

**CpSc 2070: Discrete Structures for Computer Science, Section 003 - Spring 2021.** - **University's**  
**Clemson Thinks<sup>2</sup> community of courses.**

**Prereq:** [CPSC 1010](#) or [CPSC 1060](#) or [CPSC 1110](#); and [MATH 1020](#) or [MATH 1060](#) or [MATH 1070](#).

**Syllabus Current To Start of Term (subject to update)**

**Class Meetings:** Asynchronous Online ( information on class activity will be asynchronous but assignments will have well-defined deadlines)

**Dr. Hedetniemi**

[niemi@clemson.edu](mailto:niemi@clemson.edu)

**Office Hours:** will be conducted online through Zoom Meetings as requested with Dr. Hedetniemi;

Also, Teaching Assistant: **Heba Aly** <[haly@g.clemson.edu](mailto:haly@g.clemson.edu)> \_will schedule regular hours per week.

This section of the course is designed to improve critical thinking and problem solving skills. We will use a definition of critical thinking skills

proposed by Diane Halpern that involves four strategies: **Plan; Work hard; Persist with complex thinking; Begin anew if you fail.**

**General Course Outcomes:**

- **Analysis: Use mathematical thinking**
- **Modeling: Models interpret discrete math problems**
- **Vocabulary: Justify your approach and solution using mathematical vocabulary**
- **Proofs: Implement simple proof techniques**
- **Counting: Apply suitable counting techniques**

**Specific Course Outcomes (Satisfying ABET requirements):**

- **Explain functions, relations and sets and use basic operations**
- **Determine the type of proof is best for a given problem**
- **Solve basic recurrence relations**
- **Apply the pigeonhole technique in a formal proof**
- **Apply formal methods of symbolic and predicate logic**
- **Describe the applications of general requirements above to real-life problems**

## Guiding Standards on Course Work:

Lectures will be presented asynchronously through Canvas. That is to say, there is no specific time of day when lectures must be viewed. However, **there are specific deadlines for viewing the material and completing required work as a part of this course.**

**Learning materials and assignments** will be added at a regular interval over the course of the term; as will the additional work associated with these lectures. **All work will be submitted through Canvas using specified formats. Work not submitted in the specified format will be graded as a 0 without review of its content.**

**Comments associated with a particular assignment should not be associated with an assignment after it is graded.** Instead, questions or comments need to be submitted by email if the comment is expected to be read!!

Please note that specific deadlines are in terms of EDT or EST depending upon the appropriate time at which Clemson University is using at the time. Pay attention to these times as you think of submitting your work. Since there is already flexibility built into the deadlines for submittal of work, extensive electrical failures and/ or equipment failures must be documented. **THAT IS TO SAY, WAITING UNTIL THE LAST MINUTE is NOT an excuse.** A 24 hour extension for submittal is permitted with a reduction in the grade (top value for each assignment is reduced to 75% OF GRADE for all requirements).

## Overview of topics to be used in the problem-solving process of required activities:

- Sets
- Graphs and State Diagrams
- Counting
- Relations
- Logic
- Sequences and Sums
- Proofs

## Required Material:

Textbook: Discrete Mathematics: An Open Introduction, Oscar Levin; available through this link as a free textbook [Oscar Levin Textbook](#) (since this is a free textbook consider it required; This textbook will serve as a source of definitions we need for our projects and will be used for the online quizzes.

Physical Dice ( will need to be able to manipulate in person); (A package of 5 will be useful because you can try alternatives at same time).

Use of a visualization tool such as Adobe Illustrator, Vector Drawing tool; Facility to create folders that are uploaded as .zip; Facility to upload movies in format .mp4; facilities to upload audio statements as .mp3. (These file types are required because of teaching computer equipment by Dr. Hedetniemi).

You are required to have a functioning laptop computer with web and a microphone and to connect with a broadband internet connection. Your laptop should be running software that allows access to Canvas and supports creation of pdf's. **For testing activities you will be required to use a proctoring software which will use your webcam to observe while you taking the testing activities.** You should have a working set of headphones with microphone for engaging in the activities of the class where either privacy or consideration of those with whom you share space.

Access to Canvas for reading and testing and communication in this course.

## Grading Rubric:

**Activities that will play a role in this class and their percentage of the whole grade:**

**Presentations: (60%) (Likely about 10-15, spaced over term depending on how bundled)**

- Videos from electronic sources and their resulting required presentation
- Problems related to the topics of the course and the resulting required presentations

**Quizzes: (40%) (minimum of 3 and maximum of 6, spaced over term)**

- Videos and mathigon accountability
- Textbook material accountability

**Quizzes will be taken in Canvas using Respondus Lockdown Browser and Responds Lockdown Monitor.**

Standard 10 Point Scale for letter grades: *A*: 90.00 - up; *B*: 80-89.99; *C*: 70-79.99; *D*: 60:00- 69.99; *F*: 59.99 and under.

The presentations will consist( for the most part) of two documents, an overview of the project and an iconograph. Together they will record one grade. The grading on these documents will focus on evidence of effort in pursuing the project, developing a plan of that effort, the portrayal of outcomes learned, an the expression of the problem itself in words (and/or visuals) of the definition of the project. Specific hints on success will accompany the project.

The quizzes will focus on definitions (from the textbook) and absorbing learning from mathigon study and videos.

## Specifics Regarding INTEGRITY expected in this class.

The University statement follows in a special section below. It is a direct quote of materials provided by the administration. However, this is a reminder for the more specific statements of expectation. The expectations are high in an online course because the internet is an easy convenience. This convenience defeats learning and will not be tolerated as a search for the work and thinking behind the work.

Use of electronic material, written material, other students in this class or not, are prohibited unless specifically allowed in the problem documentation.

**As a reminder, a personal statement by the person submitting the assignment will be associated with each assignment that names specifically any references used and that all other work is their own. This personal statement will be a video (phone is fine) with audio showing you as acknowledge any resources that you use and then document that all else is your work entirely. This is to be submitted at the same time and place as the associated submittal in CANVAS**

“Copyright Statement

**Materials in courses should be considered to be copyrighted. They are intended for use only by students registered and enrolled in a particular course and only for instructional activities associated with and for the duration of the course. They may not be retained in another medium or disseminated further.** They are provided in compliance with

the provisions of the Teach Act. Students must seek permission from instructors to record any class activity, including lectures, discussions, and presentations. Students should be reminded to refer to the Use of Copyrighted Materials and “Fair Use Guidelines” policy on the Clemson University website for additional information (link <https://clemson.libguides.com/copyright>).”

What this means: Unauthorized downloads, screen snapshots, movie recordings of the screen or anything else that provides an unauthorized copy of informations.

“Lack of knowledge of the academic honesty policy is not a reasonable explanation for a violation. You may not reuse any submissions from another course for any assignments in this class **without prior written permission from the instructor.** Questions related to course assignments and the academic honesty policy should be directed to the instructor. Collaboration policies will be posted on each assignment.” -- Dr. C. Plaue

## Guiding Standards for this Discrete Structures Section

(From the Common Core State Standards website For K-12, <http://www.corestandards.org/Math/>)

- **“1. Make sense of problems and persevere in solving them.**
- **2. Reason abstractly and quantitatively.**
- **3. Construct via arguments and critique the reasoning of others.**
- **4. Model with mathematics.**
- **5. Use appropriate tools strategically.**
- **6. Attend to precision.**
- **7. Look for and make use of structure.**
- **8. Look for and express regularity in repeated reasoning.”**

(From Keith DevLin’s BLOG at the Mathematical Association of America, <https://www.mathvalues.org/masterblog/what-is-a-mathematical-proof>)

**“Proofs are stories that convince suitable qualified others that a certain statement is true.”**

## Accessibility Statement as provided in Undergraduate Class Regulations

"Clemson University values the diversity of our student body as a strength and a critical component of our dynamic community. Students with disabilities or temporary injuries/conditions may require accommodations due to barriers in the structure of facilities, course design, technology used for curricular purposes, or other campus resources. Students who experience a barrier to full access to a class should let the professor know, and make an appointment to meet with a staff member in Student Accessibility Services as soon as possible. You can make an appointment by calling 864-656-6848 or by emailing studentaccess@lists.clemson.edu. Students who receive Academic Access Letters are strongly encouraged to request, obtain and present these to their professors as early in the semester as possible so that accommodations can be made in a timely manner. It is the student’s responsibility to follow this process each semester. You can access further information here: <http://www.clemson.edu/campus-life/campus-services/sds/>."

## Clemson University Title IX (Sexual Harassment) statement as provided in Undergraduate Class Regulations

"Title IX Policy: Clemson University is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, religion, sex, sexual orientation, gender, pregnancy, national origin, age, disability, veteran’s status, genetic information or protected activity (e.g., opposition to prohibited discrimination or participation in any complaint process, etc.) in employment, educational programs and activities, admissions and financial aid. This includes a prohibition against sexual harassment and sexual violence as mandated by Title IX of the Education Amendments of 1972.

The University is committed to combatting sexual harassment and sexual violence. As a result, you should know that University faculty and staff members who work directly with students are required to report any instances of sexual harassment and sexual violence, to the University’s Title IX Coordinator. What this means is that as your professor, I am required to report any incidents of sexual harassment, sexual violence

or misconduct, stalking, domestic and/or relationship violence that are directly reported to me, or of which I am somehow made aware.

There are two important exceptions to this requirement about which you should be aware: Confidential Resources and facilitators of sexual awareness programs such as "Take Back the Night and Aspire to be Well" when acting in those capacities, are not required to report incidents of sexual discrimination.

Another important exception to the reporting requirement exists for academic work. Disclosures about sexual harassment, sexual violence, stalking, domestic and/or relationship violence that are shared as part of an academic project, a research project, classroom discussion, or course assignment, are not required to be disclosed to the University's Title IX Coordinator.

This policy is located at <http://www.clemson.edu/campus-life/campus-services/access/title-ix/>. Ms. Alesia Smith is the Executive Director for Equity Compliance and the Title IX Coordinator. Her office is located at 223 Holtzendorff Hall, phone number is 864.656.3181, and email address is [alesias@clemson.edu](mailto:alesias@clemson.edu).

### **Academic Integrity as provided in Undergraduate Class Regulations**

The following is the official statement on academic integrity.

“As members of the Clemson University community, we have inherited Thomas Green Clemson’s vision of this institution as a “high seminary of learning.” Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form.”

When, in the opinion of a course instructor, there is evidence that a student has committed an act of academic dishonesty, the instructor must make a formal written charge of academic dishonesty, including a description of the misconduct to Dr. Jeff Appling, Senior Associate Dean of Undergraduate Studies. The reporting instructor may, at his/her discretion, inform each involved student privately of the nature of the alleged charge. In cases of plagiarism (I.B.2.) instructors may use the Plagiarism Resolution Form available from the Office of Undergraduate Studies. Instructors using this form for the first time must consult with Dr. Jeff Appling ([japplin@clemson.edu](mailto:japplin@clemson.edu)) prior to meeting with the student." (Note: THE PLAN FOR THIS SECTION IS TO IMMEDIATELY FILE A FORM WITHOUT NOTIFICATION TO THE STUDENTS and WITHOUT ASSIGNMENT OF A GRADE.) "