number of relevant job postings both locally and regionally (i.e., 49,180 and 113,459 job postings, respectively). Between June 2018 and May 2021, employer demand growth for bachelor's-level data science professionals outpaced employer demand growth for all bachelor's-level professionals both locally (i.e., 1.60 percent compared to 0.92 percent), and regionally (i.e., 1.81 percent compared to 0.92 percent). Additionally, local and regional employment is projected to increase faster than average in all top occupations. This indicates a large and growing labor market for program graduates with increasing employment opportunities in the coming years.

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**5. Describe the expected effects of the proposed program on existing campus programs (if applicable).**

Upon approval, the major will begin with approximately 50 students and this number of students can be absorbed within the existing departments and courses. As demand grows, faculty will be needed in the core areas of mathematics and information technology. If there is disproportionate distribution of students to the sequences, there may need to be additional faculty resources with future growth. As this is a distinct major, it is anticipated that this will attract new students to Illinois State University who are not currently choosing ISU.

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**6. Provide a sample four-year plan of study that fulfills the following requirements:** 120 hours, 42 senior college hours (200 and 300 level courses), and 39 General Education Program hours or 36 hours with exemption. If the program is a BS program, show the BS-SMT degree requirement. If the program is from CAS, show Foreign Language Requirement (LAN 111/LAN 112). Confirm General Education requirement exemptions on the General Education page of the current Academic Catalog. *4-year plans are not required for minor program proposals.*

**Four-year Plan of Study for Social Demographic and Public Policy Sequence (120 hours)****First Year – Fall Semester (16 credit hours)**

MAT 145 (General Education) (4)  
 IT 168 (3)  
 ENG 101 or COM 110 (General Education) (3)  
 General Education (3)  
 POL 138 (General Education) (3)

**First Year – Spring Semester (16 credit hours)**

MAT 146 (General Education) (4)  
 IT 179 (3)  
 ENG 101 or COM 110 (General Education) (3)  
 POL 106 (General Education) (3)  
 General Education (3)

**Second Year – Fall Semester (15 credit hours)**

MAT 147 (BS-SMT) (4)  
 MAT 260 (4)  
 IT 180 (1)  
 University-wide elective (3)  
 General Education (3)

**Second Year – Spring Semester (16 credit hours)**

MAT 350 (4)  
 IT 279 (3)  
 SOC 108 (General Education) (3)  
 PHI 234, MKT 236, or IT 214 (3)  
 SOC 220 (3) (AMALI)

**Third Year – Fall Semester (14 credit hours)**

MAT 175 (4)  
 POL 231 (3)  
 MAT 351 (4)  
 General Education (3)

**Third Year – Spring Semester (15 credit hours)**

IT 348 (3)  
 SOC 260 (3)  
 General Education (3)  
 University-wide elective (3)  
 University-wide elective (3)

**Fourth Year – Fall Semester (15 credit hours)**

SOC 264 (3)  
 POL 232 (3)  
 POL 309 (3)  
 University-wide elective[HA1] (3)  
 University-wide elective (3) (IDEAS)

**Fourth Year – Spring Semester (13 credit hours)**

MAT 355 (4)  
 POL 330 (3)  
 IDS 388 or IDS 398a05 (3)  
 SOC 362 (3)

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**7. Describe the expected curricular changes required, including new courses. If proposals for new courses have also been submitted, please reference those related proposals here:**

This program will require two new courses including a capstone course (IDS 388) and an internship course (IDS 398.05).

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**8. Anticipated funding needs and source of funds.**

This program will need 1.5 administrative personnel staff hired by year 5 of the program. An AP staff with duties including academic advising and a capstone/internship coordination will be needed in year 1. By year 5 the initial AP will coordinate internship/capstone courses and teach 1 course each semester in the capstone. At this point a .5 advisor will be needed to cover the highly-specialized advisement.

In year 1, the program will need 1 MAT tenure track faculty member who specializes in Applied & Pure Mathematics and 1 IT faculty member. In year 2, the program will need 1 BIS and 1 MKT faculty members. By year 5 the total number of new tenure track faculty members will be 11 comprised of:

4 MAT tenure track faculty members who specialize in Applied & Pure Mathematics and Statistics  
 3 IT  
 2 BIS  
 2 MKT

With a projection of 50 students per year, by year 5 with 250 and projected tuition revenue of \$8500 per student, the program will generate \$2,125,000. The personnel costs will be \$1,300,000.

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9. **No** Does this program count for teacher education?

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10. **Yes** Is this an Interdisciplinary Studies program?

List all departments who share in the administration of this program.

Sociology  
 Health Sciences  
 Accounting  
 School of Information Technology  
 Marketing  
 Mathematics  
 Politics and Government  
 Anthropology

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11. **The following questions must be answered.**

**Yes** Have you confirmed that Milner Library has sufficient resources for the proposed program?

**No** Are more than 120 hours required to complete a degree with this major?

**Yes** Beyond General Education, does the major require more than 66 semester hours?

Rationale for mandating over 66 hours in the major. [Required Hours Policy](#)

As an interdisciplinary program, it is necessary to included depth of knowledge in disciplines along with the breadth of knowledge across disciplines. Required courses for the major along with General Education requirements still puts students below the 120 credit hour mark.

**Yes** Does this sequence (if in a major) require more than 55 semester hours of courses in the major department/school?

**No** Does this program stipulate specific general education courses offered in the major department/school as a part of the major requirements only if such courses serve as prerequisites for other courses required by the major?

**Yes** Does this program stipulate specific course requirements (majors/sequences only) that also satisfy general education and/or IAI requirements?

Please specify those courses below.

MAT 145 (MAT)  
 MAT 146 (QR, BS-SMT)  
 MAT 147 (BS-SMT)  
 MAT 175 (BS-SMT)  
 POL 138 (QR)  
 POL 106 (ICL)  
 SOC 108 (SS)  
 SOC 220 (AMALI)

**No** Is the proposed program intended to be longer than four years (as indicated by the plan of study)?

**N.A.** Have letter(s) of concurrence from affected departments/schools been obtained?  
*A departments/school is affected if it has a program with significant overlap or if it teaches a required or elective course in the program.*

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12. **Routing and action summary for New Program:**

**1. Sociology Department Curriculum Committee Chair**

Winfred Avogo (website)  
 Signature

Winfred Avogo  
 Print

1/4/2023 2:13:38 PM  
 Date

**2. Sociology Department Chair/School Director**

Joan Brehm (website)  
 Signature

Joan Brehm  
 Print

1/4/2023 2:13:53 PM  
 Date

**3. Anthropology Department Chair**

Joan Brehm (website)  
 Signature

Joan Brehm  
 Print

1/4/2023 2:14:17 PM  
 Date

**4. School of Information Technology Department Chair**

<u>Traci Carte (website)</u> Signature	<u>Traci Carte</u> Print	<u>1/4/2023 2:14:47 PM</u> Date
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**5. Marketing Department Chair**

<u>Horace Melton (website)</u> Signature	<u>Horace Melton</u> Print	<u>1/4/2023 2:20:02 PM</u> Date
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**6. Mathematics Department Chair**

<u>Gaywalee Yamskulna (website)</u> Signature	<u>Gaywalee Yamskulna</u> Print	<u>1/4/2023 2:32:39 PM</u> Date
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**7. Politics and Government Department Chair**

<u>Thomas McClure (website)</u> Signature	<u>Thomas McClure</u> Print	<u>1/4/2023 4:10:02 PM</u> Date
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**8. Health Sciences Department Chair**

<u>David Grieshaber (website)</u> Signature	<u>David Grieshaber</u> Print	<u>1/4/2023 7:58:33 PM</u> Date
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**9. Accounting Department Chair**

<u>Joseph Johnston (website)</u> Signature	<u>Joseph Johnston</u> Print	<u>1/10/2023 3:04:40 PM</u> Date
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**10. Council on General Education Chair**

<u>Gregory Ferrence (website)</u> Signature	<u>Gregory Ferrence</u> Print	<u>2/9/2023 1:57:02 PM</u> Date
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**11. University Curriculum Committee Chair**

<u>Mary Califf (website)</u> Signature	<u>Mary Califf</u> Print	<u>3/22/2023 5:04:20 PM</u> Date
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All new programs (majors, minors, sequences) are routed by the U.C.C. to the Academic Senate