YEDITEPE UNIVERSITY
FACULTY OF ENGINEERING

COURSE SYLLABUS
2021 Fall

Course Code-Name	**CSE 221 – PRINCIPLES OF LOGIC DESIGN**

Course Schedule	**Tue** 14:00 (2 hours), **Wed** 13:00 (1 hour) @GSF 402 **Lab**: Sec1: **Thu** 16:00, Sec2: **Fri** 09:00, Sec3: **Fri** 11:00
Instructor's Name **Phone** **E-mail**	Dr. Mustafa Bülent MUTLUOĞLU (A-411) 216 578 04 25 (x-1425) mmutlu@cse.yeditepe.edu.tr
Assistant's Name **E-mail**	… and Yiğit Bilgin ybilgin@cse.yeditepe.edu.tr
Textbook & Supplementary Materials	M. Morris Mano, **Digital Design, 4th Edition,** Prentice Hall https://csiflabs.cs.ucdavis.edu/~ssdavis/154/Digital_McLogic_Design.pdf
Rec. Prerequisites	-
Course Outline	Week 01: Introduction, Number Systems Week 02: Number Codes and Registers, Binary Logic and Boolean Algebra Week 03: Boolean Functions and Theorems, Canonical Forms Week 04: Karnaugh Maps, Don't Cares and NAND/NOR Implementations Week 05: Don't Cares and NAND/NOR Implementations, Odd Function Week 06: Combinational Circuits, Binary Adders and Subtractors Week 07: BCD Adder, Multipliers & Comparators, Week 08: Review and Midterm Exam Week 09: Multipliers & Comparators, Decoders, MUX/DEMUX Week 10: Sequential Circuits and Latches, Flip Flops Week 11: Sequential Circuit Analysis, State Reduction Week 12: Sequential Circuit Design Week 13: Sequential Circuit Design Week 14: Shift Registers, Registers, Counters
Midterm Dates	Midterm I: Week 7
Grading (Tentative)	You will be given 3-5 assignments, lab work, one midterm and a final exam. Grade distribution: Midterm 30% Labwork 14% Homeworks 6% Final Exam 50%
Attendance	80% class, 80% lab attendance is mandatory.
Course Objectives	Students will be able to design and analyze digital electronic circuits. They will learn how Boolean algebra forms the theoretical foundation on which these circuits are built. They will learn how information can be represented in a digital system and what common logic functions are used to process it. They will learn how memory components expand the functionality and the behavior of digital circuits. Most importantly, they will see how circuits can be aggregated to larger components that allow more complex designs.

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Additional Remarks	• Copied assignments will be accepted as **not submitted** for both parties. • If you miss a midterm and have a medical report for the day, your midterm weight will be distributed over the final and/or lab work and/or the final project, or you will be given a makeup. • There is no makeup for the final exam.

Course Outcomes

i. **Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied information in these areas to model and solve complex engineering problems.**
(Matematik, fen bilimleri ve kendi dalları ile ilgili mühendislik konularında yeterli bilgi birikimi; bu alanlardaki kuramsal ve uygulamalı bilgileri karmaşık mühendislik problemlerini modelleme ve çözme için uygulayabilme becerisi.)

ii. **Ability to identify, formulate, and solve complex engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.**
(Karmaşık mühendislik problemlerini saptama, tanımlama, formüle etme ve çözme becerisi; bu amaçla uygun analiz ve modelleme yöntemlerini seçme ve uygulama becerisi.)

iii. **Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose. (Realistic constraints and conditions may include factors such as economic and environmental issues, sustainability, manufacturability, ethics, health, safety issues, and social and political issues, according to the nature of the design.)**
(Karmaşık bir sistemi, süreci, cihazı veya ürünü gerçekçi kısıtlar ve koşullar altında, belirli gereksinimleri karşılayacak şekilde tasarlama becerisi; bu amaçla modern tasarım yöntemlerini uygulama becerisi. (Gerçekçi kısıtlar ve koşullar tasarımın niteliğine göre, ekonomi, çevre sorunları, sürdürülebilirlik, üretilebilirlik, etik, sağlık, güvenlik, sosyal ve politik sorunlar gibi öğeleri içerirler).

iv. **Ability to design and conduct experiments, gather data, analyze and interpret results for investigating complex engineering problems or discipline specific research questions.**
(Karmaşık mühendislik problemlerinin veya alana özel araştırma konularının incelenmesi için deney tasarlama, deney yapma, veri toplama, sonuçları analiz etme ve yorumlama becerisi.)

v. **Ability to work efficiently in intra-disciplinary and multi-disciplinary teams; ability to work individually.**
(Disiplin içi ve çok disiplinli takımlarda etkin biçimde çalışabilme becerisi; bireysel çalışma becerisi.)