♦ Instructors:
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♦ Calendar Description:

Lectures three hours a week, laboratory/problem analysis three hours alternate weeks.

Prerequisites: MATH 3705 and fourth-year status in Engineering.
Students who have not satisfied the prerequisites for this course must either a) withdraw from the course or b) obtain a prerequisite waiver from www.sce.carleton.ca/ughelp. Students who are registered but do not satisfy the prerequisites and who have not been granted a prerequisite waiver may be deregistered from the course after the last day to register for courses in the term.

♦ Learning Objectives:
By the end of this course, students will be able to:
1. Understand digitization processes (sampling and quantization) of a 2-D image.
2. Understand a histogram of a digital image.
3. Understand the mechanism of image contrast in medical images.
4. Explain image artifacts (image errors) in medical images.
5. Implement digital image processing to enhance the image quality in spatial and frequency domains using a computer program.
6. Implement digital image processing to perform image segmentation, restoration, and feature extraction and recognition using a computer program.

♦ Course Website:
Course materials and announcements will be placed on cuLearn, so students are responsible for checking the website frequently.

♦ Course Textbook:

Other References:
Laboratories:
There will be five graded labs. Lab attendance is required. More information regarding the timing of the labs will be provided in the course website.

Assignments:
There will be five assignments. Assignments will involve image processing exercises which reinforce the concepts discussed in class. More information regarding the timing of the assignments will be provided in the course website.

Examinations:
There will be one midterm examination. The details and date will be mentioned in class and posted on the website. Midterm attendance is required. It may be held outside of regular class time if necessary.

The final examination will be held during the University’s formal examination period. The final examination is for evaluation purposes only and will not be returned to students. Students who miss the final exam may be granted permission to write a deferred examination (see the Undergraduate Calendar for regulations on deferred exams).

Both exams (midterm and final) will be closed-book, but students will be allowed to prepare and bring with them one 8.5” x 11” crib sheet, both sides, to each exam.

Plagiarism:
Plagiarism (copying and handing in for credit someone else's work) is a serious instructional offense that will not be tolerated. Please refer to the section on instructional offenses in the Undergraduate Calendar for additional information.

Course material copyright:
Student or professor materials created for this course (including presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the author(s). They are intended for personal use and may not be reproduced or redistributed without prior written consent of the author(s).

Grading Scheme:
To pass the course, a student must: (1) pass the final examination test (D- or better), and (2) obtain an overall passing average. For students who pass the final exam, the final grade will be calculated as follows:

- Assignments: 15%
- Labs: 15%
- Midterm: 20%
- Final Exam: 50%
♦ Medical Certificates:
A medical certificate must adhere to the format required by the Registrar. The format is available as a PDF form through the Registrar’s website (http://www.carleton.ca/registrar/forms). All medical certificates must be presented no later than three (3) working days after the term work was due or immediately upon return from the illness; they will not be accepted after the fact. The certificate must clearly state the name of the doctor with contact information, the date & time that you were seen, the time of onset, the degree of incapacitation, and the expected recovery date.

Lab: If one lab is missed, with a valid medical certificate, a mark equal to the average of the other labs will be given. Further absences will result in a mark of zero for the missed labs, unless valid documentation of a prolonged illness is provided. There will be no lab make-ups.

Assignment: Assignments are to be worked on throughout the week, not just the day they are due. If you miss an assignment, you will be given a mark based on your partial work if a valid medical certificate is given. If you cannot provide your partial solution, you will be given zero unless you have a valid medical certificate showing prolonged illness.

Midterm: If the midterm is missed, with a valid medical certificate, students are responsible for making alternate arrangements with the instructor.

♦ Health and Safety:
Every student should have a copy of our Health and Safety Manual. An electronic version of the manual can be found at http://www.sce.carleton.ca/courses/health-and-safety.pdf

♦ Academic Accommodation:
You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Pregnancy obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details see the Student Guide (https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf)

Religious obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details see the Student Guide (https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf)

Academic Accommodations for Students with Disabilities:
The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). Requests made within two weeks will be reviewed on a case-by-case basis. After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website (www.carleton.ca/pmc) for the deadline to request accommodations for the formally-scheduled exam (if applicable).
- **Preliminary Week by Week Outline** (subject to change):

<table>
<thead>
<tr>
<th>Week</th>
<th>Subject</th>
<th>Course Note</th>
<th>Textbook</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Course overview</td>
<td>#1</td>
<td>Ch 1</td>
</tr>
<tr>
<td></td>
<td>Introduction to imaging processing</td>
<td>#2</td>
<td>Ch 5; 2.6</td>
</tr>
<tr>
<td>2</td>
<td>Imaging system</td>
<td>#3</td>
<td>Ch 2; 7.6</td>
</tr>
<tr>
<td>3, 4</td>
<td>Medical imaging: X-ray, CT, Nuclear medicine</td>
<td>#4</td>
<td>Ch 3; 7.8</td>
</tr>
<tr>
<td>5</td>
<td>Image enhancement in the spatial domain</td>
<td>#5</td>
<td>Ch 6</td>
</tr>
<tr>
<td>6</td>
<td>Image enhancement in the frequency domain</td>
<td>#6</td>
<td>Ch 7</td>
</tr>
<tr>
<td>7</td>
<td>Image restoration</td>
<td>#7</td>
<td>Ch 8</td>
</tr>
<tr>
<td>8</td>
<td>Morphological image processing</td>
<td>#8</td>
<td>Ch 9</td>
</tr>
<tr>
<td>9</td>
<td>Image segmentation</td>
<td>#9</td>
<td>Ch 10</td>
</tr>
<tr>
<td>10</td>
<td>Feature recognition and classification</td>
<td>#10</td>
<td>Ch 11</td>
</tr>
<tr>
<td>11, 12</td>
<td>Medical imaging: Ultrasound, MRI</td>
<td>#11</td>
<td>Ch 4</td>
</tr>
<tr>
<td>13</td>
<td>Medical applications of imaging</td>
<td>#12</td>
<td>Ch 13</td>
</tr>
<tr>
<td></td>
<td>Review</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>