

# Courses

<b>A: University Requirements (12 credit hours)</b>					
<b>1. Compulsory courses (10 Credit hours)</b>					
<b>Code</b>	<b>Course title(s)</b>	<b>Lectures</b>	<b>Lab/Tutorial</b>	<b>Credits</b>	<b>Pre-requisite(s)</b>
HM001	English language 1	2	-	2	
HM002	English language 2	2	-	2	HM001
HM003	Human rights& anticorruption	2	-	2	
HM004	Russian language 1	2	-	2	
HM005	Russian language 2	2	-	2	HM004
<b>2. Elective courses (2 Credit hours)</b>					
HM006	Scientific thinking	2	-	2	
HM007	Technical writing	1		1	
HM008	Scientific Research Methodology.	2	-	2	
HM009	History of Egypt	1		1	
HM010	Russian Language3	2	-	2	HM005

**B: Math & Basic Science (21 credit hours)**

<b>Code</b>	<b>Course title(s)</b>	<b>Lectur es</b>	<b>Lab/Tutorial</b>	<b>Credits</b>	<b>Pre-requisite(s)</b>
MTH101	Mathematics 1	2	-/2	3	
MTH102	Linear Algebra	2	-/2	3	
MTH103	Mathematics 2	2	2/-	3	MTH101
MTH104	Probability and Statistics 1	2	-/2	3	MTH101
PH101	Physics	2	2/-	3	
ELC101	Electronics	2	2/-	3	PH101
ELC201	Logic Design	2	2/-	3	ELC101

**Math & Basic Science Elective Courses (3 Credit hours)**

<b>Code</b>	<b>Course title(s)</b>	<b>Lectur es</b>	<b>Lab/Tutorial</b>	<b>Credits</b>	<b>Pre-requisite(s)</b>
MTH201	Mathematics 3	2	2/-	3	MTH103
MTH202	Probability and Statistics 2	2	-/2	3	MTH104
MTH203	Numerical Analysis	2	-/2	3	MTH101

<b>C: Basic Computer Science (39 credit hours)</b>					
<b>Code</b>	<b>Course title(s)</b>	<b>Lectur es</b>	<b>Lab/Tutor ial</b>	<b>Credit s</b>	<b>Pre-requisite(s)</b>
CS101	Introduction to Computers Science	2	2/-	3	
IS101	Fundamentals of Information Systems	2	2/-	3	
CS102	Structured programming	2	2/-	3	CS101
CS103	Discrete Structure	2	2/-	3	
IS202	System Analysis and Design	2	2/-	3	IS101
IS201	Database Systems	2	2/-	3	IS101
CS201	Object Oriented Programming	2	2/-	3	CS102
SW201	Software Engineering	2	2/-	3	CS102
CS202	Signal and System	2	-/2	3	MTH103
CS203	Data Structures	2	2/-	3	CS201
CS204	Operating Systems	2	2/-	3	CS102
CS205	Algorithms	2	2/-	3	CS102
AI201	Introduction to Artificial Intelligence	2	2/-	3	MTH102

**D: Artificial Intelligence Major Requirements (69 credit hours)****1. Compulsory Courses (48 Credit hours)**

<b>Code</b>	<b>Course title(s)</b>	<b>Lectures</b>	<b>Lab/Tutorial</b>	<b>Credits</b>	<b>Pre-requisite(s)</b>
SW303	User Interface Design	2	2/-	3	---
CS302	Computer Architecture and Organization	3	2/-	3	ELC201
AI301	Machine Learning	2	2/-	3	AI201
DS307	Cloud computing	2	2/-	3	CS204
AI302	Natural Language Processing	2	2/-	3	AI201
AI303	Speech Recognition	2	2/-	3	AI201
AI304	Computer vision	2	2/-	3	AI201
AI305	Pattern Recognition	2	2/-	3	AI201
AI306	Computational Perception	2	2/-	3	AI201
AI401	Intelligent Algorithms	2	2/-	3	AI301
AI402	Computational Cognitive Systems	2	2/-	3	AI306
AI403	Deep Learning	2	2/-	3	AI301
AI405	Multi Agent Systems	2	2/-	3	AI402
AI406	AI Applications	2	2/-	3	AI401/ AI304
AI404	Graduation Project 1	2	2/-	3	---
AI407	Graduation Project 2	2	2/-	3	AI404

**2. Elective Courses (21 Credit hours)**

<b>Code</b>	<b>Course title(s)</b>	<b>Lectures</b>	<b>Lab/Tutorial</b>	<b>Credits</b>	<b>Pre-requisite(s)</b>
CS301	Operations Research	2	2/-	3	MTH202
ROB302	Fundamental of Cognitive Interaction with Robots	2	2/-	3	AI201
AI307	Computational Learning Theory	2	2/-	3	CS203
AI308	Language Modeling	2	2/-	3	MTH201
CS307	Computer Graphics	2	2/-	3	MTH102/ CS102

CS309	Embedded Systems	2	2/-	3	CS204
CS303	Image Processing	2	2/-	3	CS202
SW305	Software Development for Mobile Devices	2	2/-	3	SW201
AI309	User Models	2	2/-	3	AI301
AI310	Handwriting Recognition	2	2/-	3	AI201
AI311	Expert Systems	2	2/-	3	AI201
AI312	Architecture of Intelligence	2	2/-	3	AI201
AI313	Intelligent Systems	2	2/-	3	AI201
AI314	Artificial Intelligence in Games	2	2/-	3	AI201
AI408	Cognitive Modeling	2	2/-	3	AI307
AI409	Cognitive Engineering	2	2/-	3	AI307
AI410	Cognitive Natural Networks	2	2/-	3	AI307
AI411	Language and Speech Technology	2	2/-	3	AI308
AI412	Statistical language Modeling	2	2/-	3	AI302
AI413	AI for Robotics	2	2/-	3	AI401
AI414	Intelligent Autonomous Robotics	2	2/-	3	AI401
SW401	Software Testing & Quality Assurance	2	2/-	3	SW201
CS403	Advanced Knowledge Representation and Reasoning	2	2/-	3	AI301
AI415	Selected topics in AI (1)	2	2/-	3	AI201
AI416	Selected topics in AI (2)	2	2/-	3	AI415

**D: Data Science Major Requirements (69 credit hours)****1. Compulsory Courses (45 Credit hours)**

<b>Code</b>	<b>Course title(s)</b>	<b>Lectures</b>	<b>Lab/Tutorial</b>	<b>Credits</b>	<b>Pre-requisite(s)</b>
AI301	Machine Learning	2	2/-	3	AI201
DS301	Data Mining& Big Data analysis	2	2/-	3	IS201
DS302	Fundamental of Data Science	2	2/-	3	MTH202
DS303	Exploratory Data Analysis	2	2/-	3	MTH202
DS304	Data Visualization	2	2/-	3	MTH202
DS305	Fundamental of Simulation	2	2/-	3	MTH202
DS306	Advanced Database Systems	2	2/-	3	IS201
DS307	Cloud computing	2	2/-	3	CS204
DS401	Feature Engineering	2	2/-	3	AI301
DS402	Advanced Machine Learning	2	2/-	3	AI301
DS403	Applied data Science	2	2/-	3	DS302
DS404	Social Media Analytics	2	2/-	3	DS303
DS405	Integrated Systems and Big Data Analytics	2	2/-	3	DS301
DS406	Graduation Project 1	2	2/-	3	
DS407	Graduation Project 2	2	2/-	3	DS406

**2. Elective Courses (24 Credit hours)**

<b>Code</b>	<b>Course title(s)</b>	<b>Lectures</b>	<b>Lab/Tutorial</b>	<b>Credits</b>	<b>Pre-requisite(s)</b>
CS301	Operations Research	2	2/-	3	MTH202
CS407	Distributed Systems	2	2/-	3	CS204
AI302	Natural Language Processing	2	2/-	3	AI301
AI403	Deep Learning	2	2/-	3	AI301
IS309	Information Retrieval and Web Search	2	2/-	3	IS201

IS310	Business intelligence	2	2/-	3	IS201
IS411	Business Analytics	2	2/-	3	DS303
DS308	Data Science Tools and Techniques	2	2/-	3	DS302
DS309	Biostatistics	2	2/-	3	MTH202
DS310	Advanced Big Data Analysis	2	2/-	3	DS301
DS311	Statistics for Data Science	2	2/-	3	MTH202
DS312	Decision support for Data Science	2	2/-	3	IS201
DS313	Applied Multivariate Analysis	2	2/-	3	DS303
DS408	Applied Continuous Data for Regression Capstone	2	2/-	3	DS402
DS409	Applied Discrete Data for Classification Capstone	2	2/-	3	DS402
DS410	Text Analytics	2	2/-	3	AI302
DS411	Applied Time Series Capstone	2	2/-	3	DS302
DS412	Advanced Topics in Statistics	2	2/-	3	DS309
DS413	Applied Data Science and Statistics Capstone	2	2/-	3	DS302
DS414	Advanced Techniques of High Dimensional Data	2	2/-	3	DS305
DS415	Web Mining	2	2/-	3	AI301
DS416	Multi-Objective Optimization and Decision Making	2	2/-	3	DS303
DS417	Selected topics in DS (1)	2	2/-	3	DS303
DS418	Selected topics in DS (2)	2	2/-	3	DS302