

FOUNDATIONS

Newsletter of the Geo2YC division of the National Association of Geoscience Teachers
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Top Ten Reasons I Love Teaching Geology at a Community College

(reprinted with permission from *Geotripper*, a blog by Garry Hayes, online at <http://geotripper.blogspot.com/>)

by **Garry Hayes**
Modesto Junior College

Oh, I cannot resist a meme involving top ten lists! [Eric Klemetti at Eruptions](#) started it on the topic of liking volcanoes. He was followed by [Callan at Mountain Beltway](#) on geologic structures, [Siim Sepp at Sandatlas](#) on sand, [Silver Fox at Looking for Detachment](#) (on detachment faults, of course), and Hollis at [In The Company of Plants and Rocks](#) (on Wyoming). I teach geology at a community college, and I can't imagine a greater career. My list isn't on a specific geologic topic, it's about the joy of teaching about the Earth...

What happens when you teach geology at a community college?

We get to study anything we want

When I was in the master's program at Reno back in a different century, I had trouble settling on a geological discipline. I finally pursued a project in neotectonics, but I was constantly distracted by other stuff that was going on. Being at a community college means I have few opportunities for directed research, seeing as how I teach a large number of classes and labs. If a student asks a question on some area of the earth sciences, I get to track it down. Some years it's dinosaurs and paleontology. Other years it's seismology, or metamorphic rocks of the Sierra Mother Lode. I love learning about all of it.



We get to travel a lot to interesting places

I take my students a great many places around California, the American West, and the world. If you are a regular reader of my blog you already suspected this...



We get to meet interesting people

There seems to me to be no truer melting pot in our society than the campus of a community college. In

a classroom you have people from all kinds of backgrounds thrown together: conservative and liberal (and "don't care"), rich and poor, young and old, people of faith and atheists, and people of many different cultures. The college lecture hall and especially the college laboratory is a place where people meet as true equals, and some actual communication can take place between people who would otherwise never interact. And I get to meet and learn from them all! I figure that in my 23 years of teaching, I have met something like 10,000 people. I obviously can't remember every single one of them, but it is kind of neat to be in some public place and have a stranger walk up and say "Hi, Mr. Hayes! You were my teacher years ago!"



We get to achieve goals:

Sometimes I sit in a restaurant or wander slowly through a store and I think about how the business has been there for whatever total of years, and the employees put in their shifts and look forward to their breaks. There is always a lot of hustle and bustle, there is always routine. The faces change, and sometimes the owners change, and at the end of the day, what has changed? A few more people have been fed, some more items have been sold, and for what purpose? Making money, and staying in business for another day. That is all well and good for a capitalist system, but what a mind-killing bore. There is nothing to work towards. There are no goals, at least not for the drones who do all the work (I imagine the owners have a goal of dominating their particular business; I learned that from the game of Monopoly). As a teacher, I and my students have a challenge, one that has a beginning and an ending. It may be that a student's goal is to pass the course somehow and move on, so they can start a career and...make money like a good capitalist. But I have the challenge of guiding students to know something more than they did when they started (what we call student learning outcomes). And the information is something that

enriches their lives (and in the odd case, maybe even saving their lives; think earthquake preparedness).



We get to be creative

The art of teaching constantly requires thinking up new ways to enable learning on the part of the student. I have to challenge myself to break out of a mold when something isn't working. And I love drawing; by the end of the day I am usually covered with colored chalk. I've also grown to love photography, too.

Geology is fascinating

I can't speak for others, but I taught business math for a few semesters early in my career. If I had been teaching business math or accounting or economics for the last two decades, I think I would be nuts by now. I just can't imagine making certain subjects interesting. But there isn't a day that goes by when something fascinating isn't going on somewhere in the world. The stories are sometimes tragic, and sometimes awe-inspiring, but never boring. Even the most *pedestrian* subjects can be made interesting in some way (if you work at it)...even soils. We always have something strange and bizarre to talk about in class.



We help people discover a world outside their own

This isn't the same as the note above about traveling. Not all my students can go on field trips, but we get to open their eyes to the existence of strange and wonderful places beyond the confines of their normal everyday lives and hometowns. Every geological process involves examples from all over the planet; we use multimedia examples from our own lives or those of others to illustrate these incredible earth systems.



We get to contribute to the health of planet Earth


The decisions about how best to keep the planet liveable for 7 billion people are being made for the most part by those with a financial stake in outcomes and the politicians they lobby. Their priorities are not always correlated with everyone else's best interests. Without money, our best hope for just outcomes in environmental issues are the votes of an educated population. The community college system is on the front lines of providing that education.

We get to make a real and lasting difference

I am proud of what many of my former students have accomplished. A decent number of them went into geology, but more satisfying to me is how many of them are teachers now. There is a cascading effect of positive outcomes when students become teachers

Let's see, that's nine. What was the tenth? Oh yeah...

We're gonna get rich

Because teachers are held in the highest regard by society and especially by politicians. The politicians think that the people who are responsible for educating our children and teenagers deserve the highest possible compensation for their many years of academic preparation and daily challenges in the classroom. Now, if you actually believe in the accuracy of this last item, I recommend maybe not going into the field of education for a career. But if you want to look back on your life and say I changed things for the better, give a thought to teaching. And it's not too late to start no matter how old you are, or what career you are in now. 

SAVE THE DATE

**For a Planning Workshop to Establish
URECAS: Unique Research Experiences for
two-year College faculty And Students**

12–13 July 2012
at AGU Headquarters in Washington DC

This summer, AGU Education will be hosting a planning workshop to discuss the development of a program to strengthen the role of two-year college Earth and space science students in the future workforce. Support to attend the meeting will be provided for approximately 30 two-year college Earth and space science faculty who are currently engaged in research with their students or who have a strong interest in developing a research program. Also encouraged to attend are four-year college faculty who are currently partnering on research programs with two-year college faculty. A variety of expert speakers and panelists will help frame and build discussion on best practices in and barriers to building and maintaining such research programs. Check <http://www.agu.org/education/regularly> for information on applying to attend. If you have questions, contact principal investigators Pranoti Asher (pasher@agu.org) or Bethany Adamec (bhadamec@agu.org).

This workshop is supported by the National Science Foundation Geosciences Directorate (Opportunities for Enhancing Diversity in the Geosciences award # 1201578).

Call for InTeGrate Module Authors

by David McConnell
North Carolina State University

The InTeGrate Project (Interdisciplinary Teaching of Geoscience for a Sustainable Future) seeks applications from faculty and instructors to become co-authors of modular teaching materials for use in college-level introductory geoscience or environmental science courses.



Module teams will consist of three co-authors who will write, test, revise and publish modules that support broad development of geoscience literacy by teaching about geoscience/environmental science in the context of societal issues. Each module team member will receive a \$15,000 stipend for the successful completion of the module.

Over the life of the project we anticipate the creation of twelve modules. In this first round of module development, we seek applications to fully support teaching of one of the following module topics over approximately two weeks of classes:

- Humanity's dependence on Earth's mineral resources
- Interchanges between ocean and atmosphere in short-term climate variations
- Natural hazards, earth processes, and society
- The availability of sufficient clean freshwater
- Impact of modern environmental change on the biosphere

The application deadline is March 16, 2012. You may apply independently or as part of a team. Team members must be from 3 different academic institutions. All module materials must meet the standards set forth in the InTeGrate Design Rubric.

For more information, see the Call for Authors and the Module Author Application form:

http://serc.carleton.edu/integrate/call_authors.html

http://serc.carleton.edu/integrate/author_apply.html

Contact David McConnell with questions

(damcconn@ncsu.edu) 

2012 Workshops for Sustainability & Climate

by Cathy Manduca
Carleton College

The topics of sustainability and climate change offer important opportunities to engage students in science that is multidisciplinary, complex and societally relevant. Thus, we are pleased to announce a suite of workshops for college faculty addressing various aspects of sustainability and climate science in higher education.

Two workshops from the InTeGrate project will address sustainability at two different scales: first at the level of departments, programs and degree pathways, and secondly in the design of individual courses. These workshops are designed to foster an integration of geoscience and other disciplines in the teaching of sustainability.

Systems, Society, Sustainability and the Geosciences - July 24 - 26, 2012, Carleton College, Northfield, MN

Application deadline: April 20, 2012

<http://serc.carleton.edu/integrate/workshops/sustainability2012/index.html>

Teaching Climate Complexity - May 7 - 16, 2012

Application deadline: March 31, 2012

<http://cleanet.org/clean/community/workshops/climate2012/index.html>

...In addition, don't forget about this workshop:

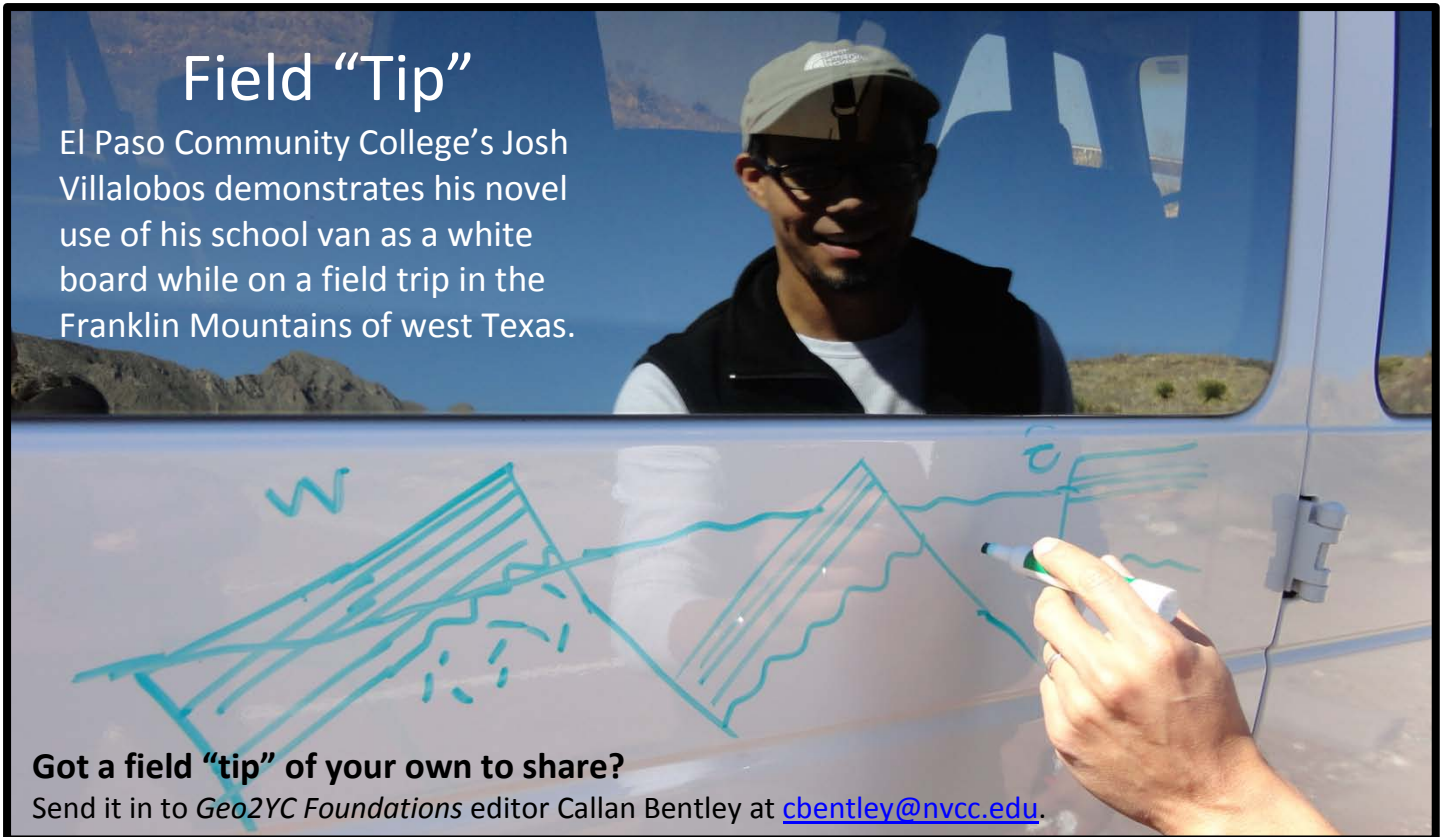
Teaching the Methods of Geoscience - June 27-30, 2012, Montana State University, Bozeman MT

Application deadline March 30, 2012

<http://serc.carleton.edu/integrate/workshops/methods2012/index.html> 

Field “Tip”

El Paso Community College’s Josh Villalobos demonstrates his novel use of his school van as a white board while on a field trip in the Franklin Mountains of west Texas.



Got a field “tip” of your own to share?

Send it in to *Geo2YC Foundations* editor Callan Bentley at cbentley@nvcc.edu.

Scott Mandia: a Community College Climate Communicator on the National Level

A conversation between **Callan Bentley** of *Northern Virginia Community College* and **Scott Mandia** of *Suffolk County Community College*.

CB: I recently became aware of the work of Scott Mandia, professor of physical sciences at Suffolk County Community College in New York (and an AGU member). When faculty at two-year colleges do prominent, important things on the national level, I sit up and take notice. Scott graciously agreed to let me ask him a couple questions about his work, and to post the resulting digital “interview” both here in Foundations. I also posted in on my blog.

Could you please tell me about your background? I’m interested in hearing about the formative experiences that developed your personal interest in science, your academic path, and research interests.

SM: When I was growing up I always thought I would be the next Stephen King. I loved to read scary books and to watch horror films. However, I was always a curious kid and I did enjoy science. It was high school where I really got turned on by science and thought that would be a career path for me.

I lived in California until age 16 so there really was no “weather”. When I moved to the east coast (Massachusetts) I experienced the seasons and all of the varied weather that comes with them. My best friend’s father worked for the National Weather Service in Boston and he would bring old maps in to school for me to look at. I decided that I wanted to be a TV weather forecaster and would go to college for meteorology.

I enrolled at University of Lowell (now UMass-Lowell) in their meteorology program which was a mirror image of Penn State’s program at the time. While a college student, I interned for Channel 7 news in Boston and really enjoyed the limelight of television although I could see that it was not a secure job, especially if one wished to be a family man. I saw that the path to a major market would involve a lot of luck and several relocations.

While a junior in college, I was approached by a local school district to speak to a group of 4th graders about weather. I brought a few props and did a few experiments. The kids loved it and I had fun. My name was put into a speakers list that was used by various school districts and I began to receive more and more requests. After doing several of these talks to groups ranging from 1st grade to high school, I realized that teaching could be more fun than weather forecasting.

I went to Penn State for graduate school and I requested a full teaching assistantship. After my very first class with college students, I was hooked. I knew that I wanted to be a college teacher. In fact, I requested teaching assignments above my normal research assistance and my thesis adviser granted me a course every semester because he knew I would be happy and happy graduate students are productive graduate students.

While there, I did my Master's thesis on tropical squall lines and how these systems influenced heat fluxes between the ocean and atmosphere. This data was to be used in global circulation models. I enjoyed my research but, to be very honest, I loved teaching much more. Talking to people is always more rewarding than staring at a screen or pushing a pencil around the paper. I still feel that way today.

CB: *How did you come to work at a community college? How long have you been there, and what are your thoughts on community and junior colleges in American education?*

SM: I never thought I would end up at a community college. One day my office-mate at Penn State walked in and dropped a piece of paper on my desk and said, "Scott, this has your name all over it." It was a community college teaching position at Suffolk Community College on Long Island, NY with minimum degree requirement of MS Meteorology. It never occurred to me that I could teach at the college-level without having the Ph.D. I called the dept. chair and realized that this job was perfect for me. I was fortunate to have been offered the job and have been teaching here for 21 years now.

I tell my students every semester that if there was one thing I would do differently it is that I would have gone to a community college for my first two

years. I sat with 200 other students in my physics and calculus classes at U of Lowell. I would have learned so much more with 35 students per class like we have here at Suffolk.

Given the current economic downturn, the affordability of community colleges when paired with the high quality of undergraduate education offered, makes two-year colleges very attractive. The past few years my institution has had large increases in enrollment so the value is becoming well-known.

CB: *Tell me a bit about your interest in global warming – when did you become aware of the problem, and what are your motivations in educating people about it? What techniques have you employed to further understanding of climate?*

SM: Global warming was not on my radar until 2007. I knew that humans were part of the problem but I did not understand that we were the main drivers of global warming until the IPCC (2007) reports were released. After reading these reports, it was pretty clear to me that humans were changing the climate and that we needed to reduce emissions of heat-trapping gases if we wished to remain in the climate in which our species evolved.



Scott Mandia, sitting in a warm climate.

One day in early 2008, I walked by a colleague's class while he was teaching geology and I heard him say that man-made global warming was a big hoax to generate research grants. Stunned, I lingered and listened. The gist of that lecture was that climate change was a natural cycle and that the

sun was responsible for today's climate. I asked instructor where he was getting his information given that the IPCC report was pretty clear that his position was incorrect. The next day he gave me a bunch of literature from The Heartland Institute. After reading these documents I knew the "science" presented within was incorrect and misleading and was laced with political commentary. I thought to myself, "Wow, if an actual geologist believes this stuff what chance does the average American have"?

Around the same time, I read Mooney & Kirshenbaum's [*Unscientific America: How Scientific Illiteracy Threatens Our Future*](#). Reading this book convinced me that scientists were not doing a good enough job communicating their work to the public and that is why Heartland Institute anti-science propaganda was so effective. I decided that I would create a Web site that bridged that gap. That site is [*Global Warming: Man or Myth? The Science of Climate Change*](#).

Since that time I have also added social media to my tool belt. I use [Twitter](#) and [Facebook groups](#) to push quality science to the general public. Web pages are only useful if people keep coming back to the page. With social media, information goes to them instead. I am a huge fan of Twitter. The only drawback to social media is that it is self-selective. I always worry that I am preaching to the choir when I need to reach those on the fence.

One group I co-founded with Drs. John Abraham and Ray Weymann is the [Climate Science Rapid Response Team](#). This group is made up of over 140 climate scientists who respond to climate-related inquiries from the media and our lawmakers. The media is in the best position to deliver accurate science information to the general public and to our elected leaders but only when they have access to that information. The Climate Science Rapid Response Team is committed to delivering that service. We are advocates for science education. To date we have responded to about 250 inquiries from various individuals including members of The White House & Congress and across the entire spectrum of journalists – even from college newspapers.

I have two very small boys and as a parent I want what we all do: to leave our children a better and

safer world than the one we grew up in. Climate change could very likely make tomorrow's world less safe, less healthy, and more costly to my children. I feel it is my duty as a parent and as a citizen to try to prevent that from happening.



Scott Mandia's Halloween Costume: "the Caped Climate Crusader"

CB: *Describe the inception, history and goals of the Climate Science Legal Defense Fund, including your role in it. (When this was announced in mid-January, it was the news that brought your name to my attention.)*

SM: [The Climate Science Legal Defense Fund](#) was established with one goal: to protect the scientific endeavor. Scientific research has brought us amazing advancements in technology, medicine, and in our basic understanding of the planet. Over the last twenty years, a small handful of politically-motivated think tanks and legal foundations, because they disliked certain scientific findings, have taken legal action against scientific institutions

and individual scientists. In recent years, the legal attacks have intensified, especially against climate scientists.

The scientific method is designed around the belief that skepticism is good. Results should be subjected to the utmost scrutiny through the peer review process, followed by close examination and replication by others in the scientific community. Those whose ideas do not live up to the standards of rigorous science have instead chosen to litigate.

For the individual scientist these legal actions are a painful burden. Academic salaries were not designed to support ongoing legal expenses. Legal actions also have taken many of our brightest scientific minds away from their research to focus on frivolous lawsuits. This state of affairs is unacceptable. The United States of America should be the leader in science and technology, and it cannot do so if unscrupulous people subject our scientists to these actions.

The Climate Science Legal Defense Fund was established to make sure that these legal claims are not viewed as an action against one scientist or institution, but that they are seen as actions against the scientific endeavor as a whole. As such the Fund will defend climate scientists who are dragged into litigation and act aggressively to protect the interests of the scientific endeavor.

In addition, the Climate Science Defense Fund will create platforms and opportunities for members of the scientific community to gain a better understanding of the legal issues surrounding their work.

Joshua Wolfe and I are co-managers of this effort but we have received a tremendous amount of help from organizations that understand the importance of this effort. I wish to especially thank Jeff Ruch, Executive Director, and his staff at [Public Employees for Environmental Responsibility](#) for being our fiscal sponsor and for all of their guidance to this point. It has been a marriage made in heaven.

CB: *What do you see as the advantages and disadvantages of pursuing such goals from a two-year college setting?*

SM: Not sure how to answer this question. CSLDF is not really “college” work at this time nor do I wish it to appear that SCCC is affiliated in any way with CSLDF.

My work with Climate Science Rapid Response Team is certainly supported (in spirit only) by my college. Again, I am unsure how to answer this question.

CB: *Well, this is one I was personally wondering about, since I'm a community college professor who also pursues non-job-related outreach and research. While it isn't a job requirement, I feel motivated to do it, including partly for the reasons you describe about citizenship and a better future for my children. So I guess what I was getting at there is: Does being employed at a community college serve as an advantage to your outreach (say, because it gives you more time, that colleagues at a 4-yr. university would be spending on research) or is it a hindrance (where, say, people take you less seriously because you "only" teach at a community college)? You follow what I'm saying? There are lots of people doing climate science education - I'm interested in your perspective on it specifically as a 2-year college faculty member.*

SM: I do not think I have more time because I teach more courses than the four-year faculty but they are doing research in place of some teaching. I think it is a wash.

Some have claimed that “I am just at a community college” so why should anybody listen. That has become rare now because actions speak louder than credentials. What my work does show is that if one wishes to become a science communicator, it can be done from a two-year setting or from a high-powered four-year research institution. It is the person and not the location that matters. The top climate scientists have been very supportive which shows that they are not elitist in the slightest. Before I was involved in CSRRT or CSLDF, Gavin Schmidt adding my global warming web site to [Realclimate's "Start Here" page](#) because he thought it was useful for beginners. He had no worries that I was a community college professor. Good science information is good science information.

CB: *Tell us about the positive and negative feedback you've gotten for being a community college professor taking such a public stand on a controversial issue.*

SM: Almost all of the feedback has been wonderful. There are many people working hard to communicate the science so that people realize it is not a controversial topic and that the solutions to the climate change issue will secure our health, our security, and our economic future. I am just one of many and I receive a lot of advice from others. Anything that I do is really a group effort.

CB: *I'd like to thank Scott for taking time to share his work with the Geo2YC community. Thanks!* 

Eureka for AGU URECAS

by **Pranoti Asher**
American Geophysical Union


Dear Geo 2YC faculty,
Greetings from the nation's capital! I hope your semester is going well and that spring is on its way in your part of the world. The American Geophysical Union (AGU) Education staff were awarded a planning grant by the National Science Foundation Geosciences Directorate (Opportunities for Enhancing Diversity in the Geosciences award # 1201578) to help launch a new initiative. This new initiative, titled Unique Research Experiences for two-year College faculty And Students (URECAS), will begin with a planning workshop this summer (11-13 July) that will bring together faculty from two-year colleges, four-year colleges and universities, and representatives from professional societies and federal organizations to learn more about how to support two-year college faculty and students engaged in Earth and space science research and to discuss the development of a program to strengthen the role of two-year college Earth and space science students in the future workforce.

The goals of this workshop are for all of us to gain a robust picture of the successes in and barriers to engaging two-year college students in research, and to learn ways of overcoming these barriers. In particular, the workshop will help:

- Identify and develop a community of two-year college Earth and space science faculty who are engaged in research experiences and programs with their students.
- Determine model programs and best practices within the community that make these research experiences and programs successful for both faculty and students.
- Identify barriers to successful faculty and student research experiences and programs.
- Connect faculty who want to engage in research experiences with their students to national and local resources that can assist them in being successful in these endeavors.
- Highlight and develop collaborations that will allow two-year college students and faculty to attend and present their research at the AGU Fall Meeting in the future.



Students participating in an NSF-funded Research Experiences for Undergraduates Program survey glacial grooves. Photo: National Science Foundation

I'm really looking forward to your participation in our workshop. For more information and to apply, visit <http://urecas.agu.org/>. The application deadline is **2 April 2012**. If you have questions, contact [Pranoti Asher](#) or [Bethany Adamec](#), AGU Education staff. 

What is an Associate's Degree in geology good for?

by Josh Villalobos
El Paso Community College

I'm often asked this question by my geology students, as I poke my nose into their educational careers and in some cases even by fellow faculty, as I poke my nose into their teaching philosophies. The associate degree has long had a stigma on being an inadequate degree or undesirable. Many students don't think, or bother to think, of this being an educational option or goal. I have even had students who have more than enough course credits to apply for an associate but feel that having it may diminish or tarnish their resume!

As the role of community colleges changes in the United States, so should the view of an associate's educational value. For community college students an associate offers more than just a degree, it offers a path. Many first time students attending community colleges are not academically ready to begin at the university level, come from low-income households, or have major outside commitments such as families, or full-time jobs.



Belinda Gonzalez (EPCC Geological Science major), Marissa Cameron (UTEP Geological Science major and former EPCC Geological Science graduate) and Galen Kaip (UTEP Geology technician) performing a real-time kinematic survey for Belinda's EPCC research project on groundwater/surface water interactions.

These circumstances put community college students at a higher risk of dropping out or not completing their educational careers. However an

associate's provides the students not only a path to follow for their education but also recognition of work completed toward their bachelors. If for some reason a student needs to stop their education they will have nothing on paper (or resume) to show for it other than their transcripts. Having associates gives you a degree to show on a resume or discuss during a job interview if they ever have to put their education on hold.

Having an associate's degree is more likely to earn you a better income and chance for advancement than having only a high school diploma. The added benefit of having an associate degree is that it shows an employer an added level of dedication to their field from the student. In the competitive job market of today a resume with Associates, Bachelors, and a Masters in geology will often look more notable than one with a Bachelors and Master degree. Unfortunately many 2YC do not offer an Associate of Arts or Associates Science in Geology. In 2007 El Paso Community College (EPCC) began the steps to create an A.S. degree in Geological Sciences to accommodate the growing interest of students for a degree in geology. Regrettably there is no step-to-step guide for the creation of an Associate degree that would work for all 2YCs.

The steps to create a degree plan within a 2YC vary from state to state and from institution to institution. For example, in the state of Texas all institutional degree plans must meet the guidelines of The Texas Higher Education Coordinating Board (THECB), whose members are appointed by the Governor of Texas. Details of the geology associates such which courses could be in the core curriculum and hours within the degree had to be in compliance with the THECB. Once the degree plan is created and follows the THECB guidelines the degree plan must then be proposed then approved by the Curriculum Board at EPCC which is composed of faculty, administrators, and staff.

The process we undertook may not be universal among 2YCs but the questions that we posed to see if we should proceed are.

Is there an adequate population to support an associate's degree?

From 2004-2005 course enrollment in the introductory geology classes rose 26% to over 2900 students per year. Although numbers of students

who wanted to continue beyond introductory geology classes or major in geology was difficult collect adjunct and full-time geology instructors were able to gauge the need for an associate's degree by the increasing number of students showing interest in their classes or the field of geology.

Is there an adequate amount of diverse geology courses offered to create a degree?

To ensure that the degree had an adequate amount of geology courses we created three new geology courses (GEOL 2389 Research Topics in Geology, GEOL 2407 Geological Field Methods and GEOL 1305 Environmental Geology) to accompany the new degree.

Will the courses in the A.S. degree plan be accepted at a 4-year's B.S. degree plan?

In order to ensure all courses in the degree plan would transfer to the University of Texas at El Paso (UTEP) we entered into an articulation agreement stating that all 60 credits of the EPCC's A.S. Geological Sciences degree would be transferable into UTEP's geological sciences Bachelors degree. EPCC and UTEP have entered a growing trend of 2YC and 4YC in creating 2+2 programs where students take their first two academic years at a 2YC (60 credit hours at EPCC) then finish the last two years at 4YC (60 credit hours at UTEP) culminating in an associates and bachelor degree for the student. In order to facilitate students transferring into the Bachelors program we opted to make as many details of the new degree program as similar to UTEP's Department of Geological Sciences as possible. Smalls details such as changing the name of our department from Geology to Geological Sciences led to fewer students questioning the differences between the two departments and if their degree would transfer. We also made the degree plan look similar in appearance to help facilitate the transferring processes.

Which skills and knowledge would transferring students need in order to be successful in upper division courses in Geology?

Asking UTEP faculty on what they feel would make an incoming sophomore with an A.S. from EPCC ready for upper division geology courses helped in the process of choosing which courses to include and which to create for the associate degree . The

principle hurdle for students entering the geology program at UTEP were the math courses. We felt that taking math at 2YC with smaller class sizes would be beneficial to students in the program. Therefore the sequencing of the math courses in the



Sandra Garcia EPCC Geological Science major collecting tree core samples at a closed copper refinery for her NSF-funded research. The cores will be analyzed for toxic metals.

Geological Sciences A.S. degree plan is dependent on entrance placement exams. So a student who tests into Calculus I can take Calculus I and II at EPCC. If a student tests into pre-calculus I then they must take pre-calculus I and II at EPCC then take Calculus I and II at UTEP. This ensures that a student enters into the math program at UTEP with a high chance of success. Basic geology skills such as mineral identification, map reading, and use of Brunton are now heavily emphasized in the A.S. courses.

Do we offer an Associate of Science or Associate of Arts?

Bachelor 's degrees in geology are math and science intensive. Unfortunately many 2YC students lack the basic fundamentals of both subjects. Leading students to be less successful in their course work or feeling unsure on their ability to continue. In order to prepare 2YC students we opted to create an A.S.

degree plan. The A.S. degree requires either a Physics and/or Chemistry course. Both of these classes require either pre-calculus (Chemistry) or Calculus (Physics). Smaller classes and more individualized attention in these courses at a 2YC can improve the outcome for students.




Students in the EPCC GEOL 2407 Geological Field Methods class performing a resistivity profile with students in the UTEP GEOL 4334 Non-Seismic Methods class.

How do we get the word out?

After creating the A.S. degree we needed to let students and counselors know about the degree and what careers are in geology. Some of the steps we took to get the word out were flyers, emails, and meetings with counselors. But by far the most successful experience was having EPCC migrated to a paperless course catalog. Having our degree posted on-line allowed us to insert [a small video on our degree and about geology in general](#).

Since 2008 EPCC has offered an A.S. in geology with great success. As of 2011 the number of declared majors doubled to 48 students. Having a degree plan also meant that we can now actively track our students while at EPCC ; send e-mails regarding new geology courses and opportunities directly to them, [collect data for use in grants and external funding](#) , and identify students have made the successful transition to UTEP.

Our ability to provide a success path in geology for our 2YC students is often challenging and demanding, but being able to properly answer the question “what is an associate’s degree in geology good for?” will always make it rewarding. 

Dorothy Stout Professional Development Grants

<http://www.nagt.org/nagt/programs/stout.html>

These grants go to faculty and students at two-year colleges and K12 teachers to support participation in Earth Science classes or workshops, professional meetings, field trips, and the purchase of materials for classroom use.

Deadline - April 15, 2012

Geo2YC needs a new Vice President!

Colleagues -


Our growing Division of the National Association of Geoscience Teachers needs an additional leader to join our Executive Board in November 2012. Each year we elect a new Vice President who serves a 1-year term before becoming President for a 1 year and then, as a Past President, serves on the Nominations and Election Committee for 5 years. The primary requirement and duties of the Vice President are:

Vice-President - Geo2YC Division Member who is a current or former 2YC professor or instructor

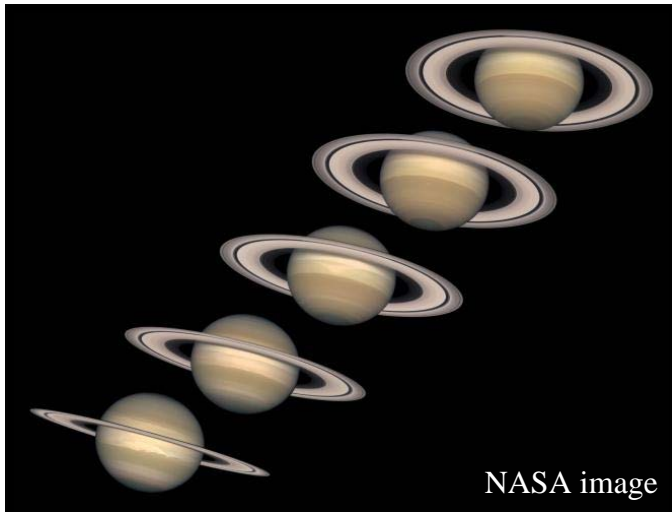
- a. Participates in Executive Board meetings
- b. Recruits and coordinates 2YC liaisons to NAGT Sections
- c. Chairs Long-Range Planning Committee

Any Geo2YC Division member can nominate themselves or another member. Please send your nomination(s) by email or in writing to Kaatje Kraft (vanderhoeven@mesacc.edu) or Bob Blodgett (rblodgett@austincc.edu) by **Friday, April 13, 2012**.

Regards,

Kaatje Kraft vanderhoeven@mesa.edu
Bob Blodgett rblodgett@austincc.edu 

A new, comprehensive list of astronomy apps for smart phones and tablet computers




by **Andrew Fraknoi**
Foothill College

An annotated overview of 98 astronomy applications for smart phones and tablets has been published in the on-line journal "Astronomy Education Review." The list features a brief description and a direct URL for each app. It may be especially useful for everyone who got a phone or tablet for the holidays and is looking for something fun or educational to do with it.

You can access the article free of charge at:
<http://dx.doi.org/10.3847/AER2011036>.

The listing includes a variety of apps for displaying and explaining the sky above you (some using the GPS function in your device); a series of astronomical clocks, calculators, and calendars; sky catalogs and observing planners; planet atlases and globes; citizens science tools and image displays; a directory of astronomy clubs in the U.S.; and even a graphic simulator for making galaxies collide. A number of the apps are free, and others cost just a dollar or two. A brief list of articles featuring astronomy app reviews is also included.

Astronomy Education Review is an on-line journal about astronomy education and outreach -- published by the American Astronomical Society -- which celebrated its 10th anniversary this fall. You can find it at <http://aer.aas.org>. 

2YC Concerns are Central in New InTeGrate Project

by **Elizabeth Nagy-Shadman**
Pasadena City College

InTeGrate (Interdisciplinary Teaching of Geoscience for a Sustainable Future) is a community effort to improve geoscience literacy and build a workforce that is prepared to tackle societal issues such as environmental and resource challenges. This 5-year project is an NSF STEP Center grant and will run from 2012 through 2016. The project team involves collaborators from 14 institutions across the U.S. and is overseen by Cathy Manduca, director of the Science Education Resource Center (SERC) at Carleton College.



The 2YC planning group, at the El Paso meeting. **Front row** (left to right): Elizabeth Nagy-Shadman (*Pasadena City College*), Allison Beauregard (*Northwest Florida State College*), Mark Maier (*Glendale Community College*), Jan Hodder (*University of Oregon*), Josh Villalobos (*El Paso Community College*), Heather Macdonald (*College of William & Mary*). **Back row** (left to right): Bob MacKay (*Clark College*), Bob Blodgett (*Austin Community College*), Callan Bentley (*Northern Virginia Community College*), and Chris DiLeonardo (*De Anza College*). Not pictured: Ellen Kabat-Lensch (*Eastern Iowa Community Colleges*).

The first goal of the project is to develop curricula that will dramatically increase geoscience literacy of all undergraduate students in *all* fields of study. This includes the large majority of students that do not major in the geosciences, those who are historically under-represented in the geosciences, and future K-12 teachers, such that they are better


positioned to make sustainable decisions in their lives and as part of the broader society. The second major goal is to increase the number of majors in the geosciences and associated fields that are able to work with other scientists, social scientists, business people, and policy makers to develop viable solutions to current and future environmental and resource challenges.

Collaboration among educators from all types of colleges and universities is a signature element that infuses every activity of the InTeGrate project. In particular, the development, implementation, and dissemination of all aspects of the project will include strategies that focus on 2YC issues, as well as broadening access issues, as the project unfolds. The first major step towards this objective occurred February 9-10, 2012, at the University of Texas at El Paso (UTEP), where an 11-member 2YC planning committee met to discuss challenges that are unique to 2YCs and how these groups can best be served by InTeGrate. A parallel meeting overseen by Laura Serpa (UTEP) focused on issues related to serving diverse student populations. The members of both groups spent some parts of the meeting together, as 2YCs often consist of diverse student populations, thus the two groups share some common concerns.

The 2YC planning committee agreed that some of the issues that should be considered in InTeGrate's curriculum development and implementation program designs include:

- curriculum that meets articulation requirements and matches course SLO's (student learning objectives),
- teaching materials that are adaptable for a wide range of student abilities,
- materials that serve the needs of both instructors who want to customize materials and those who prefer to use lessons "as written",
- extending learning outside of the classroom, including local projects that provide relevancy to students,
- balancing high quality student learning with straight-forward faculty assessment,
- making materials accessible and appealing to adjuncts, as well as fostering support and professional development for adjuncts,

- encouraging the formation of local networks of 2YC faculty and adjuncts to help test and assess materials in their classrooms,
- providing opportunities to form links between 2YCs and informal education (national parks, museums, continuing education, etc.), and
- assistance convincing 2YC administrators (especially non-scientists) of the value of this project.

Over the course of five years, the InTeGrate project will engage hundreds of faculty in developing new courses and materials, creating new programs, and disseminating results via the professional development workshops. For more information about the program as well as ways to participate, visit <http://serc.carleton.edu/integrate>. 

Linking the Geo2YC community

President's column

by Dave Voorhees

Waubonsee Community College

I am on LinkedIn, and occasionally follow some discussion groups in there. One of those discussion groups, *American Association of Community Colleges*, recently had a discussion thread on retention in community colleges. As this is something I have been thinking about recently, I started reading the posts. There was one post that seemed to summarize, at least for me, many of the challenges I face in my classroom. It was a post by a counselor at College of Lake County, a community college that is about a two-hour drive from my own campus. In her post, she said "at community colleges a good number of our students 'fit school into life' whereas at the four-year schools most students 'fit life into/around school' ". To me, this describes or explains the source of many of the unique challenges that we all face every day in our classes. At a four-year school, the students are physically committed to their education, as well as intellectually and emotionally committed. Our students may be emotionally and intellectually committed, but they are not physically committed. I think that this lack of physical commitment and


the typical overwhelming list of responsibilities and tasks our students have that are outside of our classrooms sets our students up for conflict, which often leads to an academic performance that is not commensurate with their potential.



Dave shows Tycho Brahe the direction to look.

At least for me, it is a constant struggle to balance these student conflicts, maintain academic integrity to manage those conflicts, and to deal with the skill sets that our students bring to the classroom. This is fundamentally the rationale for the upcoming technical session in the 2012 Geological Society of America Conference at Charlotte sponsored by Geo2YC, *Innovations & Challenges in Non-Major Instruction in Two- and Four-Year colleges*. If you have suggestions or solutions to this problem, please come and tell us about it. Abstract submissions start in April, and are due by August 14th. Please also consider any of the excellent workshops and webinars that are mentioned elsewhere in this newsletter to help you manage our unique 2YC challenges.

There are many ways that you can help us to define these challenges and goals of 2YC Geoscience

instruction. They range in scope from attending workshops and conferences, helping in various ongoing projects undertaken by Geo2YC, to becoming part of the Geo2YC Executive Board. Please contact me if you want to be part of the Geo2YC movement (dvoorhees@waubonsee.edu). 

Training the Future Geoscience Workforce

by Shelley Jaye

Northern Virginia Community College

President Obama paid a visit to the Annandale Campus of Northern Virginia Community College (NOVA) in February. I was fortunate to be able to attend and listen to the President outline a part of his proposed budget for 2013 which includes an \$8 billion fund to train 2 million community college students for jobs in high-growth industries. Further, the Obama administration proposes to increase federal investment in the STEM subjects to help draw more young people into these fields. “This should be an engine of job growth all across the country, these community colleges, and that’s why we’ve got to support them,” the president said in his speech (see: [Transcript of the President's speech](#)). If I could have been able to speak to the President I would have told him about the program that we are actively working on at NOVA to train geoscience students for potential Physical Science Technician (PST) positions at the US Geological Survey, conveniently headquartered near us in Reston, VA.

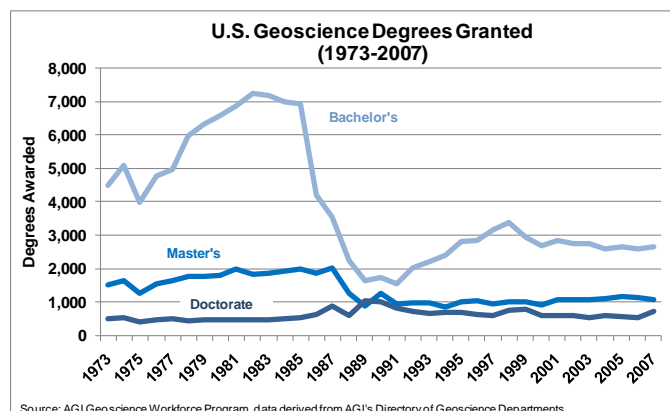
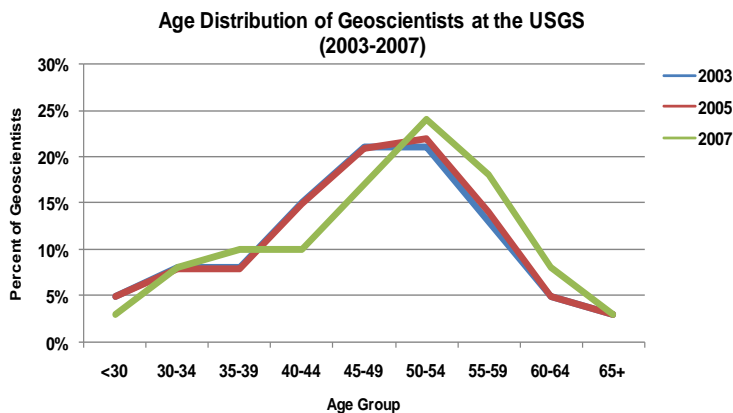


Figure 1

The USGS approached NOVA last fall with a proposal to train PSTs with the hope that the best and brightest would be offered summer internship

positions which may, in turn, lead to full time employment at the Survey. Statistics show that the population of professional geologists and trained technicians is aging (see [AGI Workforce Summary](#)). The significant decline in geology majors during the 1990's (Figure 1) has resulted in a void of trained geoscientists available to step into these positions as retirements at the Survey loom large (Figure 2). Realizing their dilemma, the USGS became proactive in engaging the community college as the initial step in providing trained technicians to add to their workforce. The thought is that with training and opportunity, these students will potentially remain at the Survey as full-time PSTs or go on to pursue Bachelor and advanced degrees in the geosciences, returning to the Survey as associates and research scientists. I jumped at the chance to oversee this effort because I knew that at NOVA, we already had well trained and enthusiastic students that could step into these internship positions as early as this summer.



Source: AGI Geoscience Workforce Program, data derived from the Office of Personnel Management fedscope database


Figure 2

Together with several scientists from the USGS, we worked on defining the curriculum and designing new courses which will lead to a new Physical Science Technician Associates of Applied Science Degree. This new degree program is in the final stages of approval at NOVA. We are in a unique position at NOVA to be able to offer not only the common introductory courses in geology, biology and chemistry but also courses in Mineralogy, Paleontology, Environmental Geology, GIS, Hard and Soft Rock prep and analysis and Field techniques courses all deemed necessary by a USGS PST. Although no students have been fully trained as PSTs as of yet, the USGS still had a need and the available resources to hire NOVA interns beginning this summer. We offered this

opportunity to our current student body that have taken or are currently enrolled in our Geology Program courses. Through a competitive process of resume submission and interviews, I am happy to announce that six of our NOVA students were offered internship or part-time employment at the USGS.



NOVA Environmental Geology students Andrew Roberts, Nick Rossi (one of the USGS interns) and Sean Warwick along with NOVA Instructor Shelley Jaye listen to James Madison University Geology Professor and Department Head Steve Leslie explain undergraduate research projects on a recent tour of the JMU Geology and Environmental Sciences Department.

We look forward to the continued success of this partnership with the USGS and hope to expand it to include other employers in need of technicians trained in the physical sciences. We want to provide our 2YC students with opportunity while we make every effort to encourage students to consider STEM careers and especially to become a part of the future geoscience workforce. 

On Blogging

by Steven Schimmrich
SUNY Ulster County Community College

I write a geology-themed blog. It feels odd, even shameful, to publicly admit this since I've always liked the semi-anonymity one has while blogging. I started on a whim a little over two years ago and have published over 550 posts (and counting) to date. I receive anywhere from 400-500 unique hits each day (mostly the result of Google searches on topics I've written about). There are times when

blogging comes easily, and I have so many ideas I can barely restrain myself from posting more than once a day, and other times I feel there's nothing to say and a week or two pass before I feel guilty enough to write up a post.

Here's my first piece of non-solicited advice about blogging. You have to want to do it and enjoy writing. If you're doing this because you feel you should for some reason and you're not always writing about things that interest you, your blog will die a slow death. It will be too much like work but without any monetary reward to compensate for the aggravation.

Why do I do it? If you're looking for a well-reasoned pedagogical explanation of its usefulness in the classroom, look elsewhere. If you're looking for a high-minded defense of public education and community outreach, I'm also not your guy. I do it because I want to and I enjoy it. That's it. As I wrote in my very first blog post:

The biggest problem I had with starting a blog, even though I've been toying with the idea for months now, is that it seems too egotistical. Literary masturbation. Self-publishing (traditionally a sign of failure as a writer). I guess it is all those things. Who the hell am I thinking I have anything interesting to say? I have no answer to that. But I'm doing it anyway. If it bothers you, click the back button and go away.

I enjoy writing and getting formally published is rare at this point in my career as a full, tenured professor and department chair at a community college with heavy teaching loads and no publication expectations. Before taking up blogging, I queried several local newspapers and other publications regarding their interest in a weekly science column. They had none, even though they all host regular astrology columns, which I think is an interesting comment on public science literacy.

Second piece of advice. Blogging is blogging. It's not peer-reviewed publication. It can't be listed on your C.V. It's not always educational or even interesting. It's not polished and sometimes mistakes are made. People will read something

you've written and disagree, maybe even hate you for it (especially if you tackle "controversial" topics in our society like how Noah's flood never really happened). You will not get famous or make money blogging.

So, once again, why do it? If, like me, you have an overinflated sense of your own expertise and believe that you can contribute something to the public's understanding of science and education, it gives you a voice. A voice you would not otherwise have as a lowly community college geology professor reaching a few dozen students each semester.



A screen shot from Steve's blog, *Hudson Valley Geologist*, <http://hudsonvalleygeologist.blogspot.com/>

How many of us haven't cringed when watching a movie and wanted to write about all the scientific errors? Or have read an article, written by a supposed science journalist, that's riddled with mistakes and demands clarification? How do you feel when you're watching the news and hear a U.S. Senator talk about all of the "scientific" debate about evolution? Wouldn't you love to write a rebuttal when a national leader claims graduation rates would be an excellent way to determine a college's future funding?


What about downsides to blogging? Besides the time and effort, it really doesn't cost anything. As long as you have Internet access, you can easily set up a blog for free on Blogger. I have ethical problems with advertising, but you can go that route if you wish and even make a few dollars if people are dumb enough to click on links to ads on your blog.

The biggest downside is its potential impact on your reputation. I don't normally mention where I work

on my blog but it would be easy enough for people to figure it out with a simple search on Google. I don't advertise my blog to my students but do have a link on my faculty web page. People I know have stumbled on the blog and tell me they read it. I'd rather not know since I find it inhibiting to wonder if I need to self-censor posts based on who my audience is at the time. So I don't think about it. I also don't have much of a reputation to protect anyway.

My next piece of advice is to untenured faculty members. Blogging about science is fine but stay away from the controversial topics and don't say bad things about your students or the college. Someone who decides your professional fate may well be reading your blog and may be lacking a sense of humor about it all. That's what tenure is for, to protect a faculty member's freedom to espouse unpopular ideas without reprisal from offended administrators or public officials. Wait until you get there before speaking your mind.

In these past two years, I've written about a lot of different things. Some are straightforward posts about topics in earth science and astronomy (courses I teach at my community college). Others are on education since I feel I have some expertise as an educator. But, I am a stereotypical geologist in that I dress poorly (once a Dean at our college requested that faculty dress more professionally – my response was to ask if I should then wear my hiking boots every instead of only on field trip days), drink beer with colleagues, and sometimes use foul language (my wife says I'm "salty," I prefer "earthy"). These things spill over into my blogging as do events in my personal life. If you decide to take up blogging, you can studiously avoid bad language and references to your family, but I've chosen otherwise. Whatever suits you personally – just consider the potential fallout.

My last piece of advice. If you think you might want to blog, then read blogs. That's how I started. I stumbled on a blog I enjoyed, followed links to other blogs, and became hooked. Some bloggers I read regularly, and others only occasionally. If nothing else, blogging is interesting and entertaining. 

FOUNDATIONS is edited by Callan Bentley, Northern Virginia Community College. Please get in touch with your feedback: cbentley@nvcc.edu

MAIL TO

National Association of Geoscience Teachers
P.O. Box 1897, Lawrence, KS 66044, U.S.A.

The membership year runs from
January through December.

NAGT Membership Application / Renewal

ONLINE MEMBERSHIP SERVICES ARE AVAILABLE AT: www.nagt.org

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I want printed copies of JGE mailed to me ☐ \$35

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The full range of membership services is available online.