प्रो0 राजेन्द्र सिंह (रज्जू भय्या) विश्वविद्यालय, प्रयागराज
Prof. Rajendra Singh (Rajju Bhaiya) University, Prayagraj
(Formerly Allahabad State University, Allahabad)
A Public University established under Uttar Pradesh State University Act 1973

Vocational/ Skill Development Course

Programme/Course: Diploma	Course Code: I010024T	Course Title: Artificial Intelligence: Fundamentals, Tools and Applications
Credits: 3 (1+2)	Max. Marks: 40+60 (100)	

Course Outcomes:

By the end of this course, students will be able to:

1. Understand the fundamentals and working principles of Artificial Intelligence.
2. Explore practical AI tools for academic and daily work.
3. Apply AI for productivity, communication, and research.
4. Understand ethical and responsible use of AI.
5. Explore AI-driven career opportunities and future skills.
6. Develop basic AI-assisted projects and presentations.

Unit	Course Contents	Practical/Assignment
1	**Introduction to AI and Fundamentals:** Introduction to Artificial Intelligence, Evolution and History of AI, AI vs Machine Learning vs Deep Learning, Types of AI, Narrow AI, General AI, Generative AI, Real-world Applications of AI, AI in Education, Healthcare, Banking, Agriculture, and Government, Introduction to Generative AI Platforms	• Exploring AI chatbots • AI image generation demo • AI voice and translation tools • Discussion on AI use in daily life
2	**Working Principles of AI:** Data and Importance of Data in AI, Introduction to Algorithms, Basics of Machine Learning, Supervised vs Unsupervised Learning, Neural Networks and Deep Learning Basics, Natural Language Processing (NLP), Computer Vision Basics, How Generative AI Works, AI Model Training and Outputs, Prompt Engineering Fundamentals	• Writing effective prompts • AI text generation exercises • AI image recognition demonstrations • NLP chatbot interactions
3	**AI Tools for Daily Work and Productivity:** AI for Content Writing, AI for Email Drafting and Communication, AI for Presentation Creation, AI for Spreadsheet and Data Assistance, AI for Note-making and Summarization, AI for Time Management and Scheduling, AI for Translation and Transcription, AI for Creativity and Design	• Writing professional emails using AI • Creating AI-generated presentations • AI-assisted resume writing • AI tools for meeting summaries • AI poster and image creation
4	**AI for Academics, Research and Communication:** AI in Academic Learning, AI for Research Assistance, Literature Review using AI, AI Citation and Referencing Tools, AI for Public Speaking and Communication, AI for Coding Assistance, AI for Report Writing, AI for Language Learning	• Research topic exploration using AI • AI-based grammar correction • AI-assisted coding demonstrations • AI presentation speech generation
5	**AI and Career Management Essentials:** Careers in Artificial Intelligence, Future Job Trends and AI Economy, AI and Employability Skills, Resume Building using AI, LinkedIn and Professional Branding, Interview Preparation using AI, AI for Entrepreneurship and Freelancing, AI Certifications and Learning Platforms	• Resume building workshop • Mock interview with AI tools • LinkedIn profile optimization • Career roadmap planning
6	**AI Ethics, Mini Project and Final Assessment:** Ethics in Artificial Intelligence, Responsible Use of AI, AI Bias and Privacy Concerns, Cybersecurity and AI Risks, AI Policies and Regulations, Human Creativity vs AI, Future of AI, Revision and Course Summary	• AI-based presentation creation • AI-assisted research project • AI productivity workflow • AI-based content creation • AI career guidance system

Suggested Readings:

1. Mitchell, M. (2019). *Artificial Intelligence: A Guide for Thinking Humans*. Farrar, Straus and Giroux. — An accessible introduction to AI concepts, capabilities, and limitations. us.macmillan.com
2. Mollick, E. (2024). *Co-Intelligence: Living and Working with AI*. Portfolio. — Practical perspectives on using generative AI in learning, creativity, and professional work. PenguinRandomHouse.com: Books
3. Russell, S., & Norvig, P. (2021). *Artificial Intelligence: A Modern Approach* (4th ed.). Pearson. — Selected introductory chapters on intelligent agents, problem-solving, knowledge representation, and machine learning. pearson.com
4. Miao, F., & Holmes, W. (2023). *Guidance for Generative AI in Education and Research*. UNESCO. — Responsible and ethical use of generative AI in academic settings. doi.org

Online Learning and Practical Resources

5. University of Helsinki & MinnaLearn. *Elements of AI*. — A free introductory course suitable for students without a programming background. elementsofai.com
6. Microsoft Learn. *AI Fluency: Explore Generative AI*. — Beginner learning material on generative AI and its practical applications. Microsoft Learn
7. Google for Developers. *Machine Learning Crash Course*. — Supplementary modules and exercises on machine learning fundamentals. developers.google.com
8. Microsoft. *Generative AI for Beginners*. — Selected lessons on generative AI fundamentals, prompting, and application development. microsoft.github.io