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*MAR GREGORIOS COLLEGE OF ARTS &  
SCIENCE*

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CERTIFICATE PROGRAM  
(30 HOURS)

# RPS ACADEMY

## **ROBOTICS MANAGEMENT**

### DAY1: Introduction to MATLAB & Robotics Basics

- Introduction to MATLAB
- Overview of MATLAB interface (command window, Editor, Workspace, etc.)
- Basic MATLAB commands and syntax
- Data types
- Plotting in MATLAB
- Functions and scripts in MATLAB
- Basic MATLAB functions for robotics
- Introduction to Robotics
- What is Robotics? Types of robots: industrial, mobile, humanoid, etc.
- Components of a robot: sensors, actuators, controllers
- Robot workspace, DOF (Degrees of Freedom)
- Robot taxonomy: Serial, parallel and hybrid robots
- Overview of robot application

### Day: 2 Robot Kinematics

- Forward Kinematics
- Introduction to Kinematics and its importance in robotics
- Understanding robot joints and link frames
- How they define a robot's Kinematic structure
- Forward Kinematics equations how to calculate end effector position from joint angles
- Example of a 2-DOF and 3-DOF robot
- Inverse Kinematics
- Overview of inverse Kinematics: computing joint angles from end effector position
- Analytical Vs numerical solutions
- Challenges in inverse Kinematics
- MATLAB implementation of inverse Kinematics for simple robots.

## Day: 3 Robot Dynamics

- Introduction to Robot Dynamics
- Difference between Kinematics and dynamics
- Key concepts: mass, inertia, forces, torques and energy
- Equations of motion for a simple robot
- Dynamics simulation in MATLAB
- Deriving the equations of motion for a 2-DOF and 3-DOF robot
- MATLAB functions for solving dynamic systems
- Simulating robot movement using dynamic equations
- Example: Modeling and simulating the dynamics of a robotic arm

## Day: 4 Robot Control Systems

- Introduction to robot control
- Control system basics: open –loop vs closed loop control
- PID controllers for robot control
- Model based Vs model free control strategies
- Stability, accuracy and performance of control systems
- Robot control in MATLAB
- Implementing PID controllers for robot joints
- Using MATLAB's control system Toolbox for modeling and simulation

## Day 5 Robot Simulation and Practical Applications

- MATLAB Robotics toolbox
- Introduction to MATLAB Robotics Toolbox
- Tools for simulating robot Kinematics and dynamics
- Working with Standard robots
- Simulating robot trajectories and path planning
- Collision detection and avoidance
- Robot Simulation Example
- Building a simple robot model in MATLAB
- Simulating and visualizing robot movement and control

## **DIGITAL MARKETING**

### **Module 1: Introduction to Digital Marketing**

- ✓ Demystifying online marketing: Why go digital?
- ✓ Key digital marketing channels: Websites, social media, search engines, email, etc.
- ✓ Building a brand online: Identity, tone, and consistency.
- ✓ Measuring success in the digital world: Traffic, engagement, conversions.

### **Module 2: Website Essentials**

- ✓ Understanding websites: Building blocks, design, and user experience.
- ✓ Search Engine Optimization (SEO): Making your website discoverable.
- ✓ Content marketing: Creating valuable content for your audience.
- ✓ Website analytics: Tracking your website's performance.

### **Module 3: Social Media for Everyone**

- ✓ Choosing the right platforms for your target audience.
- ✓ Creating engaging social media content: Posts, stories, and visuals.
- ✓ Social media advertising: Reaching a wider audience through paid campaigns.
- ✓ Social listening and monitoring: Engaging with your online community.

## Module 4: The Power of Email Marketing

- ✓ Building an email list: Opt-in forms and lead magnets.
- ✓ Crafting effective email campaigns: Structure, subject lines, and content.
- ✓ Email automation: Delivering personalized messages at the right time.
- ✓ Email analytics: Measuring the success of your email campaigns.

## Module 5: Future of Digital Marketing

- ✓ Emerging trends: AI, voice search, personalization, and immersive experiences.
- ✓ The changing consumer landscape: Understanding new behaviors and preferences.
- ✓ Building a successful digital marketing career: Skills, resources, and networking.

## **MULTIMEDIA MANGEMENT**

### **1. PRESENTATION WITH PPT**

### **2. PARCTICAL SESSION**

#### **Day-01**

- ✓ Multimedia introduction course details
- ✓ Introduction of UX and UI
- ✓ Web and mobile app design details

#### **Day-02**

- ✓ Photoshop
- ✓ Introduction of Photoshop
- ✓ Usages
- ✓ Samples

#### **DAY -03**

- ✓ Creating Graphics: ideal for designing logos, banners and other visual content
- ✓ Image editing: Allows for retouching photos, adjusting colors, and enhancing images.
- ✓ Web design: Useful for creating graphics for websites, including layouts and navigation elements.
- ✓ Publications and layouts: Employed in designing brochures, handouts and other printed materials.
- ✓ Presentations: Enhances PowerPoint presentations with custom graphics.
- ✓ Photo Restoration: helps in restoring and manipulating old or damaged photographs.

## Day 04

- ✓ Illustrator
- ✓ Introduction of Illustrator
- ✓ Usages
- ✓ Samples
- ✓ Packing designing
- ✓ Die line

## DAY 05

- ✓ Box design
- ✓ Art create
- ✓ Tracing
- ✓ Banner, Broacher, Pamphlets and some layout design examples and provide creating ideas.

## **SAP ACCOUNTING SOFTWARE**

- ✓ Enterprise Structure Creation
- ✓ Enterprise Structure Assignment
- ✓ Chart Of Accounts
- ✓ General Ledger
- ✓ Document Splitting
- ✓ Tolerance Group
- ✓ Cost Centre
- ✓ Profit Centre
- ✓ Cost Element
- ✓ Vendor Master
- ✓ Vendor Invoice And Payment
- ✓ Customer Master
- ✓ Customer Invoice And Receipt
- ✓ Goods And Service Tax
- ✓ House Bank



## **TALLY PRIME**

- ✓ INTRODUCTION TO TALLY
- ✓ COMPANY CREATION
- ✓ LEDGER CREATION
- ✓ VOUCHER ENTRY
- ✓ PURCHASE& SALES
- ✓ PAYMENT&RECEIPT
- ✓ INVENTORY
- ✓ VOUCHER CLASS
- ✓ BILLWISE DETAIL
- ✓ CASH TRANSACTION PROJECT
- ✓ BACKUP AND RESTORE
- ✓ BANK TRANSACTION PROJECT
- ✓ NON ACCOUNTING VOUCHER TYPE
- ✓ GST
- ✓ TAX INVOICE

## **GST & E – FILING**

- ✓ Introduction of GST
- ✓ Registration
- ✓ Supply under GST
- ✓ Charge under GST
- ✓ Value of Supply
- ✓ Time of Supply
- ✓ Credit Note & Debit Note
- ✓ Overall Summary of Exemption
- ✓ Input Tax credit
- ✓ Returns
- ✓ Import & export under GST
- ✓ Compliance Portal (GST)
- ✓ Job Work Assessment & Audit
- ✓ Offences & Penalties
- ✓ Payment
- ✓ GST 1
- ✓ GST2A
- ✓ GST2B
- ✓ GST3B
- ✓ Annual Returns

## **PAYROLL MANAGEMENT**

- ✓ INTRODUCTION TO PAYROLL
- ✓ ELEMENTS OF PAYSリップ
- ✓ REGULATIONS OF PAYROLL
- ✓ CALCULATION OF PAYROLL PROCESSING
- ✓ PAYROLL IN ACCOUNTING SOFTWARE

## **BUSINESS ANALYTICS**

### **Module 1: What is Business Analysis?**

- ✓ Unpacking the role of a business analyst: Problem-solving and bridge-building.
- ✓ The different types of business analysis: Requirements, processes, and systems.
- ✓ Essential skills for a business analyst: Communication, critical thinking, and problem-solving.
- ✓ Career opportunities in business analysis: Diverse paths and potential.

### **Module 2: Understanding your Business**

- ✓ Industry analysis: Research trends, competitors, and customer needs.
- ✓ Business models and value propositions: How businesses create and deliver value.
- ✓ Business processes and workflows: Mapping how things get done.
- ✓ Data analysis and visualization: Extracting insights from information.

### **Module 3: Talking to the People**

- ✓ Stakeholder identification and analysis: Understanding who matters and why.
- ✓ Gathering requirements through interviews, surveys, and workshops.
- ✓ Documenting and analysing requirements: Capturing needs and priorities.
- ✓ Prioritizing and validating requirements: Making informed decisions.

## Module 4: Improving the Way We Work

- ✓ Process mapping and analysis: Visually representing workflows.
- ✓ Process improvement techniques: Identifying and eliminating bottlenecks.
- ✓ Change management: Helping people adapt to new ways of working.
- ✓ Communicating change effectively: Engaging stakeholders and overcoming resistance.

## Module 5: Real-world Applications

- ✓ Analyzing successful business analysis projects: Learning from case studies.
- ✓ Emerging trends in business analysis: Big data, agile methodologies, and automation.
- ✓ The future of business analysis: Adapting to a changing business landscape.
- ✓ Building a successful career in business analysis: Tips and resources

## DATA ANALYSIS

### Module 1: Making Sense of Data

- ✓ What is data analysis? From numbers to insights.
- ✓ Why is data analysis important? Informed decisions and problem-solving.
- ✓ Different types of data: Numbers, text, images, and more.
- ✓ Collecting and organizing data: Sources, formats, and quality.

### Module 2: Understanding the Numbers

- ✓ Descriptive statistics: Summarizing data with averages, medians, and ranges.
- ✓ Data visualization: Telling stories with charts, graphs, and maps.
- ✓ Spreadsheets as your friend: Data manipulation and analysis in Excel or Google Sheets.
- ✓ Interpreting what the data tells you: Drawing conclusions and avoiding biases.

### Module 3: Patterns and Predictions

- ✓ Relationships and trends: Finding correlations and making predictions.
- ✓ Introduction to basic statistical models: Regression and forecasting.
- ✓ Case studies: Analyzing real-world data sets in various fields.
- ✓ Tools and resources for data analysis: Exploring online platforms and software.

### Module 4: Communicating Data Effectively

- ✓ Storytelling with data: Presenting insights clearly and compellingly.
- ✓ Visualizing complex information for different audiences.
- ✓ Reporting and communicating findings: Written reports, presentations, and dashboards.
- ✓ Ethical considerations in data analysis: Privacy, transparency, and bias.

## Module 5: The Future of Data Analysis

- ✓ Big data and machine learning: Understanding the revolution in data processing.
- ✓ Data analysis in your future career: Skills and opportunities in various fields.
- ✓ Building a data-driven mindset: Making informed decisions based on evidence.
- ✓ Resources and pathways for further learning: Continuing your data analysis Journey .

## FULL STACK DEVELOPMENT

### Day 1: Introduction to Web Development - HTML, CSS, and Bootstrap

**Goal:** Learn the building blocks of web development and set up the foundation for the application.

Topic	Description	Hands-on Activity
<b>Introduction to Web Development</b>	Overview of frontend and backend, how web apps work. Discuss project structure.	Explain the structure of a basic web application.
<b>HTML Basics</b>	Learn the structure of a webpage with tags like headings, paragraphs, links, and forms.	Create a basic webpage with headings, paragraphs, and a form.
<b>CSS Basics</b>	Learn CSS basics: colors, fonts, margins, padding, and layout.	Style the webpage, adding background colors and adjusting layout.
<b>Bootstrap Introduction</b>	Introduction to Bootstrap's grid system, buttons, and forms for responsive design.	Build a simple, responsive layout using Bootstrap.
<b>Recap and Q&amp;A</b>	Review the day's content, clear doubts, and discuss best practices.	Finalize the basic layout and understand the responsive design.



## Day 2: JavaScript Basics

**Goal:** Understand JavaScript fundamentals to add interactivity and dynamic behavior to the app.

Topic	Description	Hands-on Activity
<b>JavaScript Basics</b>	Learn variables, data types, operators, and functions.	Create simple JavaScript functions (e.g., greeting function).
<b>Conditionals and Loops</b>	Understand if statements, else conditions, loops, and logic operators.	Build a program that checks if a number is even or odd.
<b>DOM Manipulation</b>	Learn how to select elements and manipulate the DOM (Document Object Model).	Add interactivity to the webpage (e.g., change text on button click).
<b>Real-time Example</b>	Integrate basic JavaScript functionality into a webpage.	Create a simple to-do list with add/remove tasks using DOM.

## Day 3: Advanced JavaScript Concepts and Jquery

**Goal:** Enhance JavaScript skills and introduce Jquery for easier DOM manipulation and event handling.

Topic	Description	Hands-on Activity
<b>JavaScript Functions (Advanced)</b>	Deep dive into functions, parameters, return values, and scope.	Build a function to convert units (e.g., Celsius to Fahrenheit).
<b>Arrays and Objects</b>	Learn about arrays and objects for data storage and manipulation.	Create an object for a simple contact book and display data.
<b>jQuery Basics</b>	Introduction to jQuery: selecting elements, events, and effects.	Add interactivity with jQuery (e.g., hide/show elements on button click).
<b>AJAX with jQuery</b>	Learn how to make asynchronous requests with jQuery's <code>\$.ajax</code> method.	Fetch data from a public API (e.g., JSON data) and display it dynamically.
<b>Recap and Q&amp;A</b>	Review JavaScript and jQuery concepts, clear doubts.	Finalize a small project (e.g., fetch and display a list of items).

## Day 4: Introduction to React

**Goal:** Learn React basics to build dynamic user interfaces.

Topic	Description	Hands-on Activity
<b>Introduction to React</b>	Learn what React is, components, JSX syntax, and props.	Create a simple React app (e.g., a static "Hello World" app).
<b>State and Props in React</b>	Understand React state, props, and how to update the UI dynamically.	Build a simple counter app with state and buttons for incrementing.
<b>Handling User Input in React</b>	Learn how to handle user inputs with forms in React.	Build a form that takes user input and displays it in real-time.

## Day 5: Full-stack Integration - API, Node.js, MongoDB, and Deployment

**Goal:** Learn how to connect the frontend to a backend API and deploy the app.

Topic	Description	Hands-on Activity
<b>Intro to APIs and Node.js</b>	Learn what APIs are, and how to set up a simple backend with Node.js and Express.	Set up a basic API with Node.js to send and receive data.
<b>Database Integration with MongoDB</b>	Learn how to use MongoDB for data storage.	Set up a database to store user data (e.g., user profile info).
<b>Full Integration and Deployment</b>	Deploy the app to a cloud platform (e.g., Netlify for frontend, Heroku for backend).	Deploy a full-stack app (frontend and backend) to Netlify and Heroku.

## **EMOTIONAL INTELLIGENCE**

### **DAY1- GOAL SETTING**

- ✓ HOW TO SET SUCCESSFUL GOAL
- ✓ HOW TO ACHIEVE THE GOALS

### **DAY 2- PERSONALITY DEVELOPMENT**

- ✓ EFFECTIVE COMMUNICATION
- ✓ BODY LANGUAGE FOR EFFECTIVE COMMUNICATION
- ✓ LEADERSHIP SKILLS

### **DAY3- ETHICS**

- ✓ PUBLIC SPEAKING
- ✓ POWER OF POSITIVE THINKING
- ✓ TIME MANAGEMENT

### **DAY 4- EMOTIONAL INTELLIGENCE**

- ✓ WHAT IS EMOTIONAL INTELLIGENCE
- ✓ KEY POINTS TO BE FOLLOWED
- ✓ PILLARS OF EMOTIONAL INTELLIGENCE
- ✓ PRACTICAL SESSION

### **DAY 5-CLIENT MANAGEMENT**

- ✓ WHAT IS CLIENT MANAGEMENT
- ✓ KEY FEATURES OF CLIENT MANAGEMENT
- ✓ ROLE OF A CLIENT MANAGER
- ✓ INTERACTION SESSION