Department of Electrical and Computer Engineering
North South University, Bashundhara, Dhaka-1229, Bangladesh
CSE231, Section 2

Course Number and Title:	EEE231–Digital Logic Design
Credits:	3 SCH
Semester:	Spring 2021
Course Type:	Required, Engineering, Lecture
Instructor(s):	Dr. Mohammad Monirujjaman Khan Office: SAC 1027, Phone: 55668200,Ext. 1565 Email: monirujjaman.khan@northsouth.edu
Course Schedule/Timing:	ST 8.00 AM - 9:30 AM
Class Room:	SAC 309
Grading policy:	Attendance: 3% Quizzes: 15% Assignment: 2% Project: 20% Midterm exam: 15% Final exam: 25% Lab: 20 % May be changed based on UGC and University Decision.
Office Hours and Location:	Please email me. Office hour location is the same as the Instructor's office location

Textbook:
- Thomas L. Floyd, "Digital Fundamentals" 8 th edition, Prentice Hall.

- Digital Design By M. Morris Mano, 5th Edition, ISBN 01-30621218

Reference(s):
- M. Morris Mano, "Digital Logic & Computer Design" Prentice Hall.
- Digital Logic Techniques, T J Stonham, 3rd Edition
- Digital Design Principles & Practices by John F Wakerly, 4th Edition
- Fundamentals of Digital Logic with VHDL design, Stephen Brown and ZvonkoVranesic, 2nd Edition

➢ ***Please read my lecture notes, suggested book and suggested extra materials.***

Course Learning Outcomes (ABET Criteria): The students who complete this course should have:
   b) **Experiment & Interpretation:** an ability to design and conduct experiments of engineering problems, as well as to analyze and interpret data

c) **Design:** an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.

Objective:

The main focus of the course is to design and build digital circuits. This is an introductory course on digital design. So you have to grasp the fundamentals, and at the same time you need to understand how things work in the real world. Though it's an introductory course on digital design, we will cover some advanced topics also due to the length of the semester. By the end of the semester you should be able to design digital systems.

Course Outcome:

By the end of the course the student will be able to:

- Acquire the concept of number systems and switching algebra
- Minimize area and timing of a digital circuit
- Use off the shelf ICs to design circuit
- Build finite state machine using sequential circuits
- Design circuits using memory componentsand PLDs

Topics covered and level of coverage: (Subject to change by the instructor)

Course Description:

Introductory Digital Concept: Digital and Analog Quantities, Binary Digits, Logic Level and Digital Waveforms.

Binary Logic, Logic Gates and their Truth Table.

Number Systems, operations and Different Digital Codes

Boolean Algebra

Logic Simplifications

Combinational Logic Circuit Design and Functions

Minimization Techniques

Universal Gates and Their Applications.

Combinational Logic with MSI and LSI

Adders and Subtractors and Binary Multiplier

Comparator Circuit

Decoders and Encoders, Parity Generators/Checkers

Multiplexers and Demultiplexers,Boolean Function Implementation Using Multiplexer

 Flip-flops and Related Devices, Sequential Logic Circuit

Counters: Asynchronous and Synchronous Counters and Their Applications,Binary Up-Down Counter, Ripple Counter.State Diagram, State Table, State Equation, State Reduction, Cascaded Counters, Counter Applications, Counter Decoding.

Shift Registers, Basic Shift Register Functions, Different types of Shift Registers. Shift Register Counters.Johnson counter, Ring counter.

Memory Unit/Devices.

Attendance Policy: Attendance in classes is integral to the success of a student in this course. Nevertheless, **i**f a student needs to miss a class for unavoidable reasons, **the student must e-mail the instructor prior to the class period stating the reason for being absent**. In case the student fails to notify the instructor because of illness or other unavoidable reasons, certification such as a doctor's certificate may be necessary to get the absence excused. A partial unexcused absence may result from the following behaviors:
- A weak excuse for missing the class for which a prior e-mail message was sent
- Coming late or leaving early
- Disruptive behavior that results in instructor asking the student to leave for the rest of the period.

General Rules:
1. The instructor has the right to modify, add, or remove topics in the syllabus.
2. No one is exempt from any test, homework, quiz, and final exam.
3. Use of cell phones in the class or lab is not permitted.
4. A student who is absent from a class is responsible for obtaining knowledge of what happened in the class, especially information about announced tests, papers, or other assignments.
5. A student who is absent from a class on the day of a previously announced examination without valid reason and prior written notification to the instructor, is not entitled to make up what was missed.
6. Extra class will be given if there is a need.
7. Students are expected to be honest and forthright in their academic endeavors. Academic dishonesty includes cheating, inventing false information or citations, plagiarism, tampering with computers, destroying other people's property, or academic misconduct.

NSU Grading Policy: Letter grades indicating the quality of course work completed is interpreted as follows.

Numerical Scores	Letter Grade	Grade Points

		Per Credit
93 and above	A Excellent	4.0
90 - 92	A-	3.7
87 - 89	B+	3.3
83 - 86	B Good	3.0
80 - 82	B-	2.7
77 - 79	C+	2.3
73 - 76	C Average	2.0
70 - 72	C-	1.7
67 - 69	D+	1.3
60 - 66	D Poor	1.0
Below 60	F* Failure	0.0
	I** Incomplete	0.0
	W** Withdrawal	0.0
	R** Retaken	0.0

As a rule of thumb, every week you should spend at least 3 times the number of credit hours. If the course is of 3 credit hours then you need to allocate 9 hours every week outside the lecture.