UNIVERSITY OF HARGEISA

COLLAGE OF ENGINEERING, COMPUTING AND IT

COURSE OUTLINE

Course Title		**Artificial Intelligence**
Course Code		**~~IT401~~**
Degree Program		Faculty of Computing and IT
Course Instructor Name		Suleiman M. A. Gargaare
Instructor's contact information		Phone: +252 63 4127539 E-mail: suleiman.gargaare@yahoo.com
Contact Hours (per week)		3
Course Objectives		Upon completing this course, students will be able to: 1. **Understand Core AI Concepts**: Explain fundamental AI paradigms, including problem-solving, knowledge representation, reasoning, and learning, as outlined in Artificial Intelligence: A Modern Approach. 2. **Apply Search and Optimization Techniques**: Implement and analyze intelligent search algorithms (e.g., uninformed, informed, and adversarial search) to solve real-world problems. 3. **Master Machine Learning Foundations**: Demonstrate proficiency in basic machine learning techniques, including supervised and unsupervised learning, as introduced in the textbook.

		4. **Explore Knowledge Representation and Reasoning**: Utilize logical systems (e.g., propositional and first-order logic) and probabilistic reasoning to model complex domains. 5. **Evaluate AI Systems**: Critically assess the strengths, limitations, and ethical implications of AI technologies in various contexts. 6. **Implement AI Solutions**: Build and test AI algorithms and systems using programming tools, drawing from examples and exercises in the reference text.
Course Description		This course provides senior IT students with a comprehensive introduction to the field of artificial intelligence, grounded in the widely acclaimed textbook Artificial Intelligence: A Modern Approach, 3rd Edition by Stuart J. Russell and Peter Norvig. The course explores the theory, design, and implementation of intelligent systems, emphasizing both foundational concepts and practical techniques. Topics include intelligent agents, problem-solving through search, knowledge representation, logical and probabilistic reasoning, and the fundamentals of machine learning. Students will engage with real-world applications of AI, such as game playing, decision-making under uncertainty, and pattern recognition, while also examining the ethical and societal impacts of AI technologies.
Pre-requisites		Probability, Statistics and Linear Algebra.

Schedule

Week	Date	Topics and sub-topics	Activity
1 - 2		Chapter 1. Introduction	**Discussion**
3 - 4		Chapter 2. Solving Problems by Searching	

5 - 6		Chapter 3. Knowledge, Reasoning, and Planning	
7 - 8		Chapter 4. Introduction of Machine Learning	**Quiz I**
MID EXAM			
9 - 10		Chapter 5. Supervised & Unsupervised Machine Learning	
11 - 12		Chapter 6. Natural Language Processing	**Quiz II**
12 - 13		Chapter 7. Image Processing and Computer Vision	
14 - 15		Chapter 8. Robotics	**Group Assignment**
STUDY WEEK			
FINAL EXAM			
Assessment	**Continues assessment** Midterm …….…….....20% Attendance…..…….…….....5% Quiz…….…….....5% Group Assignment…….....10% Final exam……....…….....…60% Total…….....100%		
Text-Books	1. Artificial Intelligence A Modern Approach, 3rd Edition by Stuart J. Russell & Peter Norvig.		