

SCIENCE (SCIE)

* SCIE 010a and SCIE 011b, Perspectives on Biological Research Sandy Chang

The goal of this two course series is to teach Science, Technology, and Research Scholars 1 (STARS1) scientific skills necessary to conduct cutting-edge undergraduate research in their first summer. During the first semester, students read primary research papers on the COVID19 pandemic and emerge from this course with an appreciation for how rapidly scientific knowledge can be utilized to combat a deadly disease. Students learn how to (1) read the primary scientific literature, (2) present this material to the class and, (3) write a group grant proposal. During the second semester, students are required to take MCDB 201L concurrently and identify a Yale research mentor to work with over the summer. Students learn how to write an independent grant proposal to prepare them for summer research. Students receive guaranteed funding upon successful completion of the grant proposal. Credit for SCIE 010 is given only upon completion of SCIE 011. One course credit, one SC or WR credit, is awarded after successful completion of the grant proposal and one year's work. Prerequisite: Score of 5 on AP biology test or equivalent on IB biology exam. Students MUST take MCDB 201L, Molecular Biology Laboratory, in Spring 2023 concurrent with SCIE 011. Enrollment limited to first-year students. Preregistration required; see under First-Year Seminar Program. WR, SC ½ Course cr per term

* SCIE 020a and SCIE 021b, Perspectives on Research in the Mathematical and Physical Sciences Charles Bailyn

This first-year seminar is the first of a two-part sequence designed for students in the Science, Technology and Research Scholars (STARS) program, and other first-year students interesting in studying the physical and mathematical sciences. In the first semester, students encounter on-going research at Yale and in the broader scientific community across physics, astronomy, geology, computer science and data science. Skills necessary to understand, write, and present research in these areas are developed. In the second semester, students identify a Yale research mentor and prepare an independent grant proposal to prepare for summer research. The organizational structures and best practices associated with scientific research are examined. Credit for SCIE 020 is given only upon successful completion of SCIE 021. One course credit, one SC or WR credit, is awarded after successful completion of both courses. Enrollment limited to first-year students. Preregistration required; see under First-Year Seminar Program. Corequisite: Students must enroll in an appropriate introductory course sequence in Physics or Computer Science. WR, SC ½ Course cr per term

* SCIE 030a and SCIE 031b, Current Topics in Science Douglas Kankel

A series of modules in lecture and discussion format addressing scientific issues arising in current affairs. Topics are selected for their scientific interest and contemporary relevance, and may include global warming, human cloning, and the existence of extrasolar planets. Credit for SCIE 030 upon completion of SCIE 031; one course credit is awarded for successful completion of the year's work. Enrollment limited to first-year students. Preregistration required; see under First-Year Seminar Program. SC ½ Course cr per term

*** SCIE 099b / MB&B 099b / MCDB 099b / MENG 099b / PHYS 099b, Introduction to Research Methods in Physics and Biology: Preparing for a First Research Experience** Simon Mochrie

Spanning both the classroom and laboratory, this seminar course provides an immersive introduction to scientific research. Students build practical laboratory skills, computational competency, and begin to build fluency in the structures and modes of communication that define modern research. The course also facilitates identification of a laboratory mentor and devising a research proposal (with mentorship) for competitive summer research fellowship applications. This class is open to first-year students, interested in any STEM major, who have no prior research experience. This course does not count toward major requirements. Enrollment limited to first-year students. Preregistration required; see under First-Year Seminar Program.