American Open University Nigeria

UNDERGRADUATE PROGRAM | COLLEGE OF TECHNOLOGY

# Bachelor of Science in Data Science

American
Open University
Nigeria

# Program Info

The Bachelor of Science in Data Science is a deep, technical program focused on transforming vast amounts of data into predictive insights and actionable intelligence. This program equips students with a rigorous foundation in statistics, mathematics, and computer science, preparing them to build and deploy sophisticated machine learning models and data-driven solutions to solve complex problems. Students will engage in advanced projects in areas like Natural Language Processing (NLP), Computer Vision, and Predictive Analytics.

| 4 Years | BSc Degree | Hybrid | AI-Ready |
|---|---|---|---|
| Duration | Credential | Delivery | Specialization |

**SPECIALIZATION FOCUS**

Data Scientists | Machine Learning Engineers | AI Specialists | Quantitative Analysts.

# Program Objectives

### The Bachelor of Science in Data Science aims to:

Build deep expertise in statistical analysis, machine learning algorithms, and data modeling.

Develop advanced programming skills in languages like Python and R, and proficiency with data science libraries.

Provide experience with the complete data science lifecycle, from data collection and cleaning to model deployment.

Foster a strong ethical foundation for the responsible use of data and AI.

# Expected Program-Level Outcomes

## EDUCATE

Students will acquire a deep understanding of the mathematical and computational foundations of data science and machine learning.

## DEVELOP

Students will demonstrate the ability to build, train, and validate predictive models to solve real-world problems.

## GROW

Students will learn to communicate complex technical findings to diverse audiences and work collaboratively on data-intensive projects.

## EMPOWER

Students will be prepared to lead data science initiatives and drive innovation by uncovering hidden patterns and opportunities in data.

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# Program Pathway for B.Sc. Data Science Advance Stage 1

| Session | Course Code | Course Title | Units | Duration |
|---|---|---|---|---|
| **Fall (2 Sections) 12 Credit units** | | | | |
| Section 1 (6 Credits) | AGC 200 | Foundations of Academic Writing | 3 | 8 weeks |
| | ATC 200 | Information Systems Design Fundamentals | 3 | 8 weeks |
| Section 2 (6 Credits) | ATC 420 | Foundations of Data Science and Analytics | 3 | 8 weeks |
| | ATC 202 | Foundations of AI Deployment (Claude AI) | 3 | 8 weeks |
| **Break** | | | | |
| **Spring (2 Sections) 12 Credit units** | | | | |
| Section 1 (6 Credits) | DST 403 | Data Visualization for Data-driven Decision Making | 3 | 8 weeks |
| | ATC 401 | Enterprise Resource Planning | 3 | 8 weeks |
| Section 2 (6 Credits) | ATC 421 | Data Analytics and Business Intelligence (Google) | 3 | 8 weeks |
| | ATC 402 | Enterprise Systems Integration: Architectures, Technologies, and Applications | 3 | 8 weeks |
| **Break** | | | | |
| **Summer (1 Section) 6 Credit units** | | | | |
| Section 1 (6 Credits) | ATC 403 | Optimizing Business Performance with Open-Source Software | 3 | 8 weeks |
| | ATC 404 | Information Technology Project Management | 3 | 8 weeks |
| **Break** | | | | |
| **Fall (2 Section) 12 Credit Units** | | | | |
| Section 1 (6 Credits) | CYB 201 | Introduction to Cybersecurity and Strategy | 3 | 8 weeks |
| | AGC 300 | Information Technology Research Methods | 3 | 8 weeks |
| Section 2 (6 Credits) | CYB 303 | Cybersecurity Risk Analysis, Challenges, and Mitigation | 3 | 8 weeks |
| | ATC 405 | Cloud Infrastructure and Databases | 3 | 8 weeks |
| **Break** | | | | |

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# Program Pathway for B.Sc. Data Science Advance Stage 1

| Session | Course Code | Course Title | Units | Duration |
|---|---|---|---|---|
| **Spring(2 Section) 12 Credit Units** | | | | |
| Section 1 (6 Credits) | ATC 407 | AI Automation with Python I | 3 | 8 weeks |
| | ATC 406 | Data Management - Microsoft Dataverse | 3 | 8 weeks |
| Section 2 (6 Credits) | ATC 408 | IT Automation with Python II | 3 | 8 weeks |
| | DTS 497 | IT Capstone Project I | 3 | 8 weeks |
| **Break** | | | | |
| **Summer (1 Section) 6 Credit Units** | | | | |
| Section 1 (6 Credits) | ATC 449 | Machine Learning Ops & Deployment | 3 | 8 weeks |
| | DTS 498 | IT Capstone Project II | 3 | 8 weeks |
| | | | | |
| | | **TOTAL UNITS** | **60** | |

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# Program Pathway for B.Sc. Data Science Advance Stage 2

| Session | Course Code | Course Title | Units | Duration |
|---|---|---|---|---|
| **Fall (2 Sections) 12 Credit units** | | | | |
| Section 1 (6 Credits) | AGC 200 | Foundations of Academic Writing | 3 | 8 weeks |
| | ATC 200 | Information Systems Design Fundamentals | 3 | 8 weeks |
| Section 2 (6 Credits) | ATC 405 | Information Systems Project Management | 3 | 8 weeks |
| | AGC 300 | Information Technology Research Methods | 3 | 8 weeks |
| **Break** | | | | |
| **Spring (2 Sections) 12 Credit units** | | | | |
| Section 1 (6 Credits) | ATC 420 | Foundations of Data Science and Analytics | 3 | 8 weeks |
| | ATC 202 | Foundations of AI Deployment (Claude AI) | 3 | 8 weeks |
| Section 2 (6 Credits) | DST 403 | Data Visualization for Data-driven Decision Making | 3 | 8 weeks |
| | ATC 424 | AI Agents Development | 3 | 8 weeks |
| **Break** | | | | |
| **Fall (2 Sections) 12 Credit Units** | | | | |
| Section 1 (6 Credits) | ATC 449 | Machine Learning Ops & Deployment | 3 | 8 weeks |
| | DTS 497 | Capstone Project I | 3 | 8 weeks |
| Section 2 (6 Credits) | DTS 498 | Capstone Project II | 3 | 8 weeks |
| | | **Total** | **33** | |

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# What You Will Learn

**Students will build a comprehensive portfolio of skills, moving from foundational theory to specialized, real-world application.**

1. **Statistical and Mathematical Modeling:**
   Master the fundamentals of statistics, probability, linear algebra, and calculus that form the bedrock of machine learning.

2. **Machine Learning and AI:**
   Develop deep expertise in supervised, unsupervised, and reinforcement learning algorithms, including regression, classification, clustering, and neural networks.

3. **Data Science Programming:**
   Become proficient in Python and R, and master essential libraries and frameworks such as Pandas, NumPy, Scikit-learn, TensorFlow, and PyTorch.

4. **Data Engineering and MLOps:**
   Understand the complete data science lifecycle, from data wrangling and visualization to building data pipelines and deploying models into production.

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# Who You Will Become

Graduates of this program are prepared to be:

### Data Scientists

who build and deploy predictive models to solve complex business, social, and scientific problems.

### Machine Learning Engineers

who architect and build the scalable systems that run AI applications.

### AI Specialists

who research and develop cutting-edge intelligent systems in areas like computer vision or natural language processing.

### Quantitative Analysts

who apply data science techniques to financial modeling and algorithmic trading

EMPLOYMENT LANDSCAPE

# Where You Will Work

**Industries:**
Technology, FinTech, Healthcare, E-commerce, Consulting, Research.

**Certifications:**
TensorFlow Developer Certificate, AWS Certified Machine Learning – Specialty, Google Professional Data Engineer.

**Career Trajectory:**
Data Scientist, Machine Learning Engineer, AI Engineer, Quantitative Analyst, Data Architect.


# Ready to Build the Future?

Apply now and join a program designed for the next generation of AI infrastructure leaders.

**APPLY NOW: www.aouniversity.edu.mg**