# CS 420/520 – GPU Programming – Spring 2012

*Course Information*

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| **Professor:** | Dr. Necaise | **Email:** | rdnecaise@wm.edu |
| **Office:** | McGl 135 | **Web Page:** | `www.cs.wm.edu/~necaise/cs420` |
| **Phone:** | 221-3454 | | |


**Office Hours:** MWF: 10:00 – 11:00, W: 2:00 – 3:00, or by appointment.

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Introduces the design and implementation of parallel applications using the NVIDIA Graphics Processing Unit (GPU) and CUDA. This is a programming intensive course using the C++ language and the CUDA extensions. The structure of the course will include: lectures, classroom discussions, and projects. It will be divided into two main areas, learning the CUDA platform and developing parallel solutions to a wide range of problems using the CUDA platform.

**Textbook.** There is no required textbook for the course, but I will post the information for several good reference books and provide links to online resources.

**Programming Environment.** This is an advanced computer science course, with a heavy programming load. We will be using the C/C++ and the CUDA library under Linux. You are expected to either know, or be able to learn on your own, the C/C++ programming language.

**Assignments.** There will be a number of written and programming assignments. All assigned work is due on the date specified. Any assignment turned in after the due date/time but on the same day will be penalized 10%. Any assignment turned in after the day on which it is due, will be penalized 50% of the total value for that assignment. No assignment will be accepted that is more than **three** days late. If you turn an assignment in late, **you must indicate this on the top of the paper**.

**Exams.** There will be two exams during the term but there will be no final exam. There will be no make up exams unless you have a written excuse from the Health Center or permission is requested from Student Affairs.

**Final Project.** There will be a final group project for the course in which you design and implement a parallel solution for a problem of your choosing (with my approval). The size and makeup of the groups will be decided at a later date. The final project will also include a report and presentation with the presentations being made during the last 2 weeks of the term with each group having approximately 15 - 20 minutes for their presentation and to answer follow up questions. The final project can not be submitted late.

**Collaboration.** The programming projects are to be done individually, unless otherwise indicated. You may get help from other students in the form of discussion of the project and how to implement parts of the project, as well as debugging assistance, but you may not share code with each other. You may not use any code found on the Internet or published elsewhere except that provided by the instructor via the web page.

**Slip Days.** You have 5 "slip" days (includes weekends) that can be used on any of the programming assignments, excluding the final project. A slip day allows you to turn the assignment in late without penalty. If you plan to use a slip day, you must indicate this on the assignment when it is submitted. It is your responsibility to keep track of the number of slip days you have used.

**Attendance.** You are advised to attend all class meetings. You are responsible for all material related to any class meeting from which you were absent. A portion of your final grade will be based on attendance and class participation.

**Grade Distribution.** Your final grade will be computed according to the following approximate distributions:

- 50% for programming and written assignments
- 20% for the two one-hour exams
- 20% for the final project
- 10% for attendance and participation.

and the letter grade assigned as follows: A: $\geq 94$, A-: $[90 \ldots 93]$, B+: $[87 \ldots 89]$, B: $[83 \ldots 86]$, B-: $[80 \ldots 82]$, C+: $[77 \ldots 79]$, C: $[73 \ldots 76]$, C-: $[70 \ldots 72]$, D+: $[67 \ldots 69]$, D: $[63 \ldots 66]$, D-: $[60 \ldots 62]$, and F: $< 60$.

**Honor Code.** You may discuss programming assignments informally with other students. However, sharing a solution in the form of experimental results or the design or implementation of a program, is an honor violation. If you have any uncertainty about what this means, consult with me before you collaborate. All assignments should be done individually.

**Use of Laptops.** The use of laptops and mobile computing devices are permitted during class so long as they are being for the course such as for taking notes, finding information related to the course, etc. Laptops are not to be used during class for reading email, social networking, completing assignments for other courses, etc. If the use of laptops becomes distracting for myself or other students in the course, **I reserve the right to prohibit their use during class.**

**Common Courtesy.** Please be courteous to everyone in the classroom. Do not leave the room during class unless you absolutely must as this is distracting to others. If you are late to class, please be as quiet as possible when entering the room and find a seat close to the door so as to not disrupt the class. Do not use a mobile phone during class and make sure the phone is turned off or the ringer is muted before entering the classroom. Finally, my office door is open most of the time. **If it is closed, however, this is an indication that I can not be disturbed at the moment.** So, please try again later. You are always welcome to contact me by email.