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| **Course Code** | CS213 | Credit Hours | **4** |
| **Course Title** | Introduction to Emerging Technologies | | |
| **Programme** | BSc. In Computer Science / BSc. in Software Engineering | | |
| **Course Description** | The Introduction to Emerging Technologies course will acquaint students to the topics of current and contemporary technologies that may affect every one of us now or in the very near future. Topics include introductions to cloud computing, Internet of things, artificial intelligence, data science, human machine interaction, ethics and professionalism, and many other emerging technologies. | | |
| **Objectives** | By the end of this course students shall be able to:   * Identify different emerging technologies * Differentiate between a couple of emerging technologies * Select appropriate technologies and tools for a given task * Identify necessary inputs and areas for applications of emerging technologies   In this course, we will discuss the emergence of new technologies leading to entrepreneurial opportunities. This involves identifying high-potential, technology-intensive commercial opportunities, reviewing what is relevant and currently discussed in the academia. We also discuss disruptive innovations and their effects on organizations and societies.  The course will focus on concepts and current state-of-the-art technologies and shall include the following:   * Cloud Computing * Edge Computing; Mobile and Internet of Things * Machine Learning/Artificial Intelligence * Blockchain Technology * Big Data and Big Data Management * Cyber Security * Quantum Computing * Embedded Systems | | |
| **Textbook** |  | | |
| **References** | * Introduction to Emerging Technologies Course Module (MoSHE) * Online resources | | |
| **Assessment Method** | |  |  | | --- | --- | | * Assignments: 20% | * Mid. Exam: 20% | | * (Class) activities & participation: 10% | * Final Exam: 50% | | | |
| **Term - Year** | * Winter 2022 | | |
| **Instructor** | Abdella E. Mohammed [abedris@yahoo.com](mailto:abedris@yahoo.com) | | |

**COURSE CONTENT**

1. **Introduction**
   1. Evolution of Technologies
   2. Role of Data for Emerging Technologies
   3. Enabling devices and networks (Programmable devices)
   4. Human-Machine Interaction
   5. Future Trends in Emerging Technologies
2. **Data Science**
   1. An overview of data science
   2. Data types and data representations
   3. Data value Chain
   4. Basic concepts of big data
3. **Artificial Intelligence (AI)**
   1. What is Artificial Intelligence?
   2. History of AI
   3. Levels of AI
   4. Types of AI
   5. Driving factors of artificial intelligence
   6. Applications of AI
   7. AI tools and platforms
   8. Sample AI application
4. **Internet of Things (IoT)**
   1. Overview of IoT
   2. How does it work?
   3. IoT Tools and Platforms
   4. Applications of IOT
5. **Augmented Reality (AR)**
   1. Overview of augmented reality
   2. Virtual reality (VR), Augmented Reality (AR) vs Mixed reality (MR)
   3. The architecture of AR Systems
   4. Applications of AR Systems
6. **Ethics and Professionalism Of Emerging Technologies**
   1. Technology and ethics
   2. Digital privacy
   3. Accountability and trust
   4. Threats and challenges
7. **Other emerging technologies**
   1. Nanotechnology
   2. Biotechnology
   3. Blockchain technology
   4. Cloud and quantum computing
   5. Autonomic computing (AC)
   6. Computer vision
   7. Embedded systems
   8. Cyber Security
   9. Additive manufacturing (3D Printing)