

FYSE 112 Designing and Breaking Codes: The Art of Secure Communication (First-Year Experience; Fall 2026)

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1 Logistics

1.1 Instructional Staff

Instructor: Michael Levet (He/Him/His); lastnamefirstinitial (at) cofc (dot) edu. Please address me as Dr. Levet or Prof. Levet.

Peer Facilitator: Taylor Thomas; thomastm1 (at) g (dot) cofc (dot) edu.

Please note that the role of a Peer Facilitator is solely in regards to the FYSS101 0-credit companion course. The Peer Facilitator is not a teaching assistant, and is not able to assist with question related to the course content (Cryptography) or grades in the main section. Please direct all such questions to Dr. Levet, who will be happy to assist!

1.2 Key Dates

Last Day to Drop Before Grade of ‘W’ Is Recorded: Friday, August 21.

Last Day to Drop Before with Grade of ‘W’: Thursday, October 22.

Breaks: October 12-13 (Fall Break); November 25-November 29 (Thanksgiving Break). Note that the last full day of classes for the semester is Tuesday December 1.

Final Exam: Tuesday, December 8, 10:30 AM - 12:30 PM, in the usual classroom.

1.3 Course Website

All announcements will be posted to the course website: <https://michaellevet.github.io/F26/FYSE112/index.html>. Students are responsible for checking the course website daily. Assignments will be posted to OAKS. Course materials will otherwise be posted to the Google Drive.

1.4 Lecture

- Main Lecture: Section 02, TR 9:55-11:10, HWEA 301
- FYSS 101, Section 13: M 3-3:50, BELL 408.

1.5 Office Hours

Office hours will be on Zoom. The Zoom link and days/times for office hours will be posted to my course homepage. Your success is my top priority– if any of these times don’t work, please do not hesitate to email me to schedule an appointment! **If you have COVID or another contagious illness, please do not attend my office hours in-person. I will be happy to facilitate remote participation.**

2 Course Description

2.1 Prerequisites

There are no prerequisites.

2.2 Workload

FYSE 112 is a 3-credit course. Students should expect to spend on average 9-12 hours/week outside of class.

2.3 Course Content

The unofficial title for this course is Cryptography. The content will be broken up, roughly into three units. In the first unit, we will survey affine and shift ciphers, as well as the underlying mathematics, including modular arithmetic and the Extended Euclidean Algorithm. For the second unit, we will introduce the Java programming language, with the goal of implementing these cryptographic protocols, as well as gaining practice decrypting codes. The remaining third of the course will focus on the RSA cryptosystem, which is used in practice to secure online transactions (e.g., banking, shopping).

2.4 Learning Objectives

1. FYE Learning Objective 1: Metaliterate Learning.

Students will be able to access, explore, and critically assess content within scholarly, media, digital, visual, and cyber spaces according to their discipline, in both formal and informal formats (e.g., scholarly, peer-reviewed, primary literature, popular, and social user-generated, and dynamic content that circulates online, etc.); students will generate and share knowledge accurately and effectively through the production of content using appropriate formats and platforms.

2. FYE Learning Objective 2: Collaborative Learning.

Students will work collaboratively and engage respectfully with their peers in the classroom; students will work collaboratively to produce content that shows a significant contribution by each group member.

3. FYE Learning Objective 3: Integrative Learning

Students will use critical thinking skills and problem-solving techniques to make connections across disciplines and/or seemingly distinct topics, ideas, events, contexts, experiences, etc.

4. Students will develop familiarity with basic cryptosystems, including affine and shift ciphers, and RSA.

5. Students will develop familiarity with elementary number theoretic concepts, including modular arithmetic and the Extended Euclidean Algorithm.

6. Students will develop familiarity with the Java programming language, and will implement concepts related to cryptography in Java.

2.5 Course Text

The official course *Discrete Mathematics and Its Applications*, by Kenneth Rosen. The eighth edition is the most recent version. Earlier versions will also work well, as I will not be assigning problems out of the book. Please note that Math 207 and Math 307 (Discrete Structures I-II) use Rosen's text. If you are intending to major in computing (CS, DATA, CITA, SWEN, INFS), you will be required to take Math 207.

3 Course Structure and Grading

3.1 Grading Scheme

Assignments in this course will consist of a Syllabus Quiz (Section 3.3), FYSS101 Completion (Section 3.4), Current Events Presentation (Section 3.5), Professional Development (Section 3.6), and Quizzes and Exams (Section 3.7). Your final course grade will be computed as follows:

- FYSS101 Completion: 10%.
- Current Events Presentation: 10%.
- Professional Development: 15%.
- Best Unit Quiz Average: 20%.
- Second Best Unit Quiz Average: 17.5%.
- Third Best Unit Quiz Average: 15%.
- Worst Unit Quiz Average: 12.5%.

Quizzes and exams will be chunked into four units: Unit 1 Quiz Average, Unit 2 Quiz Average, Unit 3 Quiz Average, and Unit 4 Quiz Average. For each $i \in \{1, 2, 3, 4\}$, your Unit i Quiz Average will be calculated as follows. If you attempt $\geq 50\%$ of the in-class quizzes during Unit i , then your Unit i Quiz Average will be the maximum of the following two schemes. Otherwise, it will be Scheme 1.¹

¹Exceptions to this will only be made in emergency situations and at the instructor's discretion; please contact the instructor as soon as possible to discuss your situation.

- **Scheme 1:** Each in-class quiz question and each question on the exam will count towards the denominator. Note that a quiz might have multiple questions. I will drop the lowest 10% of the in-class quiz questions (this does not include exam questions). The numerator will be the #Proficiency + #Outstanding. Precisely,

$$\text{Scheme 1} = \frac{\# \text{Proficiency} + \# \text{Outstanding} + 0.5 * \# \text{Progress}}{0.9 * \# \text{Quiz Questions} + \# \text{Unit } i \text{ Exam Questions}}.$$

- **Scheme 2:** Your Exam i score, calculated at:

$$\text{Scheme 2} = \frac{\# \text{Proficiency} + \# \text{Outstanding} + 0.5 * \# \text{Progress}}{\# \text{Unit } i \text{ Exam Questions}}.$$

The Final Exam will play the role of the Unit 4 exam.

Note: This grading scheme incentivizes taking the quizzes seriously, throughout the entire semester. If you do well on the quizzes, then this provides some insulation for the exam. On the other hand, if you do poorly on the quizzes, but do well on the exam, then these poor quiz grades disappear entirely.

Final cutoffs will be awarded according to the following scale, subject to the following condition: if you do not successfully complete the Syllabus Quiz, then the highest grade you can earn is a C.

- A : $\geq 90\%$.
- A-: $\geq 88\%$.
- B+: $\geq 86\%$.
- B: $\geq 84\%$.
- B-: $\geq 80\%$.
- C+: $\geq 78\%$.
- C: $\geq 76\%$.
- C-: $\geq 70\%$.
- D+: $\geq 65\%$.
- D: $\geq 60\%$.
- D-: $\geq 55\%$.
- F: $< 55\%$.

Rounding Grades. Students who earn 100% for their FYSS101 completion score will have their final grades rounded up at a full point (precisely, I will take the ceiling). Note that $\text{ceil}(69.01) = 70$, while $\text{ceil}(69) = 69$. **There will otherwise be no rounding of final grades.**

3.2 Grading for Individual Problems

Submissions will be graded for correctness and clearly articulated reasoning. It is not enough to arrive at the correct answer. Supporting work and reasoning must also be included and **easy to follow**. That is, both your work (including attention to intermediary details) and the clarity in which it is presented will be graded.

Each problem will receive a score of $\text{NA} < \text{Attempted (ATT)} < \text{Progress (PR)} < \text{Proficiency (P)} \leq \text{Outstanding (O)}$ as follows.

- **O (Near Perfect/Outstanding):** The solution was near-perfect and clearly explained. This is almost a **textbook** caliber solution.

- *P* (**Demonstrated Proficiency**): The solution demonstrated proficiency, with perhaps minor (but not content-related) errors. While there may be room to improve the exposition, the solution was relatively easy to follow.
- *PR* (**Demonstrated Progress, but Fell Short of Proficiency**): The solution demonstrated some measure of understanding, but had significant errors or was extremely difficult to understand.
- *ATT* (**Attempted/Significant Errors or Misconceptions**): The solution demonstrated glaring misunderstandings, had significant or fatal errors.
- *NA* (**No meaningful attempt**).

Note that scores of Proficiency and Outstanding are considered **full credit**, though scores of Proficiency and Outstanding count equally. We stress that solutions do not need to be perfect in order to demonstrate proficiency (this is more favorable than partial credit). Scores of Progress will count as 50% credit. Scores of NA and ATT count equally (in that they do not contribute towards proficiency), but denote feedback as to how close one was to demonstrating proficiency. A score of PR means that you likely have some handle on the content, but need to iron out some misconceptions or pay closer attention to details. A score of ATT is alarming, and you should attempt to fix any misunderstandings immediately. Please stop by office hours so I can help you!

3.3 Syllabus Quiz

There will be a Syllabus Quiz. Despite the name, it will be structured as a HW, and you will have several days to complete it. Failure to successfully complete the syllabus quiz by the deadline may result in your final grade being capped at a C.

3.4 FYSS101

Your grade in the FYSS101 part of this FYE course will count as a part of your grade in this class. Your FYSS101 grade will be determined in the following way:

- 50% is from attendance and participation in the weekly FYSS101 in-person class
- 50% is from completing the weekly assignments from the OAKS modules

If you are absent from the FYSS101 course more than 4 times, or do not complete 5 or more weeks of assignments, you will receive a grade of 0% for FYSS 101, resulting in a full letter drop in your grade in my course.

3.5 Current Events Presentation

Students will be required to do a 10-minute presentation on a current events article, broadly related to cybersecurity, cryptography, computing, or ethics as it relates to one of these. These presentations will be on Tuesdays, with at most two students presenting on a given day. Grades will be assigned in the following manner:

- 2% of your final grade for selecting a presentation date, by the deadline on the course homepage.
- 2% of your final grade for selecting a presentation topic and submitting it to OAKS for approval, by the deadline on the course homepage.
- 2% of your final grade for uploading your slides as a PDF to OAKS, by 8 PM the night before your presentation.
- 2% of your final grade for giving a presentation that is 10 minutes in length. Students who present for 8 minutes will receive half-credit for this item. Students who present for fewer than 8 minutes, or longer than 12 minutes, will receive no credit.
- 2% of your final grade for professionalism. Your talk should be respectful and appropriate, free from: derogatory comments, sexual innuendo, excessive profanity, or horrific depictions of violence. I would recommend a PG-13 guideline. When in doubt, it is your responsibility to discuss with me at least **72 hours ahead of your presentation**.

3.6 Professional Development

Students are encouraged to work outside of class to develop their professional skillset with computing. There are several ways to do so, including:

- Attend the departmental Ice Cream Social on Aug. 25, starting at 4:50 PM, and **engage in meaningful conversation with at least two labs or clubs**.
- Visit the Career Center to get help with developing your resume.
- Attend a CS club for an entire meeting, and meaningfully engage with the activity. We have several clubs, including the Cybersecurity Club, Women in Computing, Data Science Club, and Computing in the Arts Club.
- Attend the Career Fair or the CS Department's Biz Bash, and actively engage with prospective employers.
- Participate in a hackathon.
- Attend a talk on a topic related to computing. Stay for the entire talk.
- You are welcome to propose your own professional development activity, but you **must seek approval, via email, from Dr. Levett at least one week in advance of the event**.

You are also welcome to repeat certain activities (e.g., attending multiple meetings for the same club).

Each professional development activity will count for 5% of your overall grade. The following are required:

- Upload some evidence of attendance to OAKS by the due date.
- There will be a scheduled day in-class to write a reflection on what you learned and how participating in the given event helped develop you professionally. This reflection should be 2 – 3 **solid** paragraphs, written using complete sentences and proper grammar. There should **not be any fluff or filler**.

Provided you upload some evidence of attendance to OAKS by the due date AND show up to class to complete your reflection, grades will be issued according to the following scale:

- 100%: The reflection was well-written, using proper grammar, and provided evidence of significant engagement with the professional development activity.
- 80%: The reflection was reasonably easy to follow, though had some grammatical mistakes; it provided some evidence of engagement with the professional development activity.
- 60%: The reflection was challenging to follow, had many grammatical mistakes, or relied heavily on filler and fluff to pad the length of the writing. Little evidence of engagement with the professional development activity was provided.
- 0%: No evidence of attendance was uploaded to OAKS by the due date, OR the student did not show up to write their reflection, OR their submission was plagiarized.

Note that the reflections will be handwritten. You are welcome to bring a 3 inch $\times$ 5 inch notecard, with handwritten notes (written by you) on both sides. No other notes will be permitted.

3.7 Quizzes and Exams

There will be regular quizzes, given almost exclusively in-class. Students will have 15 minutes to take the quiz (scaled for students with disability accommodations). Unless otherwise stated, quizzes are closed-book, closed-note, and are individual efforts. Consulting anyone who is not a member of the instructional staff about a quiz, which includes your classmates, tutors, generative AI (including, but not limited to ChatGPT) and posting online (e.g., Chegg, Reddit, Discord, StackExchange, etc.) constitutes an **honor code violation**. Similarly, all answers must be in your own words and reflect your understanding of the material. Copying from any resource is strictly prohibited. Use of electronics during a quiz is strictly prohibited. A four-function calculator is permitted; scientific and graphic calculators (including, but not limited to, the TI-83, TI-84, or TI-89 models) are strictly prohibited. See Section 3.9.

There will also be three midterms and a final, given in-class.

There will be regular in-class worksheets, which will double as study guides for the quizzes and exams. Significant time will be spent working problems in groups. In order to incentivize attendance, engagement, and asking for help in class, **solutions for the study guides will not be posted.**

3.8 Regrade Requests

Students have 7 days (including weekends) from when a grade was returned to request a regrade. **I am happy to fix mistakes in grading. Other regrade requests will not be considered.** When you submit a regrade, please clearly indicate the error made in grading. All regrade requests must be submitted using the Google form on the course homepage.

3.9 Honor Code

I expect students are familiar with policies pertaining to academic integrity, outlined in the Student Handbook. Much of what you will learn about mathematics and theoretical computer science will come from your discussions with your peers. You are welcome and encouraged to discuss the homework problems with each other and with me. It is expected that you work the problems by yourself first, so that you can contribute to the discussion. This policy will be changed, reluctantly, if I find it is being abused. **Your submissions must be written in your own words and reflect your understanding of the material.** Note that you are responsible for citing any resource (including other people) that are not members of the course staff, the course lecture notes, or the lectures. Posting to online forums for help (e.g., Chegg, Reddit, StackExchange, etc.) is an **honor code violation**. Regurgitating solutions from generative AI (including, but not limited to ChatGPT) is an honor code violation. If there are any questions regarding this policy, please ask the instructor.

Any acts of suspected academic dishonesty will be reported to the Office of the Dean of Students and addressed through the conduct process. Students found responsible for honor code violations will be subject to the following minimum penalties:

1. You will receive a -200% on the assignment.
2. You will be reported to the Office of Academic Integrity, which may choose to impose additional penalties.

Honor code violations may result in an XXF for the course, which carries the same weight as an F. The XX modifier denotes that the grade was received for academic integrity violations. **Please do not cheat.** It is not worth it.

4 Course Policies

4.1 Office Hours: Norms and Expectations

There will be a mix of in-person and online office hours (see Section 1.5 for the Zoom link). The purpose of office hours is to supplement lecture and the associated readings. In order to get the most out of office hours, we recommend the following.

- Read through the lecture notes. In particular, work through the provided examples. These materials are there to help you!
- Spend some time working the problems first. Try to identify specific approaches you have made, as well as identify where you are stuck. If you are spending more than 30 minutes on a single problem without making much progress, then I strongly encourage you to seek help in office hours!
- If you wish to discuss specific work, please have it typed up or a legible image of handwritten work so that you can share your screen on Zoom. It is very hard to help you if your work is on paper and you are holding it up to the camera.
- My goal is to provide hints about homework problems, as well as help students obtain momentum to keep working. In particular, I aim to help students arrive at the solutions on their own. It is completely normal to need time to digest a hint, and then come back to office hours with more questions! Learning CS Theory and Math is an iterative process- we encourage students to iterate!

- Please note that I will neither provide entire solutions in office hours nor grade work ahead of the due date.

Office Hours vs. Email: I am generally happy to discuss course logistics via email (e.g., scheduling appointments, etc.). However, email is usually not a conducive medium for tutoring. If you email me with a question about the homework (and you are certainly welcome to do so), I reserve the right to ask you to come to office hours with your question. Note that this does associate some risk with procrastination, in that you may not get your question answered until after the assignment due date (or after the quiz/exam). Similarly, if you email me late at night, I may not see your email until after the assignment is due. Please plan accordingly.

4.2 Late Work

Late work will **not** be accepted, unless prior arrangements have been made or in case of emergency situations. The final determination as to what constitutes an emergency rests with the instructor. Extensions can be requested using the Google form on the course homepage. I recognize that you all will frequently have competing deadlines, including for your other classes as well as personal obligations. There is not always time to meet all of one's deadlines. The way to handle these situations is to communicate reasonably in advance. For non-emergency situations, please request an extension at least 24 hours in advance. This includes for university-sponsored events (including, but not limited to, athletics). In general, I encourage you to ask for what you need. While I will in general try to be flexible for short-term extensions, do note that that requesting an extension does not guarantee that you will receive one.

In the event of an emergency situation which prohibits you from turning in work before the deadline, I reserve the right to choose how to handle the situation. For long-term emergencies, please talk to me.

Note that missing the deadline by a couple minutes is not a valid reason for late work to be accepted. Homework due dates and times will be clearly posted. OAKS is the final arbiter of what is considered on-time, for homework. Please plan accordingly.

4.3 Late Enrollments

Students who enroll in the course after the first day of class are subject to the same deadlines as the rest of the class.

4.4 Attendance

Attendance is not required and will only be taken during the first two weeks, for the purpose of attendance verification as required by CofC. Students who have not engaged with class by attending, completing assignments, or emailing me may be reported as having “never attended.” If you are sick, please stay home— let me know if this is in the first two weeks, so that you do not get dropped. In particular, if you have COVID, please quarantine until such time as you are not contagious. I will be happy to facilitate remote participation in these instances. In the event that any member of the class (myself included) contracts COVID, I reserve the right to move the entire class online.

Note that ≥ 0 class sessions will be recorded via both voice and video recording. By attending and remaining in this class, the student consents to being recorded. Recorded class sessions are for instructional use only and may not be shared with anyone who is not enrolled in the class.

4.5 Modifications to the Syllabus

The instructor reserves the right to modify any of the policies in the syllabus at any time, particularly as dictated by the interests of learning and fairness. Students will not be graded any harsher than as outlined in Section 3.2.

4.6 Student Feedback

Student feedback regarding this course is welcome at any time. Those who wish to leave feedback anonymously are welcome to do so using the Google form on the course homepage. Students are also welcome to reach out to the instructor via email or in office hours to discuss their concerns.

5 Required Syllabus Statements

5.1 Religious Holidays

Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. In this class, please contact the instructor within the first two weeks to discuss any conflicts with religious events. Short-term accommodations (e.g., a 24-48 hour extension on an assignment) can be requested in the normal course via the Extension Form. If you require more extensive accommodations, then you **must** discuss with the instructor within the first two weeks of class.

5.2 Students with Disabilities

The Center for Disability Services/SNAP is committed to assisting qualified students with disabilities achieve their academic goals by providing reasonable academic accommodations under appropriate circumstances. If you have a disability and anticipate the need for an accommodation in order to participate in this class, please connect with the Center for Disability Services/SNAP. They will assist you in getting the resources you may need to participate fully in this class. You can contact the Center for Disability Services/SNAP office at 843.953.1431 or at snap@cofc.edu. You can find additional information and request academic accommodations at the Center for Disability Services/SNAP website.

If you are not registered with SNAP and believe you may need a disability accommodation, please do not hesitate to contact me.

5.3 Inclement Weather, Pandemic or Substantial Interruption of Instruction

In the event of inclement weather, I will communicate a detailed plan for how class will proceed (if at all). Please prioritize your safety in these situations, including any need to evacuate. If there is a need to evacuate, I will also be prioritizing my own evacuation. The university has allocated make-up days on the weekends to be used if class is canceled for inclement weather. I will communicate in a timely manner for if/how these days will be used.

In the event of a surge in the ongoing COVID pandemic, I reserve the right to make adjustments to the structure of the class. In particular, if there exists at least one member of the class with COVID, I reserve the right to move the course online.

5.4 OAKS

OAKS will be used this semester to provide the syllabus, assignments, and such. I reserve the right to use the OAKS gradebook.

5.5 Digital Accessibility Statement

The instructor will make a good-faith effort to provide digitally accessible materials. Students who have concerns or additional needs should discuss with the instructor.