

## **Introduction to Digital Circuits**

### **ELT 140**

**Number of Credits:** 4

**Days Class Meets:** Fully online

**Meeting Times:** Various

**Location/Venue:** ONLINE

**Instructor:** D. Matt Higgins

**Contact Phone:**

**Contact Email:** higginsdavidm01@jccmi.edu

**Online Office Hours:** Thursdays 4-5pm

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## **Course Description**

This course is an introduction course to analyzing and creating digital circuits for logic operations..

## **Prerequisite(s)**

None.

## **Course Objectives**

After completing this course students will be able to:

- Convert decimal numbers to binary and hexadecimal.
- Describe mathematically several logic operations such as AND, NOR, NAND, NOR, etc.
- Utilize laboratory circuit trainers to make simple circuits.
- Design various simple circuits for logic operations, arithmetic operations, lighting LED's.
- Demonstrating the accuracy of the circuit design by building and testing real circuits.
- Using Microcontrollers to program and build circuits for real-world applications

## **Textbook**

1. Lessons In Electric Circuits, Volume IV – Digital, Tony R. Kuphaldt, 4Ed

(This will be provided in the JetNet course as an OER – not required for purchase)

## Extras

You will need to purchase the lab kit. The following link is from Amazon. The lab kit should be around \$30.00 and is ABSOLUTELY required for the course. You will need to have it ready and available by the beginning of the second week of class. Link is below -

[https://www.amazon.com/UNIROI-Complete-Tutorials-Breadboard-UA005/dp/B07D3RZZNN/ref=pd\\_sbs\\_147\\_6/144-2934159-2241454?\\_encoding=UTF8&pd\\_rd\\_i=B07D3RZZNN&pd\\_rd\\_r=8dcc0bb2-41a6-4510-97d2-785e6f442960&pd\\_rd\\_w=Z1vis&pd\\_rd\\_wg=ZjpL3&pf\\_rd\\_p=b65ee94e-1282-43fc-a8b1-8bf931f6dfab&pf\\_rd\\_r=DVS8B729RDB2XYQAG4AK&psc=1&refRID=DVS8B729RDB2XYQAG4AK](https://www.amazon.com/UNIROI-Complete-Tutorials-Breadboard-UA005/dp/B07D3RZZNN/ref=pd_sbs_147_6/144-2934159-2241454?_encoding=UTF8&pd_rd_i=B07D3RZZNN&pd_rd_r=8dcc0bb2-41a6-4510-97d2-785e6f442960&pd_rd_w=Z1vis&pd_rd_wg=ZjpL3&pf_rd_p=b65ee94e-1282-43fc-a8b1-8bf931f6dfab&pf_rd_r=DVS8B729RDB2XYQAG4AK&psc=1&refRID=DVS8B729RDB2XYQAG4AK)

## Grading Procedure

Your final grade will be posted in e-services at the end of the semester. Final grades will be determined as follows:

There are two main parts to this course, the textbook (theory) portion of the class and the hands-on laboratory portion. You will be doing the laboratory at home on electronic kits that you will purchase.

There are various online quizzes worth 20 points each, 10 labs worth 10 points each, mid term exam worth 25 points, and a final lab project worth 50 points.

## Grading Scale

<b>GPA</b>	<b>GRADE RANGE</b>
4.0	94-100%
3.5	89-93%
3.0	84-88%
2.5	78-83%
2.0	72-77%
1.5	66-71%
1.0	60-65%
0.5	55-59%
0.0	0-54%

## **Failure**

Any circumstances under which a student could be dismissed from or failed in the course that is not covered in other college publications. In pass/fail courses, a listing of minimal competencies.

## **Academic Honesty Policy**

Academic Honesty is defined as ethical behavior that includes student production of their own work and not representing others' work as their own, by cheating or by helping others to do so.

## **Plagiarism**

Plagiarism is defined as the failure to give credit for the use of material from outside sources. Plagiarism includes but is not limited to:

- Submitting other's work as your own
- Using data, illustrations, pictures, quotations, or paraphrases from other sources without adequate documentation
- Reusing significant, identical or nearly identical portions of one's own prior work without acknowledging that one is doing so or without citing this original work (self-plagiarism)

## **Cheating**

Cheating is defined as obtaining answers/material from an outside source without authorization. Cheating includes, but is not limited to:

- Plagiarizing in any form
- Using notes/books/electronic material without authorization
- Copying
- Submitting others' work as your own or submitting your work for others
- Altering graded work
- Falsifying data
- Exhibiting other behaviors generally considered unethical
- Allowing your work to be submitted by others

## **Accessibility**

Jackson College understands that cultivating a broadly diverse community is crucial to our educational mission and to our foundational commitment to leadership and service. Jackson College is fully committed to ensuring our courses are accessible to everyone including those with disabilities. We are currently working to increase accessibility and usability of our course materials in order to meet or exceed the requirements of Section 508 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1991

and Web Content Accessibility Guidelines (WCAG) 2.0. For more information about Jackson College's efforts to ensure accessibility please visit the [Jackson College accessibility web page](#).

If you have an accessibility need in any of our classes please e-mail the Center for Student Success at [JCCSS@jccmi.edu](mailto:JCCSS@jccmi.edu) or visit the [Center for Student Success web page](#).

At the Center for Student Success (CSS), we are committed to providing all students the opportunity to achieve academic success by providing a variety of support services free of charge to Jackson College students. This includes, but is not limited to, peer and faculty tutoring, mental health referral, temporary assistance with transportation, various workshops/seminars, and the TRIO program.

In addition, the CSS staff is committed to adapting the College's general services to meet the individual needs of otherwise qualified students with disabilities, for the purpose of providing equal access to all programs and facilities.

## **Makeup Policy**

There is typically no late work accepted in this course. If you have an unforeseen complication, please contact the instructor immediately.

## **Help**

Available learning services or opportunities for students seeking help with their course work. May include information about tutors, learning centers, reserved library materials, counseling services.

## **Academic Advising**

It is important to contact a Center for Student Success professional prior to the start of the semester in order to receive accommodations in a timely manner. While we will make every effort to coordinate accommodations in a timely manner, failure to self-identify prior to the start of the semester may delay notification to instructors and timeliness of acquiring accommodations. Accommodations do not automatically carry over to the next semester. Please e-mail [JCCSS@jccmi.edu](mailto:JCCSS@jccmi.edu) or visit the [Accommodations for Students with Disabilities](#) web page

## **Student Responsibilities**

You are responsible for the purchase of the lab kit and to set aside appropriate time each week to complete the requirements for this course. The work assigned each week is due at the end of that week – you cannot work ahead (or behind).

## **Attendance- Participation Policy**

Regular class participation and keeping up on the reading and assignments is strongly correlated with survival in college. It is my recommendation that you plan to do your assignments and take your exams BEFORE the last day they are due. If problems occur, there is time to fix them before the deadline.

Regular attendance means :

1. Doing weekly quizzes and labs
2. Participating in any forums

If you are not doing these things you will be marked as absent and may be dropped according to the college attendance policy.

In compliance with Federal Title IV funding requirements, as well as college initiatives, I will be monitoring student participation on a regular basis and officially reporting student activity throughout the term to assure compliance with college policy and federal regulations. It is imperative that you log in to the course and actively participate within the first couple of days of the term to validate your enrollment in the course. After that, not actively participating in class may result in you being withdrawn from the course. Being withdrawn from a course can have an impact on financial aid, billing, athletic eligibility, and housing status. As a college student you are responsible for how your participation impacts your academic progress; the accountability lies with you.

## Caveat

Please note: The format and timing of this course may need to change due to unforeseen circumstances. In particular: school closings, instructor illness, weather, or other situations that may arise.

If you are taking an in -person class, you will be required to complete a Reintegration Video Training course in JetNet prior to being admitted to campus.

All COVID safety protocols in place are based on current guidelines and will be enforced while students are on campus.

## Calendar

**Below is a tentative class schedule. This is provided for your planning purposes. Please understand that it might change as the course progresses. Use the tasks and assignment dates as they are presented in Jetnet as they will be the most current.**

<u>Week #</u>	<u>Task</u>	<u>Assignments</u>
1	Read Text Chapter 1 and 2	Online quiz (Ch1,2)
2	Read Text Chapter 3 and 4 Lab # LED, BUTTON	Online quiz (Ch3,4) Post video
3	Read Text Chapter 5 and 7 Lab # Potentiometer, DHT11	Online quiz (Ch5,7 ) Post video
4	Read Text Chapter 9 and 10 Logic Homework / Midterm Lab # Stepper, INFR Reciev	Online quiz (Ch9,10) Post Solution Post video

5            Read Text Chapter 11 and 13    Online quiz (Ch11,13)  
              Lab # Tilt switch / Ultrasonic    Post video

6            Read Text Chapter 14 and 15    Online quiz  
              Lab # 1602 LCD, Flame Sensor    Post video

Final electronic project requirements available this week.

7            Electronic Project (Final Exam)

NO LATE WORK WILL BE ACCEPTED. EVERYTHING IS DUE BY MIDNIGHT ON THE DATE LISTED ABOVE WITH NO ACCEPTIONS.

**Important Dates:**

<b>MONDAY 09/06/2021</b>	<b>LABOR DAY HOLIDAY-NO CLASSES</b>
<b>WEDNESDAY 11/24- SUNDAY 11/28/2021</b>	<b>THANKSGIVING HOLIDAY-NO CLASSES</b>
<b>SATURDAY 12/18/2021</b>	<b>END OF FALL SEMESTER</b>