

# 2YC Faculty Resources in the Geosciences

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## **1. What are the two things that your disciplinary professional organization or discipline-based NSF-funded project does particularly well?**

1. The geosciences have several national projects funded that aim to improve undergraduate geoscience education by supporting faculty including (see list below). These projects, each supported by grants from the National Science Foundation, have websites at SERC. Collectively they provide resources when getting ready to teach a class, designing or revising a course, helping develop student skills, and working to build a strong department or program. The project websites are listed below, with highlights about two of the resources.

The Math You Need, When You Need It provides web modules to help students succeed with mathematics in introductory geoscience classes and workshops for faculty interested in using these modules in their courses. The modules give students the quantitative skills that they will need, just before they will use them in a geoscience course. Each individual module addresses a single math topic in your geoscience course and is divided into three parts.

- a page that introduces and explains the concept (Why is it important? Where is it used?) and provides a set of steps that students can use to solve mathematical problems
- a set of practice problems in the context of geology with worked answers (using the steps provided on the introduction page)
- (optional) a set of quiz questions that provide an opportunity to for students to show what they have learned. If the instructor uses this part of the website, the instructor gives students a login and password.

There is also a webpage for the instructor that gives information about what is not covered in the rest of the module and some insight into why a given topic is hard for students.

On the Cutting Edge is a comprehensive, discipline-wide professional development program that offers an annual series of face-to-face workshops as well as virtual or hybrid workshops and webinars. Examples of workshops that have been of particular interest to community college faculty include teaching introductory geoscience courses, innovative and effective course design, the workshop for early career geoscience faculty. The website includes resources on ~ 40 topics including affective domain, assessment of learning, course design, data, simulations and models, metacognition, service learning, teaching methods, undergraduate research, urban students and urban issues, and visualizations (as well as numerous geoscience specific topics (see the website for the complete list). The website includes more than 1600 community-contributed teaching activities, an amazing resource for faculty interested in teaching. The website also provides a course design tutorial and resources on the two-year college faculty job search.

- The Math You Need, When You Need It: math tutorials for students in introductory geoscience <http://serc.carleton.edu/mathyouneed/index.html>

- On the Cutting Edge: <http://serc.carleton.edu/NAGTWorkshops/index.html>
- Starting Point: Teaching Entry-level Geoscience  
<http://serc.carleton.edu/introgeo/index.html>
- Building Strong Geoscience Departments <http://serc.carleton.edu/departments/index.html>
- InTeGrate: Interdisciplinary Teaching of Geoscience for a Sustainable Future  
<http://serc.carleton.edu/integrate/index.html>

2. I'm very excited about two of the outcomes of a workshop held in 2010 on The Role of Two-Year Colleges in Geoscience Education and in Broadening Participation in the Geosciences: a new organization and a new NSF-funded project, both of which are building networks and communities. The new organization is the Division of Geoscience in Two-year Colleges, the first division established in the National Association of Geoscience Teachers. The Geo2YC Division is described in more detail in the essay by Dave Voorhees. The new project is SAGE 2YC (Supporting and Advancing Geoscience Education in Two-year Colleges), which held its first workshop in July 2012 on Preparing Students in Two-year Colleges for Geoscience Degrees and Careers. Building a strong and diverse geoscience workforce is a critical national challenge and two-year colleges (2YCs) play an important role in increasing both the number and diversity of geoscience graduates. We are offering a series of follow-on workshops and a webinar series in the coming year will add to the website to expand the opportunities for participation in the project. Visit the project website for more details. <http://serc.carleton.edu/sage2yc/index.html>

**2. If you could propose (and obtain funding for) one new activity to engage community college instructors in professional associations and other discipline-based projects related to teaching and learning, what would it be?**

I am intrigued by the possibility of a webinar series for faculty teaching introductory geoscience courses that builds on the model of the Economics "Cutting Edge" webinar series described in Mark Maier's essay. The webinar would include a presentation by a national expert on an important geoscience topic, recent geologic event, or innovative pedagogic approach followed by time for question and answer and discussion. I am also intrigued by the possibility of developing local/regional networks of geoscience faculty from both two-year colleges and four-year colleges and universities who would work together to enhance their introductory geoscience courses and who would work on improving transfer of 2YC students to geoscience students as majors.