WESTERN GOVERNORS UNIVERSITY

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# Program Guidebook

## 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, what does it mean when we say that WGU's programs are competency-based? Unlike traditional universities, WGU does not award degrees based on credit hours or on a certain set of required courses. Instead, you will earn your degree by demonstrating your skills, knowledge, and understanding of important concepts through a series of carefully designed courses.

Progress through your degree program is governed not by classes but by satisfactory completion of the required courses that demonstrate your mastery of the competencies. Of course, you will need to engage in learning experiences as you brush up on competencies or develop knowledge and skills in areas in which you may be weak. For this learning and development, WGU has a rich array of learning resources in which you may engage under the direction of your student mentor. You will work closely with your mentor to schedule your program for completing the courses. You will also work closely with additional faculty members as you proceed through courses of study that are designed to lead you through the content you must master in order to pass the assessment(s) for each course.

The benefit of this competency-based system is that it makes it possible for people who are knowledgeable about a particular subject to make accelerated progress toward completing a WGU 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, indeed, 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). The WGU Teachers College is accredited by the National Council for Accreditation of Teacher Education (NCATE). The nursing programs are accredited by the Commission on Collegiate Nursing Education (CCNE). The Health Informatics program is accredited by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM).

## 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.


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Students will 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 may need to take an online class or participate in a study module to acquire the knowledge and skills needed to pass the 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, you will complete preassessments to help your mentor form a profile of your prior knowledge and experience for use in creating your personalized Degree Plan.

## WGU's Mentoring Approach

The mentoring approach is a powerful component of the WGU educational experience. When you enroll at WGU, you will begin interacting with your student mentor, course mentors, and other support staff. Your student mentor will meet with you on a regular basis and take an active role and a personal interest in your success. Your student mentor will be your point of contact throughout your program and will be available to communicate with you via e-mail or phone. Your mentor will help you set weekly study goals, guide you to learning materials, help you understand what to expect in courses, and motivate you to work hard to complete your program. When you have questions or concerns, your mentor will help you resolve them.

As you work on each course, you will also be assigned course mentors. These course mentors are content experts who can discuss your learning for the course, help you find answers to content questions, and help you navigate the course successfully. Your course mentors are available to meet with you individually to provide personal support. You can also communicate with them by posting in the online learning community and participating in live discussion sessions such as webinars and cohorts.

Working closely with your own personal mentoring team will help you engage in the learning process and be a successful student while at WGU.

## 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 have interactions with faculty and other students.

The resources in each course are specifically designed to support you as you develop competencies in preparation for your assessments through the utilization of reading materials, videos, tutorials, cohort opportunities, community discussions, and live discussions that are guided by content experts. 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 mentor solve any special problems that may arise.


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## 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

WGU offers to review coursework for possible transfer credit for all of our undergraduate programs. 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 student 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 eight (8) competency units each term, and undergraduate students must enroll in at least twelve (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

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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.

## 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

You will work with your mentor to select the various learning resources needed to prepare for the assessments in each course. In most cases, the learning materials you will use are independent learning resources such as textbooks, e-learning modules, study guides, simulations, virtual labs, and tutorials. WGU works with dozens of educational providers, including enterprises, publishers, training companies, and higher educational institutions to give you high-quality and effective instruction that matches the competencies that you are developing. The cost of most learning resources is included in your tuition, and you can enroll directly in those through your Degree Plan as your mentor has scheduled them. Some resources are not covered by your tuition, and you will need to cover those costs separately. WGU has excellent bookstore and library arrangements to help you obtain the needed 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.


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

| Course Description | CUs | Term |
|---|---|---|
| Fundamentals of Data Analytics | 2 | 1 |
| Statistics for Data Analysis | 3 | 1 |
| Data Science Tools and Techniques | 3 | 1 |
| Data Mining and Analytics I | 3 | 2 |
| Data Mining and Analytics II | 3 | 2 |
| Advanced Data Visualization | 3 | 2 |
| Advanced SQL | 4 | 3 |
| SAS Programming I: Fundamentals | 4 | 3 |
| SAS Programming II: Business Analysis Applications | 4 | 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. As these changes are implemented, WGU will ensure that the length of the student's degree program (i.e., total competency unit requirements) will not increase and that competency units already earned will be applied to the updated program version. When program requirements are updated, students returning from term break or returning after withdrawal from the university will be expected to re-enter the updated version of the program.


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# 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.

## Fundamentals

### Fundamentals of Data Analytics

This courses provides an introduction to a variety of tools and techniques used in the field of data analytics. Students will summarize data, review statistical models, explore data mining techniques, and contemplate ethical considerations associated with the field of data analytics. This course presents a survey of concepts which will be explored more in-depth in subsequent courses in the MS Data Analytics program.

*This course covers the following competencies:*

- *The graduate summarizes data by means of applying descriptive statistics and data visualization techniques.*
- *The graduate analyzes simulation modeling and simulation outputs.*
- *The graduate applies statistical models to make predictions in real-world situations.*
- *The graduate summarizes ethical principles specific to data analytics.*
- *The graduate analyzes data mining activities including data preparation, data summary, and modeling.*

### Statistics for Data Analysis

This course covers a broad range of statistical techniques and methods applied in real-world settings. Topics presented include inferential, parametric and non-parametric statistics, as well as regression analysis and analysis of variance.

*This course covers the following competencies:*

- *The graduate identifies nonparametric statistical techniques.*
- *The graduate evaluates key aspects of principal component analysis (PCA).*
- *The graduate evaluates two-sample t-tests, linear regression, and analysis of variance (ANOVA) procedures.*
- *The graduate evaluates characteristics of categorical data analysis techniques.*
- *The graduate evaluates key aspects of logistic regression.*
- *The graduate evaluates multiple regression scenarios and models.*

## Data Manipulation

### Data Science Tools and Techniques

This course covers data science tools and techniques to perform data wrangling and exploration. You will be introduced to programming languages and web scraping tools along with machine learning models.

*This course covers the following competencies:*

- *The graduate performs data analysis using software tools and techniques.*
- *The graduate manages data using wrangling tools, techniques, and methods.*
- *The graduate performs data analysis using database systems and query language.*


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### Advanced SQL

This course prepares the student for the Oracle SQL Expert Certification (1Z0-047). Students will master the SQL language to restrict and sort data, manage data, objects and tables, create schema objects, and control user access.

*This course covers the following competencies:*

- *The graduate performs advanced table operations.*
- *The graduate implements advanced functions.*
- *The graduate creates advanced queries.*
- *The graduate manages system access, schema objects, and the data dictionary.*

## Data Analytics

### Data Mining and Analytics I

This course is an introduction to data mining and exploratory data analysis, including text and web mining. Topics include the use of data exploration methods to prepare data, familiarization with commercial data types commonly used for data mining, the use of statistical and data mining software, including R, SAS and SPSS, and the comparison and classification of data mining methods.

*This course covers the following competencies:*

- *The graduate compares statistical and data mining software.*
- *The graduate describes commercial data types commonly used for data mining.*
- *The graduate compares and classifies data mining methods.*
- *The graduate uses methods to explore and prepare data.*
- *The graduate describes the purposes, processes, and lifecycle of data mining.*

### Data Mining and Analytics II

This course examines the application of descriptive and predictive data mining techniques to reveal information within a mass of data. Techniques include factor analysis, cluster analysis, classification methods, and neural networks to limit human subjectivity in decision making processes.

*This course covers the following competencies:*

- *The graduate implements descriptive data mining methods.*
- *The graduate assesses data mining model performance and application.*
- *The graduate describes the methods and software for a data mining project.*
- *The graduate implements classification and prediction data mining methods.*

## Communication

### Advanced Data Visualization

The focus of this course is visualizing and telling stories with data. This course begins with a description of the growth of data and visualization in industry, news, and government. Actual human stories will be reviewed from a data-statistical perspective. The creation of graphs, displays and geospatial data presentations to communicate information supporting decision making while implementing best practices for effective storytelling will be examined.

*This course covers the following competencies:*

- *The graduate describes the fundamentals of effective story-telling through data visualization.*


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- *The graduate implements best practices using data visualization techniques for effective storytelling.*
- *The graduate creates visualizations representing the relationships and differences of the data.*
- *The graduate creates patterns and proportions for effective data visualization.*
- *The graduate configures data for visualization.*

## Programming

### SAS Programming I: Fundamentals

This course prepares the student for the Base Programmer for SAS 9 Certification (A00-211). Students will achieve competencies in SAS programming that will allow them to import and export raw data files, manipulate and transform data, combine SAS data sets, identify and correct syntax errors, and write SAS code on the SAS platform.

*This course covers the following competencies:*

- *The graduate creates outputs in SAS-supported formats.*
- *The graduate performs a variety of data step operations to manage data sets for analysis.*
- *The graduate creates clean, standardized data sets.*
- *The graduate resolves programming and data errors.*
- *The graduate inputs data files into SAS.*

### SAS Programming II: Business Analysis Applications

This course prepares the student for the SAS Statistical Business Analyst for SAS 9 Certification (A00-240). Students will gain competency to conduct, interpret, and present complex statistical data analysis in the SAS platform.

*This course covers the following competencies:*

- *The graduate prepares data sets as input for predictive models.*
- *The graduate creates models for optimal performance.*
- *The graduate evaluates ANOVA, linear regression, and logistic regression.*

## Capstone

### Data Analytics Graduate Capstone

The Data Analytics Graduate Capstone course allows the student to demonstrate their application of the academic and professional abilities developed as a graduate student. The capstone challenges students to integrate skills and knowledge from several program domains into one project.

*This course covers the following competencies:*

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


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## 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 administrative or accessibility issues. 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. The Student Services team provides a formal means by which you can express your views, which in turn will inform the decisions we make.

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. 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. 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.


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