

## Course Description

<b>Course No: 1501721</b>	<b>Course Title: Advanced Computer Networks</b>
<p>This course gives a broad perspective of computer networks and Internet protocols. The course covers the principles and practices of computer communication networks including the design and implementation of the Internet, its protocols, and applications. Topics to be covered include Circuit switched and packet-switched networks, protocols, protocol layering; layered network architectures, application layer, network programming interfaces (e.g., sockets), transport layer, multiplexing and demultiplexing, UDP, TCP, reliability, flow control, congestion control, network layer, routing protocols, switching technologies, multicast, mobility; link layer, local area networks, error detection, and correction; mobile and wireless networks(e.g., Wi-Fi, GSM); network security and management.</p>	
<b>Course No: 1501781</b>	<b>Course Title: DATA Mining</b>
<p>This course provides students with an in-depth understanding of the design and implementation of data warehousing and data mining-based systems. It will address the opportunities and challenges of applying data mining techniques in academics, industry, businesses, sciences and the Web. Several aspects of the data mining process are covered in this course such as data gathering and storage, data selection and preparation, model building and testing, results interpretation and validation and models application.</p>	
<b>Course No: 1501782</b>	<b>Course Title: DATA Mining</b>
<p>This master-level course in machine learning is designed to provide students with advanced knowledge and practical skills in the field of machine learning. The course will cover a wide range of topics, including advanced algorithms, deep learning, reinforcement learning, and applications in various domains. Emphasis will be placed on both theoretical understanding and hands-on implementation, preparing students for real-world applications of machine learning.</p>	
<b>Course No: 1501786</b>	<b>Course Title: Natural Language Processing</b>
<p>This course provides a comprehensive exploration of advanced Natural Language Processing (NLP) techniques, focusing on recent advancements and applications. Students will gain in-depth knowledge of Large Language Models (LLMs), Retrieval-Augmented Generation (RAG), LangChain, and chatbot development. Through lectures, discussions, assignments, and a final project, students will develop the skills to apply these techniques to real-world NLP tasks.</p>	
<b>Course No: 1306781</b>	<b>Course Title: Applications of Artificial Intelligence</b>
<p>The successful student will finish the course with specific modeling and analytical skills (e.g., search, logic, probability), knowledge of many of the most important knowledge representations, reasoning, and a general understanding of AI principles and practices. Artificial Intelligence spans various topics at the forefront of computer science research, including areas like machine learning, robotics, planning, computer vision, natural language processing, and many others. This course serves as a broad introduction to many of these topics but is taught at the graduate level, where students will delve into specific algorithms and applications in significant detail.</p>	
<b>Course No: 1306752</b>	<b>Course Title: Theory of Computation</b>
<p>This course tackles computability and computational complexity theory. The course covers several models of computation and their applications and the limits on what can be efficiently computed. Topics include automata, Turing machines, computability, complexity theory, randomized algorithms, inapproximability, interactive proof systems, and probabilistically checkable proofs. The limits of computation are of great importance in this course. The course highlights some languages that are incomputable, and others that are complete, such as NP. The course also explores the tradeoffs and relationships between different computational resources, such as time and space.</p>	

**Course No: 1501751****Course Title: Applied Algorithms**

It is intended to teach advanced algorithms for solving real problem that arise frequently in computer applications, to teach basic and advanced principles and techniques of computational complexity, and to introduce the areas of NP completeness. The main design techniques to be covered are divide-and-conquer, dynamic programming, greedy, backtracking, branch and bound, and incremental. Moreover, trees and graphs related algorithms are introduced and discussed. Finally, selected machine learning algorithms will be presented and discussed.

**Course No: 1501731****Course Title: Advance Data Base System**

Our goal in this course is to provide students with advanced topics in a database system; the student will be able to understand the transactions and their properties, schedule concepts and types, the concurrency control techniques, database recovery techniques.