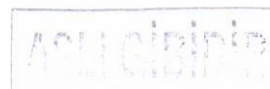


**KARABÜK ÜNİVERSİTESİ**  
**LİSANSÜSTÜ EĞİTİM ENSTİTÜSÜ**

| <b>DEPARTMENT OF COMPUTER ENGINEERING</b>                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |          |          |          |             |
|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|-------------|
| <b>Content of Master's Degree in Computer Engineering (English)</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |          |          |          |             |
| <b>COURSE CODE</b>                                                  | <b>COURSE NAME AND CONTENTS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>T</b> | <b>A</b> | <b>C</b> | <b>ECTS</b> |
| <b>CME703</b>                                                       | <b>Graph Theory and Algorithms</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>3</b> | <b>0</b> | <b>3</b> | <b>8</b>    |
| <b>Aim and Content</b>                                              | <p>The objective of this course is to teach students the fundamental concepts and algorithmic/computational background of the graph theory approach, which plays a significant role in solving many problems in network structures.</p> <p>Basic concepts of graphs, Applications of Graphs. Properties and Types of Graphs: Graph Topology, Graphs and Isomorphism. Bipartite graphs, Eulerian paths, Hamilton tours. Representing Graphs with Matrices. Graph Visualization/Drawing Algorithms. Minimum Cost Path Algorithms; Dijkstra's Algorithm, Modeling the Shortest Path Tree in the Database with Dijkstra's Algorithm, Bellman-Ford Algorithm. Minimum Spanning Tree, Kruskal's Algorithm. Graph Coloring, Duality in Graphs, Welch Powell Coloring Algorithm. Maximum Matching Algorithm. Independent Set Problem, Paul-Unger Algorithm.</p>                                                                                                                                                                                                                                                          |          |          |          |             |
| <b>CME711</b>                                                       | <b>Information and Computer Security</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>3</b> | <b>0</b> | <b>3</b> | <b>8</b>    |
| <b>Aim and Content</b>                                              | <p>The program aims to increase knowledge in information and computer security and to train students who can produce both theoretical and practical solutions to problems encountered in these areas.</p> <p>Introduction to information, security, and computer security. Security engineering. Security assurance techniques. Cryptography, symmetric and asymmetric algorithms. Digital signatures. Authentication and proof approaches. Public key infrastructure. Intrusion detection systems. Computer security models. Software security. Email and web security. E-commerce. Firewalls. Risk assessment. Information security standards. Research projects.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                          |          |          |          |             |
| <b>CME714</b>                                                       | <b>Digital Image Processing Applications</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>3</b> | <b>0</b> | <b>3</b> | <b>8</b>    |
| <b>Aim and Content</b>                                              | <p>The objective of this course is to teach students the fundamental principles and algorithms used in image processing. It is intended that students will be able to perform image analysis operations and discuss the results obtained through this course.</p> <p>Introduction to digital image processing and the basic steps in digital image processing, image acquisition and digitization, basic concepts related to image processing, intensity transformations and histogram processing, spatial filtering, filtering in the frequency domain, image restoration and reconstruction (image degradation and restoration process model), image restoration and reconstruction (noise models and filtering), color fundamentals and models in color image processing, color transformations in color image processing, smoothing and sharpening, image compression and some basic compression methods, morphological image processing and some basic morphological algorithms, image segmentation (point, line, and edge detection, thresholding), object recognition (patterns and pattern classes).</p> |          |          |          |             |

Doç.Dr. Yasin ORTAKÇI  
Bölüm Başkanı



*[Signature]*



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|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|----------|
| <b>CME717</b>          | <b>Data Mining</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>3</b> | <b>0</b> | <b>3</b> | <b>8</b> |
| <b>Aim and Content</b> | Data warehouse and online analytical processing. Time series analysis. Data preprocessing. Analysis of data mining tasks. Clustering. Association and rule discovery. Classification and prediction. Sequential analysis. Data mining applications.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |          |          |          |          |
| <b>CME718</b>          | <b>Computer Networks Design and Simulation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>3</b> | <b>0</b> | <b>3</b> | <b>8</b> |
| <b>Aim and Content</b> | The objective is to teach the theoretical and technological infrastructure of network systems by explaining the infrastructure they possess, their access methods, the types of applications they were developed for, their differences from other network systems, etc.<br><br>Classification of computer networks, Network hardware devices, Addressing structures, Physical layer, Medium Access Control protocols, Routing Protocols, Queue management algorithms, Network security, Network simulators, Wired and Wireless network simulations, Large-scale network analyses.                                                                                                                                                                                                                                                                                                                                                                                                                                      |          |          |          |          |
| <b>CME720</b>          | <b>Advanced Database Systems</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>3</b> | <b>0</b> | <b>3</b> | <b>8</b> |
| <b>Aim and Content</b> | The objective of the course is to teach database management and DBMS data structures. Relational database systems. New mechanisms for storing and retrieving data. Advanced concepts in database systems. Data models: hierarchical, network, and relational data models. Database design and management. Data warehouse systems. Data warehouse preparation area. Data mining. XML-related technologies. XML schemas and validation. PostgreSQL database. Advantages of PostgreSQL database. PostgreSQL database performance analysis.<br>Graph databases. NoSQL database architecture. Types and examples of NoSQL. NoSQL performance analysis. Discussion of advanced applications in the field.                                                                                                                                                                                                                                                                                                                     |          |          |          |          |
| <b>BSM723</b>          | <b>Project Management in Informatics</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>3</b> | <b>0</b> | <b>3</b> | <b>8</b> |
| <b>Aim and Content</b> | The aim of the course is for students to learn about scientific research, the concept of ethics and ethical theories, research and publication ethics, unethical behavior and ethical violations in the research and publication process, and methods to prevent them.<br><br>The content of this course covers science, the nature and development of science, and scientific research; the concept of ethics and ethical theories; research and publication ethics; unethical behavior and ethical violations in the research process; ethical issues related to authorship and copyright; biased publication, editing, refereeing, and ethics; publication ethics and unethical behavior in the publication process; legal regulations and committees related to research and publication ethics<br>legislation and committees related to research and publication ethics; procedures to be followed in detecting ethical violations; common research and publication ethics violations and methods to prevent them. |          |          |          |          |

Doç.Dr. Yasin ORTAĞCI  
Bölüm Başkanı

ASL GİRİŞİMLİ

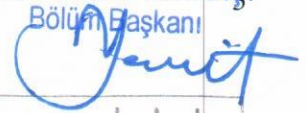
Yanıt



**KARABÜK ÜNİVERSİTESİ**  
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|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |          |          |          |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|----------|
| <b>CME725</b>          | <b>Managment of Innovative Projects</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>3</b> | <b>0</b> | <b>3</b> | <b>8</b> |
| <b>Aim and Content</b> | <p>Practical experience in managing innovative IT projects.</p> <p>This course is based on a practical approach to project management using the British PRINCE2 methodology. The term will include weekly lectures and seminars.</p> <p>Students work in groups of 5-6. Each group “invents” a project in an IT-related field that has a business case and has the potential to “take its place” in the current market and “compete” with existing products or solutions. The project is imaginary; there is no need to purchase any equipment or develop any work.</p> <p>Throughout the work period, students explain what they will do and “produce” for this project by submitting PRINCE2 templates for each stage of the project. The templates can be downloaded for free from the course page on the learning platform.</p> <p>Along with the templates, students will also submit: -a short promotional video, -a project page on their chosen social network, -an individual report reflecting their personal experiences during the project period, -a peer evaluation form reflecting the performance of team members, -a PowerPoint presentation summarizing all the work.</p> |          |          |          |          |
| <b>CME727</b>          | <b>Internet of Things and Security</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>3</b> | <b>0</b> | <b>3</b> | <b>8</b> |
| <b>Aim and Content</b> | <p>Nesnelerin internetinin (IoT) mimarisi, protokolü, güvenliği, kullanım alanları hakkında bilgi sahibi olabilmek ve IoT tabanlı uygulamalar geliştirebilmek.</p> <p>Nesnelerin interneti, Makinelerarası iletişim ile nesnelerin internetinin farkları, IoT haberleşme teknolojileri ve uygulamaları, IoT haberleşme protokolleri ve uygulamaları, IoT ve büyük veri, IoT ve Siber Güvenlik, Proje sunumları</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |          |          |          |          |
| <b>CME728</b>          | <b>Semantic Web</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>3</b> | <b>0</b> | <b>3</b> | <b>8</b> |
| <b>Aim and Content</b> | <p>The next generation web involves the interpretation of data on the web, the smarter and more efficient management, use, and support of web information and applications. Metadata standards, XML, RDF, DAML, and metadata processing; ontologies, semantic web applications.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |          |          |          |          |
| <b>BSM772</b>          | <b>Natural Language Processing</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>3</b> | <b>0</b> | <b>3</b> | <b>8</b> |
| <b>Aim and Content</b> | <p>Understanding the structure of natural languages, extracting meaning from texts and classifying texts, using natural language as an interface between computers and humans, performing language translation with computers</p> <p>Morphological analysis of language; word tagging, information retrieval, machine translation</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |          |          |          |          |

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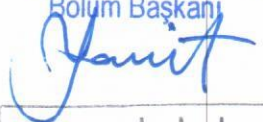


ACİL İZMİR

**KARABÜK ÜNİVERSİTESİ**  
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|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|-----------|
| <b>GEI701</b>          | <b>Scientific Research Techniques and Scientific Ethics</b>                                                                                                                                                                                                                                                                                                                                        | <b>3</b> | <b>0</b> | <b>3</b> | <b>8</b>  |
| <b>Aim and Content</b> | This course aims to provide information on how to conduct academic research, the scientific stages involved in completing this research, the methods and techniques to be used during this process, and the ethical rules that must be followed.                                                                                                                                                   |          |          |          |           |
| <b>CME797</b>          | <b>MSc Seminar</b>                                                                                                                                                                                                                                                                                                                                                                                 | <b>0</b> | <b>2</b> | <b>0</b> | <b>6</b>  |
| <b>Aim and Content</b> | The seminar course is a practical course for graduate students advised by faculty members, involving conducting comprehensive research on a topic related to their thesis field, compiling it into a report, and presenting the findings orally.                                                                                                                                                   |          |          |          |           |
| <b>CME7098C</b>        | <b>Course Field of Specialization</b>                                                                                                                                                                                                                                                                                                                                                              | <b>4</b> | <b>0</b> | <b>0</b> | <b>4</b>  |
| <b>Aim and Content</b> | The Specialization Area course is a theoretical course proposed by the faculty member to impart their knowledge, experience, and expertise in their scientific field to the graduate students they advise, to inform them about scientific ethics, and to instill a work ethic.                                                                                                                    |          |          |          |           |
| <b>CME7098T</b>        | <b>Thesis Field of Specialization</b>                                                                                                                                                                                                                                                                                                                                                              | <b>4</b> | <b>0</b> | <b>0</b> | <b>4</b>  |
| <b>Aim and Content</b> | The Thesis Specialization Area course is a theoretical course proposed by the faculty member to share methods of conducting research, following the literature, and evaluating the literature in current literature with the graduate students they advise, and to establish and carry out the scientific foundations of the student's thesis/exhibition/project work.                             |          |          |          |           |
| <b>CME799</b>          | <b>MSc Thesis Research</b>                                                                                                                                                                                                                                                                                                                                                                         | <b>0</b> | <b>1</b> | <b>0</b> | <b>26</b> |
| <b>Aim and Content</b> | This is a practical course for graduate students advised by faculty members. It covers topics such as literature review, methodology, field applications, and laboratory work within the scope of the thesis they will prepare. It also includes the necessary information for writing, defending, and submitting the thesis in accordance with the "Graduate Thesis Writing Guide and Templates." |          |          |          |           |

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ASLI GIBİTİP