

# Syllabus

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Jan 14, 2019 (original)

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## 0 Outline

- 1 Logistics
- 2 Description
- 3 Plan
- 4 Grades

## 1 Logistics

Class: CS 6301.503.19S Special Topics in Computer Science – Convolutional Neural Networks  
Link: <https://coursebook.utdallas.edu/search/searchresults/cs6301.503.19s>  
Location: Mon and Wed from 5:30 – 6:45 pm in ECSN 2.110  
Office hrs: TBA  
TA: Somayeh Mohammadpour ([sxm155431@utdallas.edu](mailto:sxm155431@utdallas.edu))

## 2 Description

Description: This course provides an introduction to convolutional neural networks (CNNs). The course is motivated by the realization that many information extraction problems can be reduced to a classification or regression problem, neural networks are universal approximators and CNNs are an efficient neural network structure for multidimensional data. Network design and training methods are discussed along with software and hardware requirements for high performance CNN implementations. Theory and implementation are demonstrated and expanded on in the context of applications.

Outline: Math – linear algebra, calculus, probability and algorithms  
Networks – design, training and implementation

Applications – vision, speech, language, games and art

Objectives: Course learning objectives include:

1. Ability to design convolutional neural networks
2. Ability to train convolutional neural networks
3. Ability to implement convolutional neural networks
4. Ability to apply convolutional neural networks to applications including vision, speech, language, games and art

References: No required book to purchase, links to open source materials will be provided.

### 3 Plan

01 Mon Jan 14	Introduction	HW1 assigned	
02 Wed Jan 16	Introduction		
03 Mon Jan 21	Martin Luther King Jr day		
03 Wed Jan 23	Linear algebra	HW2 assigned	HW1 due
04 Mon Jan 28	Linear algebra		
05 Wed Jan 30	Linear algebra		
06 Mon Feb 04	Calculus	HW3 assigned	HW2 due
07 Wed Feb 06	Calculus		
08 Mon Feb 11	Probability	HW4+5 assigned	HW3 due
09 Wed Feb 13	Probability		
10 Mon Feb 18	Algorithms		HW4+5 due
11 Wed Feb 20	Design		
12 Mon Feb 25	Design	HW6 assigned	
13 Wed Feb 27	Test 1: math		
14 Mon Mar 04	Design		
15 Wed Mar 06	Design	HW7 assigned	HW6 due
16 Mon Mar 11	Training		
17 Wed Mar 13	Training		HW7 due
00 Mon Mar 18	Spring break		
00 Wed Mar 20	Spring break		
18 Mon Mar 25	Implementation	HW8 assigned	
19 Wed Mar 27	Implementation		
20 Mon Apr 01	Test 2: networks		
21 Wed Apr 03	Vision	HW9 assigned	HW8 due
22 Mon Apr 08	Vision		
23 Wed Apr 10	Speech	HW10 assigned	HW9 due
24 Mon Apr 15	Speech		
00 Wed Apr 17	Weather cancellation		

25 Mon Apr 22	Language	HW11 assigned	HW10 due
26 Wed Apr 24	Language		
00 Fri Apr 26	Games (optional)		
27 Mon Apr 29	Summary		HW11 due
28 Wed May 01	Test 3: applications		

## 4 Grades

- 25% Test 1: linear algebra, calculus, probability and algorithms
- 25% Test 2: network design, training and implementation
- 25% Test 3: vision, speech and language (no games due to weather cancellation)
- 25% Homework

No final exam