

**CSE 260: Digital Logic Design**

# General Information:

**Course ID**: CSE260

**Section**: 11

**Semester**: Fall 2019

**Course pre-requisite**: Null

**Course credits**: 3

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| **Instructor Information:** |

**Name and title**: Ramkrishna Saha (RSA)

**Contact info*: rk.saha@bracu.ac.bd***

**Consultation room location/number**: UB80804

# Course overview:

To provide introduction to digital systems such as computers, communication and information systems. Topics covered include Boolean Algebra, Digital Logic Gates, Combinational Logic Circuits, Decoders, Encoders, Multiplexers, Asynchronous and Synchronous Counters, Registers, Flip-Flops, Adders, Sequential circuit analysis and design, Simple Computer Architecture and much more.

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| **Learning outcomes:** |

By the end of this course, students will be able to:

Convert different number systems.

Design and analyze basic Circuit.

Examine the theoretical concepts of digital logic design.

Practical implementation of what has been taught in class.

# Teaching-learning methodology:

Interactive discussion.

Recitation and oral questions by teacher answered orally by students.

Problem solving.

# Required course materials:

**Suggested Book:**

Digital and Computer Logic Design by Morris Mano

The E-Book is provided in the TSR

**Lecture Slides:**

\\TSR\FALL 2019\CSE\RSA\CSE260

# Course content:

All Chapters of the book

# Tentative course schedule:

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| Week-1 |  | |  | | | |
|  | Class-1 | Number base conversions [Lecture 1] | | |  |
| Class-2 | Arithmetic operations in n-Base number systems [Lecture 1] | | |
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| Week-2 |  | |  | | | |
|  | Class-3 | BCD, Excess-3 Codes, 1’s and 2’s complement [Lecture 2] | | |  |
| Class-4 | Introduction to Boolean Logic, Basic Gates, Truth Tables, Universal Gates [Lecture 3] | | |
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| Week-3 |  | | |  | | |
|  | Class-5 | | Boolean Algebra, Duality [Lecture 3] | |  |
| Class-6 | | SOP, POS [Lecture 4\_and\_5] | |
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| Week-4 |  | | |  | | |
|  | Class-7 | | Karnaugh Map [Lecture 4\_and\_5] | |  |
| Class-8 | | Karnaugh Map [Lecture 4\_and\_5] | |
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| Week-5 |  | | |  | | |
|  | Class-9 | | Tabulation Method [Lecture 6] | |  |
| Class-10 | | Tabulation Method [Lecture 6] | |
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| Week-6\*\* |  | | |  | | |
|  | Class-11 | | Half Adder, Full Adder, Parallel Adder [Lecture 7] | |  |
| Class-12 | | Propagation Delay, Problem Solving [Lecture 7] | |
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| Week-7\*\*      \*\*Mid Week |  | | |  | | |
|  | Class-13 | | Comparators [Lecture 8] | |  |
| Class-14 | | Comparators [Lecture 8] | |
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| Week-8 |  | | |  | | |
|  | Class-15 | | Decoder, Encoder [Lecture 9] | |  |
| Class-16 | | MUX, DeMUX [Lecture 9] | |
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| Week-9 |  | | |  | | |
|  | Class-17 | | MSI Circuit Related Problems [Lecture 9] | |  |
| Class-18 | | Introduction to Sequential Circuits, Basics of Flip-flops [Lecture 10] | |
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| Week-10 |  | | | | | |
|  | Class-19 | | | Sequential Circuit Analysis and Design [Lecture 10,11] |  |
| Class-20 | | | Sequential Circuit Analysis and Design [Lecture 11] |
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| Week-11 |  | | | |  | |
|  | Class-21 | | | Counters, Asynchronous vs Synchronous [Lecture 11] |  |
| Class-22 | | | Registers and Memory [Lecture 12] |
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| Week-12 |  | | | |  | |
|  | Class-23 | | | Recap and Discussion |  |
| Class-24 | | | Recap and Discussion |
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# Evaluation:

Attendance: 5%

Assignment (Individual problem solving): 5%

Class Tests/ Quizzes (Theory+ MCQ+ Problem solving): 10% Lab : 20%

Project: 5%

Mid Term Exam (Theory +Problem solving): 20%

Final Exam (Theory+ Problem solving): 35%

# General policy:

**Grading criteria:**

The grades at the University will be indicated in the following manner:

90 - 100 = A (4.0) Excellent

85 - <90 = A- (3.7)

80 - <85 = B+ (3.3)

75 - <80 = B (3.0) Good

70 - <75 = B- (2.7)

65 - <70 = C+ (2.3)

60 - <65 = C (2.0) Fair

57 - <60 = C- (1.7)

55 - <57 = D+ (1.3)

52 - <55 = D (1.0) Poor

50 - <52 = D- (0.7)

<50 = F (0.0) Failure

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| **Grades without numerical value:** |

P: Pass

A course may be taken for a pass/fail grade providing that the instructor approves the option and the student carries 12 credits for regular letter grades in that semester.

I: Incomplete

Incomplete is assigned only when a student has failed to complete one or more requirements of the course for an unavoidable reason/accidental circumstance and has applied for I grade.

W: Withdrawal

Withdrawal is assigned to a student who withdraws from the course within the deadline for withdrawal with 'W' grade.

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| **Attendance policy:** |

Attendance and punctuality are equally important as participation in class. Late comers are considered absent. Students are given no permission to be absent for any reasons other than sickness or illness of some kind. However, students are required to prove that they were sick or ill to be given consideration for their absence. If a student fails to maintain 70% attendance, s/he will be barred from the course. However, in case of illness (keeping in accordance with BRACU policy), exceptions can be made.

# Latecomer policy:

In case of late submission, grading rules adopted and foll owed in the department will be applicable to this course. Cause of late submission or absence has to be well supported by appropriate documents.

# Gender policy:

Gender equity among male and female students in class will be maintained as per the

BRAC University concern and BRAC's consistent endeavors on women empowerment. Therefore, all students will be evaluated equally based on their performance in the course concerned regardless of their gender.

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| **Inclusive education policy statement:** |

Each of the students shall be given equal access to laboratory resources, relevant materials and consultation hours, free from discrimination based on gender, language, sexual orientation, pregnancy, culture, ethnicity, religion, health or disability, socioeconomic background or geographic location, as per the inclusive education policy of Bangladesh