

**HAGERSTOWN COMMUNITY COLLEGE
COURSE SYLLABUS DOCUMENT**

COURSE: EGR 210 Digital Logic Design

(4 Credits)

INSTRUCTOR:

SEMESTER/YEAR:

COURSE DESCRIPTION: This course includes the design of logic gates, flip-flops, registers, counters and the analysis of digital logic networks. Also included are Karnaugh map simplification and switching algebra, synchronous sequential systems, Programmable Logic Arrays, multiplexors and encoder/decoders, binary arithmetic with adders and subtractors, decimal to octal, hexadecimal and binary conversion. **PREREQUISITE:** EGR 103, MAT 161

TEXTBOOK: Digital Design, Sixth Edition, Mano and Ciletti, Pearson, ISBN 978-0-13-454989-7.
The instructor will provide lab Material.

STUDENT LEARNING OUTCOMES:

1. Apply knowledge of mathematics, science, and engineering.
2. Apply Boolean algebra techniques to digital circuit analysis.
3. Use the techniques, skills, and modern engineering tools necessary for successful practice.
4. Design and conduct experiments and interpret analysis results.

TOTAL HOURS OF COURSEWORK

To earn three academic credits at HCC, students are required to complete a minimum of 37.5 clock hours (45 fifty-minute “academic” hours) of coursework per semester. Those hours of coursework may be completed through a combination of hours within the classroom and hours outside the classroom. Certain courses may require more than the 37.5 minimum hours of coursework per credit.

For most classes, students should expect to do at least 2 hours of coursework outside of class for each hour of in-class coursework.

Direct Faculty Instruction: 1 hour/week/credit for 15 weeks; 50 min = 1 classroom hour
(50 min x 3 credits x 15 weeks) = 2250 minutes = 37.5 hours

Student Work Outside the Classroom: 3 hours/week/credit for 15 weeks (3 hrs x 3 credits x 15 weeks) = 135 hours

	Direct Faculty Instruction	Student Work (Out of Class)
In Class Lectures (3 Credits)	37.5 Hours	
2 Exams (2 Tests and Final Exam)		40 Hrs.
Homework Assignments		95 Hrs.
Lab Time (1 Credit)	37.5 Hours	
Lab Exam	Included in Lab Time	
Lab Prep and Reports		25 Hours
TOTAL	75 Hours	150 Hours

COURSE CONTENT OBJECTIVES:

1. Learn and apply Boolean Algebra to logic circuits
2. Analyze and design combinational logic circuits
3. Analyze and design logic circuits with encoders, decoders, multiplexors, etc.
4. Investigate Latches and Flip-Flops
5. Analyze and design register and synchronous sequential logic circuits.
6. Investigate Programmable Logic Devices (PLDs) and Programmable Logic Arrays (PLAs)
7. Laboratory experiments in basic, combinational and sequential logic circuits

ASSESSMENT PROCEDURES:

Grading for this course will consist of the following:

General: Course guidelines

- **Reading Assignments:** A reading assignment will be given for every class period. The reading assignment will generally cover the material to be covered during the next class lecture. Students are responsible for completing the reading assignment **prior to the lecture.**
- **Collaboration:** Students should expect to spend a significant amount of time outside of class meetings completing homework and reading assignments. As a general rule of thumb, expect to spend 3 hours of study outside class for each 1 hour class credit. To facilitate the student's comprehension of the course material, discussion of the course material and homework assignments between students is encouraged. However,
 - All work turned in for homework assignments **must be a student's individual work** and may not be a group effort. Furthermore, homework assignments may not be copied in full or in part from another student's work or any other source.
 - Conduct of labs is a joint effort with lab partners; however, the lab report **must be a student's individual work**
 - Any assignments that, in the opinion of the instructor, violate the above guidelines will receive a grade of zero. Repeated violations of the above guidelines will result in the student receiving a failing grade for the class.
- **Attendance:** Attendance in all classes is required. If you cannot attend a class, notify the instructor prior to class and request notes/materials from a classmate.
- **Exams:** All exams will be given in the Academic Testing Center except for the final exam which will be given in the classroom on the date/time specified in the final exam schedule.

LECTURE (75% of Course Grade)

Homework: (20%):

- Homework assignments are **always** due on the specified due date.
- Homework assignments **must** be turned in prior to the end of class on the day in which they are due. Homework problems that are turned in late **will be docked 10% for each day late. Homework will not be accepted after solutions have been posted.**
- Homework assignments must be completed on engineering paper using the front side only.
- Homework problems must be neat and legible with answers clearly indicated and with appropriate units. Homework problems that cannot be easily read **will not be graded.**
- Material from all reading assignments may be covered on the homework assignments whether the material was covered in lecture. Material from all lectures may be covered on the homework assignments whether the material is contained in the reading assignments.

- To account for unforeseen circumstances, each student's two lowest homework grades will be dropped in the calculation of their final grade.

In Class Assessments: (10%):

- In-class assessments (quizzes) will be given.
- Ten short response in-class assessments will be given. The assessments will be unannounced and will cover concepts covered in previous lectures.
- To account for unforeseen circumstances, each student's lowest in-class assessment grade will be dropped in the calculation of their final grade. In the event of an excused absence, the missed assessment will be omitted.

Midterm Exams (40%): There will be 2 midterm exams, each worth 25% of the final grade.

- The date of all midterm exams will be announced at least one week before the class meeting during which the exam will be given.
- All midterm exams **must** be taken when scheduled unless prior coordinated with the instructor.
- Exams will be taken in HCC's Testing Center.
- Material from all reading assignments may be covered on the exams whether the material was covered in lecture. Material from all lectures may be covered on the exams whether the material is contained in the reading assignments.

Final Exam (30%):

- The final exam will be comprehensive of all lecture material
- The final exam **must** be taken when scheduled. **There are no makeup final exams.**
- Material from all reading assignments may be covered on the exams whether the material was covered in lecture. Material from all lectures may be covered on the exams whether the material is contained in the reading assignments.

LABORATORY (25% of Course Grade)

Lab Reports: (70%):

- Late lab reports will be assessed a 25% per day penalty
- Missing more than two lab assignments will result in a failing grade for the laboratory portion of the class
- Students are responsible for missed lab material when absent. Makeup labs can be scheduled at the discretion of the instructor.

Lab Exams: (30%):

- Two lab exams will be given, each 50% of the lab exam total.
- No makeup lab exams will be given unless prior approval is granted by the instructor or in case of illness (with written note from a physician) or family emergency.

Grading Scale

90-100%	A
80-89%	B
70-79%	C
60-69%	D
Below 60%	F

COURSE POLICIES

THE INSTRUCTOR RESERVES THE RIGHT TO MODIFY THE COURSE CONTENT AND/OR THE EVALUATION (TESTING) PROCEDURES AS DEEMED NECESSARY.

Hagerstown Community College's Attendance Policy: Students are expected to attend all classes. In the case of absence due to emergency, or participation in Official College functions, it is the student's responsibility to confer with the instructor about the absence and missed course work. Further, it is the student's responsibility to withdraw officially from any class, which he/she ceases to attend. Failure to do so will result in the recording of an "F" grade. Students absent from an announced test or exam, unless authorized, may be given an equivalent exam at a later date at the discretion of the instructor.

Emergency/Inclement Weather: Listen to your local news for cancellations or delays. You may also sign up for notification by logging onto the website at www.hagerstowncc.edu.

Honor Policy: As always, the honor code listed in the HCC College Guide applies to this class.

LECTURE SCHEDULE: EGR 210 Systems and Circuits

CONTACT INFORMATION:

Office Hours:

SERVICES FOR STUDENTS WITH DISABILITIES:

Students may receive reasonable accommodations if they have a diagnosed disability and present appropriate documentation. Students seeking accommodations are required to contact the Disability Support Services (DSS) office as early as possible. Students may contact a DSS staff member for an appointment at dss@hagerstowncc.edu or at 240-500-2530.