Criminal Justice Data Analytics, MS

Program Director: Aleksandra Snowden, Ph.D.

Criminal Justice Data Analytics website (https://www.marquette.edu/grad/programs-criminal-justice-data-analytics.php)

Degree Offered

Master of Science, Plan B only

Program Description

The master of science in criminal justice data analytics (CJDA) is designed to develop graduates with the skills and knowledge to harness data and employ analytical tools effectively to inform ethical planning, decision making, and problem solving in criminal justice agencies and related organizations. The program also offers an accelerated 5-year bachelor's and master's degree option.

Learning Outcomes

Students completing the master of science in criminal justice data analytics will be able to:

- 1. Identify crime analysis opportunities that can be ethically addressed through an understanding of crime, criminal offending, the operations of criminal justice organizations, and the US criminal justice system.
- 2. Design and implement strategies for analyzing crime data using appropriate methods, tools, and datasets.
- 3. Analyze crime data to create actionable information, and use it to establish priorities, make decisions, and solve problems aligning with the ethics, needs, and values of individuals, communities, and stakeholders.
- 4. Display and explain the results of criminal justice data analytics projects using effective written, graphic, and verbal tools and techniques.
- 5. Use advanced data processing tools incorporating regulatory, data governance, master data management, data profiling, parallel and distributed processing best practices.

Criminal Justice Data Analytics Master of Science

The master of science in criminal justice data analytics (CJDA) is interdisciplinary program designed to utilize the existing data science program and expertise in the criminology and law studies program. Computer science (COSC) courses compose the program's data analytics core and provide instruction and training in computer science, data science and managing/manipulating large data sets. Criminology and law studies (CRLS) courses provide the context for applying the skills developed in the data analytics core to criminal justice related fields. The CRLS course work also includes a practicum, which provides students with an opportunity to analyze criminal justice data in collaboration with local agencies and organizations to examine evidence-based decisions and their ethical implications.

Program Requirements

Students must complete a total of 31 credit hours of course work for the master of science degree in criminal justice data analytics. This interdisciplinary program is composed of 15 credit hours in data analytics courses and 16 credit hours in criminology and law studies courses, including the practicum. The practicum's culminating experience provides the student an opportunity to work independently with a local non-profit or government agency through a community-engaged learning experience.

Required Course work

Code	Title	Hours
CRLS 5700	Ethics in Criminal Justice	3
CRLS 6100	Advanced Social Statistics	3
CRLS 6200	Introduction to Geographic Information Systems (GIS)	3
CRLS Elective - choose one of the following:		3
CRLS 5000	Criminological Theory	
CRLS 5350	Neighborhoods and Crime	
CRLS 5360	Crime Mapping	
COSC 5500	Visual Analytics	3
COSC 6510	Data Intelligence	3
COSC 6520	Data Analytics	3
COSC 6570	Data at Scale	3
COSC 6820	Data Ethics	3
CRLS 6970	Practicum Preparation	1

CRLS	6975
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Criminal Justice Data Analytics Practicum

Total Credit Hours:

MASTER'S DEGREE WITH THE DATA SCIENCE CERTIFICATE

The Department of Computer Science offers a data science certificate. If a criminal justice data analytics master's student chooses to also earn the certificate, admission to both programs may be concurrent. The same courses may be used to satisfy the requirements of the master's program and certificate, as outlined in the university bulletin for each program. Students are expected to be admitted into all programs they intend to complete, although course work completed prior to admission may be allowed to apply toward program requirements.

Students who are dually enrolled in the master's and the data science certificate may enroll in a secondary master's that also accepts the data science certificate and complete the remaining requirements for that degree.

Details on the data science certificate can be found in this bulletin.

ACCELERATED DEGREE PROGRAM

The accelerated degree program (ADP) is designed to give Marquette University undergraduate students a more efficient means to obtain a master of science degree in criminal justice data analytics. Interested Marquette students in their junior year (or equivalent) must meet the following criteria in order to apply for the ADP:

- Students must have a minimum cumulative undergraduate GPA of 3.200.
- Students must have completed at least 18 credits of CRLS course work (6 courses) by the end of their junior year.

Undergraduates participating in this program are granted early admission to the Graduate School and are allowed to take specific graduate-level courses during their senior year. Candidates for admission to this program should notify the department director of graduate studies of their intentions.

University Policies

- Academic Censure Graduate School (https://bulletin.marquette.edu/policies/academic-censure/graduate/)
- · Academic Integrity (https://bulletin.marquette.edu/policies/academic-integrity/)
- · Academic Misconduct (https://bulletin.marquette.edu/policies/academic-misconduct-policy/)
- Academic Program Definitions (https://bulletin.marquette.edu/policies/academic-programs-defined/)
- Accelerated Degree Programs (https://bulletin.marquette.edu/policies/accelerated-degree-programs/)
- Attendance Graduate School (https://bulletin.marquette.edu/policies/attendance/graduate/)
- Awarding Diplomas and Certificates (https://bulletin.marquette.edu/policies/awarding-diplomas-certificates/)
- Background Checks, Drug Testing (https://bulletin.marquette.edu/policies/background-checks-drug-testing/)
- Class Rank (https://bulletin.marquette.edu/policies/class-rank/)
- · Commencement (https://bulletin.marquette.edu/policies/commencement/)
- · Course Levels (https://bulletin.marquette.edu/policies/course-levels/)
- · Credit Hour (https://bulletin.marquette.edu/policies/credit/)
- Credit Load Graduate School (https://bulletin.marquette.edu/policies/credit-load/graduate/)
- Faculty Grading (https://bulletin.marquette.edu/policies/faculty-grading/)
- Family Education Rights and Privacy Act-FERPA (https://bulletin.marquette.edu/policies/ferpa/)
- Grade Appeals (https://bulletin.marquette.edu/policies/grade-appeals/)
- Grading System Graduate School and Graduate School of Management (https://bulletin.marquette.edu/policies/grading-system/graduatemanagement/)
- Graduation Graduate School (https://bulletin.marquette.edu/policies/graduation/graduate/)
- Immunization and Tuberculosis Screening Requirements (https://bulletin.marquette.edu/policies/immunization-and-tuberculosis-screening/)
- · Last Date of Attendance/Activity (https://bulletin.marquette.edu/policies/last-dateof-attendance-activity/)
- Military Call to Active Duty or Training (https://bulletin.marquette.edu/policies/militarycall-active-duty-training/)
- Registration Graduate School (https://bulletin.marquette.edu/policies/registration/graduate/)
- Repeated Courses Graduate School (https://bulletin.marquette.edu/policies/repeated-courses/graduate/)
- Student Data Use and Privacy (https://bulletin.marquette.edu/policies/student-data-use-privacy/)
- Transcripts-Official (https://bulletin.marquette.edu/policies/transcripts-official/)
- Transfer Course Credit Graduate School (https://bulletin.marquette.edu/policies/transfer-course-credit-policy/graduate/)
- Withdrawal Graduate School (https://bulletin.marquette.edu/policies/withdrawals/graduate/)

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Graduate School Policies

- Academic Performance (https://bulletin.marquette.edu/graduate/policies/academic-performance/)
- · Advising (https://bulletin.marquette.edu/graduate/policies/advising/)
- Certificate Concurrent Enrollment (https://bulletin.marquette.edu/graduate/policies/certificate-concurrent-enrollment/)
- · Conduct (https://bulletin.marquette.edu/graduate/policies/conduct/)
- Confidentiality of Proprietary Information (https://bulletin.marquette.edu/graduate/policies/confidentiality-proprietary-information/)
- · Continuous Enrollment (https://bulletin.marquette.edu/graduate/policies/continuous-enrollment/)
- Courses and Prerequisites (https://bulletin.marquette.edu/graduate/policies/courses-prerequisites/)
- Cross-listed Courses (https://bulletin.marquette.edu/graduate/policies/cross-listed-courses/)
- Deadlines (https://bulletin.marquette.edu/graduate/policies/deadlines/)
- Doctoral Degree Academic Program Overview (https://bulletin.marquette.edu/graduate/policies/doctoral-program-overview/)
- Graduate Credit (https://bulletin.marquette.edu/graduate/policies/graduate-credit/)
- · Graduate School Policies (https://bulletin.marquette.edu/graduate/policies/)
- Independent Study (https://bulletin.marquette.edu/graduate/policies/independent-study/)
- Intellectual Property (https://bulletin.marquette.edu/graduate/policies/intellectual-property/)
- Master's Degree Academic Program Overview (https://bulletin.marquette.edu/graduate/policies/masters-program-overview/)
- Merit-Based Aid Registration Requirements (https://bulletin.marquette.edu/graduate/policies/merit-based-aid-registration-requirements/)
- Research Involving Humans, Animals, Radioisotopes or Recombinant DNA/Transgenic Organisms (https://bulletin.marquette.edu/graduate/policies/ research-involving-humans-animals-radioisotopes-recombinant-dnatransgenic-organisms/)
- Temporary Withdrawal from Graduate Program (https://bulletin.marquette.edu/graduate/policies/temporary-withdrawal-graduate-program/)
- Time Limitations (https://bulletin.marquette.edu/graduate/policies/time-limitations/)
- Working with Minors (https://bulletin.marquette.edu/graduate/policies/working-minors/)

CRLS 5000 Criminological Theory (3 credits)

Analyzes the nature and consequences of delinquency and crime. Classical and contemporary examinations of criminal behavior. Observes the effects of social interaction, social class, social organization, small groups and other variables on crime patterns and efforts to cope with crime. Explores the relationship of criminological theory and social policy issues.

Level of Study: Graduate

Last four terms offered: 2022 Fall Term, 2021 Fall Term, 2020 Fall Term, 2019 Fall Term Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=CRLS%205000)

CRLS 5100 The Death Penalty in Sociolegal Context (3 credits)

Critically explores the philosophical, historical and procedural issues that have attended the administration of judicial killings in the United States. Attends to principles of capital sentencing jurisprudence in comparison with empirical analysis from social scientists, legal scholars, journalists and practitioners.

Level of Study: Graduate

Last four terms offered: 2017 Spring Term, 2015 Fall Term, 2014 Fall Term, 2012 Fall Term

Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=CRLS%205100)

CRLS 5180 Empathy, Crime and Justice (3 credits)

Social justice approach to the study of empathy as it relates to crime and justice. Explores and cultivates various modes of empathic knowing, specifically as these relate to criminal defendants, victims of crime, and various actors in the criminal justice system.

Level of Study: Graduate

Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=CRLS%205180)

CRLS 5300 Transformative Justice (3 credits)

Uses transformative justice as a political framework for responding to violence, harm and abuse and aims to transform the conditions that enabled that harm. Addresses the foundations of transformative justice through a lens of peacemaking and nonviolence. Uses intersectional theories and analyses of violence and accountability; considers abolition as a visionary process of dismantling carceral systems and building structures and relationships to replace it.

Level of Study: Graduate

Last four terms offered: 2024 Spring Term, 2023 Spring Term Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=CRLS%205300)

CRLS 5350 Neighborhoods and Crime (3 credits)

Survey of theoretical and empirical literature on the role that neighborhood characteristics play in crime. Examines the utility of crime prevention strategies for reducing neighborhood crime rates. Develops the skills necessary to investigate Milwaukee neighborhood crime patterns. Students create and deliver professional presentations and technical reports.

Level of Study: Graduate

Last four terms offered: 2024 Spring Term, 2022 Fall Term, 2022 Spring Term, 2021 Fall Term

Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=CRLS%205350)

CRLS 5360 Crime Mapping (3 credits)

Technological introduction to the basic functionality of ESRI's ArcGIS for mapping and analyzing crime data. Students learn skills to create crime maps, analyze crime patterns, and develop a solid base upon which to build further expertise in geographic information system (GIS) software and spatial analysis.

Level of Study: Graduate

Last four terms offered: 2024 Spring Term, 2023 Spring Term, 2022 Fall Term, 2021 Fall Term Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=CRLS%205360)

CRLS 5400 Criminal Law and Procedure (3 credits)

Studies criminal substantive law; constitutional limits and principles of criminal law and liability; defenses to criminal liability; definitions and classification; criminal procedure of crimes; constitutional limits and protections of criminal procedure.

Level of Study: Graduate

Last four terms offered: 2018 Fall Term, 2018 Spring Term, 2017 Fall Term, 2017 Spring Term Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=CRLS%205400)

CRLS 5600 Evidence (3 credits)

Basic principles of the law of evidence. Presentation of oral and demonstrative evidence in the trial process. The quantum of proof in criminal proceedings.

Level of Study: Graduate

Last four terms offered: 2016 Fall Term, 2016 Spring Term, 2015 Spring Term, 2014 Spring Term Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=CRLS%205600)

CRLS 5640 Family Violence and Public Intervention (3 credits)

Analysis of maltreatment of children, youth, spouses, and seniors within the family. Examination of causes and intervention methods emphasizing the response of actors and government agencies.

Level of Study: Graduate

Last four terms offered: 2019 Fall Term

Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=CRLS%205640)

CRLS 5660 Criminal Violence in America (3 credits)

Analysis of violent crime in American society and ways in which the criminal justice system responds to it. Examination of the causes of violent crime, its prevention, treatment and public policy ramifications. Historical and contemporary understanding of the significance of violence in American culture. Critical evaluation of methods utilized to deal with violent offenders.

Level of Study: Graduate

Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=CRLS%205660)

CRLS 5700 Ethics in Criminal Justice (3 credits)

Overview of prevailing ethical controversies confronting the process and agencies of contemporary criminal justice. Attends to concrete ethical issues and dilemmas encountered regularly by participants in the major components of the criminal justice system. Analyzes the emerging trend of evidence-based criminal justice policy reliant on criminal justice analytics, algorithms, and predictive statistical modeling.

Level of Study: Graduate

Last four terms offered: 2023 Fall Term, 2022 Fall Term, 2021 Fall Term, 2020 Fall Term

Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=CRLS%205700)

CRLS 5931 Topics in Criminology and Law (3 credits)

Lectures and discussions in a broad area which, because of its topicality, is not the subject of a regular course. The special topics will be designated in the Schedule of Classes. May be taken a maximum of two times.

Level of Study: Graduate

Last four terms offered: 2021 Spring Term, 2012 Spring Term, 2010 Fall Term, 2010 Spring Term Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=CRLS%205931)

CRLS 6100 Advanced Social Statistics (3 credits)

An advanced statistics course examining multivariate regression models for the social sciences and common statistical software packages including STATA. Builds upon basic mathematical functions for advanced-level statistics. Develops advanced skills in multivariate linear OLS, GLS and nonlinear models with categorical dependent variables. Examines techniques in regression diagnostics and tests of robustness. Concludes with model specification of two-way interaction effects.

Prerequisite: SOCI 2060 or equiv. *Level of Study:* Graduate

Last four terms offered: 2020 Fall Term

Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=CRLS%206100)

CRLS 6200 Introduction to Geographic Information Systems (GIS) (3 credits)

An introduction to Geographic Information Systems (GIS). Designed to provide students with a working knowledge of GIS. Gives instruction on how to use GIS analytical tools to expand and enhance the understanding of spatially referenced phenomena. Examines foundational concepts behind Geographic Information Science (GIScience) to properly use GIS analytical tools. Incorporates diverse learning activities including lectures, PowerPoint presentations, instructor-led skills training and student practice sessions.

Level of Study: Graduate

Last four terms offered: 2024 Spring Term, 2023 Spring Term, 2022 Spring Term, 2021 Spring Term Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=CRLS%206200)

CRLS 6970 Practicum Preparation (1 credits)

Develop connections to field practicum placement agencies and prepare for required practicum experience. Guided development of relationship and written agreement with community-based practicum placement agency, drawing upon knowledge from student's previous course work. Group and oneon-one meetings discussing project plans and developing agreements. Grade assessed on the basis of research questions, project design and final written agreement.

Level of Study: Graduate

Last four terms offered: 2023 Fall Term, 2022 Fall Term

Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=CRLS%206970)

CRLS 6975 Criminal Justice Data Analytics Practicum (3 credits)

Serves as the CJDA capstone experience. Practical application of knowledge and skills in a crime and intelligence/crime analysis unit of a criminal justice agency. Topic determined by the instructor in conjunction with a community partner from a criminal justice-related institution, agency or organization within the Milwaukee community. Designed to afford graduate students the opportunity to use their skills to solve to an organizational problem and to cultivate relationships with community partners.

Prerequisite: CRLS 6100 and admitted to the CJDA program.

Level of Study: Graduate

Last four terms offered: 2024 Spring Term, 2023 Spring Term, 2022 Spring Term, 2021 Spring Term

Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=CRLS%206975)

CRLS 6995 Independent Study in Criminology and Law Studies (1-3 credits)

Provides opportunities to investigate and study areas of interest through readings, research, field experience, projects, and/or other educational activities under the direction of a faculty adviser.

Prerequisite: Cons. of prog. dir.

Level of Study: Graduate

Last four terms offered: 2022 Spring Term, 2021 Fall Term

Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=CRLS%206995)