

CSE251-02 Handout Spring 2022 [SDA]

Important dates:

- **January 29th** (Saturday) Classes of Spring 2022 begin
- **March 11th** (Friday) Midterm exam (2 – 5 PM)
- **April 28th** (Thursday) Last class of Spring 2022
- **May 13th** (Friday) Final exam (8 – 11 AM)

Marks Distribution

Assessment	Percentage	Total number of assessments	Number of assessment to be graded
Attendance	10%	-	-
Assignment	10%	5	Best 4
Quiz	15%	4	Best 3
Midterm*	25%	1	1
Final*	25%	1	1
Lab	15%	-	-

*In case the mid and finals are not taken in-person, the percentage might be reduced

Exam dates

Exam	Date (Time)	Syllabus
Quiz 1	Feb 15 (Class time, two slots)	Lecture 1 - 4
Quiz 2	Mar 8 (Class time, two slots)	Lecture 5 - 8
Midterm	March 11 (2 PM – 5 PM)	Lecture 1 - 10
Quiz 3	Mar 29 (Class time, two slots)	Lecture 9 - 12
Quiz 4	Apr 17 (Class time, two slots)	Week 13 - 16
Final	May 13 (8 AM – 11 AM)	Week 11 - 20

Course Policy

Weekly Live Classes

Starting from this semester, we are shifting away from flipped classroom system and going back to regular classes (online). Hence, the buX videos and pop-quizzes will now be considered as supplementary materials.

- Theory classes – Sunday and Tuesday [USIS Schedule]
- Attendance policy – Mandatory [at max 2 attendance will be considered]
- Attendance marks – active participation (random quiz during zoom session)

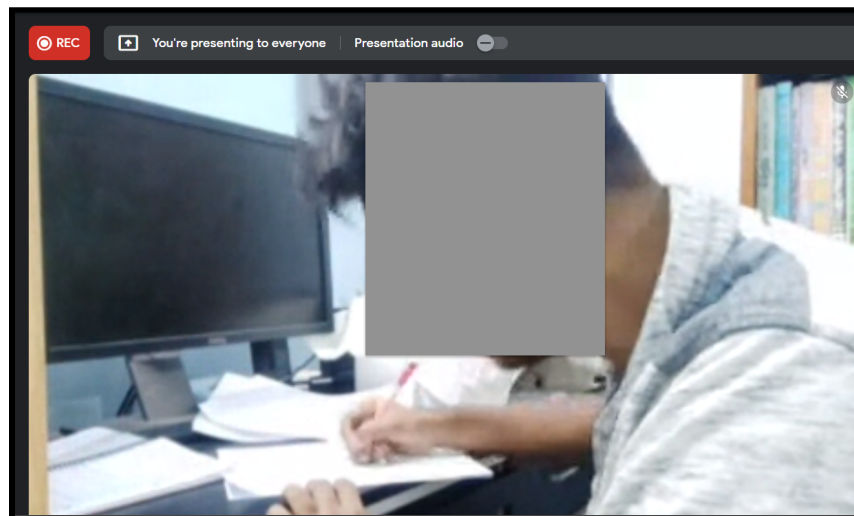
Course Timings

Day ends at 5:00 PM

- Classes and Quizzes before **5:00 PM**
- Assignments are due at **5:00 PM**
- **Consultation hours** – will be posted later

Exam Policy

All of the online exams (quizzes) will be **proctored!** You must keep your **Camera/Webcam** turned on during the exam. Your face and the script you are writing should be visible.



Collaboration on Assignments

- Can discuss the assignment questions in **study groups**
- Have to understand and write solutions independently (no copying)
- **Collaboration ≠ Copying**, **severe penalty for direct plagiarism**

Late Submission Policy for Assignments

- Up to 2 late days per assignment)
- Up to 4 “free” late days
- After exhaustion of free late days, **per day 25% penalty**
- Medical emergencies (with documents) will be considered separately

Late Submission Policy for Online Exams (Quiz)

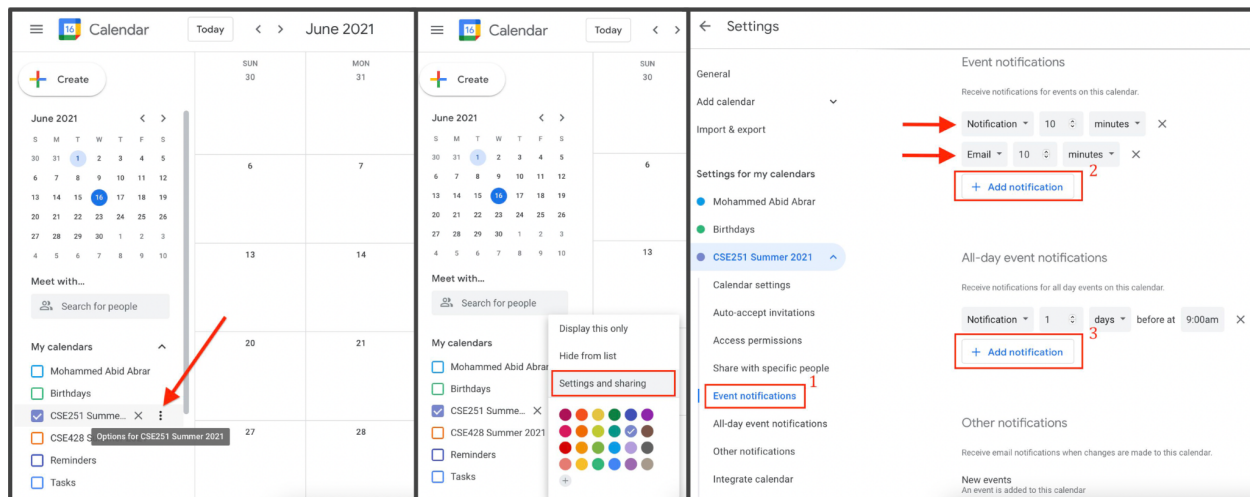
- Penalty based on the extra time taken compared to “regular” students
- $\% \text{penalty} = [(\text{extra time})/(\text{exam time})] \times 100$
- e.g., exam time is 2 hours, submitted 30 minutes late - 25% penalty

Communication Platform

All communication will be done via **Discord only**. CSE251 Spring 2022 Discord Server:
<https://discord.gg/KVhsK5fNqe>

Google Calendar

You will be sent an invitation to “CSE251: Electronic Devices and Circuits Spring’22 Section 02” official google calendar. By default, you will not receive notifications from subscribed calendars. How to turn on push notifications for Google Calendar: https://youtu.be/uwdauVrG_do



Things ***NOT*** to Do

- Any form of plagiarism/cheating/copying may result in negative marking/grade capping/suspension from BRACU.
- Any type of online bullying/harassment will not be tolerated
- **Messaging/mentioning faculty in Discord outside of office hours (8 AM - 5 PM)**

Course Timeline

Day-Month	January	February	March	April	May
Sunday	30 Lecture 1				1 May Day
Monday	31				2
Tuesday		1 Lecture 2	1 Lecture 9		3 Eid-ul-Fitr*
Wednesday		2	2		4
Thursday		3	3 A-3 Due		5
Friday		4	4 Undergraduate Admission Test for Summer 2022(1st Intake) [Tentative]	1	6 Review
Saturday	1	5	5	2	7
Sunday	2	6 Lecture 3	6 Lecture 10	3 Lecture 14	8
Monday	3	7	7	4	9
Tuesday	4	8 Lecture 4	8 Quiz 2	5 Lecture 15	10
Wednesday	5	9	9	6	11 Final Examinations
Thursday	6	10 A-1 Due	10	7	12
Friday	7	11	11 MIDTERM	8 Undergraduate Admission Test for Summer 2022(2nd Intake) [Tentative]	13 FINAL
Saturday	8	12	12	9	14
Sunday	9	13 Lecture 5	13	10 Lecture 16	15 Buddha Purnima*
Monday	10	14	14 Mid-Term Examinations	11 A-4 Due	16
Tuesday	11	15 Quiz 1	15 RS Mid-Term Examinations	12 Lecture 17	17 Last Day of Submitting Grades
Wednesday	12	16	16	13	18
Thursday	13	17	17 Birthday of Father of the Nation	14 Naba Barsha	19 Publication of Results
Friday	14	18	18 Vacation - RS	15	20
Saturday	15	19 A-2 Due	19 Shab-e-Barat*	16	21
Sunday	16	20 Lecture 6	20 Lecture 11	17 Quiz 4	22 Payment of Tuition Fees Summer 2022 (May 22 - June 02)
Monday	17 Last Day of Submitting Grades	21 International Mother Language Day	21	18	23
Tuesday	18	22 Lecture 7	22 Lecture 12	19 Lecture 18	24 Registration, Summer 2022
Wednesday	19	23	23 Mid-Term Examinations (PHR)	20	25
Thursday	20 Publication of Results of Fall 2021	24	24	21	26 FYAT Day
Friday	21	25	25	22	27
Saturday	22	26	26 Independence Day	23	28 Classes of Summer 2022 Begin & RS Orientation
Sunday	23 Payment of Tuition Fees Spring 2022 (Jan 23 - Feb 3)	27 Lecture 8	27 Lecture 13	24 Lecture 19	29
Monday	24	28	28	25 RS Final Examinations	30
Tuesday	25		29 Quiz 3	26 Lecture 20	31
Wednesday	26 Registration, Spring 2022		30	27	
Thursday	27 FYAT Day		31	28 A-5 Due	
Friday	28			29 Shab-e-Qadr*	
Saturday	29 Classes of Spring 2022 Begin & RS Orientation			30 Final Examinations	

■ Weekly Holiday
 ■ Public Holiday
 ■ Academic Recess
 ■ Undergraduate Admission Test

Course Contents

Lecture 1:

- Intro to the course,
- Brief history of electronics
- Why CSE251

Lecture 2:

- Alternative circuit representation
- Review of CSE250 topics (KCL, KVL, nodal)

Lecture 3:

- Introduction to IV characteristics
- IV characteristics of linear devices

Lecture 4:

- Intro to non-linear devices
- IV characteristics of non-linear devices
- Piecewise linear approximation.

Lecture 5:

- Introduction to diode
- Ideal diode model, IV characteristics
- Halfwave rectifier, transfer characteristics
- Simple diode circuits

Lecture 6:

- Diode logic gate
- Different input voltage, analysis
- Why we need the method of assumed state

Lecture 7:

- Diode non-idealities
- CVD model, CVD+R model
- Method of assumed state for diodes

Lecture 8:

- Method of assumed state
- Examples

Lecture 9:

- Rectifier revisited
- Full-wave rectifier design

Lecture 10:

- Rectifiers with smoothing capacitor
- Derivation, ripple voltage

Syllabus before midterm ends

Lecture 11:

- Voltage regulation
- Diodes in series as voltage regulators
- Drawbacks

Lecture 12:

- Diode breakdown region
- Zener diode
- Voltage regulation using Zener

Lecture 13:

- Introduction to transistors, MOSFET
- MOSFET as a digital switch (S-Model)
- Logic gates using MOSFET

Lecture 14:

- MOSFET non-idealities
- SR model
- Static analysis

Lecture 15:

- Structure of real MOSFET
- MOSFET in DC
- Method of assumed state for MOSFET

Lecture 16:

- Amplifiers introduction, types of amplifiers
- Common-source configuration
- Small signal amplifier

Lecture 17:

- Introduction to BJT
- S-model of BJT
- Current & voltage controlled logic gates
- RTL & TTL logic family (brief)

Lecture 18:

- Structure of a real BJT
- BJT in DC circuit
- Method of assumed state for BJT

Lecture 19:

- BJT common-emitter amplifier
- Introduction to Op-Amps
- Open-loop configuration of Op-Amps

Lecture 20:

- Op-Amp negative feedback
- Mathematical operations using Op-Amps

Syllabus after midterm ends