UNIVERSITY of WISCONSIN MILWAUKEE

COMPARISON OF Undergraduate Computing Majors

All of these programs are approximately 120 credits. Individual tracks or choices may extend the program slightly. See program web pages for details: uwm.edu/academics.

	APPLIED MATH/COMPUTER SCIENCE	APPLIED COMPUTING *(Online Degree Completion Program)*	COMPUTER SCIENCE BA	COMPUTER SCIENCE BS	COMPUTER ENGINEERING
CHOOSE THIS MAJOR IF...	You want to learn the core knowledge of computing along with essential techniques for automatic analysis of data. This major would allow you to play a technical role in a data analytics team or to do software development using artificial intelligence.	You want to fill gaps in your core knowledge of computing while following a flexible online curriculum. This major will let you advance your knowledge or update your skills, while continuing in the workforce.	You want to pursue multiple disciplines in depth, along with a computing major. This would allow you to pursue any career where a degree in Computer Science is a requirement or a profession that uses computing to collect or analyze information.	You want a broad computer science education coupled with opportunities to specialize in topics including artificial intelligence, machine learning, computer networks, operating systems, theory, programming languages or compilers. This degree also provides you excellent preparation to pursue graduate studies.	You are interested in learning about computer science software, hardware, networks, and the relationships among them. This would allow you to pursue graduate study or a career in software or hardware design or analysis.
SKILLS LEARNED/ TOPICS COVERED:	Calculus, linear algebra, advanced math, computer science and programming, data structures, algorithms.	Current programming languages and technology, software engineering, critical thinking, analysis, and problem-solving.	Design and problem solving related to software, including programming, computer architectures, applications, and social impacts.	Design and problem solving, related to software including programming, software engineering, computing architectures, performance analysis, and social impacts.	Design and problem solving related to computer hardware, software, embedded systems, networks, imaging and image processing, sensors, and IoT, and social impacts.
CAREER OPPORTUNITIES INCLUDE:	• Business Intelligence • Data Analyst • Data Scientist • Machine Learning Engineer • Software Engineer • Statistician	• Computer Security Engineer • Database Administrator • Information Technology Engineer • Software Architect • Software Engineer • Software Tester • System Developer • Web Developer	• Application Developer/Engineer • Computer Programmer • Database Administrator • Software Architect/Engineer/Developer • Systems Analyst/Engineer • Usability and Experience Designer	• Application Developer/Engineer • Computer Programmer • Database Administrator • Information Technology Director • Network Administrator/Engineer • Software Architect/Engineer/Developer • Systems Analyst/Engineer • Usability and Experience Designer	• Application Developer/Engineer • Control Systems Engineer • Embedded Systems Engineer • Firmware Engineer • Hardware and Silicon Engineer/Architect • Imaging and Vision Systems Engineer • Internet of Things Engineer • Robotics Engineer • Systems Engineer/Architect
ADMISSION TO MAJOR:	Admission to the major requires completion of 8 credits of math and 6 credits of computer science at the 200-level or higher with at least a 2.5 GPA.	Admission to the major requires completion of 60 credit hours of undergraduate courses, which includes GER courses, and at least a 2.0 GPA.	Direct admission to major after admission to UWM College of Engineering & Applied Science.	Direct admission to major after admission to UWM College of Engineering & Applied Science.	Direct admission to major after admission to UWM College of Engineering & Applied Science.
MODE OF INSTRUCTION:	Mostly in-person; some courses may be offered online but this program cannot be completed entirely online.	All courses are asynchronous online.	Mostly in-person; some courses may be offered online but this program cannot be completed entirely online.	Mostly in-person; some courses may be offered online but this program cannot be completed entirely online.	Mostly in-person; some courses may be offered online but this program cannot be completed entirely online.
REQUIREMENTS:	64 credits in math and computer science plus other degree requirements to reach a minimum of 120 to graduate and satisfy all general requirements.	Completing 61 credit hours of applied computing courses.	38 credits in math and computer science plus other degree requirements, including complementary area(s), to reach a minimum of 120 to graduate and satisfy all general requirements.	66 credits in math, computer science, and natural science plus other degree requirements to reach a minimum of 120 to graduate and satisfy all general requirements.	103 credits in engineering, math computer science, and natural science plus other degree requirements to reach a minimum of 120 to graduate and satisfy all general requirements.
ADVISING CONTACT:	Prospective students: let-sci@uwm.edu Currently enrolled UWM students: starkl@uwm.edu	Prospective students: learn@uwex.wisconsin.edu Currently enrolled UWM students: appliedcomputing@uwex.edu or ceas-adv@uwm.edu or tzhao@uwm.edu	Both prospective and currently enrolled UWM students can contact an advisor at ceas-adv@uwm.edu	Both prospective and currently enrolled UWM students can contact an advisor at ceas-adv@uwm.edu	Both prospective and currently enrolled UWM students can contact an advisor at ceas-adv@uwm.edu

UNIVERSITY of WISCONSIN MILWAUKEE

COMPARISON OF Undergraduate Data Science & IT Majors

All of these programs are approximately 120 credits. Individual tracks or choices may extend the program slightly. See program web pages for details: uwm.edu/academics.

	DATA ANALYTICS	DATA SCIENCE	INFORMATION TECHNOLOGY MANAGEMENT	INFORMATION SCIENCE & TECHNOLOGY
CHOOSE THIS MAJOR IF…	You want to use data within an organization to solve real-world business problems. Data analysts provide leadership in the space between IT and business management, giving meaning and context to data while also making sure it's used in an ethical manner. UWM students specialize in data usage within health care, business, social sciences, natural sciences, information science, or geography.	You want to acquire combined skills in statistical analysis and computer science that are necessary for organizing, analyzing and drawing conclusions from vast amounts of data. This major provides high demand skills that are in short supply in the current job market, and also allows you to pursue graduate studies in the field.	You want to be in a challenging field that creates innovative IT solutions to address evolving business needs. This major would allow you to pursue a career in a range of firms across all industries that use IT for business processes, in addition to graduate study.	You want to combine core IT skills like front-end web design, cyber security, and project management with electives you choose. Explore your interests and passions while becoming a well-rounded IT professional prepared for a wide variety of careers in Information Technology.
SKILLS LEARNED/ TOPICS COVERED:	Survey of calculus, linear algebra, intro computer programming, information management, software use and development, statistics, visualization, ethics, communication, industry specific coursework.	Survey of calculus, linear algebra, introductory and advanced computer programming, statistics, data structures (SQL), algorithms.	Introductory and advanced programming, database management, software development, enterprise resource planning, business intelligence and analytics, problem solving, security and risk management.	Current development languages (HTML, SQL, PHP), computer networking, human-computer interaction, user design, penetration testing, ethical hacking, information management, data structures, innovative thinking, ethics, leadership, and problem-solving.
CAREER OPPORTUNITIES INCLUDE:	• Business Intelligence • Data Analyst • Financial Analyst • Logistics Analyst • Market Research	• Artificial Intelligence Engineer • Computer Programmer • Data Engineer • Data Scientist • Machine Learning Engineer	• Business Intelligence Analyst • Data Analyst • Management Consultant • Programmer Analyst • Quality Assurance Analyst • SAP Developer • Systems Analyst	• Cybersecurity Analyst • Database Administrator • Network Administrator • Systems Administrator • Systems Analyst • Web Developer
ADMISSION TO MAJOR:	No additional requirements beyond the general requirements of admission to UWM (high school diploma with 4 units in English, 3 units in math, 3 units in science, 3 units in social science, and 4 units in electives).	No additional requirements beyond the general requirements of admission to UWM (high school diploma with 4 units in English, 3 units in math, 3 units in science, 3 units in social science, and 4 units in electives) but to finish in four years, students must place into pre-calculus.	Advancement to the major requires junior standing (56 or more credits), satisfaction of the oral and written communication requirement, satisfaction of the quantitative literacy requirement, completion of the business foundation courses with a 2.25 or above GPA, and a cumulative GPA (including transferwork) of 2.50 or higher.	No additional requirements beyond the general requirements of admission to UWM (high school diploma with 4 units in English, 3 units in math, 3 units in science, 3 units in social science, and 4 units in electives).
MODE OF INSTRUCTION:	Mostly in-person; some courses may be offered online but this program cannot be completed entirely online.	Mostly in-person; some courses may be offered online but this program cannot be completed entirely online.	Mostly in-person; some courses may be offered online but this program cannot be entirely online.	Program can be completed entirely online, in-person, or hybrid (a mix of both).
REQUIREMENTS:	49 credits of math, statistics, computer programming, information technology and information management, data analysis, communication and ethics; a capstone, thesis, or field work; 24 credits in an industry-specific specialization; general education requirements; elective to reach a minimum of 120 total credits.	59 to 64 credits of math, statistics, computer programming, and communications; a capstone course or internship; general education requirements; additional electives to reach a minimum of 120 total credits.	83 credits in business and economics, including 24 credits within the ITM major, plus other degree requirements to reach a minimum of 120 to graduate and satisfy all general requirements.	42 credits of information studies core and upper-level electives; 15 credits of cross-functional electives; general education requirements; electives to reach a minimum of 120 total credits.
ADVISING CONTACT:	Both prospective and currently enrolled UWM students can contact an advisor at datascience-degrees@uwm.edu	Prospective students: let-sci@uwm.edu Currently enrolled UWM students: gervini@uwm.edu	Prospective students: thinklubar@uwm.edu Currently enrolled UWM students: uwmbba@uwm.edu or 414-229-5271	Both prospective and currently enrolled UWM students can contact an advisor at: ist-review@uwm.edu