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Sri Adichunchanagiri Shikshana Trust (R)
SJB Institute of Technology
BGS Health and Education City, Dr. Vishnuvardhana Road, Kengeri, Bengaluru-560060
Approved by AICTE, New Delhi.
Autonomous Institute affiliated to Visvesvaraya Technological University, Belagavi
Accredited by NAAC with 'A+'grade, Certified by ISO 9001 - 2015
Recognized by UGC, New Delhi with 2(f) & 12 (B)

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|---|---|---|---|---|---|
| **Semester:** | I | **Course Type:** | ETC | | |
| **Course Title:** Introduction to AI and Applications | | | | | |
| **Course Code:** | **25ITT15/25** | | | **Credits:** | 3 |
| **Teaching Hours/Week (L:T:P:S)** | | | 3:0:0:1 | **Total Hours:** | 40 |
| **CIE Marks:** | 50 | **SEE Marks:** | 50 | **Total Marks:** | 100 |
| **SEE Type:** | Theory | | | **Exam Hours:** | 3 |

**Pre-requisites (Self Learning):** Basic maths (simple algebra, probability, graphs), logical thinking, and reading data from tables or charts. A little idea of loops and conditions in programming is useful but not compulsory.

**I. Course Objectives:**

- ✓ Introduce the basics of Artificial Intelligence and its real-life applications in a simple and engaging way.
- ✓ Develop an understanding of how to interact with AI systems through prompt engineering.
- ✓ Provide a conceptual overview of Machine Learning techniques such as regression, classification, and clustering without heavy mathematics.
- ✓ Create awareness of current trends, ethical concerns, and the societal impact of AI.
- ✓ Explore robotics, no-code AI tools, and practical applications of AI across industries and daily l life.

**II. Teaching-Learning Process (General Instructions):**

The following are some of the strategies that teachers can employ to facilitate the achievement of various course outcomes:

1. **Use** simple explanations with real-life examples before moving to technical terms.
2. **Include** visuals, animations, and videos to make abstract ideas easier to understand.
3. **Encourage** group discussions, debates, and hands-on activities to keep students engaged.
4. **Provide optional tasks** (mini-projects, coding demos) for fast learners while ensuring basics are clear for all.
5. **Use** quizzes, short reflections, or case studies to check understanding regularly.
6. **Relate** every concept to practical applications so students can connect theory with daily life.

□ Chalk & Talk □ Stud. Assignment □ Web Resources □ LCD/Smart Boards □ Stud. Seminars

**COURSE CONTENT**

**Theory**

| **Module-1: Getting Started with AI** | 8 Hours |
|---|---|

**Artificial Intelligence**: Introduction to AI, Real-life examples (Alexa, Netflix, Google Maps), History and Evolution of AI, **Types of AI**: Weak AI, Strong AI, Limited Memory, Theory of Mind, Self-awareness, Human vs Machine Intelligence, Basics of Machine Learning and Deep Learning (intuitive explanation),

**Activity:** Identify AI applications students already use daily
Textbook 1 (Reema Thareja) → Ch.1 (1.1–1.5)
Textbook 3 (AI for Everyone) → Ch.1 (everyday examples, beginner-friendly)

**RBT Levels:** L1 (Remember), L2 (Understand), L3 (Apply)

- ✓ Students recall definitions, understand AI types, and apply examples from daily life

| **Module-2: Communicating with AI – Prompt Engineering** | 8 Hours |
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Introduction to Prompt and its significance, Evolution of Prompt Engineering, Types: Instruction prompts, Zero-shot, One-shot, Few-shot prompting, Prompts for Creativity & Writing, Future of Human-AI Communication,

**Activity**: Explore prompts on ChatGPT and refine them.

Textbook 2 (Prompt Engineering: Empowering Communication) → Ch.1, 3, 4, 5

**RBT Levels: L2 (Understand), L3 (Apply), L4 (Analyze)**

Students understand prompting methods, apply them in tools, and analyze which prompt works better.

| **Module-3: Learning Machines – Basics of ML** | 8 Hours |
|---|---|

Introduction to Machine Learning, Regression: Predicting numerical values (e.g., house price, marks), Classification: Spam filter, disease diagnosis, Clustering: Grouping movies, customers, or products, Intro to Naïve Bayes, Neural Networks, SVM (conceptual).

**Activity:** Demonstration with Google Teachable Machine or simple sklearn demo.

Textbook 1 (Reema Thareja) → Ch.2 (2.1–2.8)

Textbook 3 (AI for Everyone) → Beginner-friendly examples.

**RBT Levels: L2 (Understand), L3 (Apply), L4 (Analyze)**

Students understand ML techniques, apply them to simple datasets/tools, and Analyze outputs.

| **Module-4: AI in Society – Trends & Ethics** | 8 Hours |
|---|---|

Recent Trends: AIaaS, Expert Systems, Internet of Things, AIoT, Ethical Concerns: Bias, fairness, privacy, job displacement, Case Studies: Tesla Autopilot, AI in healthcare, ChatGPT in exams,

**Activity**: Debate – Should AI be used in education/exams?

Textbook 1 (Reema Thareja) → Ch.8 (8.1, 8.2, 8.4), Ch.9 (9.1–9.3)

Textbook 3 → Ethical AI Applications

**RBT Levels: L1 (Remember), L2 (Understand), L4 (Analyze)**

Students recall trends, understand ethical issues, and analyze case studies.

| **Module-5: AI in Action – Robotics & Applications** | 8 Hours |
|---|---|

Robotics as an application of AI, AI-powered Drones, No-Code and Low-Code AI tools, Applications in: Healthcare, Finance, Retail, Agriculture, Education, Transportation, AI in Research and Innovation.

**Activity:** Mini-presentation: Pick one sector (e.g., healthcare) and explain 2 AI applications.

Textbook 1 (Reema Thareja) → Ch.8 (8.3), Ch.1 (1.7, 1.8, 1.10, 1.11)

Textbook 3 (AI for Everyone) → Ch.3, Ch.5.1 (applications)

**RBT Levels: L2 (Understand), L3 (Apply), L4 (Analyze)**

Students understand applications, apply knowledge in sectoral case studies, and analyze AI's role in industries.

**COURSE OUTCOMES:** At the end of this course, students will be able to

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|---|---|
| **CO1** | Apply the basic concepts, history, and types of Artificial Intelligence to real-world |
| **CO2** | Demonstrate prompt engineering techniques to effectively interact with generative AI systems. |
| **CO3** | Implement basic machine learning techniques—such as regression, classification, and clustering—using accessible tools for data-driven solutions |
| **CO4** | Examine contemporary advancements in AI and assess their ethical and societal impacts through relevant case study analysis. |
| **CO5** | Summarize applications of AI in robotics and industries, and present use cases through mini-projects or discussions. |

**III. CO-PO-PSO MAPPING** (mark H=3; M=2; L=1)

| PO/PSO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | S1 | S2 | S3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | | | | | | | | | | | | | | |
| CO2 | | 2 | | | | | | | | | | | | | |
| CO3 | 2 | 2 | 1 | | 2 | | | | | | | 1 | | | |
| CO4 | 1 | 2 | | | | 2 | 1 | 2 | | | | | | | |
| CO5 | 2 | 2 | 2 | | 2 | | | | 2 | 2 | 2 | | | | |

**IV. Assessment Details (CIE & SEE)**

**General Rules:** Refer CIE and SEE guidelines based on course type for autonomous scheme 2023 Dated on 10-02-2025.

**Continuous Internal Evaluation (CIE):** Refer Annexure section 1

**Semester End Examination (SEE):** Refer Annexure section 1

## V. Learning Resources

**VII(a): Textbooks:**

| Sl. No. | Title of the Book | Name of the author | Edition and Year | Name of the publisher |
|---|---|---|---|---|
| 1 | Artificial Intelligence: Beyond Classical AI | Reema Thareja | Pearson Education | 2023 |
| 2 | Prompt Engineering: Empowering Communication | Ajantha Devi Vairamani and Anand Nayyar | 1st Edition, CRC Press, Taylor & Francis Group | 2024. (DOI: https://doi.org/10.1201/9781032692319) |
| 3 | Saptarsi Goswami, Amit Kumar Das and Amlan Chakrabarti | AI for Everyone – A Beginner's Handbook for Artificial Intelligence | Pearson Education | 2024 |

**VII(b): Reference Books:**

| | | | | |
|---|---|---|---|---|
| 1 | Artificial Intelligence: A Modern Approach | Stuart Russell and Peter Norvig | (4th Edition), Pearson Education | 2023 |
| 2 | Artificial Intelligence, McGraw Hill Education | Nilakshi Jain | First Edition, Wiley. | |

**VII(c): Web links and Video Lectures (e-Resources):**

- https://www.elementsofai.com/ (Beginner-friendly introduction to AI concepts)
- https://cs50.harvard.edu/ai/ (Concepts + coding demos for fast learners)
- https://developers.google.com/machine-learning/crash-course (Interactive tutorials with examples)
- https://learnprompting.org/ (Hands-on guide for prompt engineering)
- https://ai.google/education/ (Videos, articles, and tutorials for beginners)
- https://teachablemachine.withgoogle.com/ (No-code tool to try ML with images, sounds, poses)

**VIII: Activity Based Learning / Practical Based Learning/Experiential learning:**

**Module 1-**Activity:- Identify and present 3 examples of AI applications students use in daily life (e.g., YouTube recommendations, Google Maps).
**Module 2-** Activity:- Try zero-shot, one-shot, and few-shot prompts in ChatGPT (or any available tool) and compare outputs.
**Module 3-**Activity:- Use Google Teachable Machine or Excel to build a simple classifier (e.g., distinguishing happy/sad faces or basic data clustering).
**Module 4-**Activity:- Classroom debate/discussion – "Is AI replacing humans good or bad?" or case study on AI in healthcare/transport.
**Module 5-** Activity:- Mini-presentation in groups – choose one industry (healthcare, finance, education, agriculture, transport) and present 2 AI applications.