SOHOP: The Mathematics Major at JHU

Richard Brown, Director of Undergraduate Studies

Department of Mathematics

April 13, 2017

Richard Brown, DUS (Math Dept.) SOHOP: The Mathematics Major at JHU

Part of the description of department from Academic Advising website:

Mathematics

Mathematics is more than the fundamental language and underlying analytical structure of science and technology. It is a formal way of thinking – an art that ties together the abstract structure of reason and the formal development of the logic that defines the scientific method. From the study of just how arguments and theories are formed in language and technology, to the framework of quantitative and qualitative models of the natural and social sciences, Mathematics is based upon the development of precise expressions, logical arguments, and the search for and exposure of pattern and structure. Part of the description of department from Academic Advising website:

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Mathematics is the *formal development of one's ability to think analytically and reason deductively* It is more the development of one's ability to take any sufficiently complex and poorly understood situation, analyze that complex situation to uncover its underlying structural framework, and be able to use and abuse the nature of that underlying structural framework to say something useful and conclusive about the situation.

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- Seen this way, it has very little to do with actual numbers.
- In quantitative areas, this is called problem solving. But it is like this in all aspects of life.
- This is why we believe every student (as a scholar-in-training) should take mathematics here.

Mathematics?

This is Math? (Was there a math class here earlier?)



...but so is this.... (M.C. Escher's "Hand with Reflecting Sphere")



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Mathematics?

...and this... (Complex dynamics in dimension 1)



...and this... (the Solenoid, and inverse limit space)



Mathematics?

...and this... (the seven bridges of Königsberg)



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Mathematics?

...and even this?!!? A recent social Media virus (Cheryl's Birthday)



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- 32 Graduate Students
- 80 Undergraduate Majors
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- Those studying math simply for the heck of it.

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We build mathematicians..., but we seek to tailor our major to the <u>student's interests</u> rather than force the student to conform.

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- flexible enough to accommodate each of these three fairly distinct types; we have options within our requirements, and can construct the major to best fit an individual student's plans.

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We do not require a ton of courses; one a semester usually works fine. It is just that our courses are each very challenging.

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- Departmental honors.
- Access to our graduate courses (and graduate students) when properly trained.
- A Bachelors/Masters four year program option.

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- A chance to compete mathematically in regional and national competitions.

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- My Blog: The Chalkboard (www.jhuchalkboard.blogspot.com)
- My TEDx talk: Why Mathematics? (https://www.youtube.com/watch?v=kg2mOl042ng)
- Facebook: JHU Undergraduate Mathematics (www.facebook.com/JHUUndergradMath)
- Twitter: @ JHU_Math_DUS
- email: brown@math.jhu.edu

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 $(Don't \ just \ take \ my \ word \ for \ it. \ ``http://www.careercast.com/jobs-rated/best-jobs-2014'':$



Mathematician, University Professor,



Statistician!)