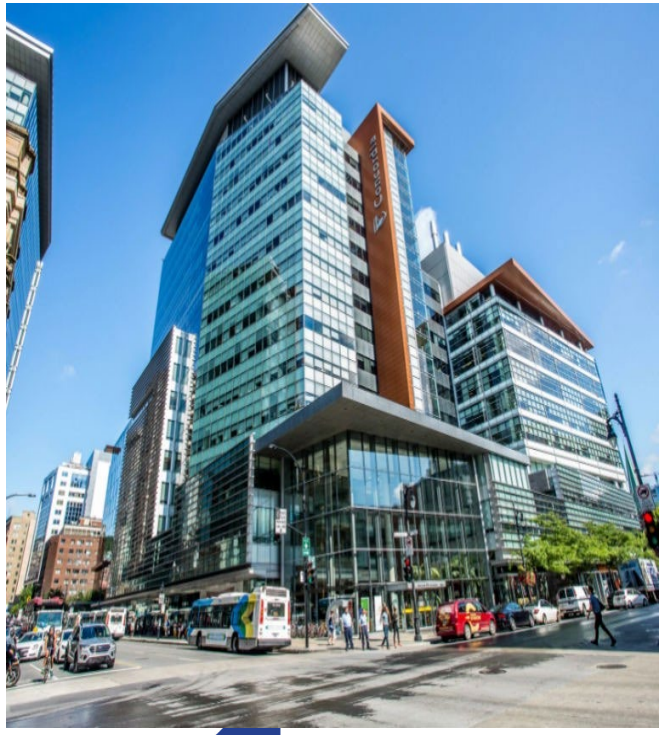
Université Concordia University

GINA CODY
SCHOOL OF ENGINEERING
AND COMPUTER SCIENCE

Fall 2020 Orientation



Welcome to the

Department of ***E***lectrical and ***C***omputer ***E***ngineering!

What's today all about?

- **Welcome and Introduction to the Faculty, Department**
  - Dr. M. Debbabi (Dean)
  - Dr. Y. Shayan (Chair)

- **Introduction to Programs**
  - **Overview of ECE U/G programs**
    (Dr. S. Hashtrudi Zad, Associate Chair, U/G Studies)
  - **ELEC program** (Dr. Z. Kabir, U/G Program Director, ELEC)
  - **COEN program** (Dr.B.Goodarzi, U/G Program Director, COEN)

- **Administrative Information**
  - **Academic Regulations**
    (Maria Fasciano, U/G Program Assistant)
  - **Campus Resources** (Maria Fasciano)

- **Labs**
  - **Remote and in-person labs**
    (Dmitry Rozhdestvenskiy, Engineer in Residence)

Overview of ECE programs

- U/G programs offered:
  - B.Eng in Computer Engineering
  - B.Eng in Electrical Engineering

- Information source
  - ECE website >
    Students > Undergraduate students
    http://www.concordia.ca/eceugrad

  - Undergraduate Calendar

Program Structure

- **Total:** 120 credits (CEGEP graduates) + additional credits required for other students

  - **Engineering Core** (30.5 credits)
  - **Program (COEN / ELEC) Core**
  - **Option Core**
  - **(Technical) Electives**

More info: U/G Calendar, Sec. 71.10 to 71.30.

Course Sequences

Electrical Engineering New Course Sequences

Sequence Table: Follow this table according to your entry (courses indicated by orange are modified due to COVID-19 circumstances)

	Offering of course sequences for Fall Year 1 and Winter Year 1 starts in academic year 2019-20		Offering of course sequences for Summer Year 1, Fall Year 2 and Winter Year 2 starts in academic year 2020-21			Offering of course sequences for Summer Year 2, Fall Year 3 and Winter Year 3 starts in academic year 2021-22			Offering of course sequences for Summer Year 3, Fall Year 4 and Winter Year 4 starts in academic year 2022-23		
Co-op Program Fall Entry	Fall Year 1	Winter Year 1	Summer Year 1	Fall Year2	Winter Year 2	Summer Year 2	Fall Year 3	Winter Year 3	Summer Year 3	Fall Year 4	Winter Year 4
	COEN243	COEN244	ELEC242	CO-OP WORK TERM	ELEC311	TBA	TBA	CO-OPWORK TERM	CO-OP WORK TERM	TBA	TBA
	COEN212	COEN231	ELEC251		ELEC321						
	ELEC273	COEN311	ELEC342		ENGR371						
	ENGR213	ENGR233	COEN352		ENGR290						
	ENGR201	ENCS282	ENGR202		ENGR301						
Regular (non-Coop) Fall Entry	Fall Year 1	Winter Year 1	Summer Year 1	Fall Year2	Winter Year 2	Summer Year 2	Fall Year 3	Winter Year 3	Summer Year 3	Fall Year 4	Winter Year 4
	COEN243	COEN244	No activity	ELEC242	ELEC342	Use Work Term Table Below	Use Work Term Table Below	Use Work Term Table Below	Use Work Term Table Below	TBA	TBA
	COEN212	COEN231		ELEC311	ELEC331						
	ELEC273	COEN311		ELEC251	COEN352						
	ENGR213	ENGR233		ENGR371	ENGR290						
	ENGR201	ENCS282		ENGR202	ENGR301						
Regular (non-Coop) Winter Entry	Fall Year 1	Winter Year 1	Summer Year 1	Fall Year2	Winter Year 2	Summer Year 2	Fall Year 3	Winter Year 3	Summer Year 3	Fall Year 4	Winter Year 4
	No activity	COEN243	COEN244	ELEC242	ELEC342	Use Work Term Table Below	Use Work Term Table Below	Use Work Term Table Below	Use Work Term Table Below	TBA	TBA
		COEN212	COEN231	ELEC311	ELEC331						
		ELEC273	ENCS282	ELEC251	COEN352						
		ENGR213	ENGR233	ENGR371	ENGR290						
		ENGR201	ENGR202	COEN311	ENGR301						

Work Term Table: Choose the courses according to your work term

Fall Work Term			Summer Year 2	Fall Year 3	Winter Year 3	Summer Year 3	
			TBA	NON-COOP WORK TERMS	TBA	No activity	
Winter Work Term			Summer Year 2	Fall Year 3	Winter Year 3	Summer Year 3	
			No activity	TBA	NON-COOP WORK TERMS	TBA	
Summer Work Term			Summer Year 2	Fall Year 3	Winter Year 3	Summer Year 3	
			No activity	TBA	TBA	NON-COOP WORK TERMS	

More info: **http://www.concordia.ca/eceugrad**

ELEC Sequences

	Offering of course sequences for Fall Year 1 and Winter Year 1 starts in academic year 2019-20		Offering of course sequences for Summer Year 1, Fall Year 2 and Winter Year 2 starts in academic year 2020-21			C
Co-op Program Fall Entry	**Fall Year 1**	**Winter Year 1**	**Summer Year 1**	**Fall Year2**	**Winter Year 2**	
	COEN243	COEN244	ELEC242	CO-OP WORK TERM	ELEC311	
	COEN212	COEN231	ELEC251		ELEC321	
	ELEC273	COEN311	ELEC342		ENGR371	
	ENGR213	ENGR233	COEN352		ENGR290	
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		ENGR213	ENGR233	ENGR371	ENGR290	
		ENGR201	ENGR202	COEN311	ENGR301	

Project Courses

- Three design projects
  - ENGR 290
  - ELEC/COEN 390
  - ELEC/COEN 490 Capstone project (Two terms)

    https://www.youtube.com/watch?v=EAyMN7dVJus

ELEC Program

ELEC Program (General Stream)

- **Total**: 120 credits (CEGEP graduate) + additional credits required for other students

  - **Engineering Core** (30.5 credits)
  - **ELEC (and General Stream) Core** (70 credits)
  - **(Technical) Electives** (19.5 credits)

ELEC Program: Elective Groups

Elective Groups

- Telecommunication Networks and Signal Processing
- Microdevices, Electronics and VLSI
- Power and Renewable Energy Systems
- Controls, Robotics and Avionics
- Waves and Electromagnetics
- Computer Systems
- Biological and Biomedical Engineering

COEN

- Total: 120 Credits
- Engineering Core (27.5 credits) + General Elective (3 credits)
- Computer Engineering Core (72.00 credits)
- Electives (17.5 credits)
- **Options:** Students may choose one of the following options:
  - Avionics and Embedded Systems Option
  - Biological and Biomedical Engineering (BME) Option
  - Pervasive Computing Option
  - General Stream

COEN Options

- Selecting an option:
  - Compulsory courses
  - Few elective courses should be chosen within the elective list of that option
  - The rest can be taken from the Computer Engineering Electives
- Not selecting an option:
  - General stream is for the students not selecting an option. At least 3 of these credits must be taken from the *General Stream Electives list*. The rest may be chosen from the *Computer Engineering Electives*

COEN Electives

- Computer Engineering Electives

  A: Hardware/Electronics/VLSI

  B: Real-Time and Software Systems

  C: Biological and Biomedical Engineering

  D: Computer Science and Software Engineering

  E: Telecommunications, Networking and Signal Processing

  F: Control Systems

  G: Avionics

  - List of Courses for each category: Computer Engineering Options

Program Notes

- Sequences have electives in final year
- Gives time to consider options
- Three design projects
  - ENGR 290
  - ELEC/COEN 390
  - ELEC/COEN 490 Capstone project (Two terms)

COEN Course Sequences

	Offering of course sequences for Fall Year 1 and Winter Year 1 starts in academic year 2019-20		Offering of course sequences for Summer Year 1, Fall Year 2 and Winter Year 2 starts in academic year 2020-21		
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		ENGR201	ENGR202	COEN311	ENGR301

Check COEN Course Sequence Webpage

Curriculum Changes

- Important Notes and Curriculum Changes in the 2020-2021 UG Calendar

- http://www.concordia.ca/content/dam/ginacody/ece/docs/curriculum-letters/coen-cc-letter-2020-21.pdf

Coop

- As of Fall 2019 Students newly admitted to Concordia in ECE program have a mandatory work term. Student can

❑ apply to Coop:

- 3 work terms
- 2.5 minimum GPA (Also required to stay in Coop)
- 12 credits minimum per term

- To apply
  - Fill out a form
  - Propose a sequence
  - https://users.encs.concordia.ca/~mariaf/ECE_Coop/ECE_COOP.pdf

❑ Or Apply to C-Edge:

- Career Edge(C-Edge) allows for one work terms for non-coop students
- With this program, undergraduate students in eligible programs can obtain one, relevant, paid internship to better your transition to the workplace.
- Minimum of 45 credits
  - https://www.concordia.ca/academics/co-op/programs/career-edge.html
  - https://users.encs.concordia.ca/~mariaf/C-Edge/C-Edge.pdf

Registration

- How to register – ECE Website link
  - http://www.concordia.ca/eceugrad
- On-line registration using myConcordia
  - https://www.myconcordia.ca
- All 200-level courses within the program which are prerequisites for other courses must be completed with a C- or higher.
- A 200-level course in which a student has obtained a D+ or lower must be repeated before attempting a course for which it is a prerequisite.
- All students in engineering programs must complete all 200-level courses in their programs prior to commencing courses at the 400-level.

General Guidelines and Academic Regulations, Administrative Notations

- Section - 16.3.4 (Undergraduate Calendar)
- Evaluation, Administrative Notations, Examinations, and Performance Requirements

Failing Grades Notations

- Failing Grades “F,” “FNS,” “R,” and “NR”

Administrative Notations

- DEF, DISC, DNE, DNW, PEND, CODE
- MED, PEX, REPT, SRCR, SREP, SUPP
- TRC, WRKT

What do I do if I need to Change my Courses if I am Registered?

- You can log onto “MyConcordia” and change the courses or course sections you are registered for.
- The last day for course changes is called the “add/drop date” or the “Did Not Enter” (DNE) date – **September 21, 2020**
- Before the add/drop date you can “drop” a course and you will not have to pay the fees.
- After the add/drop date;
  - **You must pay the fees even if you drop a course.**
  - **The course will remain on your record with the notation DISC or “discontinued”.**
  - **Late registration is possible (form to fill out)**
  - **Late withdrawal/fee refund**

Late DISCONTINUE (DISC)

When Can I Late Discontinue (DISC) a Course?

- **The Add/Drop deadline was Monday, September 21, 2020 at midnight. (Until that time, you can discontinue a course yourself in your Student Portal.**
- **Deadline for withdrawal with full refund for Fall 2020 was Monday, September 21, 2020**
- **After the DISC date of November 9, 2020 you may Late Discontinue**

- **Deadline for withdrawal with full refund for Winter 2021 is Monday, January 21, 2021**
- **The Add/Drop deadline is Tuesday, January 19, 2021 at midnight. (Until that time, you can discontinue a course yourself in your Student Portal.**
- **After the DISC date of March 22, 2021 you may Late Discontinue:**

- **<u>Deadline to Late DISC courses that do not have a final exam</u>: up to and including the last day of classes, Dec 7, 2020 & April 13, 2021.**

- **<u>Deadline to Late DISC courses that have a final exam:</u> Up to the day and time when the exam begins.**
- **ONCE THE FINAL EXAM TAKES PLACE, YOU CANNOT LATE DISCONTINUE A COURSE.**

Information I need to know when I discontinue a course

- **If you ask for a late discontinue: DO NOT WRITE THE FINAL EXAM of the course.**
- **You can late discontinue a Deferred Exam from a previous semester. Do so by filling out a student request form at Student Academic Services (EV2-125).**

How Do I Late DISC a Course?

- **Access the Late DISC application at https://fis.encs.concordia.ca/ldsa**

Student Requests & Forms

When you make your request, you must **complete and sign student request forms** and bring them to **Student Academic Services - EV 2.125.**

- **Transfer credits or course exemption**
- **Take a course at another institution**
- **Apply for course substitution**
- **Take a course a third time**
- **Request a credit overload**
- **Return to full-time status**

Use the following forms for other types of academic requests:

- **Change of concentration**
- **Late registration, Late withdrawal, and Tuition Refund**
- **Student request appeal form**

GPA

- Assessed each May (assuming 12 credits minimum)
- > 2.0: Good standing
- Between 1.5 and 2: Conditional standing
  - Repeat half D grades
- Less than 1.5 or second time in a row in Conditional standing → Failed standing
- Must apply for re-admission
- Need overall CGPA and last annual GPA of 2.0 or better to graduate
- If you fail a summer or fall course, repeat it right away (same academic year)
- Only second attempt counts toward last annual GPA ***if replaced in the same year***

Electrical and Computer Engineering Department Labs

Orientation session

2020

Overview

- The purpose of the labs is to provide students with valuable hands-on experience in various areas of electrical and computer engineering
- They are based on course material covered on the lectures and help you gain deeper knowledge of the subject

How do the labs work?

- The labs start on the second or third week of semester, so the professor has time to deliver course material.
- For the majority of courses the labs are scheduled every second week.
- Most of the time you will be working in teams of two. Few courses require individual work.
- Standard lab capacity is ten workstations.
- One lab demonstrator will help you to go through the experiments.
- A report for each lab will summarize your work.

How do the labs work? (cont' d)

- Fail the course – must redo the labs (2xx & 3xx level).
- Fail the labs = fail the course.
- Missed a lab – make an arrangement to make it up A.S.A.P.:
  - Types of labs:
    - sequential labs;
    - non-sequential labs.
  - When to catch up:
    - next available lab session with another TA;
    - end of semester (make-up lab session).
  - Whom to contact: Lab Coordinator, not the TA!
  - Missed two labs = failed the labs!
- Lab exam (individual!)

Types of labs

- Software (e.g. programming, simulation, etc.) For example: COEN 346, COEN 445 (366), COEN 451, ELEC 342.

- Hardware labs (exposure to measurement tools, circuits, and other lab equipment and setups), e.g.: COEN 212, ELEC 273/275, ELEC 311/312…

Circuits and Systems Lab (ELEC 273/275)

THE BASIC CIRCUITS & SYSTEMS LAB, located in H822 in the Hall Building, provides the laboratory components of the following core courses:

- ELEC273 (Basic Circuit Analysis),
- ELEC275 (Principles of Elec.Eng),and

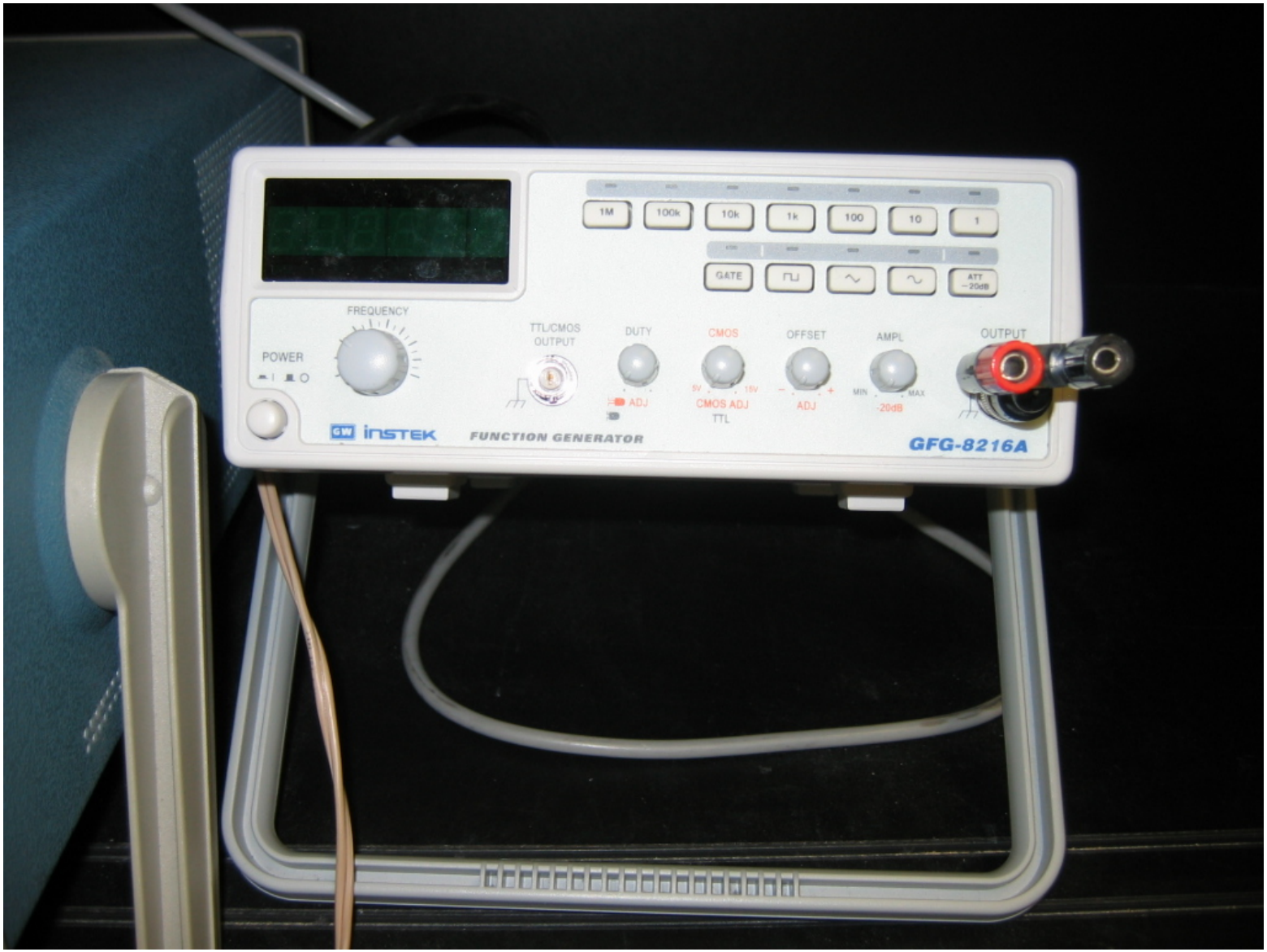
Basic instruments used in these labs include:

- digital storage oscilloscope (Tektronix TDS320),
- digital multimeters (Fluke8010A & Omega HHM1),
- function generator (Instek GFG8216A),
- AC & DC Power supplies and
- Wattmeters.

Each of these labs consists of a set of five experiments, each set being described in the appropriate lab manual. Students obtain experience in the use of measuring instruments and in writing engineering reports.


STATION # 4
Tektronix


Tektronix
TDS 320
TWO CHANNEL DIGITIZING SCOPE
100 MHz 500 MS/s
TOGGLE
AUTOSET
UTILITY
MEASURE
HARDCOPY
RUN/STOP
SAVE/RECALL SETUP
CURSOR
DISPLAY
ACQUIRE
VERTICAL
HORIZONTAL
TRIGGER
CH 1
CH 2
MATH
REF 1
REF 2
POSITION
VERTICAL MENU
VOLTS/DIV
WAVEFORM OFF
HORIZONTAL MENU
SEC/DIV
LEVEL
TRIGGER MENU
TRIG'D
READY
SET LEVEL TO 50%
FORCE TRIGGER
PROBE COMP
CH 1
CH 2
EXT TRIG
CLEAR MENU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POWER
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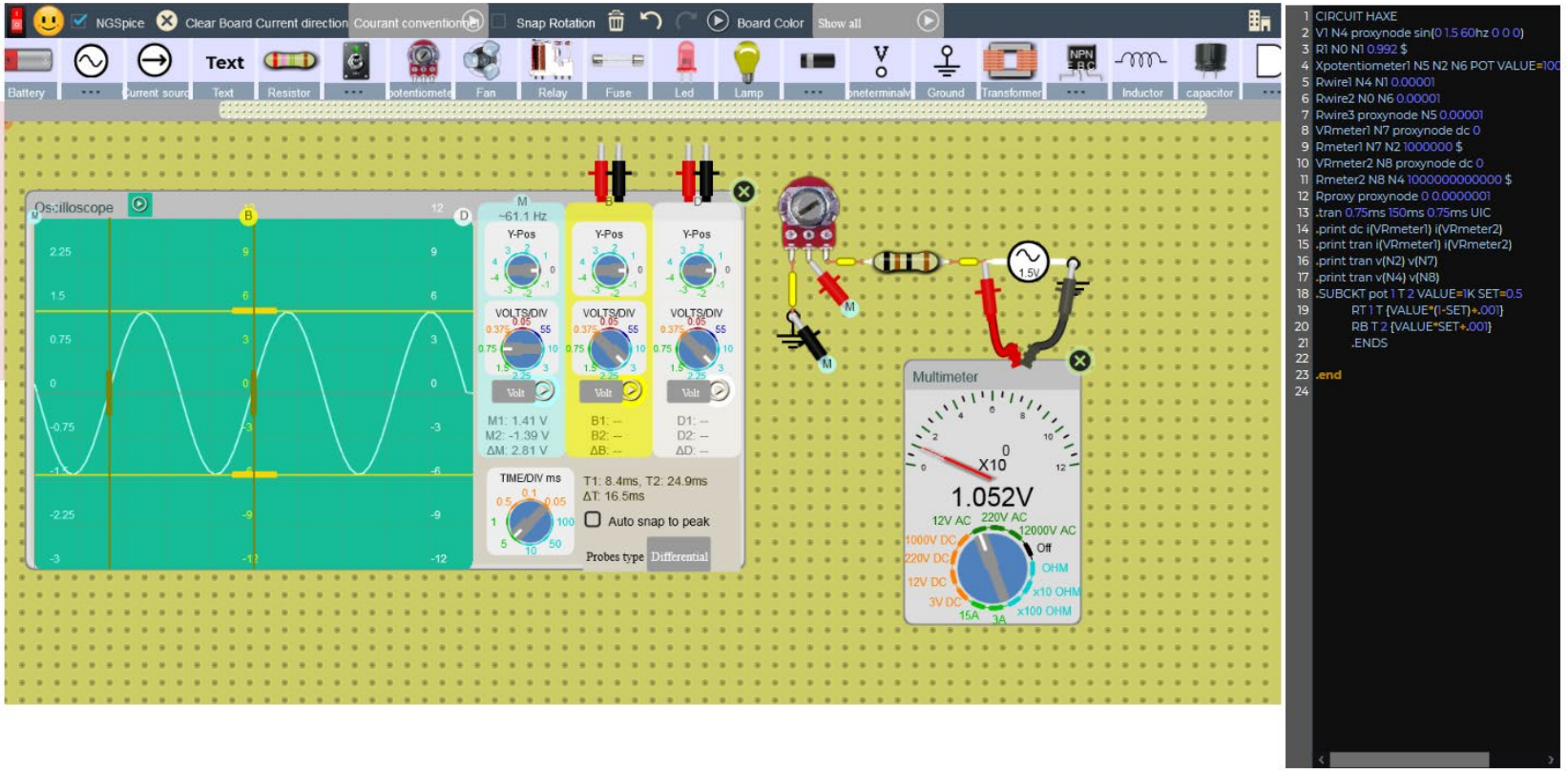
ADJ
CMOS
5V
16V
CMOS ADJ
TTL
OFFSET
ADJ
AMPL
MIN
MAX
-20dB
OUTPUT
GW INSTEK
FUNCTION GENERATOR
GFG-8216A

Covid-19: Types of delivery (1/2)

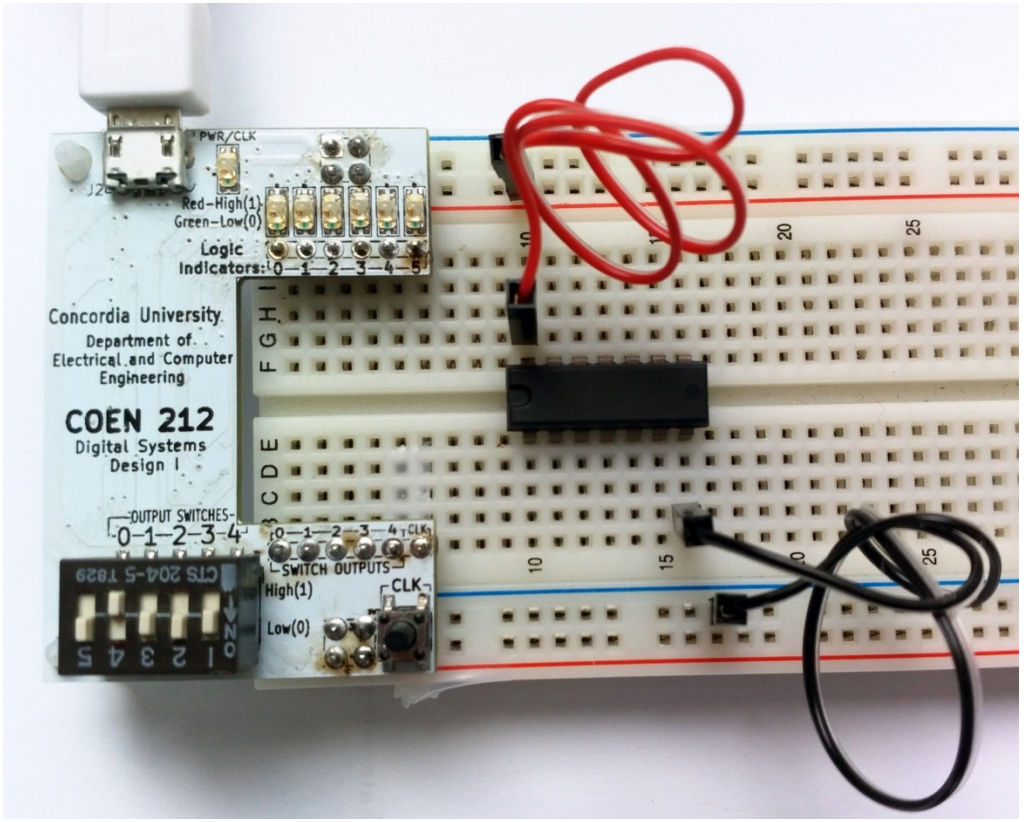
- All remote-only and remote sections of in-person labs: Videoconferencing software (e.g. Zoom, MS teams, etc.):
  - Students must login to the meeting at the scheduled time.
  - Breakout rooms.
  - Attendance.
- Remote - only (online):
  - For software labs (MATLAB, VHDL, C++…) – remote desktop on computers on campus or free software (COEN 311 - NASM).
  - ELEC 275 – online virtual lab (www.DCAClab.com).
  - COEN 212 – hardware lab kits.

ELEC 275 virtual lab



www.DCAClab.com

COEN 212 lab kit



Covid-19: Types of delivery (2/2)

- In-person (in physical lab and remote):
  - The same lab manual and experiments.
  - Physical lab:
    - H&S protocols and trainings.
    - Reduced lab capacity.
- Remote lab:
    - Pre-lab (wiring/connection diagrams, circuits, etc.).
    - Lab demonstrator to live-demo the experiment.
    - Experimental data to be sent to students for reports.
    - Plan C: record the experiments and run supervised video watching with Q&A

Differences between "In-person" and "Remote" sections

	"Remote"	"In-person"
Location	Online.	Real lab.
Interaction with lab demonstrator	Through videoconferencing software (Zoom, MS Teams, etc.).	Direct person to person communication.
Exposure to hardware tools	Virtual.	Real.
Use of software tools	Licensed software: via remote desktop, ssh, etc. on computers on campus. Free software: own PC.	PC on the lab workbench.
Lab safety quiz	Not required, since students will not be physically attending the lab.	Students might require to pass a lab safety quiz.
University access	Not required.	Students will receive details regarding University access since they must be physically present in the lab.
Pre-lab	In addition to the calculations and other preparation as it is outlined in the lab manual, students will be required to submit before the lab: - detailed wiring diagrams of each part of the lab, or - explanations how you will do the lab step-by-step . Students will be given a template with pictures of the lab equipment, components, etc., and they will have to make necessary connections on the paper according to the instructions.	As outlined in the lab manual. The lab demonstrator will check it before letting you do the lab.
Who will perform the experiments?	The lab demonstrator – hardware, students - software.	Students.
Who will collect the data?	The lab demonstrator. After the end of the lab he/she will send to each student, who attended the lab session, a set of data to use in the report.	Students will collect the data themselves. The lab demonstrator will sign the sheet with experimental data at the end of the lab.

Introduction to Engineering Team Design Project ENGR 290

- Get to know what real team work is about
- Teams of three
- Introduction to mechanical engineering subjects
- Build a hovercraft and win the competition!

http://upload.wikimedia.org/wikipedia/commons/0/05/Formel1_hovercraft.jpg

http://www.griffonhoverwork.com/media/78952/Image288.jpg

Engineering Team Design Project COEN/ELEC 390

- Make a real product according to customer's needs
- Teams of four
- Computer and electrical engineering students
- Focus on:
  - Project management skills
  - Customers' requirements and specifications
- Platform: Android phone and various sensors (ex.: TI Sensor Tag)

Capstone Project COEN/ELEC 490

- Two-semester course
- Team of three-five
- It's time to show what you have learnt!
- Try yourself in a role of Project Manager
- Pick one of the suggested projects or come up with your own idea
- Design it! Implement it! Test it! Debug it ☺, make it WORK! Present it! Be proud of it!


Agilent
54641A
OSCILLOSCOPE
MEGAZoom
350 MHz
2 GSa/s
Horizontal
Run Control
Run Stop
Single
Measure
Waveform
Trigger
Analog
Ext Trigger


DIGITAL IC TESTER
IDENT:09
BK PRECISION
575
ON
MODE CLEAR
TEST EXEC
Bottom Justified
0 1 2 3 4
5 6 7 8 9

Questions?