

ECE 3430: Embedded Systems-II

Class Meetings

Section 001: Tuesday, 8:00 am-9:15am, Zoom

Section 001: Thursday, 8:00 am-9:15am, Zoom or CEER 206

Instructor

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Office Hours

Tuesday 2:30-4:30pm (Zoom) and other times by appointment

Course Objectives

Dedicated for understanding and applying digital design knowledge into practical hardware systems which can be modeled, designed, and implemented in specific FPGA platform. Specifically,

1. To understand the properties of digital systems
2. To understand how to use computer aided simulation tools to design, analyze and synthesize digital circuits
3. To understand how to prototype and troubleshoot simulation based designs to obtain desired synthesized performance through the CAD tool

Course Materials

- Brock J. LaMeres, Introduction to Logic Circuits & Logic Design with VHDL, 2nd ed., Springer.
- Go to Falvey Library Site and then search it
- and you can **download** it.

Grading Policy

Your final grade will be determined from the following:

- Attendance: 5%
- Homework*: 20%
- Quizzes**: 15%
- Lab report***: 35%
- Mid-Term Exam****: 10%
- Final Exam*****: 15%

The requirement for attendance can be seen in the next section.

There will be 5 times of attendance check.

*: There will be 10 homework assignments (every 1-2 weeks). The detailed assignment schedule can be seen at the course schedule provided later.

Each homework will be 2 points.

Homework must be submitted to the Blackboard according to the designated timeline. LATE HOMEWORK WILL NOT BE ACCEPTED. Your homework should be neat and with your full name on.

** : There will be 3 quizzes (every 2-3 weeks) in the beginning of the class. The detailed assignment schedule can be seen at the course schedule provided later.

Each quiz will be 5 points.

***: There will be 5 project assignments (each time gets 7 points).

The report template is provided, see Blackboard.

****: Exam review will be provided and the schedule can be seen later.

*****: Exam review (project and writing mixed) will be provided and the schedule can be seen later (probably December 6th).

The scale used to assign letter grades is:

Letter Grade	Numerical Grade	Letter Grade	Numerical Grade
A	94 to 100	C	73 to 76
A-	90 to 93	C-	70 to 72
B+	87 to 89	D+	67 to 69
B	83 to 86	D	63 to 66
B-	80 to 82	D-	60 to 62
C+	77 to 79	F	Less than 60

Inclusive Classroom

We consider this classroom to be a place where you will be treated with respect; and, we welcome individuals of all ages, backgrounds, beliefs, ethnicities, gender, gender identities and expressions, sexual orientation, and other visible and non-visible differences. All members of this class are expected to contribute to a respectful, welcoming, and inclusive environment for every other member of the class.

Attendance

Class and laboratory attendance for first-year students is mandatory. A first-year student will receive a grade of "Y" (failure) whenever the number of unexcused absences in a course exceeds twice the number of weekly class meetings for the course.

State here if attendance is mandatory or not for your class. Provide a description of what it means to be present (seated and ready to go, just in the room, camera on if virtual, be explicit).

Where possible, students should inform their instructors if they plan to be late or absent from class. In all cases, students should be prepared to provide documentation to petition for *excused* absences to the Associate Dean for Student and Strategic Programs, Dr. Stephen Jones. Students should use the [form for requesting an excused absence](#). Excused absences do not count toward a failure in the course for first year students. Absence from class does not release the student from work assigned. Students who miss an in-class obligation (exam, presentation, etc.) due to an excused absence will not be penalized - the instructor may offer a make-up test, arrange an alternative time for a presentation, exempt a student from the assignment, or provide another arrangement. In the case of illness or injury, the form must be submitted within 24 hours of missing class.

The University's list of excused absences for all students includes the following:

- participation in NCAA athletic competitions
- participation in special academic events (e.g., conferences, field trips, project competitions)
- participation in official university business (e.g., student representatives attending meetings related to university governance)
- attendance at significant events involving the immediate family (e.g., funerals, weddings)
- religious holidays - see the University's policy on Religious Holidays
- college-approved participation in placement activities (e.g., job interviews, graduate school interviews, attending job fairs)
- legally required absence (jury duty, court appearance, short-term military service)
- documented serious illness, such as COVID, or disability

Academic Integrity

The College of Engineering is committed to creating an environment of academic integrity and ethical decision-making that we hope is reflected in the actions of our students and graduates. As Villanova students, integrity is central to the University mission. As engineers, our code of conduct requires us to place honor and integrity at the forefront of everything we do. As engineering students, it is expected that you will begin to adopt these values and instill them into your work habits. Students violating the academic integrity policy will receive a zero on that assignment or exam and the violation will be reported to the Associate Dean for Academic Affairs.

Students are encouraged to read the [University's academic integrity policy](#).

The College of Engineering has adopted the following exam guidelines:

- Students must arrive before the start of the exam. Under exceptional circumstances a student may need to arrive late, but he/she can enter the exam no later than 5 minutes after the start of the exam.
- All cell phones must be turned off and stored away until the student exits the exam room.
- The official Villanova class attendance policy must be followed when requesting excuses for absences or lateness to an exam.
- Each student must write and sign the following statement, "*I have neither given nor received any unauthorized assistance in the completion of this exam.*" If taking an exam remotely, students still need to copy and sign this statement (even if signed for electronically).
- In the case of virtual exams, the instructor may implement video proctoring or other measures to ensure academic integrity. For consent purposes, the instructor will announce ahead of time to students if they plan to use any form of video proctoring during an assessment and whether a recording will take place.

Adherence to the Student Code of Conduct and the CARITAS Commitment

Students are expected to act in a professional and respectful manner to their fellow students, faculty, and staff. Students should become acquainted with and understand the responsibilities set forth in the Student Handbook, especially those in the sections on Policy and Regulations. Adherence to University regulations is expected and required for successful completion of the program of studies. Enforcement within the classroom of policies regarding classroom behavior is the responsibility of the faculty member. All other discipline problems are to be referred to the Dean of Students.

Students, faculty, and staff are expected to comply with the [CARITAS Commitment](#). Students should wear masks, practice social distancing and good hygiene, wipe down their work area upon arrival and departure, and request an excused absence if they are not feeling well.

Online Expectations

To foster a professional environment, please wear appropriate clothes, mute if you are not talking to cut down on background noise, refrain from eating, and select an appropriate setting when we are meeting online.

Students with Disabilities

It is the policy of Villanova to make reasonable academic accommodations for qualified individuals with disabilities. If you are a person with a disability please contact me after class or during office hours to make arrangements.

If you have a non-physical disability you need to register with the Learning Support Office by contacting 610-519-5176 or at learning.support.services@villanova.edu as soon as possible. Registration is needed to receive accommodations.

The Office of Disability Services collaborates with students, faculty, staff, and community members to create diverse learning environments that are usable, equitable, inclusive and sustainable. The ODS provides Villanova University students with physical disabilities the necessary support to successfully complete their education and participate in activities available to all students. If you have a diagnosed disability and plan to utilize academic accommodations, please contact and register with Gregory Hannah, advisor to students with disabilities @ 610-519-3209 or visit the office on the second floor of the Connelly Center.

Electronics Policy

Online portions of this class may be recorded so that students that are absent may view the content later.

The use of electronic devices, such as phones, laptops, tablets, etc., during class is...

Students are prohibited from making any audio or visual recordings (including taking photographs) of lectures, discussions, or other classroom activities, unless a student (1) has written permission in advance from the instructor, or (2) is permitted to record under terms and conditions as approved by the University's Office of Disability Services or Learning Support Services. Students who have received approval to record classes as an academic accommodation must provide supporting documentation from the Office of Disability Services or Learning Support Services in advance of any recording. Students may use authorized recordings

only for the purposes of individual study in the course and may not disseminate or share them with a wider audience without explicit permission.

Copyright Policy

The materials used in Villanova University courses ("Course Materials") generally represent the intellectual property of course instructors, third parties and/or the University which may not be disseminated or reproduced in any form for public distribution (e.g., sale, exchange, etc.) without the written permission of the course instructor. Course Materials include all written or electronic documents and materials, including syllabi, current and past examination questions/answers, and presentations such as lectures, videos, PowerPoints, etc., provided by a course instructor. Course Materials may only be used by students enrolled in the course for academic (course-related) purposes.

Published course readings (book chapters, articles, reports, etc.) available in Blackboard are copyrighted material. These works are made available to students through licensed databases or fair use. They are protected by copyright law, and may not be further disseminated or reproduced in any form for distribution (e.g., uploading to websites, sale, exchange, etc.) without permission of the copyright owner.

Follow these links for more information about [intellectual property](#), [copyright](#), and [computer acceptable use](#).

The Learner's Studio

Villanova's Learners' Studio provides free content tutoring for over 100 courses (excludes writing, math, and entry level VSB courses). From quick homework clarification questions to prep for final exams, we can help! Our peer tutors are each endorsed by two faculty members and are trained according to CRLA national standards. All tutoring services at the university can be found [here](#). Don't see the class you want listed? Click [here](#). For more information, contact juliana.studer@villanova.edu or call 610-519-5862.

The Center for Speaking and Presentation

Villanova's Center for Speaking and Presentation provides expert guidance on topics including organizing presentation material, performing as a cohesive group, voice modulation, vocal interruptions, speaking anxiety and more! All tutoring services at the university can be found [here](#). For more information, contact juliana.studer@villanova.edu or call 610-519-5862.

Other Sections

You may wish to add sections on classroom expectations (electronics policy) homework, quizzes, laboratory expectations, etc. Anything that will make it clearer what your expectations are. In addition, you may wish to add a statement regarding your other obligations and what the turn around time for answering questions should be.

Schedule

Month	Date	Course topic	Homework/project	Quiz	Exam
August	18th 20th	Background Knowledge Review VHDL	HW1		
	25th 27th	Combinational Logic Synthesis VHDL		Quiz 1	
September	1st 3rd	MSI Logic VHDL	HW2 Project 1		
	8th 10th	Sequential Logic VHDL	HW3 Project 1		
	15th 17th	Sequential Logic VHDL	HW4 Project 2		
	21st 24th	Sequential Logic VHDL	HW5 Project 2	Quiz 2	
October	29th 1st	Mid-term Review Mid-term Exam			Mid-term
	6th 8th	RTL Modeling VHDL	HW6		
	13th 15th	RTL Modeling VHDL	HW7 Project 3		
	20th 22nd	Memory VHDL Design	HW8 Project 3		
	27th 29th	Programmable Logic VHDL Design	HW9	Quiz 3	
November	3rd 5th	Computer Arithmetic-I VHDL Project	Project 4		
	10th 12th	Computer Arithmetic-II VHDL Project	HW10 Project 5		
	17th 19th	Final Exam Review VHDL Project	Project 5		
	24th 26th	Break, No Class			
December	1st 3rd				Final Exam
	Happy Holiday				

