Course Outline

Laboratory Practicum 1

(as it appears in the eCalendar)

General Information

Course #	MDPH 603
Term	Winter
Year	2019
Course pre-requisite(s)	MDPH 601
Course co-requisite(s)	MDPH 602
Course schedule (day and time of class)	See below
Number of credits	2
Course location	See below

Instructor Information

Name and Title	Marija Popovic, PhD
E-mail	marija.popovic@mcgill.ca
Telephone number for office appointments	514-934-1934 ext. 44157
Office hours for students	To be arranged over email
Office location	DS1.5118

Course Overview

This laboratory course gives some experience in practical/clinical aspects as applied to radiation therapy and to the techniques for the measurement of different physical parameters which characterize radiation beams. The student is exposed to the operation of various therapy units, dose measuring devices, 3D treatment planning, virtual simulator units, brachytherapy, quality assurance, calibration and thermoluminescent dosimetry.

Learning Outcomes

By the end of this course, the student should be able to:

1. Use basic clinical equipment in radiotherapy department
2. Gain proficiency in applications and underlying physical principles of basic clinical dosimetry equipment used to measure photon and electron beam properties
3. Study guidance documents such as AAPM TG reports and define specific measurement methodologies
4. Analyze measurement data and write scientific reports
5. Demonstrate an understanding of basic radiotherapy treatment process

Instructional Method

Labs provide students first-hand experience with concepts of Radiotherapy Physics and the opportunity to explore methods commonly used by physicists in this discipline. The best way to prepare for labs is to read the instructions in the student's lab manual ahead of time and complete assigned readings and pre-lab exercises. The students are expected to highlight confusing passages in the instructions, and ask for clarifications prior to starting the experiment. These labs are designed primarily for independent work.

Lab instructors are clinical physicists who will summarize the theory and procedure before students begin the lab. Lab instructors will relate the lab to the lecture and real-world applications. Throughout the lab, the instructors will ask questions that make students think more deeply about what they are doing and why.

Students' participation in the lab will be assessed based on:

- Students' preparation for the lab
- Students' ability to perform lab techniques
- Student's understanding of the lab procedures
- Student's observance of safety standards

Moreover, students will submit two written lab reports to assess their skill in scientific writing. While the lab work will be conducted in groups, all written work must be completed individually.

Mid-course evaluation consists of the first written lab report, based on work conducted in Labs 1 through 4.

Required and Optional Course Materials

Required and recommended readings are referenced in the student's lab manual.

C.A. Mack. How to Write a Good Scientific Paper. 2018. Society of Photo-Optical Instrumentation Engineers. Freely available as an ebook at
http://spie.org/samples/9781510619142.pdf?utm_id=kpm286e&utm_id=kpm286e&spMailingID=1302867&spUserID=NDIwNzE3MzM1MDYS1&spJobID=480789384&spReportId=NDgwNzg5Mzg0S0&SSO=1

Course Content

Classes start Mon, Jan 7			
	Thursday, Jan 10,	Marija Popovic	Mandatory Introduction
1	S, Jan 12 S, Jan 13	Marija Popovic	Intro to Linac and Essential Daily QA
2	S, Jan 19 S, Jan 20	Michael Evans	3D Beam data measurement in water tank
3	S, Jan 26 S, Jan 27	Piotr Pater	Dosimetry of small static fields
4	S, Feb 9 S, Feb 10	Laurie Archambault Christophe Frustoss	Clinical reference dosimetry
Lab 1 due Friday, February 22 (12 days)			
5	T, Feb 16 W, Feb 17	Nada Tomic	Basic workflow in IGRT
Reading week, Mon-Fri, Mar 4-8			
6	S, Mar 16 S, Mar 17	Monica Serban	Treatment Planning I (3D-CRT)
7	S, Mar 23 S, Mar 24	Tanner Connell	Treatment Planning II (IMRT)
8	S, Mar 30 S, Mar 31	Liheng Liang	Patient Specific QA
Lab 2 due Friday, April 12 (12 days)			
Exams, Mon Apr 15 – Tue Apr 30			

Evaluation

Each lab will take up to 3.5 hours to complete.
The final grade will be based on:

- Lab report for labs 1-4: 20%
- 8 pre-lab exercises and in-lab participation: 40% and 10%, respectively
- Lab report for labs 5-8: 30%

McGill Policy Statements

Required Course Outline Statements [in keeping with Senate resolutions]

Language of Submission:

"In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded. This does not apply to courses in which acquiring proficiency in a language is one of the objectives." (Approved by Senate on 21 January 2009 - see also the section in this document on Assignments and Evaluation.)
Note: In courses in which acquiring proficiency in a language is one of the objectives, the assessments shall be in the language of the course.

The FRENCH TRANSLATION about this right may also be used on your course outline:
« Conformément à la Charte des droits de l'étudiant de l'Université McGill, chaque étudiant a le droit de soumettre en français ou en anglais tout travail écrit devant être noté (sauf dans le cas des cours dont l'un des objets est la maîtrise d'une langue). »

Academic Integrity:

"McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures" (see www.mcgill.ca/students/srr/honest/ for more information).
(Approved by Senate on 29 January 2003)

The FRENCH TRANSLATION of the Academic Integrity statement may also be used on your course outline:
« L'université McGill attache une haute importance à l'honnêteté académique. Il incombe par conséquent à tous les étudiants de comprendre ce que l'on entend par tricherie, plagiat et autres infractions académiques, ainsi que les conséquences que peuvent avoir de telles actions, selon le Code de conduite de l'étudiant et des procédures disciplinaires (pour de plus amples renseignements, veuillez consulter le site www.mcgill.ca/students/srr/honest/). »

Additional Statements

The following statements are optional and you are encouraged to include them on course outlines as appropriate:

- "The University Student Assessment Policy exists to ensure fair and equitable academic assessment for all students and to protect students from excessive workloads. All students and instructors are encouraged to review this Policy, which addresses multiple aspects and methods of student assessment, e.g. the timing of evaluation due dates and weighting of final examinations."

- Instructors may avail themselves of software freely available on the internet that can be used for text-matching. If you intend to use such software, it is suggested that you inform students in writing before the end of the add/drop period of your intention to do so: "Note that to support academic integrity, your assignments may be submitted to text-matching or other appropriate software (e.g., formula-, equation-, and graph-matching)."

- "© Instructor-generated course materials (e.g., handouts, notes, summaries, exam questions, etc.) are protected by law and may not be copied or distributed in any form or in any medium without explicit permission of the instructor. Note that infringements of copyright can be subject to follow up by the University under the Code of Student Conduct and Disciplinary Procedures."

- "As the instructor of this course I endeavor to provide an inclusive learning environment. However, if

you experience barriers to learning in this course, do not hesitate to discuss them with me and the Office for Students with Disabilities, 514-398-6009.”

- “McGill University is on land which has long served as a site of meeting and exchange amongst Indigenous peoples, including the Haudenosaunee and Anishinabeg nations. We acknowledge and thank the diverse Indigenous people whose footsteps have marked this territory on which peoples of the world now gather.”

  The FRENCH TRANSLATION of the land acknowledgement statement may also be used on your course outline:
  « L’Université McGill est sur un emplacement qui a longtemps servi de lieu de rencontre et d'échange entre les peuples autochtones, y compris les nations Haudenosaunee et Anishinabeg. Nous reconnaissons et remercions les divers peuples autochtones dont les pas ont marqué ce territoire sur lequel les peuples du monde entier se réunissent maintenant. »

- “End-of-course evaluations are one of the ways that McGill works towards maintaining and improving the quality of courses and the student’s learning experience. You will be notified by e-mail when the evaluations are available. Please note that a minimum number of responses must be received for results to be available to students.”

- In keeping with McGill’s preparedness planning strategies with respect to potential pandemic or other concerns, the Administration suggests that all course outlines contain the statement: “In the event of extraordinary circumstances beyond the University’s control, the content and/or evaluation scheme in this course is subject to change.”

- Additional policies governing academic issues which affect students can be found in the McGill Charter of Students’ Rights (see document).

- McGill has policies on sustainability, paper use and other initiatives to promote a culture of sustainability at McGill. (See the Office of Sustainability.)

- Guidelines for the use of mobile computing and communications (MC2) devices in classes at McGill have been approved by the APC. Consult the Guidelines for a range of sample wording that may be used or adapted by instructors on their course outlines.