

August 13, 2021

Last summer, the Computing Accreditation Commission (CAC) and Computing Area Delegation (CAD) of ABET approved criteria for accrediting undergraduate data science programs under CAC. These were developed by a subcommittee of the CSAB-CAC Joint Criteria Committee, and were posted publicly for a review and comment period last fall.

Since that time, members of this subcommittee, along with others from CSAB, its new member the American Statistical Association, and the Applied and Natural Sciences Accreditation Commission (ANSAC) of ABET, have been working on developing similar criteria for accreditation of data science programs under ANSAC.

Based on input received during the public review period for the CAC version and a desire to align (as appropriate) the two sets of criteria, the CAC criteria were modified and resubmitted to the commission in July. At the same time, CSAB submitted to ANSAC the newly developed criteria for accrediting data science programs within that commission. Both sets of criteria were approved by their respective commissions last month. Next, they will go to relevant ABET Area Delegations, which meet in October.

If your program may be interested in participating in the piloting of these criteria, please send contact information and a link to the program website to lglazer@csab.org.

**This document contains the criteria approved by the
Applied and Natural Sciences Accreditation Commission.**

WITHOUT MARKUP

**PROGRAM CRITERIA FOR DATA SCIENCE, DATA ANALYTICS,
AND SIMILARLY NAMED PROGRAMS**

1st Reading

Lead Society: CSAB

PROGRAM CRITERIA FOR BACCALAUREATE LEVEL PROGRAMS

Curriculum

The curriculum must provide graduates with the knowledge and skills to be able to apply theory, techniques, and tools throughout the data science lifecycle and to employ the results to satisfy stakeholders' needs. The curriculum must include:

1. Fundamental data science lifecycle topics:
 - a) Data acquisition and representativeness
 - b) Data management
 - c) Data preparation and integration
 - d) Data analysis
 - e) Model development and deployment
 - f) Visualization and communication of the knowledge obtained from the data
2. Concepts that span and are applied to the data science lifecycle:
 - a) Data ethics including legitimate use and algorithmic fairness
 - b) Governance including privacy, security, and stewardship
 - c) Statistical and mathematical topics including inference, modeling, linear algebra, probability, and optimization
 - d) Computing including data structures and algorithms
3. Advanced data science coursework that provides depth.
4. Coverage of at least one application area that provides context for data science activities.
5. A comprehensive project or experience that incorporates an application area and requires integration and application of knowledge and skills acquired in earlier course work.

Faculty

A full-time faculty member must be identified as administratively in charge of the program and preferably be full-time with the program.

WITH MARK UP

**PROGRAM CRITERIA FOR DATA SCIENCE, DATA ANALYTICS,
AND SIMILARLY NAMED PROGRAMS**

1st Reading

Lead Society: CSAB

PROGRAM CRITERIA FOR BACCALAUREATE LEVEL PROGRAMS

Curriculum

The curriculum must provide graduates with the knowledge and skills to be able to apply theory, techniques, and tools throughout the data ~~analysis-science~~ lifecycle and to employ the results to satisfy stakeholders' needs. The curriculum must include:

6. Fundamental data ~~analysis-science~~ lifecycle topics:
 - a) Data acquisition and representativeness
 - ~~a) —~~
 - b) Data management
 - c) Data preparation and integration
 - d) Data analysis
 - e) Model development and deployment
 - f) Visualization and communication of the knowledge obtained from the data
7. Concepts that span and are applied to the data ~~analysis-science~~ lifecycle:
 - a) Data ethics including legitimate use and algorithmic fairness
 - ~~a)b) Governance including Pprivacy, security, governance, and stewardship~~
 - ~~b) —~~ Statisticals and mathematical topics including inference, modeling,
 - c) Mathematics linear algebra, probability, and optimization
 - ~~d) —~~ Computing including substantial coverage of data structures and, algorithms, and at least one programming language
 - ~~e)d) —~~
8. Advanced data science coursework that provides depth.
9. Coverage of at least one application area that provides context for data science activities.
10. A comprehensive project or experience that incorporates an application area and requires integration and application of knowledge and skills acquired in earlier course work. that incorporates an application area and integrates data science knowledge and skills.

Faculty

A full-time faculty member must be identified as administratively in charge of the program and preferably be full-time with the program.