Gmail **Hadi Amini <h.amini67@gmail.com>**

Request for feedback on new Computer Science Course

Laura De Carli <decarlil@fiu.edu> Mon, Sep 21, 2020 at 10:19 AM
To: Hadi Amini <amini@cs.fiu.edu>
Cc: John Zweibel <zweibelj@fiu.edu>, Prabakar <prabakar@cis.fiu.edu>, Trevor Cickovski <tcickovs@fiu.edu>, Mohammadhadi Amini <moamini@fiu.edu>

Dear Dr. Amini,

Based on the information that you provided, we approve the proposed course with the modification that you suggest
All the best,

Laura De Carli
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On Fri, Sep 18, 2020 at 8:20 AM Hadi Amini <amini@cs.fiu.edu> wrote:

> Dear Dr. De Carli,
>
> Thanks again for your feedback. Please find the detailed answers to your inquiries below. Please let me know if you have any further inputs:
> 1- You acknowledge that your proposed course description has a lot in common with your MAS 3105. It has also a lot in common with EEL3120 - in fact, we estimate that your proposed course has over 40% overlap with both MAS3105 and EEL3120. These two courses are not focused on the application of linear algebra to computer sciences, but we are not sure what percentage of your course is.
>
> >> Thanks for the feedback. As the main definitions of vectors, matrices, and some of the operations that are needed for data analytics, distributed computing, and machine learning are from linear algebra, they are common with both MAS3105 and EEL3120 courses. I have reached out to ECE department regarding EEL 3120. According to the syllabus (attached) "EEL 3120 is an introductory course on linear systems deals with the use of linear algebra to analyze resistive and dynamic electric circuits."
> Hence, as you properly mentioned, our focus and EEL3120's focus are completely on different applications. Indeed, the fundamental definitions are shared between all three courses, with the MAS3105 dives deeper into theories, EEL3120 applies it to circuits and engineering applications, and the proposed courses applies these concepts to computer science applications. The proposed course also has some programming and hands-on experience to expose students to concepts that they need for data science, distributed computing, and machine learning courses.
>
> In order to understand better what you are proposing, we would like to see a complete syllabus, with a specific text (Boyd and Vandenberghe ?), and an exact list of the sections of your chosen text that they wish to cover in the course. The list of topics that you have already provided is not in 1 to 1 correspondence with section titles in the table of contents of the book that you mention. Since the textbook Boyd and Vandenberghe are available online, providing a list of sections to be covered would then allow us to be able to see exactly what you propose to do in the course.
>
> >> Thanks for your feedback. I tried to provide as much detail as possible in the syllabus. Please find the link to open access book here: http://vmls-book.stanford.edu/vmls.pdf
> Here are some components of the book that will be covered in the course. I would like to mention that we are not going to entirely cover all chapters of the book, specifically the part corresponding to fundamental definitions will be covered briefly, just to make sure students are familiar with the main definitions in linear algebra/systems. The main focus of the course is on the Computer science and IT applications of linear algebra. Here are the sections of the book that cover the applications: section 4(Clustering); section 12 (least squares), section 13(LS data fitting), 14 (LS classification), 16/17 (constrained LS & applications).

For the distributed linear optimization I will use my notes on linear programming that is mainly based on the pioneer George Dantzig, as well as distributed linear programming with Philip Wolfe.
When it comes to matrix multiplication, inverse, decompositions, and eigenvalue calculations, we will provide brief definitions and move forward to applied programming using large scale matrices. This helps students to see how these strong tools are applicable in data analytics.

Also, in your proposal, you did not specify which MAC class is a prerequisite for the proposed course, but we think that the mathematical prerequisite should be **(MAC 2311 or MAC 2281)** with a corequisite **(MAD 2104 or COT 3100)**. We don't think that it's realistic to expect students with MAC 1147 or even MAC 1105 mathematical training, to handle this subject. In principle it is possible, but for example, we do not see how students without some exposure to differential calculus can be expected to appreciate the topic 1.2, linear functions, and Taylor approximation.

>>Thanks for pointing out this important point. I agree and added **(MAD 2104 or COT 3100)** as the pre or co-requisites of this course. This helps us to ensure that students can handle definitions regarding functions. Students who are in COT3100 class can handle these concepts conveniently and we believe they will be able to learn the basic definitions covered in the propsoed course. In order to tackle the issue about the Taylor series, as it is not affecting other applications that this course covers, I removed Taylor approximation from the syllabus to address this concern.

Please let me know if you and your colleagues have any further input/feedback.

Thanks,
Hadi

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