AU-ABC Bachelor of Science in Data Science Agreement

Air University Associate-to-Baccalaureate Cooperative (AU-ABC) establishes partnerships between the Air University and civilian institutions to provide Community College of the Air Force (CCAF) graduates advanced education opportunities at the baccalaureate level.

Minot State University is offering a Bachelor of Science in Data Science program plan to meet the needs of Community College of the Air Force (CCAF) students looking for advanced education opportunities in management at the baccalaureate level.

CCAF students with degrees in any area are eligible to participate.

The Bachelor of Science in Data Science program includes the following degree requirements:

- General Education Core and Foundational Content
- Data Science Required Core
- Electives
- 120 Total Credits

This program plan is designed to be an AU-ABC Category II program. As prerequisites to this program, students must complete the following:

- An additional General Education Communications course (Courses completed must include two non-duplicative Written Communication (English composition) courses and an Oral Communication (Speech) course.)
- An additional General Education Humanities course (Courses completed must include two General Education Humanities courses.)
- An additional General Education Social Science course (Courses completed must include two General Education Social Science courses.)

Students considering this BS degree are encouraged to contact an academic advisor at Minot State **as early as possible** to ensure maximum transferability and a smooth transition.

MINOT STATE UNIVERSITY

Bachelor of Science in Data Science
Program Plan File (PPF)
Category II

Degree Requirement	Required Semester Credits	CCAF Transfer Credits	Minot State Course Credits
Data Science Core Courses	**49**	**0**	**49**
CSCI 111 Introductory Programming and Big Data or CSCI 160 Computer Science I	4		4
MATH 146 Applied Calculus (counts under the General Education Required Core)			
MATH 208 Discrete Mathematics I	4		4
DATA 211 Applied Statistics and Data Visualization or MATH 210 Elementary Statistics	4		4
BIT 220 Management Information Systems	3		3
DATA 240 Programming for Data Science	4		4
BOTE 247 Spreadsheet Applications	Waived		Waived
DATA 347 Data Analytics and Visualization	3		3
CSCI 331 Social Implications or CSCI 497 Internship	4		4
CSCI 356 Database Management I or BIT 454 Data and Information Management	4		4
DATA 350 Project Design and Techniques	3		3
MATH 445 Probability and Statistics I	4		4
MATH 446 Probability and Statistics II	4		4
CSCI 456 Machine Learning, Data Mining, and AI	4		4
DATA 491 Data Science Capstone I	2		2
DATA 494 Data Science Capstone II	2		2

	Required Semester Credits	CCAF Transfer Credits	Minot State Course Credits
General Education: Foundational Content	**19**	**12**	**7**
FC1 Humanities	3	3	
FC1 Humanities[1]	3	3	
FC2 Lab Science	4		4
FC3 Social Science	3	3	
FC3 Social Science[1]	3	3	
FC3 History	3		3
General Education: Required Core	**12**	**9**	**3**
ENGL 110 College Composition I	3	3	
ENGL 120 College Composition II[1]	3	3	
COMM 110 Fundamentals of Public Speaking[1]	3	3	
Mathematics –MATH 146 Applied Calculus	3		3
Other Electives[2]	**40**	**39**	**1**
Total Credits Required[3]	**120**	**60**	**60**

Footnotes:

[1] As prerequisites to this program, students must complete the following:

- An additional General Education Communications course (Courses completed must include two non-duplicative Written Communication (English composition) courses and an Oral Communication (Speech) course.)
- An additional General Education Humanities course (Courses completed must include two General Education Humanities courses.)
- An additional General Education Social Science course (Courses completed must include two General Education Social Science courses.)

[2]Courses completed in the Technical Core, Technical Electives, and Program Electives will be evaluated by the department for transferability towards the Data Science Required Core. The total number of other electives required can change depending on the transferability of courses.

[3]Students must take 30 credits from Minot State University and 60 credits from a 4-year institution.

Additional Notes:

- The General Education Developmental Content requirements are waived.
- Students in this AU-ABC Bachelor of Science in Data Science program are required to complete 31 credits of the 36 credits of General Education Requirements.

AU-ABC Application Requirements

1. **Confirm that your school has signed the Department of Defense (DoD) Memorandum of Understanding, agree to the DoD Instruction 1322.25 and will operate the AU-ABC program in accordance with both documents.**
   Minot State University has signed the Department of Defense Memorandum of Understanding. We agree to the DoD Instruction 1322.25 and will operate the AU-ABC program in accordance with both documents.

2. **AU-ABC Partner schools must be regionally accredited or accredited by the Distance Education Accrediting Commission. State your school's accreditation status, accrediting body and academic mission.**
   Minot State University is accredited by the Higher Learning Commission.

   Mission

   Minot State University is a public university dedicated to excellence in education, scholarship, and community engagement achieved through rigorous academic experiences, active learning environments, commitment to public service, and a vibrant campus life.

3. **Question intentionally left blank by CCAF.**

4. **Describe the course delivery methods used by your school that will be employed in the proposed AU-ABC program. List program related online services and other support that will be provided to students. Examples include student advisement, library and learning resources, delivery of course materials, online student services and technical support.**
   The general education courses in our program are all delivered asynchronously which means that students are not required to be online at a certain day and time each week. The Data Science required core courses are offered synchronously at a specific day/time but students have the flexibility to watch recorded lectures on their own schedule.

   Once admitted as degree-seeking students, students will complete an online orientation which explains our policies and procedures and teaches them how to use our online learning management system, Blackboard. They will also meet with a department advisor to explain the degree requirements and complete a program plan.

   All online course materials are available through an online course shell in Blackboard and all coursework will be submitted online. Academic assistance is available at a distance through our Writing Center and NetTutor, an online tutoring service. The Gordon B. Olson Library provides off-campus access to library databases, reference services, and interlibrary loan. Our Information Technology Central (ITC) office provides remote technical support through a variety of tools.

5. **Indicate which AU-ABC Category (I, II, or III) the proposed AU-ABC program will participate:**
   This will be a Category II program.
   Category II - Programs designed for CCAF AAS students. Partnering institutions will identify prerequisite coursework (no more than three courses/nine SH) the CCAF AAS student needs to complete their CCAF general education and program elective requirements. These courses would simultaneously fulfill CCAF AAS and AU-ABC degree requirements. Upon completion of his/her CCAF degree, the student would be guaranteed that no more than 60 SH of additional credit will be required to complete an AU-ABC baccalaureate degree; provided the student completed the specific prerequisite coursework.

6. **Confirm that your school will create an AU-ABC landing page.**
   We will create an AU-ABC landing page with the following required items:
   - AU-ABC logo and heading (logo will be provided)
   - Online academic services and support
   - Application and enrollment information
   - Cost of tuition and fees
   - Course schedule (if available)
   - Point-of-contact
   - AU-ABC Program Plan File (PPF)

7. **Confirm that the AU-ABC program is an established program and is listed in the current school catalog. Provide a link to your current school catalog.**
   Our Bachelor of Science in Data Science is an established program and is listed in our current catalog.

   Undergraduate Catalog - Bachelor of Science in Data Science

   The following program changes are not reflected in the current catalog but have been approved and will be in our 2024-2025 Undergraduate Catalog.
   - DATA 211 title changed to "Applied Statistics and Data Visualization"
   - BIT 347 subject and title changed to "DATA 347 Data Analytics and Visualization"
   - CSCI 331 changed to CSCI 331 or CSCI 497
   - CSCI 356 title changed to "Machine Learning, Data Mining, and AI"

8. **Agree to notify AU-ABC Program Manager in writing of intent to withdraw from the program, AU-ABC degree program discontinuation, change to school accreditation status and all changes to AU-ABC programs or degree requirements; and to resubmit new AU-ABC program applications for AU-ABC programs that undergo catalog changes and/or degree requirement changes.**
   Minot State will notify the AU-ABC Program Management of any changes in the program or our accreditation status. We will submit a new application if the program has any catalog changes or degree requirement changes.

9. **Describe the purpose and requirements of your school's baccalaureate degree program. Explain how the baccalaureate's coursework and the CCAF AAS coursework create a coherent course of study.**
   The purpose of the BS in Data Science program is to equip our students with the necessary digital skills of gathering, analyzing, visualizing, and utilizing data by providing multidisciplinary, collaborative, active experiences to undergraduate students and professionals.
   The skills gained while serving in the Air Force and completing courses in their CCAF degree provide students with a real world understanding of the value of proper data analysis. This is then enhanced with additional knowledge in the areas of programming, statistics, and project design by the Bachelor of Science in Data Science at Minot State University.

10. **Explain and comment on the baccalaureate degree program's specific education outcomes. State the assessment process your school uses to measure the degree's educational outcomes.**
    Please see Appendix I for the Data Science Program mission, goals, outcomes, and assessment.

11. **Confirm that a degree contract will be offered to every student who enrolls in the AU-ABC program. Once completed, this document becomes the binding contract between your school and the student. Attach an example of the degree contract.**
    An academic advisor will complete the attached advising plan for each student who enrolls in the AU-ABC program. Once completed, this document will be a binding contract between Minot State University and the student. [Please see Appendix II for the AU-ABC Data Science Advising Plan.]

Signatures:

Dr. Steven Shirley

BEB9E02CE011355D36DD2E9C41330938 readysign

04/11/2024

Dr. Steven Shirley
President

Date

Laurie Geller

D28EDDECB700D80940A53E6A78D92423 readysign

04/12/2024

Dr. Laurie Geller
Vice President for Academic Affairs

Date

Krista Lambrecht

A7527F7D4E95B1D14ADC70E81F295C51 readysign

04/15/2024

Ms. Krista Lambrecht
Vice President for Administration and Finance

Date

Appendix I – Data Science Program Mission, Goals, Outcomes, and Assessment

The mission of the program for a BS in Data Science is to equip our students with the necessary digital skills of gathering, analyzing, visualizing, and utilizing data for decision making by providing multidisciplinary, collaborative, active experiences to undergraduate students and professionals.

Student Learning Goals	Student Learning Outcomes
SLG 1: Students will describe problems that data can solve.	SLO 1.1: Students will identify knowledge gaps that analysis of data can fill.
	SLO 1.2 Students will formulate questions that data can answer.
SLG 2: Students will describe characteristics of data collection.	SLO 2.1: Students will describe settings where primary data are collected.
	SLO 2.2: Students will describe various types of data.
	SLO 2.3: Students describe tools utilized to collect data.
SLG 3: Students will process data.	SLG 3.1: Students will gather existing data from data sources.
	SLO 3.2: Students will prepare data for analysis.
	SLG 3.3: Students will apply statistical methods to support analysis of data.
	SLG 3.4: Students will create visualizations to foster analysis of data.
SLG 4: Students will solve problems using data.	SLO 4.1: Students will interpret answers to questions guiding a study based on data analysis results.
	SLO 4.2: Students will identify limitations of data analysis results.
SLG 5: Students will communicate data to stakeholders.	SLO 5.1: Students will develop materials for communicating data analysis results to others.
	SLO 5.2: Students will explain data analysis results to others.
SLG 6: Students will use data to make informed decisions based on data analysis results.	SLO 6.1: Students will identify decisions that may be informed by data analysis findings.
	SLG 6.2: Students will describe cautions for making decisions based on data analysis findings.

Assessment

The Bachelor of Science in Data Science Program uses the same process as all Minot State University academic programs to ensure that, beyond students meeting learning outcomes, learning is improved by leveraging program data.

Each fall the Data Science Working Group and program advisors produce an assessment report containing learning outcomes, data sources, data, identification of data-driven changes to the program, and budget priorities based on necessary change(s). The working group and advisors hold the responsibility of considering program findings and determining which recommended changes can or should be implemented.

Program goals, success indicators, and evaluation tools are as follows:

Goal Statement	Success Indicators	Evaluation Tools
Students will describe problems that data can solve.	• Students will identify knowledge gaps that analysis of data can fill. • Students will formulate questions that data can answer.	Learning Outcome Measures
Students will describe characteristics of data collection.	• Students will describe settings where primary data is collected. • Students will describe several types of data. • Students describe tools utilized to collect data.	Learning Outcome Measures
Students will gather and prepare data.	• Students will gather and explore data to gain insights. • Students will prepare data for machine learning algorithms and analysis.	Learning Outcome Measures
Students will analyze data.	• Students will apply statistical methods and select different models to support analysis of data. • Students will fine-tune selected models. • Students will create visualizations to foster analysis of data.	Learning Outcome Measures
Students will communicate data to stakeholders.	• Students will develop materials for communicating data analysis results to others. • Students will explain data analysis results to others.	Learning Outcome Measures

Goal Statement	Success Indicators	Evaluation Tools
Students will use data to make informed decisions based on data analysis results.	• Students will identify decisions that may be informed by data analysis findings. • Students will describe cautions for making decisions based on data analysis findings.	Learning Outcome Measures
The program will deliver curricular offerings through on-campus, online, and blended methods to meet the educational needs of traditional and non-traditional student populations.	• The program's rate of on-campus course offerings • The program's rate of on-line and hybrid course offerings • The program's rate of non-traditional course offerings	Enrollment reports Department self-evaluation
The program will continuously assess the quality of learning with rigorous and multi-faceted methods; updating the course offerings, contents, learning strategies, and academic and non-academic activities and materials.	• The program appropriately measures learning outcomes. • The program revises course content. • The program revises the nature of course activities and materials.	Learning Outcome Measures Department self-evaluation

Appendix II – Sample AU-ABC Data Science Advising Plan

AU-ABC Bachelor of Science Degree: DATA SCIENCE MAJOR
Department of Math and Technology
MINOT STATE UNIVERSITY

	Advisor:
NAID No.	**CCAF Completion Date:**

2023-2024

COMMUNICATIONS: 0 SH			
Course & No.	**SEM**	**SH**	**GR**
ENGL 110 College Composition I Completed as part of your AAS Degree	CCAF	3	
ENGL 120 College Composition II Completed as part of your AAS Degree	CCAF	3	
COMM 110 Fundamentals of Public Speaking Completed as part of your AAS Degree	CCAF	3	
HISTORY: 3 SH			
Course & No.	**SEM**	**SH**	**GR**
		3	
HUMANITIES: 0 SH			
Course & No.	**SEM**	**SH**	**GR**
Completed As Part of your AAS Degree	CCAF	3	
Completed As Part of your AAS Degree	CCAF	3	
MATHEMATICS: 3 SH			
Course & No.	**SEM**	**SH**	**GR**
MATH 146 Applied Calculus		3	
or MATH 165 Calculus I & MATH 166 Calculus II			
SCIENCE: 4 SH			
Course & No.	**SEM**	**SH**	**GR**
		4	
SOCIAL SCIENCE: 0 SH			
Course & No.	**SEM**	**SH**	**GR**
Completed As Part of your AAS Degree	CCAF	3	
Completed As Part of your AAS Degree	CCAF	3	

As part of the CCAF General Education requirements and as prerequisites to this program, the following requirements must be completed as part of the CCAF degree:

- Two non-duplicative Written Communication (English composition) courses and an Oral Communication (Speech) course
- Two Humanities courses
- Two Social Science courses

DATA SCIENCE CORE REQUIREMENTS 49 SH	SEM	SH	GR	HP
CSCI 111 Introductory Programming and Big Data		4		
or CSCI 160 Computer Science I				
MATH 146 Applied Calculus *Gen Ed Math		GE		
or MATH 165 Calculus I & MATH 166 Calculus II				
MATH 208 Discrete Mathematics I		4		
DATA 211 Applied Statistics and Data Visualization		4		
or Math 210 Elementary Statistics				
BIT 220 Management Information Systems		3		
DATA 240 Programming for Data Science		4		
BOTE 247 Spreadsheet Applications Waived for AU-ABC Students				
DATA 347 Data Analytics and Visualization		3		
CSCI 331 Social Implications		4		
or CSCI 497 Internship				
CSCI 356 Database Management I		4		
or BIT 454 Data Information Management				
DATA 350 Project Design and Techniques		3		
MATH 445 Probability and Statistics I		4		
MATH 446 Probability and Statistics II		4		
CSCI 456 Machine Learning, Data Mining, and AI		4		
DATA 491 Data Science Capstone I		2		
DATA 494 Data Science Capstone II		2		

Electives to meet the 120 SH graduation requirement			
Course & No.	**SEM**	**SH**	**GR**