

**BOARD OF HIGHER EDUCATION
REQUEST FOR BOARD ACTION**

NO: BHE 26-62

BOARD DATE: May 19, 2026

**APPROVAL OF LETTER OF INTENT OF BRIDGEWATER STATE UNIVERSITY TO AWARD THE
BACHELOR OF SCIENCE IN DATA SCIENCE FOR FAST TRACK REVIEW**

MOVED: The Board of Higher Education (BHE) has evaluated the Letter of Intent of **Bridgewater State University** to award the **Bachelor of Science in Data Science** and has determined that the proposal aligns with BHE criteria. Accordingly, the BHE authorizes the Commissioner to review the program and to make a final determination on degree granting authority pursuant to the Fast-Track review protocol.

VOTED: Motion adopted by the BHE on 5/19/2026.

Authority: Massachusetts General Laws Chapter 15A, Section 9(b); AAC 18-40

Contact: Richard Riccardi, Sc.D., Deputy Commissioner for Academic Affairs and Student Success

**BOARD OF HIGHER EDUCATION
2026
Bridgewater State University
Letter of Intent
Bachelor of Science in Data Science**

DEGREE TITLE ABSTRACT ON INTENT AND MISSION OF PROGRAM

The Bachelor of Science in Data Science at Bridgewater State University will equip students with the knowledge and skills to analyze and interpret complex datasets, develop algorithms, apply statistical methods, and use AI and machine learning to solve real-world problems. Through hands-on experience, graduates will be ready for high-demand careers in data analytics, data engineering, business intelligence, biostatistics, healthcare informatics, and more.

With the rapid expansion of data-driven industries, data science is a critical field nationally and in Massachusetts. As businesses and public sectors increasingly rely on analytics for decision-making, Bridgewater State leverages its strengths in mathematics, statistics, AI, and computer science to prepare students for evolving workforce needs. Industry connections, expert faculty, and cutting-edge resources ensure graduates are job-ready.

The proposed degree program also expands STEM access for underserved students. Bridgewater State is committed to closing achievement gaps, serving 47% first-generation, 31% low-income, 25% currently and historically underrepresented (e.g., minority), and 60% female students. Additionally, the proposed degree program provides a curricular pathway with lower mathematical and computational barriers, making it more accessible to students who may have been discouraged from STEM due to the high emphasis on advanced mathematics and programming. By offering an accessible pathway, Bridgewater State will empower a broader range of students to be prepared to confidently engage in data-driven problem-solving and thrive in an AI-driven landscape.

The proposed Bachelor of Science in Data Science was approved by Bridgewater State's Board of Trustees on December 16, 2025. The LOI was circulated on February 18, 2026. No comments were received.

A. ALIGNMENT WITH MASSACHUSETTS GOALS FOR HIGHER EDUCATION

Address Gaps in Opportunity and Achievement in Alignment with Campus-Wide Goals

The proposed degree program directly addresses gaps in STEM access by expanding opportunities for low-income, first-generation, and currently and historically underrepresented students. The proposed degree program offers a **curricular pathway with reduced mathematical and computational barriers**, ensuring that students who may have been

discouraged from STEM due to high-level mathematics and programming requirements can still pursue data science. By lowering barriers to entry, Bridgewater State will prepare a broader range of students for data-driven careers and equip them with the skills needed to thrive in an evolving job market shaped by AI. This aligns with Bridgewater State's institutional goal of increasing access to STEM education and supporting student success in high-demand fields. As the **largest university in SE Massachusetts**, Bridgewater State can have a significant impact on regional workforce development, playing a crucial role in helping the state meet its goals for historically underserved and underrepresented groups. The proposed degree program also supports **economic mobility** by preparing students for **high-paying careers** in a rapidly expanding field. **Entry-level data scientists with a bachelor's degree earn competitive salaries**, with Glassdoor reporting a median salary of **\$83,543 per year**, while Springboard estimates a range between **\$88,151 and \$93,553** (Glassdoor, 2024; Springboard, 2024). This positions graduates for financial stability and career growth, benefiting all students, including low-income, first-generation, and currently and historically underrepresented students. The proposed degree program aligns with **Bridgewater State's commitment to workforce development and ensuring graduates contribute to the regional economy**.

To bridge achievement gaps, Bridgewater State provides a **comprehensive support system**, including peer-assisted learning (PALs) mentorship, interactive classroom pedagogies, tutoring, Academic Achievement Center coaching, faculty mentoring, career and internship coaching, and high-impact learning experiences. These resources ensure students receive the academic and professional guidance necessary to succeed in data science careers, aligning with **Bridgewater State's commitment to academic excellence in STEM**.

Program or Department Supports to Ensure Student Retention and Completion

Bridgewater State is committed to ensuring student success through a combination of **academic support, advising, professional development, and state-of-the-art facilities**. The following initiatives and programs help students persist and complete their degrees:

Academic Support Services

- **Tutoring through Math Services** provides specialized assistance to support students in their introductory-level mathematics and statistics courses.
- **Undergraduate Peer-Assisted Learning (PALs)** in MATH 161 - Calculus I and COMP 151 – Computer Science I supports students in challenging courses through structured peer-led sessions. This program has been highly successful in increasing **student retention and success rates**.
- **Academic Achievement Center Coaching** helps students develop skills in time management, overcoming anxiety, and effective study strategies, contributing to stronger persistence in coursework.

Advising and Mentoring

- **Holistic Departmental Advising** connects students with faculty mentors who help them navigate coursework, understand job market trends, and explore opportunities such as undergraduate research, internships, and honors program.

Internship and Career Services

- **Bridgewater State's Career Services and Internship Office** helps students gain professional experience, develop career skills, and connect with employers.
- **Funding for Unpaid Internships** is available through Bridgewater State's internship program allowing students to pursue meaningful professional experiences without financial barriers.
- **Strong Employer Partnerships** ensure that students have access to **internships, co-ops, and career opportunities** that enhance their readiness for the workforce.

Undergraduate Research and High-Impact Practices

- **Nationally Recognized Undergraduate Research Program:** Bridgewater State's **award-winning undergraduate research program** provides students with extensive opportunities to engage in faculty-mentored high-impact practices, enhancing their skills and career prospects.
- **Adrian Tinsley Program (ATP) Summer Grants** provide students with **\$5,000 summer research grants**, allowing them to gain hands-on experience in data-driven projects.

Optimal Learning Environment

- **Small Class Sizes** (capped at 25 students) ensure **personalized attention and strong faculty-student relationships**, leading to higher success and retention rates.
- **Mathematics Research and Computer Labs** provide dedicated spaces for students to collaborate, work with **industry-standard software**, and build a sense of community.
- **Dana Mohler-Faria Science and Mathematics Center**, a **\$100 million facility**, offers state-of-the-art resources that support hands-on learning and innovative research.

Alliances and Partnerships with PK-12, Other IHE's, Community Employers

The proposed degree program will leverage existing and new partnerships with PK-12 schools, community colleges, and industry leaders to strengthen the program, provide experiential learning opportunities, and enhance career readiness for students.

PK-12 Partnerships

- The **Bridgewater State University Center for the Advancement of STEM Education (CASE)** supports PK-12 students and teachers through STEM outreach. The Department will contribute by expanding **workshops in data science** to engage more students and spark interest in the field.

Higher Education Collaborations

- **Strong Existing Community College Partnerships:** Bridgewater State has long-standing articulation agreements and strong partnerships with all regional community colleges (CC2BSU program).

- Bridgewater State will pursue **formal articulation agreements** with regional community colleges to strengthen transfer opportunities for students interested in data science. These partnerships will create **clear transfer pathways** for students pursuing the proposed degree program.
- **Massasoit Community College and Cape Cod Community College** offer two-year associate degrees in data science, creating a seamless transfer pipeline for students who wish to continue their education at Bridgewater State. While **Bristol Community College** does not offer a specific data science degree, its programs in AI, Computer Science, and the Certified Business Data Analyst (CBDA) Prep Course provide students with foundational skills that align well with the proposed degree program curriculum.

Industry & Advisory Council Engagement

- **Expanding the CoSM Advisory Council:** In addition to the current Data Science expert on the **College of Science and Mathematics (CoSM) advisory council**, the council will be **expanded to include more industry professionals with expertise in data science**. Their expertise will help refine coursework, ensure alignment with workforce needs, and expand employer partnerships to enhance internship and job opportunities for students.
- **Alumni Engagement:** Graduates of Bridgewater State's **Statistics Concentration** working in data science and analytics roles will provide **program feedback, share industry insights, and mentor students through networking events, guest lectures, and career panels**.
- **Proven Industry Success:** Graduates of Bridgewater State's **Statistics Concentration** have secured roles at Hanover Insurance, Boston Public Schools, Amica Insurance, Takeda, John Hancock, Santander Bank, Kraft Analytics Group, Steward Healthcare, Granite Telecommunications, Buildium, and more, demonstrating **strong industry engagement** and **employer demand** for Bridgewater State-trained data scientists.

By strengthening PK-12 outreach, higher education pathways, and industry partnerships, Bridgewater State ensures that the proposed degree program remains industry-aligned, transfer-friendly, and career-focused.

Relationship to MassHire Regional Blueprints

Bridgewater State has an **established track record of preparing graduates for employment in statistics and related data-driven fields** through its Statistics Concentration within the B.S. in Mathematics. Bridgewater State graduates have secured positions at prominent Massachusetts organizations including Hanover Insurance Group, Harvard Medical School, Boston Public Schools Capital Planning, Talbots, Santander Bank, Akamai Technologies, and DraftKings. Bridgewater State graduates have a strong employment record, with 88% securing jobs or enrolling in graduate school within six months to a year after graduation, and over 80% remaining employed within Massachusetts. The proposed degree program is designed to **expand upon these successful outcomes** by further developing industry partnerships and enhancing workforce readiness in the critical area of data science. Graduates from the proposed degree program are anticipated to similarly find employment primarily within Massachusetts, securing positions in high-demand data science roles and significantly contributing to the Commonwealth's continued economic growth.

The **Southeast Regional Labor Market Blueprint (2024)** emphasizes the importance of employer engagement and aligning educational programs with current workforce demands. Based on employment growth identified in the Blueprint, several industries stand out as increasingly relevant for data science and analytics skills:

- Information-Based Industries: Experienced 55.3% employment growth (2021–2023). Relevant for data science due to growth in fields like big data analytics, cybersecurity, and cloud computing.
- Manufacturing: Experienced 10.8% employment growth (2021–2023). Relevant due to demand for predictive maintenance and advanced manufacturing processes that utilize data analytics.
- Financial Services: Experienced nearly 17% employment growth (2021–2023). Relevant for roles involving predictive modeling and analytics (e.g., financial management, risk assessment).
- Healthcare: Largest regional employment sector, adding 5,371 new jobs in recent years. Relevant due to growing need for data analytics in healthcare management, electronic health records, bioinformatics.
- Professional, Scientific, and Technical Services: Employment increased by 9.5% (2021–2023). Relevant due to direct alignment with IT and technical roles involving data analysis and systems design. (MassHire Southeastern Massachusetts Regional Blueprint, 2024).

The **Greater Boston Regional Workforce Blueprint (2024)** explicitly identifies Computer/IT occupations as high-demand roles, including Data Scientists and Database Architects, confirming direct market need for data science skills in the region and emphasizing the importance of educational programs to meet regional workforce demands (MassHire Greater Boston Regional Workforce Blueprint, 2024).

The **expanding use of AI across various industries** suggests a **growing demand for data scientists**. Effective AI deployment often relies on data preparation, analysis, and statistical evaluation, which are fundamental skills for data science professionals. Organizations integrating AI technologies typically require data scientists to manage and interpret complex datasets, highlighting data science's increasingly important role in regional economic strategies related to AI.

Current labor market data confirms immediate regional demand for data scientists. As of March 16, 2025, approximately 923 active data science job postings existed in Massachusetts, including at UnitedHealth Group, Outlier AI, and Boston Consulting Group, indicating strong employer engagement and immediate hiring needs (Indeed, 2025, March 16. Data Science Jobs in Massachusetts. Retrieved March 16, 2025, from <https://www.indeed.com/q-data-science-l-massachusetts-jobs.html>).

The attached **Eduventure Market Research Report (2024)** commissioned by Bridgewater State further validates the program's relevance. Nationally, bachelor's degrees in data science are experiencing strong growth, with a compound annual growth rate (CAGR) of 31%, while regional growth within New England is also strong at 27%. Regionally, **occupations aligned with data science (Data Scientists, Statisticians) are projected to grow substantially, at five times the rate of overall occupations**, indicating robust career opportunities for graduates of the proposed program (Eduventure, 2024. BSU B.S. in Data Science Market Analysis Report).

These combined labor market analyses clearly demonstrate the critical regional and statewide need for the proposed degree program, aligning closely with the Commonwealth's workforce priorities.

Duplication

In Southeastern Massachusetts, UMass Dartmouth and Stonehill College offer Data Science programs. The proposed degree program provides distinct advantages in affordability, accessibility, flexibility, and industry alignment.

- **Affordability:** Bridgewater State's tuition and fees (\$11,734) are significantly lower—approximately 25% less than UMass Dartmouth (\$15,612) and about 77% less than Stonehill College (\$52,000)—making Bridgewater State a substantially more affordable option for Massachusetts residents. Lower costs expand access to a broader student population, especially first-generation and low-income students.
- **Accessibility:** Unlike the Data Science programs at other regional institutions, Bridgewater State provides curricular pathways with reduced mathematical and computational barriers, attracting students who might otherwise feel excluded from STEM disciplines. By lowering these barriers compared to UMass Dartmouth and Stonehill, the proposed degree program becomes more inclusive for students traditionally discouraged from STEM fields. This approach boosts completion rates and diversifies the talent pipeline.
- **Curricular Flexibility:** Bridgewater State offers multiple pathways with varied focus areas, ensuring students with different academic strengths can succeed in the proposed degree program.
- **Larger Student Population & Greater Reach:** Bridgewater State serves a larger undergraduate student population (8,172 students) compared to UMass Dartmouth (5,602, 31% fewer) and Stonehill College (2,490 students, 70% fewer). A larger student base allows for broader participation, particularly among women, currently and historically underrepresented students, and students from varied socio-economic backgrounds. This enables Bridgewater State to significantly impact regional workforce development by reaching a broader segment of the population.
- **Demonstrated Student Demand:** Interest in Data Science at Bridgewater State is already strong. A recently launched undergraduate certificate program enrolled over 30 students in its first month, and foundational courses such as DATA 101 and 102 reached capacity within an hour of registration opening. This high demand, combined with Bridgewater State's large undergraduate population, highlights the university's ability to scale access to Data Science education quickly and effectively.
- **Transfer and High School Partnerships:** Bridgewater State has strong, established relationships with regional community colleges, creating clear pathways for students transferring after associate degrees. Additionally, Bridgewater State maintains robust partnerships with local high schools through programs such as CASE and thus is able to effectively promote data science careers to younger students.
- **AI Integration & Industry Relevance:** Artificial Intelligence is integrated into the curriculum from the outset, ensuring students graduate with cutting-edge, industry-aligned skills. This approach prepares students to excel in an AI-driven workforce, offering stronger alignment with future job market trends.

Bridgewater State's lower cost, flexible curriculum, greater reach, and strong transfer pipeline position it as a more accessible alternative to regional programs, expanding opportunities for students across the region and directly supporting Massachusetts' workforce needs.

Innovative Approaches to Teaching and Learning

The proposed degree program provides students with **hands-on experience, real-world applications, and industry-aligned digital tools** to prepare them for careers in data-driven fields.

1. Digital Learning

- Coursework is **software-driven and lab-based**, ensuring hands-on experience with **Python, R, SQL, and cloud computing platforms**, all **industry-standard** tools in data science.
- Students will work with **real-world datasets** to develop skills in data visualization, statistical modeling, and computational analysis.

2. Experiential & Competency-Based Learning

- **End-of-Semester Projects:** Students will apply their learning through comprehensive data analysis projects, culminating in professional reports that mirror workplace tasks.
- **Capstone Project and Honors Thesis:** This **immersive experience** guides students through data generation, collection, cleaning, analysis, and professional presentation.
- **Seminar Participation:** Students will attend departmental Data Science seminars featuring **industry trends and real-world case studies**.
- **Professional Communication & Presentation:** Students will refine their ability to present data analysis results through written reports and oral presentations, focusing on effectively conveying insights to non-technical audiences.

3. Industry Engagement & Professional Experience

- Students will be **strongly encouraged** to complete an **internship or co-op** before graduation, applying their skills in industry settings.
- The program will **partner with local businesses, government agencies, and research labs** to provide professional experience opportunities.
- Students will be encouraged and trained to participate in **data science competitions such as Kaggle and ASA DataFest**, gaining hands-on problem-solving experience.

4. Interdisciplinary Applications

- Students will be encouraged to **pursue a minor outside of mathematics or computer science**, broadening their ability to apply data science in fields such as **business, healthcare, social sciences**.
- **Real-world case studies** are integrated throughout the curriculum to demonstrate **data science applications across industries**.

5. AI Integration

- AI concepts are embedded into coursework to **enhance data analysis and decision-making**, ensuring students are prepared for **emerging trends in data science**.
- The **Data Analysis with AI course** provides hands-on experience applying AI techniques to **real-world data**, strengthening students' ability to **extract insights and build predictive models**.

B. ALIGNMENT WITH CAMPUS STRATEGIC PLAN AND MISSION

The proposed degree program aligns with Bridgewater State's strategic plan by preparing students for **high-demand, high-paying careers** while ensuring **affordable access to cutting-edge skills** in data analysis, AI, and machine learning. The proposed degree program advances **workforce development, economic mobility, and student success** through the following key priorities:

1. **Prepare students for careers in the rapidly growing field of Data Science**, where the **Bureau of Labor Statistics projects a 36% job growth** from 2023 to 2033¹, significantly higher than the national average of 4% for all occupations². *(Goal 2A, Strategic Plan)*
2. **Meet regional workforce needs and support economic growth and innovation in Massachusetts** by training students in **data analysis, machine learning, and AI**, which are critical for industries in the state. *(Goal 4C, Strategic Plan)*
3. **Increase access to high-paying, high-satisfaction careers** for students from **underrepresented backgrounds**, aligning with Bridgewater State's mission of equity and opportunity. *(Goal 5A, Strategic Plan)*
4. **Provide students with pathways to employment in diverse data-intensive industries**, including **finance, healthcare, technology, and government**, ensuring job security and economic mobility. *(Goal 1D, Strategic Plan)*
5. **Develop partnerships with local companies, government agencies, and research institutions** to create internship and co-op opportunities for students. *(Goal 4A, Strategic Plan)*
6. **Enhance interdisciplinary collaboration** across STEM and business fields by integrating **real-world projects and research** into the curriculum. *(Goal 2B, Strategic Plan)*
7. **Address affordability** by providing a cost-effective pathway to a high-demand career, reducing financial barriers for first-generation and low-income students. *(Goal 1B, Strategic Plan)*

¹ Bureau of Labor Statistics, U.S., U.S. Department of Labor. (2024). Occupational Outlook Handbook, Data Scientists.

Retrieved from <https://www.bls.gov/ooh/math/data-scientists.htm>

² U.S. Bureau of Labor Statistics. (2024). Employment Projections: 2023–2033 Summary. Retrieved from <https://www.bls.gov/news.release/pdf/ecopro.pdf>

Goals and Objectives (Form B)

The proposed degree program is designed to achieve key **goals and learning outcomes** that prepare students for careers in data-driven fields. A primary goal is to **equip students with strong technical and analytical skills** by ensuring proficiency

in Python, R, SQL, data visualization, and machine learning. This is achieved through hands-on coursework, **industry collaborations, real-world case studies, and certification training.**

Another goal is to **ensure strong career outcomes**, with a learning objective that **at least 90% of graduates** secure employment or pursue graduate studies within six months. To accomplish this, the proposed degree program establishes an **alumni tracking system**, strengthens **industry partnerships**, and requires students to complete **internships or capstone projects.**

The proposed degree program also aims to **align the curriculum with evolving industry needs** by integrating **cutting-edge technologies, advisory board feedback, and employer-driven curriculum updates.** Additionally, it promotes **accessibility** by expanding interdisciplinary pathways, offering introductory, no-prerequisite courses, and building K-12 and community college partnerships.

A structured timeline supports these efforts: **short-term initiatives** focus on partnerships and outreach, **mid-term objectives** expand internships and certification programs, and **long-term strategies** include alumni engagement and workforce collaborations. Ongoing efforts such as **annual assessments, career workshops, and industry panels** ensure continuous improvement and student success.

C. ALIGNMENT WITH OPERATIONAL AND FINANCIAL OBJECTIVES OF INSTITUTION

Enrollment Projections (Form C)

Program Enrollment Projections: Bridgewater State anticipates steady growth in the proposed degree program over its first five years:

- **Year 1:** 10 new full-time students
- **Year 2:** 15 new full-time students
- **Year 3:** 30 new full-time students
- **Year 4:** 45 new full-time students
- **Year 5:** 50 new full-time students

Impact on Other Programs: The proposed degree program may slightly reduce the number of students in the **Statistics concentration of the B.S. in Mathematics** and the **Computer Science major**, but the impact on other programs is expected to be minimal. As AI technologies continue to reshape the job market, there is potential for a more significant long-term shift toward Data Science programs. Moreover, the strong overlap of courses between the proposed degree program and existing offerings in Mathematics, Statistics, and Computer Science will enhance enrollment in shared courses, thereby strengthening those programs.

Most importantly, the proposed degree program is expected to **attract new students to Bridgewater State**, particularly those who may not have otherwise considered the university. Strong partnerships with **regional community colleges** (Massasoit Community College, Bristol Community College, and Cape Cod Community College) will ensure a **clear transfer pathway** for students completing **two-year degrees** in data science and related fields. This pipeline will help **underrepresented and economically disadvantaged students** gain access to a **high-demand, high-paying career in data science**, strengthening Bridgewater State's mission of affordability and workforce development.

*Resources and Financial Statement of Estimated Net Impact on Institution
(Form D, Appendices)*

The proposed degree program can be implemented using existing faculty, staff, office space, and classroom resources at Bridgewater State. Bridgewater State has **three full-time Statistics and four full-time Computer Science faculty with Data Science expertise**, who will provide instruction for the core and elective courses for the program. Many courses in the proposed degree program curriculum already exist within the **Statistics Concentration (B.S. Mathematics) and B.S. in Computer Science**, minimizing new course development needs. The proposed degree program will require **nine new courses**, with **six** offered each year on a rotating basis. Additionally, **six new sections** of existing courses will be added annually to accommodate program demand, bringing the total to **12 new sections per year**.

Faculty & Staffing Needs

- Existing full-time faculty will teach the new courses, requiring a shift in their teaching responsibilities, with some introductory courses reassigned to part-time faculty.
- **Part-time faculty will cover 12 course sections per year**, costing an estimated **\$78,000 annually** based on Bridgewater State's part-time faculty rate of **\$6,500 per course**.

Space & Equipment

- No additional office or classroom space is needed.
- Industry-standard software (**Python, R, SQL, Tableau, Power BI, AI**) will be incorporated, leveraging free tools when possible, with an estimated **\$10,000 annually** for software licenses.

Financial Impact & Revenue Projections

The estimated **\$89,000 annual instructional and marketing cost** for part-time faculty coverage, marketing, and licenses is expected to be fully offset by tuition and fees with an initial enrollment of **8 students**. Based on projected student enrollment of 12 students in the first cohort, the program is projected to generate **positive net revenue** within its first year.

Other Revenue Opportunities

- **Federal Grants & Research Funding** – Data Science serves as a critical underpinning for AI. With AI now a federal priority, this positions Bridgewater State for competitive **grant opportunities** from agencies like the NSF and NIH.

- **Industry & Community Partnerships** – Collaborations with **industry, local government, and non-profits** will create **internships, sponsorships, and potential funding opportunities**.

The proposed degree program is financially sustainable within Bridgewater State's existing resources. By leveraging current faculty expertise, existing courses and infrastructure, the program will be implemented efficiently while **meeting the growing demand** for data-driven careers and supporting **Bridgewater State's mission of workforce development, accessibility, and student success**.

STAFF REVIEW AND VALIDATION

Staff thoroughly reviewed the **LOI** proposing full degree granting authority for the **Bachelor of Science in Data Science** program submitted by **Bridgewater State University**. Staff validate that the **LOI** includes all data required by the Massachusetts Board of Higher Education. Staff recommendation is for BHE authorization for the Commissioner to review the program pursuant to the Fast-Track review protocol.

Form A: Curriculum Outline

Required (Core) Courses in the Major (Total # courses required = 13)		
<i>Course Number</i>	<i>Course Title</i>	<i>Credit Hours</i>
DATA 101	Introduction to Data Analytics	3
DATA 102	Data Visualization	3
MATH 120 <i>or</i> MATH 202	Introduction to Linear Algebra <i>or</i> Linear Algebra	3-4
MATH 161 <i>or</i> MATH 141	Single Variable Calculus I <i>or</i> Elements of Calculus I	3-4
MATH 200	Statistical Methods I	3
MATH 300	Statistical Methods II	4
MATH 350	Regression Analysis	4
COMP 151	Computer Science I	3
DATA 210	Python for Data Science	4
DATA 360	Statistical Learning I	4
DATA 310	Introduction to Databases with SQL	4
DATA 430	Data Analysis with AI	4
DATA 450 <i>or</i> 485	Data Science Capstone <i>or</i> Honors Capstone	3
	Sub Total Required Credits	45-47
Elective Courses (Total # courses required = 4) (attach list of choices if needed)		
Statistical Data Science Focus Area (15-16 credits)		
MATH 353	Design and Analysis of Experiments	4
MATH 356	Programming with R	4
MATH 398	Special Topics in Statistics	3
DATA 361	Statistical Learning II	4
DATA 397	Special Topics in Data Science	3
DATA 410	Applied Bayesian Statistics	4
DATA 420	Applied Time Series Analysis	4
DATA 498	Internship in Data Science	3
Mathematical Foundations Focus Area (14 credits)		
MATH 162	Single Variable Calculus II	4
MATH 261	Multivariable Calculus	4
MATH 403	Probability Theory	3
MATH 412	Mathematical Statistics	3
MATH 360	Mathematical Foundations of AI	3
Computational Data Science Focus Area (13 credits)		
COMP 152	Computer Science II	4
COMP 250	Data Structures and Algorithms	3
COMP 405	Introduction to Database Systems	3

COMP 418	Data Mining	3
COMP 463	Machine Learning	3
COMP 470	Introduction to Artificial Intelligence	3
DATA 498	Internship in Data Science	3
General Focus Area (12-16 credits)		
DATA 361	Statistical Learning II	4
DATA 397	Special Topics in Data Science	3
DATA 410	Applied Bayesian Statistics	4
DATA 420	Applied Time Series Analysis	4
DATA 498	Internship in Data Science	3
MATH 162	Single Variable Calculus II	4
MATH 261	Multivariable Calculus	4
MATH 353	Design and Analysis of Experiments	4
MATH 356	Programming with R	4
MATH 398	Special Topics in Statistics	3
MATH 403	Probability Theory	3
MATH 412	Mathematical Statistics	3
MATH 360	Mathematical Foundations of AI	3
COMP 405	Introduction to Database Systems	3
COMP 418	Data Mining	3
COMP 463	Machine Learning	3
COMP 470	Introduction to Artificial Intelligence	3
	Sub Total Elective Credits	12
<p>Note: DATA 101 and DATA 102, along with all MATH and COMP courses, are existing offerings currently serving other academic programs. All other DATA courses listed in the curriculum will be newly developed specifically for this program.</p>		
<p>Distribution of General Education Requirements Attach List of General Education Offerings (Course Numbers, Titles, and Credits) BSU's Core Curriculum requirements are available at https://catalog.bridgew.edu/preview_program.php?catoid=8&poid=1987</p>		<p># of Gen Ed Credits</p> <p>43 credits or more</p>
<p>Core Skills: - ENGL 101 Writing Rhetorically (3 credits), - ENGL 102 Writing Rhetorically with Sources (3 credits), - COMM 102 Introduction to Public Speaking or THEA 210 Oral Interpretation of Literature (3 credits), - PHIL 111 Foundations of Logical Reasoning or MATH 180 Transition to Advanced Mathematics (3 credits), - and Foundations of Mathematical Reasoning (several courses possible) (3 credits).</p>		15
Arts: Several courses possible.		6
Humanities: Several courses possible.		9

Natural Sciences: Several courses possible.	7
Social and Behavioral Sciences: Several courses possible.	6
BSU's Core Curriculum also requires that students complete courses to fulfill requirements in Writing/Speaking, Global Culture, Multiculturalism, Quantitative Skills, and US and Massachusetts Constitutions. The total number of credits will vary, depending on the student's choice of courses.	# varies
Sub Total General Education Credits	43 or more, # varies
Curriculum Summary	
Total number of courses required for the degree	17 in the major + general education
Total credit hours required for degree	120
<p>Prerequisite, Focus Areas or Other Requirements:</p> <p>Students in the B.S. in Data Science program will have the opportunity to tailor their coursework to their career goals and academic interests by selecting from four distinct focus areas:</p> <ol style="list-style-type: none"> 1. Statistical Data Science Focus Area – Designed for students pursuing careers in industry, this track emphasizes statistical modeling, experimental design, Bayesian methods, and time series analysis. It is ideal for those seeking roles in data analysis, business intelligence, and applied research. 2. Mathematical Foundations Focus Area – Geared towards students planning to pursue graduate studies in Data Science, this track provides a strong theoretical foundation in calculus, probability, and statistical inference. It is recommended for students aiming for research-intensive master's or Ph.D. programs in theoretical machine learning, statistics, or mathematical modeling. 3. Computational Data Science Focus Area – Best suited for students interested in the technical and computational aspects of data science, including databases, data mining, machine learning, and artificial intelligence. This track prepares students for roles in software engineering, AI development, and big data infrastructure. 4. General Focus Area – Offers students maximum flexibility to explore various aspects of data science, blending coursework from the other tracks based on their interests. This track is ideal for students who want to customize their learning path for interdisciplinary applications or emerging fields in data science. <p>This flexible, multi-track approach ensures that students from diverse academic backgrounds and strengths can find a pathway that aligns with their skills and aspirations. By reducing barriers to entry and offering tailored coursework, the program promotes higher completion rates and expands access to lucrative, in-demand careers in Massachusetts and beyond.</p>	

Form B: LOI Goals and Objectives

Goal	Measurable Objective	Strategy for Achievement	Timetable
<p>Equip students with the technical expertise, analytical mindset, and practical experience needed to excel in high-demand data science careers across various industries.</p>	<p>Ensure at least 90% of graduates secure employment or pursue graduate studies in data science within 6 months of graduation.</p>	<p>Establish an alumni tracking system to assess graduate career trajectories and industry placements.</p> <p>Organize at least two career development workshops per year, covering topics such as resume building, technical interviews, and networking.</p> <p>Partner with tech companies, financial institutions, and healthcare organizations to create targeted job pipelines for graduates.</p>	<p><u>Recurring Activities</u></p> <p>Conduct annual student satisfaction surveys to assess program effectiveness.</p> <p>Host career development workshops for resume building, technical interviews, and networking.</p> <p>Strengthen industry partnerships for internships, capstone projects, and guest lectures.</p>
<p>Ensure students develop robust technical and analytical skills through hands-on learning, real-world data applications, and a comprehensive curriculum covering programming, statistics, machine learning, and data visualization.</p>	<p>Ensure 90% of students demonstrate proficiency in Python, R, SQL, and data visualization tools (Tableau, Power BI), statistics, and machine learning by their final year.</p>	<p>Integrate project-based learning, industry collaborations, and hackathons to enhance hands-on experience with real-world data.</p> <p>Establish an assessment committee to review student outcomes, course effectiveness, and alignment with industry needs, making data-driven improvements to the curriculum.</p>	<p>Maintain an active assessment committee to review student outcomes and curriculum effectiveness.</p> <p>Ensure continuous alignment with industry needs through surveys, advisory board meetings, and employer feedback.</p>
<p>Foster industry engagement and experiential learning opportunities by building strong partnerships with companies, offering internships and collaborative projects, hosting guest lectures and panel discussions, and integrating real-world case studies into the curriculum.</p>	<p>Require students to complete an internship, capstone project, or industry-sponsored research project before graduation.</p> <p>Establish new industry partnerships each year for guest lectures, panel discussions, internships, or industry-sponsored research projects.</p>	<p>Develop corporate partnerships to provide structured internships and sponsor capstone projects, allowing students to tackle real business challenges.</p> <p>Organize annual industry panels and networking events to connect students with professionals and potential employers.</p>	<p><u>Short-Term (Within 1 Year)</u></p> <p>Form a collaborative advisory board with community colleges to create seamless transfer pathways.</p> <p>Organize the first outreach event to</p>

<p>Align the curriculum with evolving industry needs and workforce trends by regularly updating course content, integrating emerging technologies, incorporating feedback from industry partners, and ensuring students gain relevant skills through hands-on projects and experiential learning.</p>	<p>Ensure students complete coursework that includes cutting-edge technologies (e.g., cloud computing, AI, big data). Use real-world datasets and case studies in at least 40% of program coursework to ensure industry relevance.</p>	<p>Build on the existing advisory board with the Bartlett College of Science and Math to provide insights into job market trends and evolving skill requirements.</p> <p>Provide certification program training to validate students' technical expertise.</p> <p>Host and train students for data science hackathons or competitions, such as DataFest, to promote applied learning.</p>	<p>introduce data science to K-12</p>
<p>Promote accessibility to data science beyond traditional STEM fields by developing interdisciplinary courses, offering no-prerequisite introductory classes, providing flexible learning formats, and actively recruiting students from diverse academic backgrounds.</p>	<p>Offer introductory, no-prerequisite courses (such as Data 101 and Data 102) to attract at least 50 students from diverse academic backgrounds every year.</p> <p>Ensure at least 20% of students come from non-STEM backgrounds within five years by expanding interdisciplinary pathways.</p>	<p>Expand outreach to attract non-STEM students through marketing, information sessions, and faculty collaborations.</p> <p>The curriculum committee will oversee curriculum development and engagement efforts, while the assessment committee will evaluate the program and curriculum.</p> <p>Measure student satisfaction with the program through annual surveys.</p>	
<p>Build partnerships with K-12 schools, community colleges, and regional companies and nonprofit organizations.</p>	<p>Develop and maintain at least three partnerships with local K-12 schools to introduce data science at an early stage.</p> <p>Establish dual-enrollment or transfer pathways with MCC, BCC and CCCC regional community colleges.</p> <p>Collaborate with regional companies and nonprofit organizations to support student</p>	<p>Build on existing collaboration with community colleges to develop seamless transfer pathways, ensuring alignment of curricula, articulation agreements, and academic support services to facilitate a smooth transition for transfer students into the data science major.</p> <p>Leverage CASE's existing strengths to enhance partnerships with local K-12 schools.</p>	

	projects and workforce development.		
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Form C: LOI Program Enrollment

	Year 1	Year 2	Year 3	Year 4	Year 5
New Full-Time	10	15	30	45	50
Continuing Full-Time	0	8	17	35	60
New Part-Time	2	2	3	4	5
Continuing Part-Time	0	1	2	3	4
Enrollment Totals	12	26	52	87	119

* assuming approximately a 75% retention rate for full-time students and 50% retention rate for part-time students based on statistics and computer science experience.

Form D: LOI Program Budget

One Time/ Start Up Costs		Annual Expenses				
		Year 1	Year 2	Year 3	Year 4	Year 5
	Cost Categories					
	Full Time Faculty <i>(Salary & Fringe)</i>	\$0	\$0	\$0	\$0	\$0
	Part Time/Adjunct Faculty <i>(Salary & Fringe)</i>	\$78,000	\$80,340	\$82,750	\$85,233	\$87,790
	Staff	\$0	\$0	\$0	\$0	\$0
	General Administrative Costs	\$0	\$0	\$0	\$0	\$0
	Instructional Materials, Library Acquisitions	\$0	\$0	\$0	\$0	\$0
	Facilities/Space/Equipment	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
	Field & Clinical Resources	\$0	\$0	\$0	\$0	\$0
	Marketing	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
	Expenses Total	\$89,000	\$91,340	\$93,750	\$96,233	\$98,790

One Time/Start-Up Support		Annual Income				
		Year 1	Year 2	Year 3	Year 4	Year 5
	Revenue Sources					
	Grants	\$0	\$0	\$0	\$0	\$0
	Tuition	\$10,920	\$23,660	\$47,320	\$79,170	\$108,290
	Fees	\$129,888	\$136,382	\$143,202	\$150,362	\$157,880
	Departmental	\$0	\$0	\$0	\$0	\$0
	Reallocated Funds	\$0	\$0	\$0	\$0	\$0
	Other (specify)	\$0	\$0	\$0	\$0	\$0
	Income Total	\$140,808	\$160,042	\$190,522	\$229,532	\$266,170

Bridgewater State University

Data Cut | National and Regional Data Science Demand

Background & Methodology

Bridgewater State University (BSU) is interested in gaining more insight into the bachelor's in data science market. They reached out to Eduventures to gather data on program demand, program competition, and the labor market at the undergraduate level.

Explanation of Tabs:

Overview. This tab, which reviews methodology, background, explanation of tabs, and an appendix.

National Data Science Demand. Each view shows 2013-2022 data science bachelor's conferrals for the aligned CIP codes and net program vs. conferral growth. For the top-conferring national providers, Eduventures lists the 2022 completions, year-over-year growth between 2021 and 2022, market share, and modality.

Regional Data Science Demand. Shows the identical information as the national data science demand tab but focuses on Bridgewater's region (ME, NH, VT, MA, CT, and RI).

Labor Market Demand. This tab links the CIP codes used to the aligned Standard Occupational Code (SOC) to list national and regional projected labor demand data for relevant occupations.

Appendix. Lists the CIP code descriptions used for this analysis.

Key Findings:

Data Science Demand and Productivity. Nationally, demand for a bachelor's degree in data science is experiencing strong growth with no signs of saturation. Limited online visibility that has been flat over the past decade. Within Bridgewater's New England region, growth is steady but about half of the national market CAGR. Significant decline in online conferrals at the bachelor's level. Productivity market signals that supply is outpacing demand and any new programs could see difficulty in standing out.

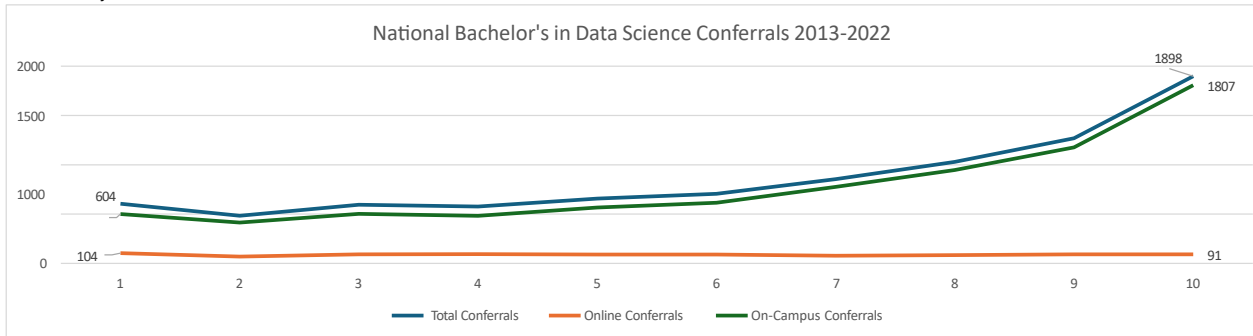
Top-Conferring National and Regional Providers. Virginia Tech holds the majority of the market share for the aligned CIP codes nationally. CIP code demand for data science programs, despite a new code being added in 2020, can be difficult due to institutions reporting to a variety of different codes. Regionally, Smith College holds a quarter of the market share and the top providers include strong private institutions and regional publics.

Modality. All top conferring providers report an on-campus modality. Online conferrals regionally have seen a decline in recent years.

Labor Market. Both nationally and regionally, aligned occupations to data science are primarily growing faster than the overall average of all jobs, which proves to be a strong signal for graduates. Bridgewater should consider alumni profiles and labor demand statistics to cast a wider net for prospects and showcase value and ROI.

**National Data Science Demand
Bachelor's Degree Student Demand vs.
Supply**

National Conferral Trends



All Conferral CAGR: 14%
On-Campus CAGR: 15%
Online CAGR: -1%
Program Productivity: 10%

Nationally, the market is healthy and unsaturated with majority of growth happening on-campus. Online has been relatively flat, but ultimately

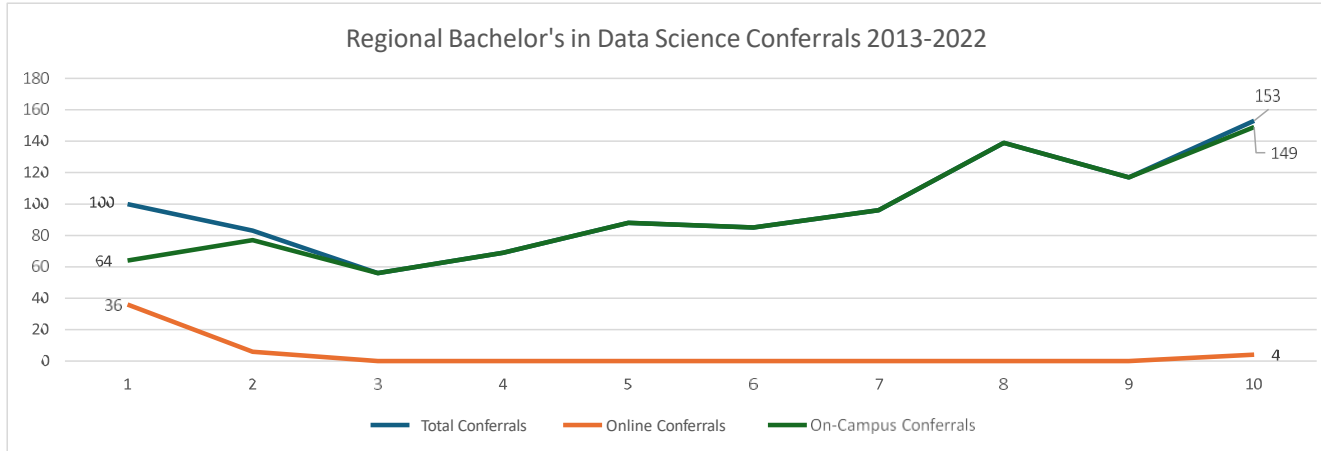
Top Ten National Providers

Institution	Bachelor's Degree Conferrals	Growth % Y Market Share (2022)	Modality
Virginia Polytechnic Institute and State University	174	46.20%	9.20% On-Campus
University of Michigan- Ann Arbor	163	N/A	8.60% On-Campus
Brigham Young University	159	-11.70%	8.40% On-Campus
University of Wisconsin-Madison	122	N/A	5.90% On-Campus
University of Illinois-Urbana Champaign	98	0.00%	5.20% On-Campus
Bowie State University	81	39.70%	4.30% On-Campus
University of Southern California	76	-20.80%	4.00% On-Campus
Miami Dade College	61	N/A	3.20% On-Campus
University of California- San Diego	56	-3.40%	3.00% On-Campus
Arizona State University Campus Immersion	51	104.00%	2.70% On-Campus

Top conferring providers, nationally, are reporting all data science programs on-campus. Some are experiencing significant year-over-year growth (Virginia Tech, Bowie State, and Arizona State), while others are declining (Brigham Young University, USC, and UC San Diego). Some programs are newer to the market over the past decade like Michigan and Miami Dade.

**Regional Data Science Demand
Bachelor's Degree Student Demand vs.
Supply**

Regional Conferral Trends



All Conferral CAGR: 5%
On-Campus CAGR: 10%

Online CAGR: -21%

Program Productivity: 12%

Online conferrals started out stronger within the New England region and demand has since plummeted. Overall conferrals are not as strong as the national market but have grown steadily over the decade.

Productivity; however, signals the market is

Top Ten National Providers

Institution	Bachelor's Degree Conferrals	Growth % Y Market Share (2022)	Modality
Smith College	38	18.80%	24.80% On-Campus
Bryant University	22	-4.30%	14.40% On-Campus
University of Vermont	18	80.00%	11.80% On-Campus
Worcester Polytechnic Institute	15	N/A	9.80% On-Campus
University of New Hampshire at Manchester	15	15.40%	9.80% On-Campus
Mount Holyoke College	11	57.10%	7.20% On-Campus
University of New Hampshire- Main Campus	7	-12.50%	4.60% On-Campus
Dartmouth College	6	0%	3.90% On-Campus
University of Massachusetts- Dartmouth	5	N/A	3.30% On-Campus
Champlain College	5	N/A	3.30% On-Campus

Significant growth from top New England providers including UVM and Mount Holyoke. Smith College holds almost a quarter of the market share at the bachelor's level.

Newer programs include WPI, UMass Dartmouth, and Champlain College.

Labor Market Demand

Projections for Aligned SOC Codes
National and Regional

National

SOC Code	SOC Code Description	2024 Jobs	2034 Jobs	Avg. Annual Openings	Change %	Typical Entry Level Education
11-3021	Computer and Information Systems Managers	626,023	730,973	54,242	17%	Bachelor's Degree
11-9121	Natural Sciences Managers	104,723	113,227	8,594	8%	Bachelor's Degree
15-1221	Computer and Information Research Scientists	40,815	49,840	3,739	22%	Master's Degree
15-1243	Database Architects	61,428	68,430	4,505	11%	Bachelor's Degree
15-1252	Software Developers	1,748,436	2,185,642	148,602	25%	Bachelor's Degree
15-2041	Statisticians	35,170	44,574	3,309	27%	Master's Degree
13-1111	Management Analysts	887,317	995,005	86,937	12%	Bachelor's Degree
15-1251	Computer Programmers	123,923	117,553	7,706	-5%	Bachelor's Degree
15-2051	Data Scientists	205,623	270,104	20,539	31%	Bachelor's Degree
15-2011	Actuaries	33,722	39,942	2,494	18%	Bachelor's Degree
15-2021	Mathematicians	3,190	3,387	224	6%	Master's Degree
15-2099	Mathematical Science Occupations, All Other	5,203	5,231	339	1%	Bachelor's Degree
All National Codes	All National Occupations	164,125,043	174,714,138	20,056,468	6%	Varies

For the national aligned labor market, almost all occupations are growing faster than the overall growth of all national jobs (6%). Data Scientists, a direct occupation for data science graduates, are seeing the fastest growth at 31%. Statisticians (27%), Software Developers (25%), and Computer/Information Research Scientists (22%) are also growing quickly at almost triple the rate of overall occupations.

The New England labor market is also seeing majority growth faster than the regional average of 5%. The most common typical entry level education is a bachelor's degree, with the exception of a few fast growing occupations that typically are looking for graduates with a master's degree. Bridgewater State's region is seeing stronger growth in Natural Science Managers, Mathematicians, and Mathematical Science Occupations, All Other, than the nation.

Regional

SOC Code	SOC Code Description	2024 Jobs	2034 Jobs	Avg. Annual Openings	Change %	Typical Entry Level Education
11-3021	Computer and Information Systems Managers	42,676	47,239	3,349	11%	Bachelor's Degree
11-9121	Natural Sciences Managers	12,256	13,631	1,045	11%	Bachelor's Degree
15-1221	Computer and Information Research Scientists	2,906	3,528	263	21%	Master's Degree
15-1243	Database Architects	2,995	3,204	202	7%	Bachelor's Degree
15-1252	Software Developers	100,855	119,785	7,769	19%	Bachelor's Degree
15-2041	Statisticians	2,993	3,812	284	27%	Master's Degree
13-1111	Management Analysts	51,848	56,380	4,807	9%	Bachelor's Degree
15-1251	Computer Programmers	7,729	7,072	459	-9%	Bachelor's Degree
15-2051	Data Scientists	11,924	15,156	1,125	27%	Bachelor's Degree
15-2011	Actuaries	3,234	3,335	194	3%	Bachelor's Degree
15-2021	Mathematicians	299	338	23	13%	Master's Degree
15-2099	Mathematical Science Occupations, All Other	196	209	14	7%	Bachelor's Degree
All Regional Codes	All Regional Occupations	7,892,190	8,272,987	920,701	5%	Varies

Appendix: CIP Code Descriptions

CIP Code	Program Description
30.7001 Data Science, General	A program that focuses on the analysis of large scale data sources from the interdisciplinary perspectives of applied statistics, computer science, data storage, data representation, data modeling, mathematics, and statistics. Includes instruction in computer algorithms, computer programming, data management, data mining, information policy, information retrieval, mathematical modeling, quantitative analysis, statistics, trend spotting, and visual analytics.
30.7099 Data Science, Other	Any instructional program in data science not listed above.
30.7101 Data Analytics, General	A program that prepares individuals to apply data science to generate insights from data and identify and predict trends. Includes instruction in computer databases, computer programming, inference, machine learning, optimization, probability and stochastic models, statistics, strategy, uncertainty quantification, and visual analytics.
11.9999 Computer and Information Sciences, and Support Services, Other	Any instructional program in computer and information sciences and support services not listed above
27.0304 Computational and Applied Mathematics	A program that focuses on the application of a broad range of mathematical and computational methods to modeling, analysis, algorithm development, and simulation for the solution of complex scientific and engineering problems. Includes instruction in numerical analysis, discrete mathematics, operations research, optimization, differential equations, statistics, scientific computation, and applications to specific scientific and industrial topics
27.0599 Statistics, Other	Any instructional program in statistics not listed above.