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Teaching graduate students The Art of Being a Scientist¹

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Graduate education in the classroom traditionally focuses on disciplinary topics, with non-disciplinary skills only marginally discussed, if at all, between graduate student and adviser. Given the wide range of advisers with different types and quality of communication skill (or lack thereof), the professional coaching delivered to students often is restricted to just the technical aspects of research. Yet graduate students have a great need to receive professional training aimed at, among other things, helping their graduate career be more efficient, less frustrating and less needlessly time-consuming. We have addressed this gap in graduate education by developing the one-credit course “The Art of Being a Scientist.” This course covers a diverse range of topics of importance to being an effective and creative researcher. Topics covered include the following: What is science? Choosing a research topic, department, and adviser. The adviser and thesis committee. Making a work plan. Setting goals. Ethics of research. Using the scientific literature. Perfecting oral and written communication. Publishing papers and writing proposals. Managing time effectively. Planning a scientific career. Applying for jobs in academia or industry. In evaluations of the course, students invariably comment that they could have avoided significant problems in their graduate study and saved valuable time if they would have taken the course earlier on. This is an indication that the course not only useful for students, but also that it is best taken early in a their graduate career. The material covered in the course is captured in the book “The Art of Being a Scientist: A Guide for Graduate Students and Their Mentors,” published by Cambridge University Press; more information can be found at: www.mines.edu/~rsnieder/Art_of_Science.html From this website one can download a description of the curriculum used in the class, including homework exercises. Currently we are expanding of professional education by offering more lectures and workshops in order to better prepare graduate students for a career in science.

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