«СУЛЕЙМАН ДЕМИРЕЛЬ АТЫНДАҒЫ УНИВЕРСИТЕТ» МЕКЕМЕСІ

040900, Қазақстан Республикасы,
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Course Syllabus

Name of Instructor	Abay Nussipbekov

	Secondary/ Additional Instructors

SDU Email Address	abai.nussipbekov@sdu.edu.kz

Contact Details   Office Phone [ ]   Room [ ]

Academic Year of Study	2020 - 2021 Spring	Semester	2

Course Dates	18/01/2021	30/04/2021

	Days	Time of office hours	Place of office hours
1	Monday	15:00 - 18:00	Online
2	Monday		

Course Code	INF 337	Degree Cycle (Level)	Bachelor
Course Title	Deep Learning	Faculty	Инженер және жаратылыстану ғылымдары факультеті
Credits / ECTS	5	Total Contact Hours	
		Department	Department of Computer Sciences
Course Type	Choose	Primary Language of Instruction	English
Collaborative Organization		Secondary Language of Instruction	Choose
Delivery Location (1)	Campus	Mode of Delivery	Online
Delivery Location (2)			

"Бекітемін"

Инженерлік және жаратылыстану ғылымдары факультетінің деканы

_____

Богданчиков А.

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Pre-Requisite Courses

	Course Code	Course Title
1	INF 321	Machine Learning

Include the list of topics that students must know to gain an understanding of the course

	Additional topics

Co-Requisite Courses

An academic course required to be taken in conjunction with this course, where relevant

	Course Title
1	Computer vision
2	Natural Language Processing

Programes on which course is available

	Program Title	Degree
✓	Information Systems	Bachelor
✓	Information Systems	Bachelor
	Computing Systems and Software	Bachelor

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Course Description

Deep learning is a subset of machine learning which is based on neural networks. The goal os this course is to give basic understanding of state of the art neural networks and their applications in different areas such as computer vision and natural language processing. Deep learning is behind many recent advances in artificial intelligence, including Siri's speech recognition, Facebook's tag suggestions and self-driving cars. We will cover a range of topics from linear models, fully connected neural networks, convolutional and recurrent networks.

Skills and Competencies

	Academic Skills
1	Read documentation
2	Self studying and ability to search for specific information
3	Understanding scientific papers

	Subject-Specific Skills
1	Strong Python programming
2	Algorithms and Data Structures
3	Google colab
4	JupyterNotebook

Course Learning Outcomes

	Active Verb	What will be done/produced	How this learning outcome will be achieved
1	List	Students will be able to list steps to be able to train deep neural networks	How this learning outcome will be achieved
2	Explain	Students will be able to explain how and why different algorithms work	Students will cover specific topics for that and will practice training NNs
3	Apply	Students will be able to apply their knowledge and skill on real world	Students will be given assignments that are designed to teach them to
4	Analyze	Students will be able to analyze the efficiency of different models	Evaluation is one of the essential topics in DL where they are taught the
5	Identify	Students will be able to identify the problem and it's solution	Students will deal with different case studies

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Methods of Assessment

The University's normative rules regarding assessment apply. See the Code of Practice on Assessments. These norms set the boundary conditions for all instructors of University.

Assessed Components

	Description	Number of Points (60/100)
1	Midterm exam	30
2	Assignments	30
3	Final Exam	40

Final Exam

	Description	Number of Points (total score / 40)
1	Final exam	40

Proposed system of assessment by MES RK

Grade			
In Percent	Alphabetic	In Points	Traditional
95 - 100	A	4	Excellent
90 - 94	A-	3.67	Excellent
85 - 89	B+	3.33	Good
80 - 84	B	3	Good
75 - 79	B-	2.67	Good
70 - 74	C+	2.33	Good
65 - 69	C	2	Satisfactory
60 - 64	C-	1.67	Satisfactory
55 - 59	D+	1.33	Satisfactory
50 - 54	D	1	Satisfactory
25 - 49	FX	0	Unsatisfactory
0 - 24	F	0	Unsatisfactory
0 - 24	FC	0	Unsatisfactory

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Reading List

Required Reading List

	Type	Author	Year	Title	Publisher/Web site

Recommended Resources (optional)

	Type	Author	Year	Title	Publisher/Web site
1	Online	Ian Goodfellow		Deep Learning	www.deeplearning boo k org
2	Online	Fei-Fei Li		CS231n	http://cs231n.stanf or d edu
3	Online	Andrew Ng		Deep learning specialization	https://www.deepl ear ning ai/
4	Online	Jeremy Howard		Practical Deep Learning Course	https://fast.ai
5	Online	Sebastian Raschka		Deep learning course	http://pages.stat.w isc edu/~sraschka/tea ch

Other Resources (optional)

	Type	Author	Year	Title	Publisher/Web site

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Course Content - Curriculum Plan

	TOPICS	Activity
1	History and Overview of Deep Learning	Lecture
2	Perceptron	Lecture, implementation
3	Logistic Regression	Lecture, code demonstration
4	Multi layered perceptron	Lecture, assignment
5	Training Neural Networks I	Lecture, code demonstation
6	Training Neural Networks II	Lecture, code demonstration, assignment
7	DL Best Practices	Lecture
8	Convolutional Neural Networks	Lecture, assignment
9	Convolutional Neural Networks	Lecture, code example
10	Convolutional Neural Networks	Lecture, code demonstration, asignment
11	Recurrent Neural Networks	Lecture, example demonstation
12	Recurrent Neural Networks	Lecture, assignment
13	Generative Adversarial Networks	Lecture, example demonstation
14	Deploying DL models into production	Lecture, code demonstration, assignment
15	Midterm (in the middle of semester)	Paper based exam

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Academic Integrity

Students must ensure that all work completed for this course is their own work. Any evidence of plagiarism, data falsification, fabrication, collusion, self-plagiarism and/or other forms of academic misconduct will be penalised. Further, information can be found in the Code of Practice on Academic Integrity.

Late/Non Submission and Attendance Policy

Academic excellence and high achievement are only possible in an environment where the highest standards of academic honesty and integrity are maintained: students at SDU must ensure they adhere to this requirement.

Active participation is an integral part of teaching and learning at SDU. Therefore, regular class attendance is required of all students and records of any absences are kept for each class: a student whose attendance falls below 70% will fail the course. Students are also expected to be in class on time: poor punctuality is seen as being discourteous to the teacher and other students, therefore repeat incidences of late arrivals are subject to a penalty.

The use of electronic devices (e.g.: computers, tablets, phones) is only permitted upon tutor instruction. Any other activities (e.g.: texting, surfing, gaming, social emails, online shopping…etc.) are strictly forbidden during class time. Students found to be engaged in any non-class activity may lose marks for overall participation.

Course-Specific Policy

Honor Code:
Students may discuss and work together on their projects and assignments. However, each student must write down the solutions independently.

Administrative Contacts

User	Email	Action	Date
Abay Nussipbekov	abai.nussipbekov@sdu.edu.kz	Create	1/6/2021 5:37:08 PM
Azamat Zhamanov	azamat.zhamanov@sdu.edu.kz	Келісемін	1/10/2021 1:05:26 PM
Andrey Bogdanchikov	andrey.bogdanchikov@sdu.edu.kz	Келісемін	1/10/2021 2:00:25 PM