York University
PHYS 2030: Computational Methods (3 credits)
Winter 2017

Time & Location
Lecture: MWF 11:30-12:30 (CLH J)
Lab: M 2:30-5:30 (DB 2032)

Instructor: Christopher Bergevin (cberge@yorku.ca)
Office: Petrie 240
Office Hours: TBD (and by appt.)

TAs:

- Hugh Podmore (podmore@yorku.ca)

Graders:

- Charissa Campbell (ccamp93@yorku.ca)
- Timjan Kalajdzievski (timjank@yorku.ca)

Course Website:
`http://www.yorku.ca/cberge/2030W2017.html`

Textbook:
Basic Concepts in Computational Physics, Stickler, BA & Schachinger, E (*Springer, 2014*)

Prerequisites: SC/PHYS 1010 6.00 or a minimum grade of C in SC/PHYS 1410 6.00 or SC/PHYS 1420 6.00; One of LE/CSE 1020 3.00, LE/CSE 1540 3.00; SC/MATH 1014 3.00 or equivalent. Corequisite: SC/MATH 2015 3.00 or equivalent, SC/MATH 2271. Basically/ideally, you should have some familiarity with Matlab (or similar programming language) and differential equations (or in the process of concurrently doing such).

Grading

There will be 100 total possible points in the course. Point breakdowns are as follows:

- Homework – **35 points**
- Midterm – **15 points**
- Final Exam – **20 points**
- Class attendance & Lab participation – **10 points**
- Group Project – **20 points**

Final grades will be no lower than as listed below:

$90 <$ points (90%-100%) = A+
$80 <$ points (80%-89%) = A
$75 <$ points (75%-79%) = B+
$70 <$ points (70%-74%) = B
$65 <$ points (65%-69%) = C+
$60 <$ points (60%-64%) = C
$55 <$ points (55%-59%) = D+
$50 <$ points (50%-54%) = D
~ 50 points ($\sim$50%) = E
points < 50 (0%-50%) = F

Homework: Assignments will be given on a weekly basis. While students are not discouraged from working together, each student is expected to turn in his or her own assignment. Points may be deducted for lack of explanation/clarity/completeness, or if it is unclear that the student independently came up with their own solution. For further specifics, see Academic Honesty section below.

Exams: There will be two exams: one midterm and one (comprehensive) final exam. Exams will cover all topics dealt with in class during lecture and assigned reading, as well as the HW. While material from the labs will not be covered directly, salient topics in class relevant to the labs will be (e.g., signal processing). Students will be allowed to bring a single page (double-sided) of notes with them for each exam. Note, as specified in the *lateness policy* below, there are no makeups.

Labs: You will need to be present for each weekly lab session, unless rescheduling is pre-arranged at the discretion of the instructor. Lab work will culminate in a group project (details will be made available later in the semester). Grades will be determined as described on the course webpage.

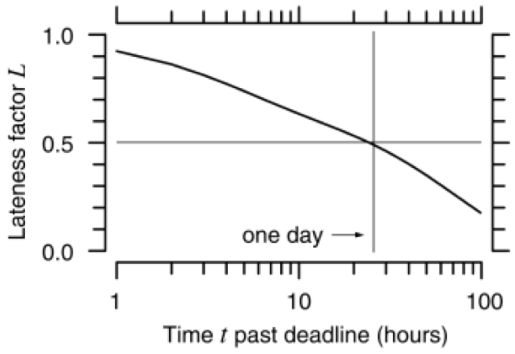
Course Policy

Lateness
Unfortunately, some deadlines in the *real world* are quite harsh and allow no room for lateness. Given such, this course will implement two policies:

1. **There will be no makeup exams**. It is very important that you are present in class for the exams and any assigned project presentation (as these determine more than 50% of your final grade!). Exceptions in extreme cases may be granted, but only upon prior approval or for an (excused) emergency.

2. All other due dates (i.e., for HW, lab reports, and project deadlines) will be subject to a severe lateness penalty. The grade for a particular assignment will be multiplied by a lateness factor

$$L = 0.3e^{-t/4} + 0.7e^{-t/72}$$



where t is the number of hours late. See figure for the lateness factor plotted as a function of time. Notice that the maximum grade for a report that is more than ONE DAY LATE is less than 50%.

Academic Honesty, University Attendance Policies and Classroom Conduct

An important part of learning how to program is discussing problems with other people, and reading other peoples code. This makes it important to think about what constitutes plagiarism. Here are some guidelines. You can discuss assigned problems with others as much as you want, and read each others code, but in the end you must do your own work. If you cut and paste someone elses code, you are plagiarizing. If you find yourself looking at someone elses code while writing your own, you are probably plagiarizing. If you memorize someone elses code and type it in without understanding how it works, you are plagiarizing. You should think of computer programming as problem solving, and it is important that you provide your own solutions to assigned problems. That said, discussions are an important part of solving difficult problems, and it is inevitable and acceptable that different peoples solutions will end up being similar in some ways.

Students at York University are expected to conform to the standards of conduct established in the Code of Student Rights and Responsibilities. Students found to be in violation of the Code are subject to disciplinary action. Students are responsible to be informed of University policies:

`http://www.yorku.ca/secretariat/policies/index-policies.html`

Regarding the Academic Honesty, students found to be in violation of the Code are subject to sanctions that will be determined by the severity of the infraction. The Code of Academic Integrity will be enforced in all areas of the course, including projects, tests, and homework. For assignments (e.g., HW, labs), students can (and are encouraged to) work together in groups. However, each student will be expected to turn in their own individual assignments and (reasonably) acknowledge contributions made by others.

Students are expected to attend every scheduled class and be familiar with the University Class Attendance policy. It is the student's responsibility to keep informed of any announcements, syllabus adjustments, or policy changes made during scheduled classes. Students may be administratively dropped if they miss more than three classes and/or the first class.

Students Who Require Reasonable Accommodations Based on Disability
Students planning to use accommodations for this course should privately identify themselves to their instructor within the first few days of class.

Important Dates (2017)

First Day of Class	Jan. 5
Add Deadline	Feb. 1
Midterm Exam	Feb. 17
Winter Reading Week	Feb. 18–24 (**no classes**)
Drop Deadline	Mar. 10
Last Day of Class	Apr. 5
Final Exam	TBD