

A Cross-disciplinary Review of Introductory Undergraduate Data Science Course Content

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Data Science is one of the fastest growing fields with unmet demand from employers. Many academic institutions have taken on the task of creating programs to meet both current and future needs and demands. Data science, as a field, integrates aspects of computer science, statistics, and subject matter expertise which encourages cross-disciplinary conversations and collaboration. In this talk, we present results from a broad survey of instructors of introductory college-level data science courses for undergraduates. In addition, we explore the alignment of these findings with the recommendations of various professional organizations.

We conducted a national survey on topics covered in introductory, college-level data science courses. With responses from computer scientists, statisticians, and allied fields, these results represent a wide array of instructors of data science. The survey identifies topics commonly covered, the amount of time spent on each, common and divergent definitions of data science, and course materials used. These results will be presented.

We will then discuss the alignment of these results through a rigorous review and synthesis of recommendations from various professional organizations. These include Association for Computing Machinery's Computing Competencies for Undergraduate Data Science Curricula[1], the National Academies of Science, Engineering, and Medicine's Data Science for Undergraduates: Opportunities and Options[2], the Park City Math Institute's report Curriculum Guidelines for Undergraduate Programs in Data Science[3], and the American Statistical Association's Two-Year College Data Science Summit Final Report[4] and Curriculum Guidelines for Undergraduate Programs in Statistical Science[5]. We will also explore alignment with ABET's accreditation of data science.[6]

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