

# Science Education (SCIE)

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**SCIE 2400. Measurement and Analysis for Science Teachers. (3 Credits)**

Prerequisite(s): BIOL 1610

Engages students in how to measure cognitive variables in their classroom and use this data to draw conclusions via statistical analysis. Makes use of real data sets from educational settings to provide an applied lens to how we identify and assess student learning and other educational challenges. Covers psychometric measurement models and statistical calculations for both parametric (central tendency, correlation, means difference testing) and non-parametric (chi-squared) data sets to employ hypothesis testing. Requires students to visualize data in multiple formats (graphs and tables) and make use of confidence intervals to find evidence for trends and/or patterns in data. Asks students to apply course ideas to carry out a semester long research project applying statistics to solve educational problems.

**SCIE 4210. Science Teaching Methods I. (3 Credits)**

Prerequisite(s): University Advanced Standing

Explores foundational aspects of learning science and how this intersects with the nature of science in secondary schools. Includes introductions into state science standards, best methods of engaging learners, how to generate inclusive science learning environments, and promote discourse and collaboration in the service of greater student learning.

**SCIE 4220. Teaching Methods in Science II. (3 Credits)**

Prerequisite(s): SCIE 4210 and University Advanced Standing

Examines instructional methods and curriculum for teaching science in the secondary school. Includes developing, adapting, evaluating, and using strategies and materials for teaching biological and physical sciences, appropriate both to the special needs of the learners and the special characteristics of science discipline.