



We recognize and acknowledge that McMaster University meets and learns on the traditional territories of the Mississauga and Haudenosaunee nations, and within the lands protected by the "[Dish With One Spoon](#)" wampum, an agreement amongst all allied Nations to peaceably share and care for the resources around the Great Lakes.

PHYSICS 1D03 – INTRODUCTORY MECHANICS 2020 Fall Term

C01 & C03	Instructor: Dr. Reza Nejat	E-mail: nejatsm@mcmaster.ca	Office Hours: TBA
C02	Instructor: Dr. Miranda Schmidt	E-mail: miranda.schmidt@mcmaster.ca	Office Hours: TBA
C04	Instructor: Dr. Patrick Clancy	E-mail: clancyp@mcmaster.ca	Office Hours: TBA
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Teaching Assistant(s): TBA		E-mail: TBA	

COURSE DESCRIPTION

Physics 1D03 is an introductory mechanics course designed for students in Engineering programs. Topics including kinematics, dynamics, Newton’s laws, energy, rotational motion and oscillatory motion will be covered. There is also a lab component where students become familiar with handling and analyzing data as well as relating theory and experiments.

Prerequisites

Registration in Engineering I or a program in the Faculty of Engineering

Course Expectations

The course is organized as follows:

- Weekly video modules with main course content (can be watched at a time that suits you) plus PDFs of PowerPoint slides of the lecture topics such as kinematics, dynamics, etc. ...
- 1-2 synchronous online/virtual (discussion, problem solving) sessions per week (times depend on your lecture section)
- 4 labs in the term – alternating with tutorials
- 5 tutorials in the term – alternating with labs
- Weekly LONCAPA problems
- 2 term tests
- 1 final exam

Class Schedule

C01 - Day(s): Tu We Fr | Time/Duration: 9:30 - 10:20AM | Location: Avenue to Learn / MicroSoft Teams

C02 - Day(s): Tu We Fr | Time/Duration: 12:30 - 1:20PM | Location: Avenue to Learn / MicroSoft Teams

C03 - Day(s): Tu We Fr | Time/Duration: 3:30 - 4:20PM | Location: Avenue to Learn / MicroSoft Teams

C04 - Day(s): Tu Th Fr | Time/Duration: 11:30AM - 12:20PM | Location: Avenue to Learn / MicroSoft Teams

This term there will be both asynchronous (PDF copies of PowerPoint slides and video modules for each week's topic that you can watch when you want) and synchronous (virtual sessions, live-streamed via Microsoft Teams, 1-2 times per week during scheduled lecture times). These live sessions include question-answer, discussion and problem solving examples.

Time/Duration: Live (discussion, problem solving) sessions will be 50 minutes long (during scheduled lecture times)

Lab Schedule

Day(s): Labs will be online/at-home experiments. You will have 10 days (total) to complete each lab.

Time/Duration: Labs should take ~3 hours but you have some flexibility in when you do the experiment (you do not have to do it during the scheduled lab time). You will have a week (Monday-Sunday) for performing the experiment and the last 3 days (Monday-Wednesday) completing and submitting the Lab report.

Location: See Avenue to Learn for details

Tutorial Schedule

Day(s): TBA – see Mosaic. There will be 5 tutorials this term. Tutorial will be online/virtual during scheduled tutorial sessions. Lab and tutorials are every other week, alternating.

Time/Duration: Tutorials are two hours and during the scheduled lab/tutorial time.

Location: See Avenue to Learn/Teams

Course Website

<http://avenue.mcmaster.ca/>

We will be using Avenue to Learn as the main source of information in this course. We will also use Microsoft Teams for synchronous/live (discussion, problem solving) sessions and tutorial group discussions as well as office hours.

COURSE AND LEARNING OBJECTIVES

Learning Objectives

By the end of this course students will be able to...

- Apply their understanding of introductory mechanics topics including kinematics, Newton's laws, rotational motion, energy, oscillatory motion, etc. to analyze conceptually and numerically both dynamic and static scenarios.
- Interpret graphical data and be able to analyse qualitatively and/or quantitatively the motion occurring.
- Perform at-home investigations and analyze data related to the physical principles featured in this course.
- Estimate the experimental uncertainty of a set of measurements, propagate uncertainties when determining results, and then discuss the accuracy of these results as well as sources of error in an experiment.



- Evaluate experimental findings and connect conclusions to physical theories/laws.

MATERIALS & FEES

REQUIRED MATERIALS/ RESOURCES

Textbook (required): *Physics for Scientists and Engineers*, Tenth Edition, by Serway and Jewett, published by Brooks/Cole Cengage Learning

Calculator (required): Casio fx-991MS or Casio fx-991MS Plus

iClicker (required): Reef Polling (online application – may be installed on your phone)

VIRTUAL COURSE DELIVERY

To follow and participate in virtual classes it is expected that you have reliable access to the following:

- A computer that meets performance requirements [found here](#).
- An internet connection that is fast enough to stream video.
- Computer accessories that enable class participation, such as a microphone, speakers and webcam when needed.

If you think that you will not be able to meet these requirements, please contact uts@mcmaster.ca as soon as you can. Please visit the [Technology Resources for Students page](#) for detailed requirements. If you use assistive technology or believe that our platforms might be a barrier to participating, please contact [Student Accessibility Services](#), sas@mcmaster.ca, for support.

COURSE OVERVIEW AND ASSESSMENT

Course Schedule – Physics 1D30 2020 - Approximate Timetable

Week Number	Begins	Topics	Text: Serway 10 th Chapters, Sections
1	Sep 07	Introduction, kinematics-1D, vectors	1; 2; 3
2	Sep 14	Kinematics-2D, Newton's Laws	4; 5
3	Sep 21	Newton's Laws	5
4	Sep 28	Circular Motion, Rotational Kinematics, Torque	6.1 - 6.2; 10.1 – 10.4
5	Oct 05	Rotational Dynamics; Test 1 (Oct 8, 2020)	10.5, 10.7; 9.6
6	Oct 12	Fall Recess	Recess
7	Oct 19	Center of mass. Equilibrium of a Rigid Body, Work	12.1 – 12.3; 7.1 – 7.4
8	Oct 26	Work, Kinetic Energy, Potential Energy	7; 8
9	Nov 02	Energy, Rotational Energy, Power	7; 8; 10.8
10	Nov 09	Momentum, Centre of Mass again; Test 2 (Nov 5, 2020)	9.1 – 9.7
11	Nov 16	Rolling, Angular Momentum;	10.9; 11.1 – 11.4
12	Nov 23	Oscillatory Motion	15.1 - 15.7
13	Nov 30	Oscillatory Motion	15.1 – 15.7



EVALUATION

Assessment	Due Date	Weight
Engagement		5%
Tutorials / Tutorial Quizzes	5 in term	10%
Labs	4 in term	15%
LONCAPA	12 in term	5%
Term Tests	Oct 8, 2020 and Nov 5, 2020	25%
Final Exam	TBA	40%
		100%

Engagement

You are expected to take an active role in your learning in this course. We will be incorporate formative quizzing within the modules and problem-solving sessions. We will use Reef Polling for these participation-based grades.

Tutorials / Tutorial Quizzes

Tutorial sessions develop skills for solving physics problems, and test students on the LON-CAPA assignments they have completed.

Labs

There will be 4 labs this term. Each lab will be released on a Monday, and you will have until the following Wednesday to submit your completed report – this allows you to complete the lab a time that suits you (you do not have to do it during a scheduled lab time). TAs will host office hours and answer questions via Teams/discussion boards. Labs will be submitted via CrowdMark.

There is no make-up lab. For each lab not completed before the end of term, your final grade will be reduced by 3 percentage points, in addition to a mark of zero on the missed experiment of lab. Notice that MSAF covers only 3 days, and the lab time is a week.

Lab exemptions: If you are repeating the course and you have already completed all the labs for 1D03, you are eligible for a lab exemption. Please fill out the survey (available on Avenue) to request this exemption.

LONCAPA

Individualized online homework problems will be due approximately weekly via the LONCAPA system. These are good practice questions for making sure you understand the material and preparing for larger assessments like the tests and exam.

Term Tests

The two term tests will mainly cover topics from weeks 1-4 and then 5-9 respectively, but you should remember that many of the concepts in this course build on one another.

Final Exam

The final exam in this course is cumulative (will contain material from the entire course). Details about the final exam will be posted prior to the exam.

REQUESTS FOR RELIEF FOR MISSED ACADEMIC TERM WORK

[McMaster Student Absence Form \(MSAF\)](#): In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar “Requests for Relief for Missed Academic Term Work”.

For the Faculty of Science, please follow the guidelines located [here](#).

Policy Regarding Missed Work

1. It is the students’ responsibility to regularly check the course webpage (ex. Avenue to Learn) for updates and announcements.
2. For **one brief absence**, you may use the MSAF self-reporting system at <http://mcmaster.ca/msaf>. You may use this **only once per term**, and only for a brief absence. In all other cases, you must take appropriate documentation to the Engineering I Academic Advisors.

ACADEMIC ACCOMMODATION OF STUDENTS WITH DISABILITIES

Students with disabilities who require academic accommodation must contact [Student Accessibility Services \(SAS\)](#) at 905-525-9140 ext. 28652 or sas@mcmaster.ca to make arrangements with a Program Coordinator. For further information, consult McMaster University’s [Academic Accommodation of Students with Disabilities](#) policy.

Physical and Mental Health

For a list of McMaster University’s resources, please refer to the [Student Wellness Centre](#).

ACADEMIC ACCOMMODATION FOR RELIGIOUS, INDIGENOUS OR SPIRITUAL OBSERVANCES (RISO)

Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the [RISO](#) policy. Students should submit their request to their Faculty Office **normally within 10 working days** of the beginning of term in which they anticipate a need for accommodation or to the Registrar’s Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.

Equity, Diversity, and Inclusion

Every registered student belongs in this course. Diversity of backgrounds and experiences is expected and welcome. You can expect your instructor to be respectful of this diversity in all aspects of the course, and the same is expected of you.

The Department of Physics & Astronomy is committed to creating an environment in which students of all genders, cultures, ethnicities, races, sexualities, abilities, and socioeconomic backgrounds have equal access to education and are welcomed and treated fairly. If you have any concerns regarding inclusion in our department, in particular if you or one of your peers is experiencing harassment or discrimination, you are encouraged to contact the Chair, Associate Chair of Undergrad Studies, Undergraduate Advisor (Level I), and/or Undergraduate Advisor (Levels II to IV) (contact details listed [here](#)) or to contact the [Equity and Inclusion Office](#).



COURSES WITH AN ON-LINE ELEMENT

Online Statement

McMaster is committed to an inclusive and respectful community. These principles and expectations extend to online activities including electronic chat groups, video calls and other learning platforms.

Some courses may use various on-line elements (e.g. e-mail, Avenue to Learn (A2L), LearnLink, LON-CAPA, Microsoft Teams, etc.). Students should be aware that, when they access the electronic components of a course using these elements, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in a course that uses on-line elements will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure, please discuss this with Sara Cormier (phys1Acoord@physics.mcmaster.ca).

McMaster University Statement on Inclusivity

The University values integrity, inclusiveness and teamwork, and strives to support the personal and collective growth of the McMaster student community.

These values are foundational to ensuring campus environments – both in-person and virtual – are conducive to personal wellbeing and academic success.

ONLINE PROCTORING

Some courses may use online proctoring software for tests and exams. This software may require students to turn on their video camera, present identification, monitor and record their computer activities, and/or lock/restrict their browser or other applications/software during tests or exams. This software may be required to be installed before the test/exam begins. If you have questions about whether this software will be used, or concerns about the use of this software, please contact the course instructor.

ACADEMIC INTEGRITY

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

It is your responsibility to understand what constitutes academic dishonesty.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: “Grade of F assigned for academic dishonesty”), and/or suspension or expulsion from the university. For information on the various types of academic dishonesty please refer to the [Academic Integrity Policy](https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/), located at <https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/>

The following illustrates only three forms of academic dishonesty:

- plagiarism, e.g. the submission of work that is not one’s own or for which other credit has been obtained.
- improper collaboration in group work.



- copying or using unauthorized aids in tests and examinations.

Some helpful information can be found [here](#).

AUTHENTICITY / PLAGIARISM DETECTION

Some courses may use a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work. For courses using such software, students will be expected to submit their work electronically either directly to Turnitin.com or via an online learning platform (e.g. A2L, etc.) using plagiarism detection (a service supported by Turnitin.com) so it can be checked for academic dishonesty.

Students who do not wish their work to be submitted through the plagiarism detection software must inform the Instructor before the assignment is due. No penalty will be assigned to a student who does not submit work to the plagiarism detection software. **All submitted work is subject to normal verification that standards of academic integrity have been upheld** (e.g., on-line search, other software, etc.). For more details about McMaster's use of Turnitin.com please go to www.mcmaster.ca/academicintegrity.

CONDUCT EXPECTATIONS

As a McMaster student, you have the right to experience, and the responsibility to demonstrate, respectful and dignified interactions within all our living, learning and working communities. These expectations are described in the [Code of Student Rights & Responsibilities \(the "Code"\)](#). All students share the responsibility of maintaining a positive environment for the academic and personal growth of all McMaster community members, **whether in person or online**.

It is essential that students be mindful of their interactions online, as the Code remains in effect in virtual learning environments. The Code applies to any interactions that adversely affect, disrupt, or interfere with reasonable participation in University activities. Student disruptions or behaviours that interfere with university functions on online platforms (e.g. use of Avenue 2 Learn, WebEx or Zoom for delivery), will be taken very seriously and will be investigated. Outcomes may include restriction or removal of the involved students' access to these platforms.

Additional information about the Code and netiquette can be found [here](#).

COPYRIGHT AND RECORDING

Students are advised that lectures, demonstrations, performances, and any other course material provided by an instructor include copyright protected works. The Copyright Act and copyright law protect every original literary, dramatic, musical and artistic work, **including lectures** by University instructors.

The recording of lectures, tutorials, or other methods of instruction may occur during a course. Recording may be done by either the instructor for the purpose of authorized distribution, or by a student for the purpose of personal study. Students should be aware that their voice and/or image may be recorded by others during the class. Please speak with the instructor if this is a concern for you.

RESEARCH ETHICS – NA

EXTREME CIRCUMSTANCES

The University reserves the right to change the dates and deadlines for any or all courses in extreme circumstances (e.g., severe weather, labour disruptions, etc.). Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, A2L and/or McMaster email.