Course Syllabus

# Course Prefix, Number, and Title: Credits:

MAD 6607 – Coding Theory 3

# University name: Academic term/year:

Florida Atlantic University Spring 2018

**Last date to Drop and receive 100% refund:**

Friday, January 12th

**Last date to Withdraw without receiving a grade of 'F':**

Friday, April 6th

# Course meeting time and location:

Monday, Wednesday and Friday at 3pm in Sanson Life Sciences Building, Room 178

# Instructor information:

## Name: Office:

Edoardo Persichetti Science Building Room 218

## Phone number(s): Email address:

561-297-4136 [epersichetti@fau.edu](mailto:epersichetti@fau.edu)

## Office hours:

Tuesday-Thursday 2-3pm, or by appointment

# Course description:

## Catalog description: The course provides an introduction to fundamental concepts of coding theory. In addition to theoretical aspects, algorithmic questions and applications of coding theory are discussed, including a short introduction to code-based cryptography. At the end of the course you should be acquainted with standard schemes for channel coding. In particular you should be familiar with the basics of algebraic coding theory and various important algebraic codes. You should also be able to explain algebraic structures used in coding theory and know examples of how they are applied in communication systems.

# Prerequisites:

## Course prerequisite(s):

MAS 4301 with grade of "C" or better or permission

# Course materials:

## Textbook:

*The Theory of Error-Correcting Codes*, by MacWilliams-Sloane, published by North Holland (ISBN **978-0-444-85193-2**)

# Course delivery and instructional methods:

The course will be delivered using traditional methods, including whiteboards and/or slides.

# Communication and Feedback:

## Preferred Email Contact Method:

Please contact me **exclusively** via email at [epersichetti@fau.edu](mailto:epersichetti@fau.edu).

## Email Response Time:

I will do my best to reply to all emails within 24 hours on week days and 48 hours during the weekend. If you do not receive a reply within this time, please send me another email or call my office phone.

# Evaluation Procedures:

## Tests and Final Exam:

There will be four intermediate tests during the semester, distributed as follows:  
  
 Test 1: Friday, January 26th  
 Test 2: Friday, February 9th   
 Test 3: Friday, February 23rd  
 Test 4: Friday, March 16th Test 5: TBD

The Final Exam will be on TBD

## Assessments:

The final grade will depend on class tests and a comprehensive final exam, and will be calculated as follows:  
   
 Final Grade 100% = Tests: 65% + Final Exam: 35%

**No extra credit** will be provided.

## Performance standards and grading policy:

Allwork is to be organized and complete, with grading being based both on accuracy and quality of work. The grades will be assigned according to the following table:

|  |  |
| --- | --- |
| Percentage | Final Grade |
| 94-100 | A |
| 90-94 | A- |
| 87-90 | B+ |
| 83-87 | B |
| 80-83 | B- |
| 75-80 | C+ |
| 65-75 | C |
| 60-65 | C- |
| 57-60 | D+ |
| 53-57 | D |
| 50-53 | D- |
| 0-50 | F |

# Tentative Course Outline and Schedule:

We will cover the following topics from the textbook (not necessarily in the listed order)

|  |  |
| --- | --- |
| Chapter | Topic |
| 1 | Introduction to Coding Theory |
| Constructions and Properties |
| 2 | The Golay Code |
| 4 | Finite Fields Recap |
| 5 | Dual Codes |
| Weight Distributions |
| 7 | Cyclic Codes |
| 8 | Idempotents |
| 7 | Simple BCH Codes |
| 9 | Generic BCH Codes |
| 10 | Reed-Solomon Codes |
| Generalized Reed-Solomon Codes |
| 12 | Alternant Codes |
| Goppa Codes |
| Other Alternant Codes |
| Extra | Small Intro to Cryptography |
| Code-based Cryptography |

# Classroom policies:

## Attendance policy:

I strongly advise to attend every class: not only it is your right, but it is also the best way to succeed in the course.   
Try to be organized: pay attention to the lecture, take notes regularly and in a tidy manner, **do your homework** and respect the deadlines.   
I encourage you to make questions during the lecture and, if something is not clear, to come and seek me out during office hours. Remember, though, that office hours are a support, and not a substitute, to the lectures.  
Attendance during test and exam days is required, make-ups are not allowed unless you have a University excused absence or serious illness. You must contact me prior to the scheduled exam time if you are in one of these situations.  
  
Please arrive to class **on time**.

## ADA Statement:

In compliance with the Americans with Disabilities Act (A.D.A.) – Students who require special accommodations due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) located in Boca – SU 133 (561-297- 3880), in Davie – MOD I (964-236-1222), or in Jupiter – SR 117 (561-799-8585) and follow all OSD procedures

## Free Math Tutoring for FAU Students:

The MLC provides the following **FREE** academic support services for FAU students:

1.  Drop-in tutoring in the SAM LAB (**S**ucceed **A**t **M**ethods) in GS207 during all hours of operation

a.  **ALL METHODS TUTORING is done in the SAM Lab except on Sundays.** On Sundays, please visit the MLC as the SAM Lab is closed.  
b. Monday – Thursday: 9am – 6pm and Friday: 9am – 4pm

2.  Drop-in tutoring in the MLC GS211 during all hours of operation

a. Monday – Thursday: 9am – 6pm, Friday: 9am – 4pm, and Sunday: 1pm – 5pm

3.  Small group tutoring by appointment

a. Appointments can be made in TutorTrac. Go to [www.fau.edu/tutoring](http://www.fau.edu/tutoring) and click on ‘Find a Tutor,’ then ‘Click Here to Make an Appointment.’ Login with your FAU ID and password and click on ‘Search for Availabilities.’ For Center, choose SAM Lab for Methods of Calculus and Math Learning Center for everything else. Choose your Section (Class) and click ‘Search.’ Choose your time and then click ‘Save.’ If there are no appointments listed for your course, please email [mlc@sci.fau.edu](mailto:mlc@sci.fau.edu) and request an appointment.

4.  eTutoring (remote online tutoring)

a.       Find the schedule at <http://www.math.fau.edu/mlc/remote/index.php>

**The instructor reserves the right to adjust the content, homework, or pacing of the course as needed. The instructor also reserves the right to amend this syllabus.**