# Faculty Survey about General Education Requirements in Science and Math at DePauw

## In your opinion, what are the three most important concepts for students to master in a general education science/math course that meets the SM requirement?

| | Response Count |
|---|---|
| | 32 |
| **answered question** | **32** |
| **skipped question** | **9** |

| Page 4, Q1. In your opinion, what are the three most important concepts for students to master in a general education science/math course that meets the SM requirement? | | |
|---|---|---|
| 1 | Science is interesting. Science is accessible. We need to understand some science to be good citizens. | Nov 7, 2013 11:30 AM |
| 2 | -the complex and dynamic nature of natural systems -probabilty and reliability -scientific reasoning | Nov 7, 2013 11:09 AM |
| 3 | threats to validity, basic tenants of scientific method, limitations of scientific findings | Nov 5, 2013 9:53 AM |
| 4 | Understand the carbon cycle. Energy and energy flow through the universe and biological systems. Understand the distinctions between the different sciences | Nov 5, 2013 8:41 AM |
| 5 | - science is a process - the concept of uncertainty; what it means and what it *doesn't* mean - quantitative reasoning skills are important/necessary for a well-functioning society | Nov 4, 2013 1:12 PM |
| 6 | This is a hard question to answer as concepts are numerous across the disciplines. It's hard to pinpoint just three across all the sciences. | Nov 4, 2013 11:53 AM |
| 7 | Master? I think is discipline dependent for the majors, while all students should know more about the following than less. Energy in it's various forms and the transfer of energy. Cognition/memory or how the nervous system works in general. Very vague, but no less important, the intertwining of the sciences or relationships between the different sciences. | Nov 4, 2013 11:48 AM |
| 8 | 1. Scientific method (an obvious one…but emphasize the development and testing of multiple working hypotheses and how this continues to help refine our understanding of scientific concepts…that is, we might not know the "right" answer). I'm sure there are important concepts related to specific disciplines (e.g., Geoscience-plate tectonics, Biology-evolution, etc.). I guess I'm not so much wrapped up in the idea that each person needs to know certain scientific concepts as I am that they need some concepts in a natural physical science (non-human) and then a second course. I've never been a fan of an interdisciplinary course that tries to hit a highlight here and there for each of the sciences. I'm rather see students getting some depth in a particular discipline. | Nov 4, 2013 10:57 AM |
| 9 | I'm confused by the question. On the previous page you included important concepts under content, along with facts, etc., which sounds like its a discipline specific question. But here I think you mean it more generally...in which case I would say I want students to grasp the meaning and origins of scientific consensus. | Nov 4, 2013 9:09 AM |
| 10 | evolution, thermodynamics, ecology | Nov 4, 2013 8:59 AM |
| 11 | I'm not sure if you'd consider the following skills or concepts: --- Understanding the relationship between research and how research is reported in the media. --- Understanding how statistics can "lie." --- Understanding the scientific method and why it can be relied upon (and what the pitfalls of it are). Thanks for the opportunity to provide feedback, Pam and Jackie. Best, Matt | Nov 4, 2013 8:25 AM |
| 12 | Science is not history. Models are not reality. Science facts will change over their lifetime. | Nov 4, 2013 7:05 AM |

| Page 4, Q1. In your opinion, what are the three most important concepts for students to master in a general education science/math course that meets the SM requirement? | | |
|---|---|---|
| 13 | scientific process meaning of research "big ideas" from one science or a small group of sciences | Nov 4, 2013 12:08 AM |
| 14 | This I am unsure of. | Nov 3, 2013 11:18 AM |
| 15 | It is difficult to answer this question. | Nov 2, 2013 8:45 AM |
| 16 | No opinion. | Oct 31, 2013 5:00 PM |
| 17 | complimentary events (negation) partitioning visual interpretation of data | Oct 31, 2013 12:55 PM |
| 18 | 1. basic statistics 2. basic biological concepts 3. scientific methodology | Oct 31, 2013 11:44 AM |
| 19 | 1. how life is related to chemistry and physics - specific examples that explain this to students that they can remember/rely on later in life 2. that scientific knowledge is growing but this does not negate past knowledge 3. that we can make predictions and test them | Oct 31, 2013 11:11 AM |
| 20 | Energy, Entropy, and Evolution | Oct 31, 2013 10:36 AM |
| 21 | this is really hard because what I'd like them to know what are the fundamental concepts in the particular field they gain exposure to but I don't preference any field over another because I realize in one or two course we can't cover even the most core concepts in every science | Oct 31, 2013 9:45 AM |
| 22 | I'm divided on how to answer this. One way is to choose broad -- probably interdisciplinary -- scientific topics/questions that will likely be most pertinent in the students' lifetime, e.g. (in no particular order): 1. knowledge of genetics, at the molecular and behavioral levels, with connections to traits, abilities, etc., and also with connections to genetic engineering research and ethical questions for animals, plants, etc. 2. Climate change, with contributions from geosciences, physics, chemistry, biology, psychology, etc. 3. An overview tech/engineering course that could be geared a bit towards the computers and gadgets and underlying science -- e.g. gives students some familiarity with computer science principles, with a bird's eye perspective of the chemistry, physics, etc. involved in materials and tech advances, perhaps with some discussion of behavioral and ethical issues regarding how humans relate to technology, etc.; but could also relate the course to a variety of tech advances across disciplines and a feel for how these advances are made, what are the ethics involved in some cases, etc. I could also answer the question with a relatively narrow set of concepts, e.g. 1. understanding the scientific approach and how to weight evidence, falsify hypotheses, etc. (with examples across disciplines; 2. statistical concepts, including central tendency, law of large numbers, etc. 3. Validity within a discipline and compare it to validity in other disciplines | Oct 31, 2013 9:39 AM |
| 23 | Scientific method; how to perform and interpret an experiment; understanding data | Oct 31, 2013 9:20 AM |
| 24 | the scientific method difference between a scientist and others who research (is there one) critical analysis of data - how is data presented and how do you look at it | Oct 31, 2013 9:20 AM |

| Page 4, Q1. In your opinion, what are the three most important concepts for students to master in a general education science/math course that meets the SM requirement? | | |
|---|---|---|
| 25 | Understanding uncertainty at the level of individual studies/experiments Understanding the different forms of scientific knowledge and the relative levels of confidence they should be accorded (e.g. that "peer reviewed" does not mean "correct;" that uncertainty and openness to new explanations do not mean science is merely arbitrary) Understanding the way science really works (I don't mean "scientific method" here; I mean the nitty-gritty of how it's funded, the roles of both cooperation and competition, and the tension between being open to new ideas and the principled rejection of crackpottery). | Oct 31, 2013 9:06 AM |
| 26 | Interconnected nature of modern science and how many different disciplines can come together to solve problems. | Oct 31, 2013 9:02 AM |
| 27 | I couldn't boil this down to three. | Oct 31, 2013 8:29 AM |
| 28 | This is highly dependent on the department but I would think an understanding of how models are used in science would permeate most fields. | Oct 31, 2013 8:24 AM |
| 29 | Math is a language and can be used as such Physical and life sciences are precise, not exact | Oct 31, 2013 8:23 AM |
| 30 | Being aware of topics in the news that are relevant to what they learned in their science and math courses. | Oct 31, 2013 8:18 AM |
| 31 | 1. Notion of controlled expts and exptl design (e.g. double blind if it's a medical study). Some understanding of stats, i.e. that one replication/opinion/anecdote is meaningless. | Oct 31, 2013 8:18 AM |
| 32 | Even less overlap here. | Oct 31, 2013 8:16 AM |