



## Program Guidebook

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### Master of Science, Data Analytics

*The MS Data Analytics degree prepares statisticians, analysts, data managers, programmers, and other business and IT professionals for successful and rewarding careers in the high-demand field of data analytics through cutting-edge courses in data mining, manipulation, analysis, and visualization. The program empowers graduates to use powerful tools to implement industry-standard techniques in order to solve problems, identify trends, and make predictions.*

## Understanding the Competency-Based Approach

Practically speaking, how do competency-based programs like those offered at Western Governors University (WGU) work? Unlike traditional universities, WGU does not award degrees based on completion of a certain number of credit hours or a certain set of required courses. Instead, you will earn your degree by demonstrating your skills, knowledge, and understanding of important concepts.

Progress through a degree program is governed not by the amount of time you spend in class but by your ability to demonstrate mastery of competencies as you complete required courses. Of course, you will need to engage in learning experiences as you review competencies or develop knowledge and skills in areas in which you may be weak. To help you acquire the knowledge and skills you need to complete your courses and program, WGU provides a rich array of learning resources. Your program mentor will work closely with you to help you understand the competencies required for your program and to help you create a schedule for completing your courses. You will also work closely with course instructors as you engage in each of your courses. As subject matter experts, course instructors will guide you through the content you must master to pass the course assessments.

The benefit of this competency-based system is that enables students who are knowledgeable about a particular subject to make accelerated progress toward completing a degree, even if they lack college experience. You may have gained skills and knowledge of a subject while on the job, accumulated wisdom through years of life experience, or already taken a course on a particular subject. WGU will award your degree based on the skills and knowledge that you possess and can demonstrate—not the number of credits hours on your transcript.

## Accreditation

Western Governors University is the only university in the history of American higher education to have earned accreditation from four regional accrediting commissions. WGU's accreditation was awarded by (1) the Northwest Commission on Colleges and Universities, (2) the Higher Learning Commission of the North Central Association of Colleges and Schools, (3) the Accrediting Commission for Community and Junior Colleges of the Western Association of Schools and Colleges, and (4) the Accrediting Commission for Senior Colleges and Universities of the Western Association of Schools and Colleges. The university's accreditation status is now managed by the Northwest Commission on Colleges and Universities (NWCCU), which reaffirmed WGU's accreditation in February 2020. The WGU Teachers College is accredited at the initial-licensure level by the Council for the Accreditation of Educator Preparation (CAEP) and by the Association for Advancing Quality in Educator Preparation (AAQEP). The nursing programs are accredited by the Commission on Collegiate Nursing Education (CCNE). The Health Information Management program is accredited by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM). The College of Business programs are accredited by the Accreditation Council for Business Schools and Programs (ACBSP).

## The Degree Plan

The focus of your program is your personalized Degree Plan. The Degree Plan is a detailed blueprint of the courses you will need to complete in order to earn your degree. The Degree Plan also lays out the accompanying learning resources and assessments that compose your program. The list of courses in the Degree Plan is often referred to as the standard path. The amount of time it takes to complete your program depends on both the amount of new information you need to learn and the amount of time you plan to devote each week to study. Your program mentor and course instructors will help you assess your strengths and development needs to establish a study plan.

Students vary widely in the specific skills and information they need to learn. For example, some students may be highly knowledgeable in a particular subject matter and would not need to engage in new learning opportunities. Other students may find that portions of the program require them to learn new information and that they need to take an online class or participate in a study module to acquire the knowledge and skills needed to fulfill program competencies in that area. Some individuals may be able to devote as little

as 15–20 hours per week to the program, while others may need to devote more time. For this reason, pre-assessments are there to help your program mentor form a profile of your prior knowledge and create a personalized Degree Plan.

## How You Will Interact with Faculty

At WGU, faculty serve in specialized roles, and they will work with you individually to provide the guidance, instruction, and support you will need to succeed and graduate. As a student, it is important for you to take advantage of this support. It is key to your progress and ultimate success.

Upon your enrollment, you will be assigned a program mentor—an expert in your field of study who will provide you with regular program-level guidance and support from the day you start until the day you graduate. Your program mentor will set up regular telephone appointments (weekly at first) with you, which you will be expected to keep. The mentor will review program competencies with you and work with you to develop a plan and schedule for your coursework. Your program mentor will serve as your main point of contact throughout your program—helping you set weekly study goals, recommending specific learning materials, telling you what to expect in courses, and keeping you motivated. In addition to regular calls, your program mentor is available to help you resolve questions and concerns as they arise.

You will also be assigned to a course instructor for each course. Course instructors are doctoral-level subject matter experts who will assist your learning in each individual course. When you begin a new course, your assigned course instructor will actively monitor your progress and will be in touch to offer one-on-one instruction and to provide you with information about webinars, cohort sessions, and other learning opportunities available to help you acquire the competencies you need to master the course. Your course instructor can discuss your learning for the course, help you find answers to content questions, and give you the tools to navigate the course successfully. In addition, you will communicate with course instructors by posting in the online learning community and participating in live discussion sessions such as webinars and cohorts.

For many of the courses at WGU, you will be required to complete performance assessments. These include reports, papers, presentations, and projects that let you demonstrate your mastery of the required competencies. A separate group of faculty members, called evaluators, will review your work to determine whether it meets requirements. Evaluators are also subject matter experts in their field of evaluation. If your assessment needs further work before it “passes,” these evaluators, who review your work anonymously, will provide you with instructional feedback to help you meet evaluation standards and allow you to advance.

## Connecting with Other Mentors and Fellow Students

As you proceed through your Degree Plan, you will have direct contact with multiple faculty members. These communications can take a variety of forms, including participation in one-on-one discussions, chats in the learning communities, and live cohort and webinar opportunities. As a WGU student, you will have access to your own personal MyWGU Student Portal, which will provide a gateway to your courses of study, learning resources, and learning communities where you will interact with faculty and other students.

The learning resources in each course are specifically designed to support you as you develop competencies in preparation for your assessments. These learning resources may include reading materials, videos, tutorials, cohort opportunities, community discussions, and live discussions that are guided by course instructors who are experts in their field. You will access your program community during your orientation course to network with peers who are enrolled in your program and to receive continued support through professional enrichment and program-specific chats, blogs, and discussions. WGU also provides Student Services associates to help you and your program mentor solve any special problems that may arise.

## Orientation

The WGU orientation course focuses on acquainting you with WGU's competency-based model, distance education, technology, and other resources and tools available for students. You will also utilize WGU program and course communities, participate in activities, and get to know other students at WGU. The orientation course must be completed before you can start your first term at WGU.

## **Transferability of Prior College Coursework**

Because WGU is a competency-based institution, it does not award degrees based on credits but rather on demonstration of competency. However, if you have completed college coursework at another accredited institution, or if you have completed industry certifications, you may have your transcripts and certifications evaluated to determine if you are eligible to receive some transfer credit. The guidelines for determining what credits will be granted varies based on the degree program. Students entering graduate programs must have their undergraduate degree verified before being admitted to WGU. To review more information in regards to transfer guidelines based on the different degree programs, you may visit the Student Handbook found at the link below and search for "Transfer Credit Evaluation."

[Click here for the Student Handbook](#)

WGU does not waive any requirements based on a student's professional experience and does not perform a "résumé review" or "portfolio review" that will automatically waive any degree requirements. Degree requirements and transferability rules are subject to change in order to keep the degree content relevant and current.

Remember, WGU's competency-based approach lets you take advantage of your knowledge and skills, regardless of how you obtained them. Even when you do not directly receive credit, the knowledge you possess may help you accelerate the time it takes to complete your degree program.

## **Continuous Enrollment, On Time Progress, and Satisfactory Academic Progress**

WGU is a "continuous enrollment" institution, which means you will be automatically enrolled in each of your new terms while you are at WGU. Each term is six months long. Longer terms and continuous enrollment allow you to focus on your studies without the hassle of unnatural breaks between terms that you would experience at a more traditional university. At the end of every six-month term, you and your program mentor will review the progress you have made and revise your Degree Plan for your next six-month term.

WGU requires that students make measurable progress toward the completion of their degree programs every term. We call this "On-Time Progress," denoting that you are on track and making progress toward on-time graduation. As full-time students, graduate students must enroll in at least 8 competency units each term, and undergraduate students must enroll in at least 12 competency units each term.

Completing at least these minimum enrollments is essential to On-Time Progress and serves as a baseline from which you may accelerate your program. We measure your progress based on the courses you are able to pass, not on your accumulation of credit hours or course grades. Every time you pass a course, you are demonstrating that you have mastered skills and knowledge in your degree program. For comparison to traditional grading systems, passing a course means you have demonstrated competency equivalent to a "B" grade or better.

WGU assigns competency units to each course in order to track your progress through the program. A competency unit is equivalent to one semester credit of learning. Some courses may be assigned 3 competency units while others may be as large as 12 competency units.

Satisfactory Academic Progress (SAP) is particularly important to students on financial aid because you must achieve SAP in order to maintain eligibility for financial aid. We will measure your SAP quantitatively by reviewing the number of competency units you have completed each term. In order to remain in good

academic standing, you must complete at least 66.67% of the units you attempt over the length of your program—including any courses you add to your term to accelerate your progress. Additionally, during your first term at WGU you must pass at least 3 competency units in order to remain eligible for financial aid. We know that SAP is complex, so please contact a financial aid counselor should you have additional questions. \*Please note: The Endorsement Preparation Program in Educational Leadership is not eligible for federal financial aid.

## Courses

Your Degree Plan includes courses needed to complete your program. To obtain your degree, you will be required to demonstrate your skills and knowledge by completing the assessment(s) for each course. In general there are two types of assessments: performance assessments and objective assessments. Performance assessments contain, in most cases, multiple scored tasks such as projects, essays, and research papers. Objective assessments include multiple-choice items, multiple-selection items, matching, short answer, drag-and-drop, and point-and-click item types, as well as case study and video-based items. Certifications verified through third parties may also be included in your program. More detailed information about each assessment is provided in each course of study.

## Learning Resources

WGU works with many different educational partners, including enterprises, publishers, training companies, and higher educational institutions, to provide high-quality and effective learning resources that match the competencies you are developing. These vary in type, and may be combined to create the best learning experience for your course. A learning resource can be an e-textbook, online module, study guide, simulation, virtual lab, tutorial, or a combination of these. The cost of most learning resources are included in your tuition and Learning Resource Fee. They can be accessed or enrolled for through your courses. Some degree-specific resources are not covered by your tuition, and you will need to cover those costs separately. WGU also provides a robust library to help you obtain additional learning resources, as needed.

Mobile Compatibility:

The following article provides additional details about the current state of mobile compatibility for learning resources at WGU. It includes a list that can be referenced to determine the mobile friendliness of all core course materials used in a program.

[Student Handbook article: Can I use my mobile device for learning resources?](#)

## Standard Path

As previously mentioned, competency units (CUs) have been assigned to each course in order to measure your academic progress. If you are an undergraduate student, you will be expected to enroll in a minimum of 12 competency units each term. Graduate students are expected to enroll in a minimum of 8 competency units each term. A standard plan for a student for this program who entered WGU without any transfer units would look similar to the one on the following page. Your personal progress can be faster, but your pace will be determined by the extent of your transfer units, your time commitment, and your determination to proceed at a faster rate.

## Standard Path *for* Master of Science, Data Analytics

Course Description	CUs	Term
The Data Analytics Journey	2	1
Data Acquisition	3	1
Data Cleaning	3	1
Exploratory Data Analysis	3	2
Predictive Modeling	3	2
Data Mining I	3	2
Representation and Reporting	3	3
Advanced Data Acquisition	2	3
Data Mining II	3	3
Advanced Data Analytics	3	4
Data Analytics Graduate Capstone	3	4

### Changes to Curriculum

WGU publishes an Institutional Catalog, which describes the academic requirements of each degree program. Although students are required to complete the program version current at the time of their enrollment, WGU may modify requirements and course offerings within that version of the program to maintain the currency and relevance of WGU's competencies and programs. When program requirements are updated, students readmitting after withdrawal from the university will be expected to re-enter into the most current catalog version of the program.

# Areas of Study for Master of Science, Data Analytics

The following section includes the areas of study in the program, with their associated courses. Your specific learning resources and level of instructional support will vary based on the individual competencies you bring to the program and your confidence in developing the knowledge, skills, and abilities required in each area of the degree. The Degree Plan and learning resources are dynamic, so you need to review your Degree Plan and seek the advice of your mentor regarding the resources before you purchase them.

## Data Analytics

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### The Data Analytics Journey

The Data Analytics Journey gives an overview of the entire analytics life cycle. Learners gain fluency in data analytics terminology, tools, and techniques. The course contextualizes the data analytics journey firmly with organizational metrics and requirements to position graduates to answer key questions for businesses and other employers. This course has no prerequisites.

*This course covers the following competencies:*

- *Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.*
- *The graduate explains the phases of the data analytics life cycle to contextualize and define the scope of each phase.*
- *The graduate develops a project plan to solve organizational problems.*
- *The graduate determines organizational requirements to improve key drivers.*
- *The graduate identifies appropriate data analytics tools and techniques to solve organizational problems.*

### Data Cleaning

Data Cleaning continues building proficiency in the data analytics life cycle with data preparation skills. This course addresses exploring, transforming, and imputing data as well as handling outliers. Learners write code to manipulate, structure, and clean data as well as to reduce features in data sets. The following courses are prerequisites: The Data Analytics Journey, and Data Acquisition.

*This course covers the following competencies:*

- *Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.*
- *The graduate predicts potential obstacles in data analysis based on the quality of data provided.*
- *The graduate prepares data for analysis to address organizational needs.*
- *The graduate writes reusable code to manipulate and clean data in preparation for analysis.*

### Exploratory Data Analysis

Exploratory Data Analysis covers statistical principles supporting the data analytics life cycle. Students in this course compute and interpret measures of central tendency, correlations, and variation. The course introduces hypothesis testing, focusing on application for parametric tests, and addresses communication skills and tools to explain an analyst's findings to others within an organization. Data Cleaning is a required prerequisite for this course.

*This course covers the following competencies:*

- *Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.*
- *The graduate interprets central tendency, correlations, and variation to inform organizational decisions.*
- *The graduate conducts parametric hypothesis testing.*

### Predictive Modeling

Predictive Modeling builds on initial data preparation, cleaning, and analysis, enabling students to make assertions vital to organizational needs. In this course, students conduct logistic regression and multiple regression to model the phenomena revealed by data. The course covers normality, homoscedasticity, and significance, preparing students to communicate

findings and the limitations of those findings accurately to organizational leaders. Exploratory Data Analysis is a prerequisite for this course.

*This course covers the following competencies:*

- *Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.*
- *The graduate employs logistic regression algorithms to describe phenomena.*
- *The graduate employs multiple regression algorithms with categorical and numerical predictors in describing phenomena.*
- *The graduate makes assertions based on regression modeling.*

## **Advanced Data Analytics**

Advanced Data Analytics prepares students for career-long growth in steadily advancing tools and techniques and provides emerging concepts in data analysis. This course hones the mental and theoretical flexibility that will be required of analysts in the coming decades while grounding their approach firmly in ethical and organizational-need-focused practice. Topics include machine learning, neural networks, randomness, and unconventional data sources. Data Mining II is a prerequisite for this course.

*This course covers the following competencies:*

- *Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.*
- *The graduate builds neural networks in the context of machine-learning modeling.*
- *The graduate applies time series models in generating forecasts.*
- *The graduate extracts insights from text data using effective and appropriate natural processing (NLP) models.*

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## **Data Management**

### **Data Acquisition**

Data Acquisition builds proficiency in Structured Query Language (SQL) and the initial stages of the data analytics lifecycle. The course introduces relational databases. Students gain concrete skills in data transference and database manipulation. There are no prerequisites.

*This course covers the following competencies:*

- *Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.*
- *The graduate examines the data available for analysis to determine their dimension, quality, relations, and limitations.*
- *The graduate implements physical data models.*
- *The graduate performs table operations and queries within the context of data acquisition for analysis.*

### **Advanced Data Acquisition**

Advanced Data Acquisition enhances theoretical and SQL skills in furthering the data analytics life cycle. This course covers advanced SQL operations, aggregating data, and acquiring data from various sources in support of core organizational needs. The prerequisite for this course is Representation and Reporting.

*This course covers the following competencies:*

- *Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.*
- *The graduate applies advanced SQL operations to integrate multiple data sources.*
- *The graduate explores data acquisition.*

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## **Data Mining**

### **Data Mining I**



Data Mining I expands predictive modeling into nonlinear dimensions, enhancing the capabilities and effectiveness of the data analytics lifecycle. In this course, learners implement supervised models—specifically classification and prediction data mining models—to unearth relationships among variables that are not apparent with more surface-level techniques. The course provides frameworks for assessing models' sensitivity and specificity. D208 Predictive Modeling is a prerequisite to this course.

*This course covers the following competencies:*

- *Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.*
- *The graduate applies observations to appropriate classes and categories using classification models.*
- *The graduate implements prediction data mining models to find hard-to-spot relationships among variables.*
- *The graduate evaluates data mining model performance for precision, accuracy, and model comparison.*

## **Data Mining II**

Data Mining II adds vital tools to data analytics arsenal that incorporates unsupervised models. This course explains when, how, and why to use these tools to best meet organizational needs. The prerequisite for this course is Advanced Data Acquisition.

*This course covers the following competencies:*

- *Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.*
- *The graduate applies clustering techniques to accurately predict outcomes of interest.*
- *The graduate implements dimension reduction methods to identify significant variables.*
- *The graduate predicts patterns in data using association rules and lift analysis.*

## **Data Visualization**

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### **Representation and Reporting**

Representation and Reporting focuses on communicating observations and patterns to diverse stakeholders, a key aspect of the data analytics life cycle. This course helps students gain communication and storytelling skills. It also covers data visualizations, audio representations, and interactive dashboards. The prerequisite for this course is Data Mining I.

*This course covers the following competencies:*

- *Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.*
- *The graduate communicates data insights to technical and nontechnical audiences.*
- *The graduate creates data representations to offer insight into an organizational problem.*
- *The graduate designs executive decision support with interactive tools.*

## **Capstone**

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### **Data Analytics Graduate Capstone**

The Data Analytics Graduate Capstone allows students to apply the academic and professional abilities developed as a graduate student. This capstone challenges students to integrate skills and knowledge from several program domains into one project. Advanced Data Analytics is a prerequisite for this course.

*This course covers the following competencies:*

- *The graduate integrates and synthesizes competencies from across the degree program, thereby demonstrating the ability to participate in and contribute value to the chosen professional field.*

## Accessibility and Accommodations

Western Governors University is committed to providing equal access to its academic programs to all qualified students. WGU's Accessibility Services team supports this mission by providing support, resources, advocacy, collaboration, and academic accommodations for students with disabilities and other qualifying conditions under the Americans with Disabilities Act (ADA). WGU encourages student to complete the Accommodation Request Form as soon as they become aware of the need for an accommodation. Current and prospective students can reach the Accessibility Services team Monday through Friday 8:00 a.m. to 5:00 p.m. MST at 1-877-HELP-WGU (877-435-7948) x5922 or at ADASupport@wgu.edu.

## Need More Information? WGU Student Services

WGU's Student Services team is dedicated exclusively to helping you achieve your academic goals. The Student Services office is available during extended hours to assist with general questions and requests. The Student Services team members help you resolve issues, listen to student issues and concerns, and make recommendations for improving policy and practice based on student feedback.

Student Services team members also assist with unresolved concerns to find equitable resolutions. To contact the Student Services team, please feel free to call 877-435-7948 or e-mail [studentservices@wgu.edu](mailto:studentservices@wgu.edu). We are available Monday through Friday from 6:00 a.m. to 10:00 p.m., Saturday from 7:00 a.m. to 7:00 p.m., mountain standard time. Closed Sundays.

If you have inquiries or concerns that require technical support, please contact the WGU IT Service Desk. The IT Service Desk is available Monday through Friday, 6:00 a.m. to 10:00 p.m. and Saturday and Sunday, 10:00 a.m. to 7:00 p.m., mountain standard time. To contact the IT Service Desk, please call 1-877-HELP-WGU (877-435-7948) or e-mail [servicedesk@wgu.edu](mailto:servicedesk@wgu.edu). The support teams are generally closed in observance of university holidays.

For the most current information regarding WGU support services, please visit "Student Support" on the Student Portal at <http://my.wgu.edu>.