COURSE TITLE	**ROBOTICS PROCESS AUTOMATION**
COURSE CODE	**05MF0302**
COURSE CREDITS	**4**

Objective:

1. Understand the fundamentals of Robotic Process Automation (RPA) and its role in AI-driven automation.
2. Learn how to develop and integrate chatbots using UiPath for financial and customer service applications.
3. Gain hands-on experience in building rule-based chatbots using Python and Natural Language Processing (NLP).
4. Explore real-world applications of RPA and AI chatbots in financial services, banking, and automation.

Course Outcomes: After completion of this course, student will be able to:

1. Demonstrate the ability to design and implement RPA-based chatbots using UiPath.
2. Develop a functional rule-based chatbot in Python for handling customer queries and automation.
3. Integrate chatbots with APIs and databases for real-time information processing
4. Apply automation strategies in FinTech by deploying AI-driven chatbots in a professional setting.

Pre-requisite of course:NA

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
3	0	2	50	30	20	25	25

Contents : Unit	Topics	Contact Hours
1	**Introduction to RPA and AI Tools** Understanding Robotic Process Automation (RPA), AI vs RPA: Key Differences, Overview of RPA Tools: UiPath, Blue Prism, Automation Anywhere, AI-Powered Chatbots: How AI Enhances RPA, Case Study: AI & RPA in Customer Support Automation	8
2	**Building a Chatbot using UiPath** Introduction to UiPath Chatbot Integration, Designing a Conversational Chatbot in UiPath, Connecting Chatbot with Financial APIs (Banking, Loan Processing), Implementing NLP in UiPath Chatbot, Case Study: UiPath-based Chatbot for Customer Queries	10

DR. SUNIL LALCHAND BAJEJA
Digitally signed by (Name of HOD)

DR. R SRIDARAN
Digitally signed by (Name of Dean/ Principal)

Contents : Unit	Topics	Contact Hours
3	**Fundamentals of Rule-Based Chatbots using Python** Introduction to Rule-Based Chatbots, Basics of Natural Language Processing (NLP) in Python, Understanding Libraries: NLTK, SpaCy for Chatbot Development, Creating a Keyword-Based Chatbot in Python, Case Study: Rule-Based Chatbot for Loan Inquiry	12
4	**Advanced Rule-Based Chatbot in Python** Expanding Rule-Based Chatbot Capabilities, Integrating Python Chatbot with APIs, Handling User Intent and Context Awareness, Deploying a Chatbot as a Web Service, Case Study: AI-Powered Virtual Assistant for Financial Services	15
Total Hours		**45**

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Unit 1** Hands-on with UiPath: Understanding the UiPath Studio interface and basic automation, Simple RPA Automation: Automate a repetitive financial task using UiPath	15
2	**Unit 2** Develop a simple chatbot using UiPath for FAQs in a banking system, Integrate UiPath chatbot with an external API for real-time financial data	15
3	**Unit 3** Develop a simple rule-based chatbot using Python and NLTK, Implement user input handling and response generation	15
4	**Unit 4** Build an advanced chatbot using Python with API integration, Deploy the chatbot on a web platform using Flask	15
Total Hours		**60**

Textbook :

1 Learning Robotic Process Automation, Alok Mani Tripathi, Packt Publishing, 2018

2 Mastering UiPath, Nitin R. Shrivastava, Parthasarathy Ramachandran, Packt Publishing, 2019

References:

1 Building Chatbots with Python: Using Natural Language Processing and Machine Learning, Building Chatbots with Python: Using Natural Language Processing and Machine Learning, Sumit Raj, Apress, 2018

DR. SUNIL LALCHAND BAJEJA
Digitally signed by (Name of HOD)

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References:

2 Artificial Intelligence in Financial Markets: Cutting Edge Applications for Risk Management, Portfolio Optimization and Economics, Artificial Intelligence in Financial Markets: Cutting Edge Applications for Risk Management, Portfolio Optimization and Economics, Christian L. Dunis, Peter W. Middleton, Andreas Karathanasopolous, Konstantinos Theofilatos, Palgrave Macmillan, 2016

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
10.00	20.00	25.00	25.00	10.00	10.00

Instructional Method:

1 PPT, Demo, Practical, Board work

Supplementary Resources:

1 https://miet.ac.in/assets/files/UiPATH_RPA_Training_Manual.pdf
2 https://www.uipath.com/hubfs/resources/documents/event_PDFs/UiPath-Academy-Training-overview-deck.pdf
3 https://tjzhifei.github.io/resources/NLTK.pdf
4 https://balka-book.com/files/2021/07_16/10_54/u_files_store_25_1670.pdf
5 https://www.jetir.org/papers/JETIR2309320.pdf
6 https://www.uipath.com.cn/wp-content/uploads/2021/01/UiPath-Chatbots-Brochure.pdf
7 https://scispace.com/pdf/chatbot-development-using-python-16buhjb7.pdf

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