

## Assessment Plan

**Graduate Certificate in Business Data Mining**  
**SAS® and OSU Data Mining Certificate (core level)**  
**SAS® and OSU Predictive Analytics Certificate (advanced level)**  
**SAS® and OSU Marketing Data Science Certificate (expert level)**

**Spears School of Business: School of Marketing and International Business**  
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**Degree Program:** This plan relates to the Graduate Certificate in Business Data Mining, SAS® and OSU Data Mining Certificate, SAS® and OSU Predictive Analytics certificate, and SAS® and OSU Marketing Data Science certificate at Oklahoma State University's Spears School of Business (SB).

**Mission Statement:** These online programs are designed to help working professionals who do not want to pursue a full master's degree yet want to acquire data mining, predictive analytics and data science skills by taking a series of courses online. Online students start by enrolling in the graduate certificate program in business data mining and then complete relevant coursework to earn the graduate certificate. If students take additional courses, appear for certification exams and earn additional credentials from SAS®, they may obtain up to three additional certificates, jointly sponsored by SAS® and OSU's Spears School of Business. These three additional certificates build on each other. The Data Mining coursework and credentials comes first, followed by additional work and credentials for the Predictive Analytics certificate, and then even more coursework and credentials for the Marketing Data Science certificate.

### **GRADUATE CERTIFICATE IN BUSINESS DATA MINING**

#### **Learning Goal 1 – Basics of Analytics**

This goal anticipates that students will be able to use software such as SAS/JMP to:

- Read data from different data sources;
- Manipulate and transform data;
- Combine and create SAS/JMP data sets;
- Create summary statistics and summary reports using SAS/JMP
- Create visualization and basic statistical modeling using SAS/JMP

Opportunity to learn these skills:

- Students take BAN5733 (Descriptive Business Analytics) and BAN5743 (Predictive Business Analytics)

Assessment method:

- The final exams in BAN5733 and BAN5743 will include questions addressing these learning objectives. Our target is that at least 80% of the students will score 70% or more on these questions.

### **SAS® and OSU DATA MINING CERTIFICATE**

#### **Learning Goal 2 – Data Management**

This goal anticipates that students will be able to use SAS to:

- Import and export raw data files;
- Manipulate and transform data;
- Combine SAS data sets;

- Create basic detail and summary reports using SAS procedures; and
- Identify and correct data, syntax, and programming logic errors.

Opportunity to learn these skills:

- Students take MKTG5243 (Base SAS programming)

Assessment method:

- Students will take the SAS Base Programmer Certification exam, a 110-minute, SAS-administered exam with 60-65 multiple-choice and short-answer questions.

Target:

- 50% of students will successfully pass this certification exam.

### **SAS® and OSU PREDICTIVE ANALYTICS CERTIFICATE**

#### **Learning Goal 3 – High-Level SAS Programming Proficiency**

This goal anticipates that students will be able to:

- Use advanced DATA step programming statements and efficiency techniques to solve complex problems;
- Write and interpret SAS SQL code; and
- Create and use the SAS Macro facility.

Opportunity to learn these skills:

- Students take MKTG5253 (Advanced SAS programming), BAN5753 (Advanced Business Analytics), and STAT5023 (Statistics for Experimenters II)

Assessment method:

- Students will take the SAS Certified Advanced Programmer exam, a 2-hour, SAS-administered exam with 60-65 multiple-choice and short-answer questions.

Target:

- 50% of students will successfully pass this certification exam.

#### **Learning Goal 4 – Predictive Modeling**

This goal anticipates that students will be able to use SAS Enterprise Miner to:

- Prepare data;
- Build predictive models;
- Assess models;
- Score new data sets; and
- Implement models.

Opportunity to learn these skills:

- Students take BAN5753 (Advanced Business Analytics) and STAT5023 (Statistics for Experimenters II).

Assessment method:

- Students will take the SAS Certified Predictive Modeler using SAS Enterprise exam, a 3-hour, SAS-administered exam with 60 multiple-choice questions.

Target:

- 50% of students will successfully pass this certification exam.

## **SAS® and OSU MARKETING DATA SCIENCE CERTIFICATE**

### **Learning Goal 45– Complex Statistical Data Analysis**

This goal anticipates that students will be able to use SAS/STAT software to conduct and interpret complex statistical data analysis, including:

- Analysis of variance;
- Linear and logistic regression;
- Principal components and factor analysis
- Cluster analysis
- Preparing inputs for predictive models; and
- Measuring and tracking model performance.

Opportunity to learn these skills:

- Students take BAN5763 (Advanced Marketing Research Analytics) and IEM5013 (Introduction to Optimization) or, equivalent coursework.

Assessment method:

- Students will take the SAS Certified Statistical Business Analyst Regression and Modeling Credential exam, a 2-hour, SAS-administered exam with 60 multiple-choice and short-answer questions.

Target:

- 50% of students will successfully pass this certification exam.

### **Learning Goal 6 – Google Analytics**

This goal anticipates that students will be able to use Google Analytics to conduct digital analysis, including:

- Create accounts;
- Define key metrics and dimensions;
- Set goals and collect campaign data;
- Create Google Analytics reports; and
- Navigate conversion reports.

Opportunity to learn these skills:

- Students take BAN5511 (Web Analytics and Digital Marketing) and/or free online trainings available from Google®

Assessment method:

- Students will take the Google Analytics certification exam, a Google-administered exam.

Target:

- 50% of students will successfully pass this certification exam.