

**Number and title of course:** THE ART OF SCIENCE, SYGN501 (Spring 2013)

**Catalog description:**

This course consists of class sessions and practical exercises. The content of the course is aimed at helping graduate students acquire the skills needed for a career in research. The class sessions cover topics such as the choice of a research topic, making a work plan and executing that plan effectively, what to do when you are stuck, how to write a publication and choose a journal for publication, how to write proposals, the ethics of research, the academic career versus a career in industry, time-management, and a variety of other topics. The course is open to students with very different backgrounds; this ensures a rich and diverse intellectual environment.

**Teacher:** Roel Snieder, Green Center GC240F, tel. 303-273-3456, email [rsnieder@mines.edu](mailto:rsnieder@mines.edu), <http://www.mines.edu/~rsnieder>

**Prerequisites:** open to graduate students and senior undergraduates. Otherwise the consent of instructor is needed.

**Textbooks and/or other required material:**

The Art of Being a Scientist, by Roel Snieder and Ken Lerner, Cambridge University Press, 2009, ISBN 978-0-521-74352-5.

**Course Objectives:**

Help create student develop effective research habits. Make students aware of the various choices that need to be made in a career in science, and offer consideration that may help in making those choices. Offer practical skills that make research more efficient.

**Topics covered:** What is science? The advisor and thesis committee. Questions drive research. Giving direction to your work. Turning challenges into opportunities. Using the scientific literature. Communication. Publishing a paper. Time management. Writing proposals. The scientific career. Applying for a job.

**Class/laboratory schedule:** One 50-minute lectures per week at the following time and place

Section A: Wednesday 3-4 PM in AH162

Section B: Thursday 1-2 PM in GC249

**How to get help?** Please do not hesitate to seek my help or advice. You can do this in the following ways:

1. Ask questions in class. Never hesitate to ask, even if I have explained material before. You can safely assume that if something is not clear to you, there are several classmates that have the same question. I will also answer questions related to homework.
2. Drop by in my office. I travel much and am busy, but you need not hesitate to come by with questions regarding the class or your research experience. You can see my schedule online by visiting [http://inside.mines.edu/~rsnieder/Snieder\\_schedule.html](http://inside.mines.edu/~rsnieder/Snieder_schedule.html) . I will not use email to answer questions about the material covered.

**Student absences from class, labs, or exams.**

Attendance of this class is mandatory. All students are advised to be familiar with CSM's policy regarding the make-up of work missed due to excused absences. This policy may be found in the Bulletin. If a student is ill and exhibits flu-like symptoms, they should not attend class, labs, or exams. Students must inform me ahead of time by email if they cannot attend class. In all cases of unexcused absences the faculty member has the right to deny the student the opportunity to make up all or part of the missed work.

**Evaluation:** class participation (40%), homework (60%).

**Person who prepared this description and date of preparation:** Roel Snieder (January 2013)