



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)

Accredited with 'A' grade by NAAC
Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai - 600 119.

Phone: 044 - 2450 3150 / 3151 / 3152 / 3154 / 3155 Fax: 044 - 2450 2344
www.sathyabama.ac.in



Role of Robotics in Engineering and Technology



Center for Skill Development & School of Mechanical Engineering

In Association With

NSIC Technical Training services – A Government of India Enterprise

Jointly Organizing a Five Days Skill Development Program on



ROLE OF ROBOTICS IN ENGINEERING & TECHNOLOGY

(09-03-2020 to 14-03-2020)



Coordinators

- Mr. S. Venkatesh
Assistant Professor, Dept. of Aeronautical
- Dr. R. B. Durairaj
Assistant Professor, Dept. of Mechanical
- Mr. P. Gunasekar
Assistant Professor, Dept. of Aeronautical
- Mr. M. Rakesh Vimal
Assistant Professor, Dept. of Aeronautical
- Dr. Y. Swarnalatha
Professor & Dean – Higher studies

Registration
Fee

Rs. 1500
Per Trainee

Registration
Link for
Students



Helpline Contact: 9789993066 (Mr. Venkatesh) / 7305533500 (Dr. Durairaj)
Venue: (09-03-2020 to 11-03-2020) @ IRC, 3rd Floor
(12-03-2020 to 13-03-2020) @ Center for Robotics & Automation Lab



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Course Contents

- Introduction to Robotics: Introduction to Manual Robotics, Motor Principle explanation, Introduction to electronics, Introduction to the breadboard. [2 hrs]
- Testing of IR sensors: IR range detection. L293D IC Explanation & Making Connections [2 hrs]
- of L293D IC on BREADBOARD. Interface Motor Driver with IR sensor [2 hrs]
- The mechanism in Robots: Completion of line follower, obstacle detector, edge avoider [2 hrs]
- Different types of robots introduction: [3 hrs]
- Different types of motor working: Practical session on Stepper, DC, servo motor. [2 hrs]
- Introduction to Gesture control robot: Accelerometer sensor working, Robot remote working of gesture control robot, Gesture base robot working model. [2 hrs]
- Assembling of Hexapod robot [2 hrs]
- Assembling of line follower robot [2 hrs]
- Assembling of dumpster robot [2 hrs]
- Assembling of light sinker robot [2 hrs]
- Assembling of crane type robot [3 hrs]
- Student review on Robotics system: Internal Exam Theory:70Mark practical/Viva, Competition, Doubts & Practical Session [2 hrs]
- EXTRA/OPTIONAL PROJECTS [2 hrs]

COURSE OUTCOMES:

CO1: Perform the Testing of IR sensors and the mechanism utilized for driving the Robots.

CO2: Explain the working principle of different types of motors utilized for Robots.

CO3: Perform the assembly operation of Hexapod, line follower, and dumpster Robots.

CO4: Perform the assembly operation of a light sinker and crane-type Robots.



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List of Participants

S.No	Roll.No	Name
1	18SAE5013	Adithya M
2	18SAE1001	Angadala Ganesh
3	18SAE5001	Anirudh Ashok
4	18SAE5002	Athyala Anoushka Dev
5	18SAE9003	Balasubramaniy N R
6	18SAE1002	Bhoye Harshad Bharat
7	18SAE5027	Bolla Deepthi Chowdary
8	18SAE5014	Chode Satya Manikumar
9	18SAE5020	Dipesh Ranjan
10	18SAE5026	Gabrielhoseadoss K
11	18SAE5003	Genesisgodwin Bs
12	18SAE5004	Gokulakrishnan K
13	18SAE5016	Gokulakannan V
14	18SAE1003	Gursharan Kaur Pabla
15	18SAE5011	Hariharan V

16	18SAE9001	Infant Rainia L
17	18SAE8001	Joseline X
18	18SAE5005	Karthikeyan R
19	18SAE1004	Kelli Karthikeyan
20	18SAE5006	Konchada Uday Kumar
21	18SAE5025	Kuppalasubhramanyakarthish
22	18SAE1005	Majella Riona R
23	18SAE1006	Mangina Leela Krishna
24	18SAE5017	Mohamed Ansaf
25	18SAE5007	Mohamed Asif S
26	18SAE5013	Adithya M
27	18SAE1001	Angadala Ganesh
28	18SAE5001	Anirudh Ashok
29	18SAE5002	Athyala Anoushka Dev
30	18SAE9003	Balasubramaniy N R



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Diploma for Airport Ground Handling Management



MADRAS FLYING CLUB
AVIATION ACADEMY



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- Course on Airlines Customer Service Executive (Approved by Skill India - NSDC)
- Aircraft Maintenance Engineering – INTERNSHIP for One month (120 hours)

DIPLOMA COURSES OFFERED (Duration : 6 months)

- Diploma in CABIN CREW & HOSPITALITY MANAGEMENT
- Diploma in AIRPORT GROUND HANDLING MANAGEMENT
- Diploma in FLIGHT OPERATION MANAGEMENT

Eligibility
Open to all
Students



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COURSE CONTENT

DIPLOMA IN AIRPORT GROUND HANDLING

(course duration: 6 months)

CURRICULUM & CREDITS

TOPIC	CREDITS
Common Aviation	5
Airport Ground Services	5
Personality Development	4
Airport Operations	6
Practical	5
Total Credits	25

COMMON AVIATION

Credits:5

COURSE OBJECTIVES:

The aim of the course is to

- Familiarise the student about aviation history and aviation terminologies.
- To know about the various buildings, facilities and equipment in airport.
- Learn about different time zones and calculation to be done.
- Have a basic understanding of weight and balance.

MODULE 1- ABOUT AVIATION

14

General Aviation – Aviation History – Ministry of Civil Aviation (ICAO, FAA, EASA, IATA, DGCA, AAI and its wings) – Aviation Terminology – Aviation Geography.

MODULE 2- FAMILIARISATION

15

Aircraft Familiarisation – Buildings and Installation in Airport – Marking and Lightings in Airport, Airport Facilities and Equipments.



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MODULE 3- TIME ZONE AND TIME CALCULATION

12

Calculation of LMT at any given place – UTC – IST – Longitude - Latitude - Meridians – Rhumb line – Difference in longitude — Difference in latitude.

MODULE 4- WEIGHT AND BALANCE

14

Aircraft weight calculation – Selection of alternate aerodrome – Fuel calculation for the flight– Minimum fuel requirement and Pay Load.

REFERENCES:

- DGCA CAR Section – 7

COURSE OUTCOMES:

After completing the course, student will

- Understand about aviation history and aviation terminologies.
- Have good idea about various buildings, facilities and equipment found in airport.
- Study about different time zones and calculation to be done.
- Have a basic understanding of weight and balance.

AIRPORT GROUND SERVICES

Credits:5

COURSE OBJECTIVES:

The aim of the course is to

- Have good knowledge about the arrival and departure services, transfer counters, customer service counters and airline lounge.
- Train students to handle different phenomenon like parking, towing, lavatory, luggage handling, refuelling etc.,
- Learn about cargo terms and procedures.
- Have a basic understanding of security checking.

MODULE 1- TERMINAL

15



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Providing check in counter services – Providing gate arrival and departure services – Staffing the transfer counter – Customer service counter – Airline lounge.

MODULE 2- APRON

14

Guiding aircraft for parking – Towing – Lavatory – Air Conditioning – Luggage Handling – Catering trucks – Refuelling – Ground power – Passenger stairs – wheel chair lifts – Hydraulic moles.

MODULE 3- CARGO

14

Passenger Baggage – Cargo terms and procedures – Cargo Abbreviations – Special Cargo – Dangerous Goods – Labelling – Cargo Manifest – Courier-Mail – Post Office Mail.

MODULE 4- SECURITY CHECK

12

Bureau of Civil Aviation – Central Industrial Security Force – Airport Security Group – Airport Security Unit – Airlines security group – Passenger Customs and Cargo Customs.

REFERENCES:

- DGCA CAR Section – 7

COURSE OUTCOMES:

After completing the course, students will

- Acquire sufficient knowledge about the arrival and departure services, transfer counters, customer service counters, and airline lounge.
- Be able to handle different phenomenon like parking, towing, lavatory, luggage handling, refueling, etc.,
- Have good knowledge about cargo terms and procedures.
- Adequate understanding of security checking.

PERSONALITY DEVELOPMENT

Credits:4

OBJECTIVES:

The aim of the course is to

- Provide effective communication and listening skills
- Inculcate the leadership and managing quality of the students.
- Develop and enhance the group discussing skill of the students.
- Educate about personal hygiene and presentation skills.
- Train the students to take up interview by providing tips and tricks.

MODULE 1- COMMUNICATION

11

Introduction to effective communication – Barrier to communication – Over coming strategies – Miscommunication – Non-verbal Communication – Listening skills.

MODULE 2- LEADERSHIP

11

Own Brand of leadership – Ability to collaborate and build relationship – Leadership development plan – Managing organisational culture and conflict – Leadership performance– leadership courage.

MODULE 3- GROUP DISCUSSION

8



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Objective – Pre-requirement – Methods – Training Aid – Requirement for support – Set of stage – Preparation Methods.

MODULE 4- PERSONAL HYGIENE AND GROOMING 12

Body language – Etiquette of dressing – First impression – Hair and Skin care – Makeup and hair styling – Presentation skills – Personal development – Professional behaviour – Body shape – Personal Hygiene.

MODULE 5- INTERVIEW TECHNIQUES AND PREPARATION 13

Behaviour based question – Situational question – Traditional question – Interview question – Prepare for interview question - STAR method – Stage of an interview – Developing effective answers - Types of interview – Interview preparation steps and tips – Developing effective answers.

REFERENCES:

- DGCA CAR Section – 7
- Aeronautical Chart user's guide by FAA 8th edition

COURSE OUTCOMES:

After completing the course, the student will

- Be able to achieve good communication and listening skills.
- Incorporate leadership and managing qualities.
- Be able to develop and enhance the group discussing skills.
- Have good knowledge about personal hygiene and presentation skills.
- Be Trained to take up an interview and develop effective answers.

AIRPORT OPERATIONS

Credits:6

COURSE OBJECTIVES:

The aim of the course is to

- Familiarise with the terminal building operations line BMA, BBA etc.,
- Inculcate good knowledge about different types of airplanes, ramp operations, and ground servicing tasks.
- Train the students for different safety procedures to be followed in aviation.
- Develop adequate knowledge about various emergency situations that may occur in an airport.

MODULE 1- TERMINAL BUILDING OPERATION 11

Domestic operation – International operation – Procedure for Immigration/customs – Procedure for passenger check-in – BMA operation – BBA operation – Facilitation in the airport.

MODULE 2- RAMP OPERATION 13

Types of an aeroplane – Ground operation - Working environment – Standard Ramp operation – Basic security for efficient operation – Procedure for key aircraft – Ground servicing task.



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MODULE 3- AVIATION SAFETY PROCEDURE

9

Passenger luggage- Cabin environment and oxygen – Portable electronic devices – Tarmac safety – Exit Row – Life jackets – Inspection of aircraft – Ramp checks – Cabin management - Electronic flight bag – Anti Hijacking procedure.

MODULE 4- AIRPORT EMERGENCY

10

Regulatory requirement management – Basics of Aviation – Emergency management -Roles and responsibilities of the airport – Emergency response leadership skill – Notification of alarm/alarm plans – Special assistance team – Communication.

MODULE 5- ADVANCE IN AIRCRAFT WEIGHT AND BALANCE

12

The basic theory of flight – Aircraft weight and indexes at different flight stage – Initial aircraft weight and indexes – Aircraft limiting weight – Theory of balance - Balance theory applied to aircraft – Drop line trim chart and its functions – Fuel trim effects – Last-minute changes – load planning effects on-ramp handling – Refreshing load control processes.

REFERENCES:

- DGCA CAR Section – 7

COURSE OUTCOMES:

After completing the course, the student will

- Be able to understand the terminal building operations line BMA, BBA etc.,
- Have good knowledge about different types of airplanes, ramp operations and ground servicing tasks.
- Learn about different safety procedures to be followed in aviation.
- Acquire adequate knowledge about various emergency situations that may occur in an airport.

PRACTICAL

Credits:5

PRACTICAL GROUND HANDLING EXERCISES

List of Participants:

S.NO.	NAME	ROLL NUMBER
1	Calvin A Raja	16SAE002
2	Ajith Kumar F	16SAE004
3	Dhanush Kumar	16SAE502
4	Ramanan A	19s095029
5	Neeraja Medim	18SAE5008
6	Priyadarshini Dash	19S261006
7	Jatin Gajjar	19S265005
8	Majella Riona R	18SAE1005



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ADVANCES IN AEROSPACE MATERIALS

ORGANIZED BY SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY BY DEPARTMENT OF AERONAUTICAL ENGINEERING

28.01.2021-27.02.2021

CHIEF PATRONS
Dr. Mariazeena Johnson
Chancellor
Dr. Marie Johnson
Vice chancellor

COORDINATORS
Mr. P. Gunasekar
Prof, Aero
Mr.R. Gokulnath
Prof, Aero

CONVENORS
Dr. P. Boomadevi
HOD, Aero
Dr. A. Anderson
Prof, Aero

Modules

Week	Time	Topic
Week 1	6hrs	Classification of aerospace materials.
Week 2	6 hrs	Aluminum and aluminum alloys
Week 3	6 hrs	Titanium and titanium alloys.
Week 4	6 hrs	High strength steels.
Week 5	6 hrs	Powder materials

Week 1 Module 1. Classification of aerospace materials

This module will introduce you to the classification of aerospace materials. You will learn about the requirements for these materials. Technologies always affect the structure and properties of materials. You will learn about the main forming technologies (metal forming, hot and cold working, and machining) and their effects on the structure of aerospace materials. Phenomena that accompany the machining operations will be examined as well.

Week 2 Module 2. Aluminum and aluminum alloys

This module will introduce you to aluminum alloys, which are crucial aerospace materials. Aluminum alloys were the first to be used in the manufacture of aircraft. The use of aluminum in revolutionized the aircraft industry. Its advantages are high manufacturability and specific strength (the ratio of maximum stresses to weight). We will study various classifications and designations of aluminum alloys as well as the basics of heat treatment. We will learn how alloying elements affect the structure and properties of aluminum alloys.



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Week 3 Module 3. Titanium And Titanium Alloys

We will learn about the role of titanium in the aircraft industry, its advantages and disadvantages for aerospace applications, the structure and properties of titanium alloys. We will examine promising titanium aluminides and shape-memory titanium alloys. Titanium alloys have unique properties and are very promising as aerospace materials. Titanium alloys are used in heavily loaded airframe sections, undercarriage parts, skins to high Mach speed aircraft, jet engines, and many other aircraft components requiring high strength, fracture toughness and resistance to fatigue, creep and corrosion. These mechanical properties are superior to lightweight structural materials, including aluminum alloys and magnesium alloys.

Week 4 Module 4. High strength steels

This module will introduce you to high strength steels. Steel is used as an aerospace material, but to a lesser extent than titanium, aluminum, and composites. High strength steel cannot be replaced with other materials. Advantages of using steel in highly-loaded aircraft structures include high stiffness, strength, fatigue resistance and fracture toughness. In this part of the video course, we will deal with steels used in landing gear and other high-strength components, namely: maraging steels, medium-carbon low-alloy steels, and stainless steels.

Week 5 Module 5. Powder materials

This module will introduce you to powder metal materials and modern technologies used to manufacture them. Powders are used in the manufacture of complex parts or when increased heat resistance is required. "Sweating" highly porous materials are used to prevent icing on aircraft. Metal powder compositions are of particular interest due to the rapid development of additive technologies. You will learn about the requirements for powders used in additive manufacturing.

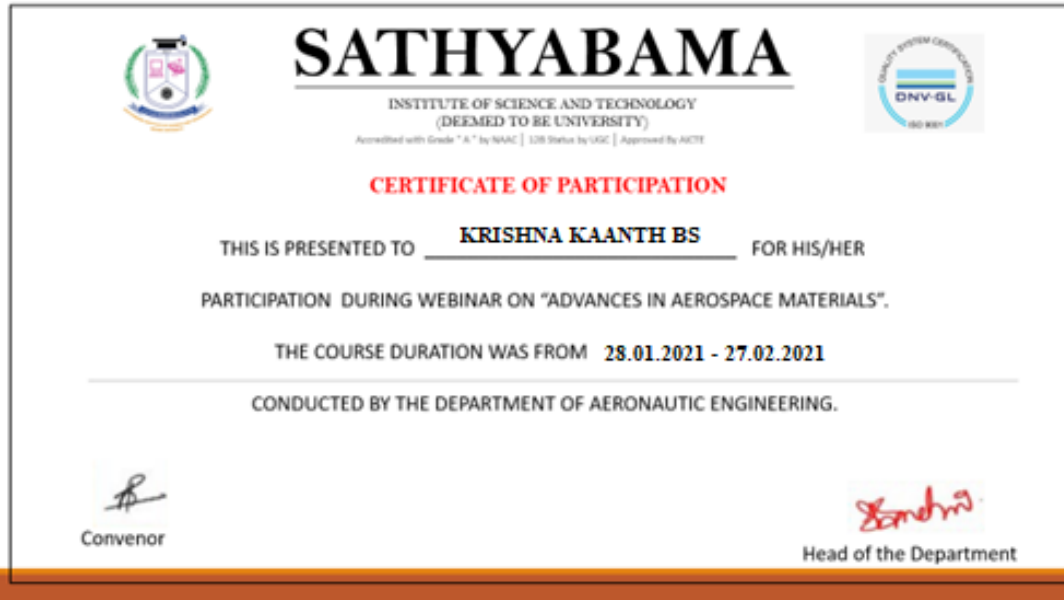


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List of Participants

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1	19S265039	Abilash S
2	19S265030	Amal. T
3	19S265001	Amarapalli Deepak
4	19S265002	J S Aswin Nair
5	19S265003	Bandugula Saitharun
6	19S265029	Muthi Gopi
7	19S265032	Harish M
8	19S265005	Gajjarjatinnitinkumar
9	19S261003	Jaya Sethu Pragathish. J
10	19S265006	John Sathiyathan A
11	19S265026	Karthick B
12	19S261001	Krishna Kaanth Bs
13	19S265007	Krupal Kodi
14	19S265008	Lekha T
15	19S265028	Lingesh R
16	19S264026	Magesh. S
17	19S265038	S Manoj
18	19S261004	Suresh Chandra Mediseti
19	19S265010	Mouliharan M

20	19S261005	Murali Krishna A
21	19S265011	Nishwin Abishek K
22	19S265012	Pravin Bhaskar V
23	19S261006	Priyadarshini Dash
24	19S265013	Ragul R
25	19S265014	Rehmath Bazil R M
26	19S265015	Rohith. A
27	19S265016	Sachin B
28	19S268001	Sahaya Susmi. S. K
29	19S261007	Sameer Taj Shaikh
30	19S265035	Sanjay Sharma R
31	19S265033	Sanjay V
32	19S265017	Santhosh Kumar S
33	19S269001	Seenu G
34	19S265018	Shalu Kumari S
35	19S265019	Sheik Umar J
36	19S261008	Shivaani V S
37	19S265020	Somasundareswaran A
38	19S265021	Sri Ganesh H
39	19S261009	Sriram R