

COSC 190  
Artificial Intelligence, Computer Vision, and Cognition  
Course Syllabus  
Instructor: Dr. Fred Park  
Spring 2017

## Course Description

Have you ever wondered how a computer can tell the difference between the letter B and the number 8? This simple process can be extended to recognizing faces in an FBI database or even tracking moving airplanes in live video. In this course we will look at how computers recognize objects, patterns, and more. Moreover, we will detail the links between human cognition and how computers attempt to mimic such cognitive processes. Prerequisites: C- or higher in MATH 76 or MATH 79 or COSC 100 or 2 or higher on the MATH placement test. Note: Students must also enroll in 21184 PSYC 336 to receive CON1 credit.

## Instructor Information

Instructor: Dr. Fred Park  
email: fepark@whittier.edu  
webpage: www.fredpark.com  
Office: SLC 226  
Phone: 562-907-4880  
OH's: TBA

## Course Information

- Times and Location: MWF 12:00-12:50 in SLC 416
- There is no official textbook for the course. We will have class handouts and active learning exercises.
- Recommended Software: Matlab Student Version R2016b. At \$99, it includes everything you need computationally for the course. [http://www.mathworks.com/academia/student\\_version/](http://www.mathworks.com/academia/student_version/)  
Note: computers in SLC 416 have the Matlab software already installed.

## Paired Course Info (for those seeking CON1 Credit)

Paired Course: Psych 336, Cognitive Psychology  
Professor Joanne Hash  
MWF 1:30-2:20 in SLC 205  
Office: SLC 350C  
Phone: 562-907-4847  
email: jhashcon@whittier.edu

## Course Breakdown

### Scheme #1:

- HW 30%
- MT 30%
- Final 40%

### Scheme #2

(Emergencies Only!!):

- HW 30%
- Final 70%

**No makeup exams whatsoever!** I highly recommend you taking the midterm exam since scheme #2 is only for emergencies. I will automatically take the higher of both schemes at the end of the course when determining your final grade. An automatic “F” grade will be issued to anyone who does not take the final exam.

## Final Course Evaluations

Final Evaluations: 1% total bump in course grade. For example if your final total course average from the higher of scheme #1 and #2 is an 89% total (B+ grade), your final average gets bumped to 90% (Now an A- grade). I highly recommend that everyone does the final course evaluations.

## Grading Scale

In this course, I will utilize an A-F scale with +/- grading. The percentage breakdowns based on the highest average from scheme #1 and #2 above are as follows:

- 90-100% A Range
- 80-89.9% B Range
- 68-79.9% C Range
- 58-67.9% D Range

The minimum grading guidelines in terms of percentage of the class are as follows:

- 20% of the class will be in the A Range
- 30% of the class will be in the B Range
- 35% of the class will be in the C Range

To obtain an “A” grade in my course, you will have to work very hard. In general, there are no easy “A’s” in my courses.

## Exam Dates

The exam dates are set in stone and will not change. Please write these down in your scheduler ASAP.

- Midterm: Take home exam dispersed on Weds March 22nd. Due Friday March 24th by 8pm.
- Final: Final exam will be a final project on object classification. It entails both computer vision and machine learning. Some cognitive concepts will also be used.

## Homework

HW is due at the beginning of class on alternate Weds no later than 12:05 PM unless indicated otherwise by the instructor. No HW will be accepted after the 12:05 PM deadline. Please do not walk up and attempt to turn your assignment into the front of class after the 12:05 PM deadline since it will not be accepted. Moreover, such action would be deemed as disruptive to the class. You are allowed to drop 1 of the assignments. Please make sure to keep up with the homework after each lecture.

## Coding and Matlab

There will be a large computational aspect to this course. This will include programming assignments in Matlab. The computational part of this course is extremely important and will be useful for all of your future work. The student version of the software can be used for your remaining time in college and will prove to be valuable.

## Study Time and Class Expectations

For every 1 hour of lecture you should be studying at least 3 hours outside of class. That is at least 9 hours a week outside of class of studying and HW. Math and Computer Science are difficult and time consuming subjects. Please keep up with the work and do not 'Cram' for any exams or HW deadlines since this usually results in very poor results. I recommend at least 15 hours a week of study outside the classroom for this course.

## Class Attendance

Class attendance is mandatory! If you will miss more than 2 total lectures (unexcused) throughout the course, your final grade will drop 1/2 letter grade for each absence past the 2 allowed. For example:

- 3 unexcused absences: You drop 1/2 letter grade. e.g. your B- grade now becomes a C+.
- 4 unexcused absences: You drop 1 full letter grade. e.g. your B- grade now becomes a C-.
- 5 unexcused absences: You drop 1-1/2 letter grades. e.g. your B- grade now becomes a D+.

Valid excuses include a doctors note, emergency (documented), or sports related travel. For sports travel, you must bring in the necessary forms ahead of time for me to sign or else your absence will be counted towards the two allowed.

## Active Learning

Active learning will be a large component of the class time. You will be required to work in groups, challenged to think, and work problems out in class on a regular basis. There will be a 50/50 split between lecture and group work. Active learning exercises will be graded and required to be turned in. This includes both group work and individual work. There will also be quizzes throughout the semester. You may drop only 1 graded active learning exercise or quiz. No make up quizzes or active learning exercises whatsoever under any circumstances. Attendance is mandatory to take part in the course. Quizzes will be counted towards your HW grade.

## Cheating

Cheating will absolutely not be tolerated in any way, shape, or form in this course!! I have not had any issues in the past and do not plan on starting. Cheating in any form will be recorded, the student will receive an automatic 'F' grade in the course, and the student will be sent to the Dean. Cheating has far reaching consequences that can affect your future career path. Quite simply put: Don't Do It!

## Group Work

I encourage group work and you may work together. But you must have your own write ups of your HW and only if you completely understand the problem being solved. Please note that if you simply copy a solution from another student, this falls into the category of cheating.

## Accomodations

Students desiring accommodations on the basis of physical, learning, or psychological disability for this class are to contact Disability Services. Disability Services is located on the ground floor of the Library, room G003, and can be reached by calling extension 562-907-4825.

## Disruptive Behavior

Disruptive behavior will absolutely not be tolerated in any way, shape, or form in this class. This includes cell phone use (talking, texting, email, etc), non-class computer use, talking, chatting, or any other general disruptions. If you are being disruptive in the class to the instructor and your fellow students, you will be asked to leave with the possibility that you may not be allowed back in the class. Furthermore, disciplinary action by way of the Dean may also ensue.