Multivariable calculus essay assignment

Why you should study MC

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Due on Thursday, September 8, 2011

Rationale

Scientists working in the fields of psychology, brain research/neurology, and education/learning science have discovered that anyone learns best if they **want** to learn the material. This is called "intrinsic motivation". It helps you grasp new material, deeply understand it, connect it to previous knowledge, and most of all remembering it.

"Extrinsic motivation" (motivation from outside like wanting to get good grades, being required to pass a course to get a certain degree, or the wish to satisfy other people) on the other hand helps but is not as strong and helpful as intrinsic motivation.

I therefore consider it essential that you find reasons for yourself *why* **you** *should want to learn multivariable calculus (MC)*. This is why I ask you to write this essay.

Instruction

You might not yet have decided which subject(s) you want to major in. Your enrollment for MATH 103 though lets me suspect that at least one of the majors you are interested in requires some knowledge of multivariable calculus. Please feel free to choose one of your possible majors if you consider several ones relying on MATH 103. I will call this subject your "field".

Your tasks now are the following:

1. Please find out **why** you are required to take MATH 103 (or MC for short) as part of your studies in your field. You can do so by reading course material, talking to your colleagues, researching on the internet, asking more advanced students, or by asking your adviser or any other instructor in your field/mathematics or any combination of these.

2. Make sure you find a reason or a number of reasons that convince **you** to learn MC. Reasons can be as diverse as
   - individual applications of MC in your field
   - a general understanding of how MC is used in your field
   - an explicit problem professionals or researchers in your field wouldn't be able to solve if they didn't know sufficiently many ideas/methods from MC
   - a technology that heavily relies on MC (and you thus wouldn't be able to use or develop further if you didn't know MC)
   - computer code regularly applied in your field that relies on methods from MC (and that you thus wouldn't be able to alter or even truly understand if you didn't know MC)
   - mathematical insights you expect to have from learning MC, based on your own past experiences with learning mathematics or on someone else's word
   - ...

[2] cederbaum@math.uni-tuebingen.de

3. Write an essay describing your intrinsic motivation for learning MC. This motivation can but need not be related to the applications MC has in your field. If it is, please describe explicitly what kind of applications motivate you (e.g. a specific computer code, problems, technology, etc. as explained in the bullet points under 2.).

   If your motivation is not relying on applications in your field, but e.g. on past experiences you had with learning mathematics, please describe these experiences explicitly (in particular which kind of mathematics, where you had the experience, what was so fascinating about it etc.).

Formal Requirements

Minimum length of essay:	2 standard pages (typed)
Due date:	Thursday, September 8, 2011, before class begins
Collaboration:	You are invited to collaborate with your colleagues on your essays, exchanging ideas and advice etc. The final work, however, must be your own.

If you are unsure how to work on this assignment or have any questions concerning it, please come and talk to me as soon as possible!