CSD 4151	APPLIED ARTIFICIAL INTELLIGENCE	L	T	P	C
SDG 8		3	0	0	3

OBJECTIVES :

COB1: To learn the fundamental concepts of robotics, artificial intelligence, and natural language processing..

COB2: To gain expertise using AI approaches in the fields of business, finance, and medicine.

COB3: To acquire knowledge on AI approaches to create smart cities.

COB4: To get familiarize with the foundation of cognitive science with AI.

COB5: To understand AI techniques effectively within governmental processes..

MODULE I INTRODUCTION TO AI TECHNOLOGY 9

Computer Graphics: Overview of computer graphics applications and history – **Robotics**: Introduction to Robotics - Robot Kinematics - Robot Control - Robot Planning - **Image Processing and Computer Vision:** Overview of digital image processing and computer vision - Image representation and visualization - Image acquisition and digitization - **Natural Language Processing**: Origins and challenges of NLP – High Performance Computing.

MODULE II AI IN BUSINESS, FINANCE AND MEDICINE 9

Electronic commerce technology - Operations research - Financial calculus - Fraud Detection and Prevention-Marketing analytics - Time-series analysis - Survival analysis - Bayesian learning - Modern biostatistics - Omics data analysis - Medical image analysis

MODULE III AI IN SMART CITY 9

Theories and Global Trends in Urban Development - Urban Problems, Interventions and Design Thinking - Smart building and Infrastructure- Introduction to geographic information systems - GIS in environmental studies - Transport and society-Waste management.

MODULE IV AI IN NEUROCOGNITIVE SCIENCE 9

Introduction to psychology – Perception - Foundations of cognitive science - Emotion Recognition and Affective Computing - Cognitive Agents and Virtual Humans - Brain Imaging analysis-Brain Computer Interfaces (BCIs) - Neural Data analysis.

MODULE V AI FOR GOVERNMENT PROCESSES 9

Deep Learning and intelligent Robots in Government – AI and Systems thinking in Public sector – AI based CHATBOTs in Public Administration – Sentiment Analysis for Public Reactions to COVID-19 Vaccine – Development and Adoption of Peruvian Public Sector.

L – 15; P- 30; TOTAL HOURS – 45

REFERENCES:

1. S. Russell and P. Norvig, “Artificial Intelligence: A Modern Approach.” Boston, MA: Pearson, 2022.ISBN: 978-0134610993
2. David Valle cruz, Nely Plata, Jacobo Leonardo, “ HandBook of Research on Applied Artificial Intelligence and Robotics for Government Processes” , IGI Global Publisher of Timely Knowledge.
3. I. Goodfellow, Y. Bengio, and A. Courville,” Deep Learning.” Cambridge, MA: MIT Press, 2016. [ISBN: 978-0262035613]
4. V. C. Müller, “Ethics of Artificial Intelligence and Robotics”. Stanford, CA: Stanford University Press, 2020. [ISBN: 978-1509513716]
5. C. Molnar, “Interpretable Machine Learning. “Leanpub, 2019. [ISBN: 978-3030183085]

OUTCOMES :

Students who complete this course will be able to

CO1: Describe the foundations of AI Technologies such as robotics, NLP, Image processing and Computer vision.
CO2: Implement AI development techniques in Business, Finance and Medicine.
CO3: Utilize AI techniques for the development of Smart Cities, implementing innovative solutions for sustainable urban development
CO4: Apply AI development techniques in Neurocognitive Science
CO5: Analyze the importance of AI techniques in Government Public sector applications.

Board of Studies (BoS) : **Academic Council:**
23rd BoS of CSE held on 09.05.2024

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO 12	PSO1	PSO2
CO1	H	H	H		H								H	
CO2	H	H	H	M	H	M	L						H	
CO3	H	H	H	M	H	M	L		M				H	H
CO4	H	H	H	M	M	H							H	H
CO5	H	H	H	H	H	H		M	L	L			H	H

SDG No. & Short Description

SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Statement: This course aims to Some more AI techniques like Robotic and Automation are also minimizing the human afford and can help to achieve SDG.