

A Certificate Course

## ACTIVE SUSPENSION SYSTEMS WITH MATLAB AND SYSTEM DESIGN

From 01st February 2021 to 06th February 2021



ORGANIZED BY

## DEPARTMENT OF MECHANICAL ENGINEERING AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY,

(Approved by AICTE, Permanently Affiliated to JNT University Kakinada, ACCREDITED BY NAAC and Recognized under 2(f) &12 (b) by UGC,NewDelhi) Tamaram, Makavarapalem, Narsipatnam (RD), Visakhapatnam-531113

#### AVANTHI EDUCATIONAL SOCIETY

Avanthi Educational Society under the Leadership of Sri M. Srinivasa Rao garu as chairman was started in the Year 1991. Within a short span of its establishment, the group has made a remarkable stride in the field of education offering various courses at Under Graduate, Post Graduate, Pharmacy & Engineering levels. This milestone is achieved as the institution carved itself to impart quality and career oriented education, countering the challenges of the modern world through planning, dedication, determination, prompt execution and with the innovative ideas of our advisory board.

Today, Avanthi Educational Society is proud to have a strength of over 16000 students with 15 institutions under its ambit. It is the path of glory towards the success during the last 19 years. The institution has been adjudged many times as the second best educational institutions in the twin cities and 16th best in all over India through the impartial survey made by the renowned magazine "India Today".

#### AVANTHI INSTITUTE OF ENGINEERING & TECHNOLOGY

AIET started in the year 1999 and offers various courses at Engineering and PG level. The college is providing with rooms, computer centre, laboratories and seminar hall with audio-visual equipments. Industry Institute interaction is conducted regularly to emphasize on the latest trends in the present market.



It is very near to Narsipatnam. Frequent bus facilities are available both from and to Visakhapatnam and Narsipatnam. Very safe and secure hostel facility is available for Girl students. These are the additional facilities MATLAB is an interactive programming environment for scientific computing. besides excellent academic atmosphere in the college campus.

#### DEPARTMENT OF MECHANICAL ENGINEERING

Mechanical Engineering department was started in the year 2005 with intake strength of 60 seats, this was increased to 120 students in 2012 and this was increased to 180 students in 2013. The department has well qualified and trained faculty members. It has well equipped laboratories and workshops and During this MATLAB masterclass, you will be provided with a detailed advanced production techniques and design and analysis of machine elements.

The department of Mechanical Engineering has been contributing its humble share of the Mechanical Engineering graduates for national needs. Several of the graduates who have passed out of this department are occupying responsible positions in various Engineering Industries like Hindustan Shipyard Limited, Renault Nissan, Varun Motors, Tata Consultancy Services, HP and IBM and holding responsible positions in the premier educational institutes in and outside India.

#### ABOUT WORKSHOP

It is a fourth-generation high-level programming language and interactive environment for visualisation, programming and numerical computation. MATLAB is one of the common programming languages in existence and thus widely used by those within engineering, science, and data analysis profession, as well as used in each phase of computational mathematics. Learning MATLAB is very useful in today's age, and having the necessary knowledge of MATLAB will definitely help you in your programming career.

includes a CAD/CAM laboratory where students are imparted training in understanding of how to navigate MATLAB interface, whilst using commands and variables, how to create scripts, produce visualisations, select data, and more.

#### TOPICS TO BE COVERED

- User-defined functions with multiple outputs, Persistent Variables
- String concepts (concatenation, sprintf, eval & more)
- Anonymous functions
- Function functions & function handles
- Variable input & variable output functions (varargin & varargout)
- **Polynomials**
- Curve fitting with polynomials
- Symbolic expressions
- Integration & differentiation

For Registration, please contact Dr. Ch. Suresh, Associate Professor, Department of Mechanical Engineering.

**CHIEF PATRON** 

Smt .M.Gnaneswari President, Avanthi Educational Society **PATRON** 

Dr. C P V N J Mohan Rao Principal, Avanthi Institute Of Engineering And Technology **CHAIRMAN** 

Sri. V. Harikiran Head of the Department Mechanical Engineering

## AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY

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#### **DEPARTMENT OF MECHANICAL ENGINEERING**

#### **CIRCULAR**

Date: 25/01/2021

We are happy to inform you that, Department of Mechanical Engineering, AIET is organizing six day certificate course on "Active Suspension with MATLAB and System Design" from 01st February, 2021 to 06th February, 2021 in physical mode for all III B. Tech students. Interested candidates are directed to enrol above course on or before 30/12/2021. For further details contact Course Coordinator Dr. Ch. Suresh, Associate Professor, Mechanical Engineering Department.

#### Resource Person Details:

- Sri Pramod Butty,
   Sr. Manager-Projects,
   4C Design Engineering Solutions,
   Hyderabad.
- Sri Narayana,
   Design Engineer,
   4C Design Engineering Solutions,
   Hyderabad.

V. Harikiran

HOD of Mechanical Engineering Department

Head of the Department Department of Mechanical Engg. Avanthi Institute of Engg. & Tech., Makavarapalem, Visakhapatnam - 531113.

Copy to: Principal, AIET



## AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY

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## **DEPARTMENT OF MECHANICAL ENGINEERING**

A Six-day workshop on

### ACTIVE SUSPENSION SYSTEM WITH MATLAB AND SYSTEM DESIGN

From 1st February 2021 to 06th February 2021

#### Syllabus of the Workshop:

#### Chapter-1

• Introduction - Active Suspension System Design in System Dynamic Approach, System Dynamics Structure, Active Suspension System

#### Chapter-2

• A brief lecture on Analogy Models, Mass, Spring, and Damper Systems

#### Chapter-3

• Expressions in the MATLAB/SIMULINK program, The SIMULINK interface, MATLAB applications

#### Chapter-4

• Control Systems in MATLAB, The Dynamic Equation of Motion and Problem Solving

#### Chapter-5

• Derivation of the mathematical equations behind an electric DC motor. Derivation of the mathematical equations that govern the movements of a car.

#### Chapter-6

• Implement Mathematical equations in Simulink through MATLAB functions. Implement a Closed Loop PID Controller in Simulink and learn how to tune it with respect to a desired performance.

#### **EXPECTED OUTCOMES**

- •This workshop will provide insight on MATLAB-SIMULINK
- It will strengthen participants skills in MATLAB to perform various engineering problems.
- Workshop will help to understand application of MATLAB in the multidisciplinary areas such as Electronics, Automation, Materials inspection and so on.

COORDINATOR

нор

Head of the Department
Department of Mechanical Engg.
Avanthi Institute of Engg. & Tech.,
Makavarapalem, Visakhapatnam - 531113.



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#### **DEPARTMENT OF MECHANICAL ENGINEERING**

#### ACTIVE SUSPENSION SYSTEM WITH MATLAB AND SYSTEM DESIGN

From 1st February 2021 to 06th February 2021

#### <u>Schedule</u>

DAY - 1 (01.02.2021)

9.00 AM to 11.00 AM - Introduction - Active Suspension System Design in System Dynamic Approach

11.00 AM to 11.15 AM - Tea Break

11.15 AM to 1.15 PM - System Dynamics Structure

1.15 PM to 2.15 PM - Lunch Break

2.15 PM to 4.15 PM - Active Suspension System

DAY - 2 (02.02.2021)

9.00 AM to 11.00 AM - A brief lecture on Analogy Models

11.00 AM to 11.15 AM - Tea Break

11.15 AM to 1.15 PM - Explanation about Mass, Spring, and Damper Systems

1.15 PM to 2.15 PM - Lunch Break

 $2.15\ PM$  to  $4.15\ PM$  - The active use of "Mat lab Function" expressions in the MATLAB/SIMULINK program

DAY - 3 (03.02.2021)

9.00 AM to 11.00 AM - The problem of transforming theory

11.00 AM to 11.15 AM - Tea Break

11.15 AM to 1.15 PM - The SIMULINK interface, Mat lab application

1.15 PM to 2.15 PM - Lunch Break

2.15 PM to 4.15 PM - Transfer Function and State-Space Model in Simulink

### DAY - 4 (04.02.2021)

9.00 AM to 11.00 AM - Control Systems in Mat Lab

11.00 AM to 11.15 AM - Tea Break

11.15 AM to 1.15 PM - The spool and the hydraulic actuator in Servo Valve System

1.15 PM to 2.15 PM - Lunch Break

2.15 PM to 4.15 PM - The Dynamic Equation of Motion and Problem Solving

#### DAY - 5 (05.02.2021)

9.00 AM to 11.00 AM - Derive the mathematical equations behind an electric DC motor.

11.00 AM to 11.15 AM - Tea Break

11.15 AM to 1.15 PM - Derive the mathematical equations that govern the movements of a car.

1.15 PM to 2.15 PM - Lunch Break

2.15 PM to 4.15 PM - Implement Mathematical equations in Simulink through Mat lab functions.

### DAY - 6 (06.02.2021)

9.00 AM to 11.00 AM - Implement Transfer Functions into Simulink.

11.00 AM to 11.15 AM - Tea Break

11.15 AM to 1.15 PM - Create an Open loop engineering Model in Simulink and test its performance using sink blocks.

1.15 PM to 2.15 PM - Lunch Break

2.15 PM to 4.15 PM – Implement a Closed Loop PID Controller in Simulink and learn how to tune it with respect to a desired performance and Valedictory Session.

COORDINATOR

HOD

Head of the Department
Department of Mechanical Engg.
Avanthi Institute of Engg. & Tech.,
Makavarapalem, Visakhapatnam-531113.



## AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY,

TAMARAM (V), MAKAVAAPALEM (M),

#### VISAKHAPATNAM - 531113

### DEPARTMENT OF MECHANICAL ENGINEERING

## Active suspension system with MATLAB and System Design

From 01-02-2021 to 06-02-2021 STUDENTS ATTENDANCE LISTS

| CNO  |             |                            |            |            | 100000     |            |            |            |
|------|-------------|----------------------------|------------|------------|------------|------------|------------|------------|
| S.NO | Roll Number | Name of the student        | 01.02.2021 | 02.02.2021 | 03.02.2021 | 04.02.2021 | 05.02.2021 | 06.02.2021 |
| 1    | 18811A0302  | ADARI UDAY                 | ~          | ~          | 4          | ~          | ~          | ~          |
| 2    | 18811A0303  | APPALLA SAI ROHAN RAKEND   | ~          | ×          | 1          | ~          | ~          | ~          |
| 3    | 18811A0304  | ASGAR KHAN                 | ~          | ~          | 4          |            | ~          | ~          |
| 4    | 18811A0306  | BODDAPU SAI TEJA           | ~          | /          | 7          |            | ~          | ~          |
| 5    | 18811A0307  | BUDDALA ANAND              | <b>✓</b>   | V          | 1          | <u> </u>   | ~          | ✓          |
| 6    | 18811A0308  | DHARMIREDDY VAMSI          | V          | ~          | Y          |            | ~          | ~          |
| 7    | 18811A0309  | GORLE NAGA SAI KRISHNA     | ~          | <b>~</b> . | ~          | ~          | ~          | ~          |
| 8    | 18811A0310  | GORRUPOTU ANIL             | ~          | ~          | V          | ~          | ~          | X          |
| 9    | 18811A0311  | GUMMUDU PRAVEEN            | ~          | V          | ~          | /          | V          | ~          |
| 10   | 18811A0313  | KARANAM JAGADEESH          | ~          | ~          | ~          | <b>✓</b>   | ~          | ~          |
| 11   | 18811A0314  | KONDRA TRINADH             | ~          | ~          | ~          | X          | <b>/</b>   | ~          |
| 12   | 18811A0315  | KOVVADA MANIKANTA          | ~          | ~          | ~          | V          |            | <b>✓</b>   |
| 13   | 18811A0316  | LALAM SAMPATH KUMAR        | <b>✓</b>   | ~          | ~          | V          |            |            |
| 14   | 18811A0318  | LOKAVARAPU NAIDU           | ~          | ~          | ~          | ~          | <b>/</b>   | <b>/</b>   |
| 15   | 18811A0319  | MARRI SIVA                 |            | V          | X          | ~          | ~          | V          |
| 16   | 18811A0321  | PALIPINI SURYA APPALA RAJU | ~          | ~          | ~          | · ·        | ~          |            |
| 17   | 18811A0322  | PANTAGOLUSULA NAVEEN       | ~          | -          | ~          | -          | ~          | ✓          |
| 18   | 18811A0323  | PASAGADUGULA VAMSI         | _          | ~          | \ \ \ \ \  | -          | ~          | ~          |
| 19   | 18811A0325  | PUCHHA RAVI KUMAR          | ~          | -          | ~          | _          | ~          | V          |
| 20   | 18811A0326  | RAPARTHI SAI               | ~          | ~          | _          | -          | ~          | ~          |
| 21   | 18811A0327  | RONGALA GNANESWAR          | X          | ~          | ~          | V          | V          | V          |
| 22   | 18811A0329  | RUTTALA KALYAN             | _          | ~          | V          | V          | V          | ~          |
| 23   | 18811A0330  | SINGAMPALLI CHANDRA SEKHAR |            | ~          | ~          |            | ×          | ~          |

| 131.14 |            |                                      |              |                            |          |          |    |   |
|--------|------------|--------------------------------------|--------------|----------------------------|----------|----------|----|---|
| 24     | 18811A0332 | SURISETTI SAI RAM                    | TV           | ~                          | /        | ~        | ~  | ~ |
| 25     | 18811A0333 | VENUKOTI PRASANTH                    | V            | ~                          | /        | ~        | ~  | ~ |
| 26     | 18811A0334 | VAVA DEVA DIVAGENTE                  | X_           | ~                          | ~        | ~        | ~  | ~ |
| 27     | 18811A0335 | YAKA DEVA BHASKAR                    | -            |                            | ~        | ~        | ~  |   |
| 28     | 18811A0336 | YENNAMSETTI MAHESH                   |              | V                          | /        | ~        | ~  | ~ |
| 29     | 18811A0337 | VELAGA VASU                          | ~            |                            | ~        | ~        | ~  | ~ |
| 30     |            | KOTARU TEJA APPALA DURGA PRASAD      | ~            | ~                          | V        | <b>✓</b> | ~  | ~ |
| 31     | 18811A0338 | KANDREGULA YASWANTH                  | ~            | <b>/</b>                   | <b>/</b> | ~        | ~  | ~ |
|        | 18811A0339 | GARAGA SRAVAN                        | \<br>\       | ✓                          | ~        | <b>✓</b> | ~  | ~ |
| 32     | 18811A0340 | KALAGA THALUPULESWARA RAO            | \ \ \ \ \    | ~                          | ~        | V        | ~  | × |
| 33     | 19815A0301 | AKKIREDDY JAGADEESH KUMAR            | - V          | · ·                        | ~        | ~        | ~  | ~ |
| 34     | 19815A0302 | ALLA RAVI SHANKAR                    |              | <b>~</b>                   | <b>/</b> | ~        | ~  |   |
| 35     | 19815A0303 | ALLAMPALLI SATISH                    | -            | ~                          | X        | ~        | ~  |   |
| 36     | 19815A0304 | BEERA ARUN KALYAN                    |              | V                          | ~        | ~        | ~  | ~ |
| 37     | 19815A0305 | BORA VARMA                           | + -          | /                          |          | ~        | ~  | ~ |
| 38     | 19815A0306 | BUDDHA SUNIL NAGA SATYANARAYANA      | + -          | ~                          | ~        | ~        | ~  | ~ |
| 39     | 19815A0307 | CHALAPAREDDI NAGADURGAPRASAD         | 1            | ~                          | 1        | ~        | ~  | ~ |
| 40     | 19815A0308 | CHINTAKAYALA ADI VAMSI               | - V          | ~                          | ~        | ~        | ~  | ~ |
| 41     | 19815A0309 | CHODIPALLI RAJESH                    |              | ~                          | ~        | ~        | ~  | ~ |
| 42     | 19815A0310 | DAMMU SAIKUMAR                       | -            | ~                          | ~        | ✓        | ~  | ~ |
| 43     | 19815A0311 | DUSANAPUDI VENKATA SAI MOHAN KRISHNA | - V          | ×                          |          | ~        | ~  |   |
| 44     | 19815A0312 | EMMILI MADHU                         | -            | CONTRACTOR CONTRACTOR      | ~        | 30       | ~  | ~ |
| 45     | 19815A0313 | GAMPA SIVAJI RAO                     |              | ~                          |          | ~        |    | - |
| 46     | 19815A0314 | GANDEPALLI NARESH                    |              | V                          | ~        | Si .     | ~  |   |
| 47     | 19815A0315 | GANDREDDI UMA MAHESWARA RAO          | \ \rac{1}{2} | <b>V</b>                   | <b>/</b> | ~        | /  | ~ |
| 48     | 19815A0316 | GOLISETTI NARENDRA KUMAR             |              | ~                          | ~        | ×        | V  | - |
| 49     | 19815A0317 | GOLLU GANGADHAR                      |              | ~                          | ~        | ~        |    | ~ |
| 50     | 19815A0318 | GORLI GANESH                         | ~            | ~                          | - 1      | ~        |    | ~ |
| 51     | 19815A0319 | GORLI SAI JAGADEESH                  | V            | ·                          | ~        | ~        | ~  | ~ |
| 52     | 19815A0320 | GUDDATI VAMSI KRISHNA                | V            | ~                          | ~        | ~        | V  | ~ |
| 53     | 19815A0321 | GULLA YAMINI VEERABHADRA PRASAD      | ~            | V                          | ~        | ~        | ~  | ~ |
| 54     | 19815A0322 | GURRAM TEJA                          | ~            | V                          | ~        | ~        | ~  | ~ |
| 55     | 19815A0323 | DOPPA RAJESH                         | ~            | ~                          | ~        | ~        | V  | / |
| 56     | 19815A0324 | KANDREGULA HEMAVENKATKUMAR           | V            | ~                          | V        | ~        | ×  | V |
|        |            |                                      |              | The Control of the Control |          | 1        | ~_ |   |

| , · |             | •   |          |          |          |             |            |   |
|-----|-------------|---|----------|----------|----------|-------------|------------|---|
|     |             |   |          |          |          |             |            |   |
| 57  | 19815A0325  |   | V        | ~        | ~        |             | ~          |   |
| 58  | 19815A0326  | KANDREGULA SAI SANDEEP                    |          |          | /        | ~           | ~          |   |
| 59  | 19815A0327  | KANNURU YERRINAIDU                        | ~        | ~        | ~        | ~           | ~          | ~ |
| 60  | 19815A0328  | KARRI SAI KUMAR                           | ×        | ~        | ~        | ~           | ~          |   |
| 61  | 19815A0329  | KARRI SATHISH                             | V        | ~        | ~        | ~           | ~          | ~ |
| 62  | 19815A0330  | KARRI SHIVA                               | V        |          | ~        | V           | ~          | ~ |
| 63  | 19815A0331  | KASPA SIVA KRISHNA                        | <b>✓</b> | V        | Y        | ~           | ~          | ~ |
| 64  | 19815A0332  | KATTOJU S V N GOPAL SATHWIK               | -        |          | ~        |             | ~          | ~ |
| 65  | 19815A0333  | KOLAGANI NARASIMHA NAIDU                  | ~        | <u> </u> | ~        | ~           | ~          | ~ |
| 66  | 19815A0334  | KOMMOJU DHILIP MANIDHAR SAI               | ~        | ~        | ~        | ×           | ~          | ~ |
| 67  | 19815A0335  | KONDA NAGA RAJU                           |          | ~        | V        | ~           | ~          | V |
| 68  | 19815A0336  | KOONISETTI VARA PRASAD                    | V        | ~        | ~        | <b>✓</b>    | ~          | ~ |
| 69  | 19815A0337  | KORUKONDA SRAVAN KUMAR                    | /        | ~        | ~        | ~           | V          | ~ |
| 70  | 19815A0338  | KORUPROLU SYAMALA                         | ~        | V        | ~        | ~           | ~          | ~ |
| 71  | 19815A0339  | KOSURI BHARATH VAMSI                      | ~        | ~        | ~        | <b>✓</b>    | ~          | ~ |
| 72  | 19815A0340  | KOTA GANESH                               | ~        | ~        | ~        | ~           | ~          | ~ |
| 73  | 19815A0341  | KUNCHA NARESH                             | ~        | ×        | ~        | ~           | ~          | ✓ |
| 74  | 19815A0342  | KUNDIRI VIVEKANANDA                       | ~        | ~        | <b>*</b> | <b>✓</b>    | ~          | ✓ |
| 75  | 19815A0343  | KUNDRAPU KRUSHI TEJA                      | ~        | ~        | ~        | ~           | ~          | ✓ |
| 76  | 19815A0344  | KURRA VENKATA DURGA APARNA                | 4        | ~        | 5        | <b>&gt;</b> | /          | ~ |
| 77  | 19815A0345  | KODURU SANTHOSH                           | ~        | ~        | >        | \ \ \       | ~          | ~ |
| 78  | 19815A0346  | MALASALA SAI VENKATA RAMCHARAN            | ~        | ~        | ~        | ~           | ~          | ~ |
| 79  | 19815A0347  | MALLAPUREDDY SIVA SANKAR                  | ~        | V        | ~        | ~           | ✓ <b>/</b> | ~ |
| 80  | 19815A0348  | MANEPALLI SATYA DEVA PRAVEEN CHAKRAVARTHI |          | ~        | V        | V           | V          | ~ |
| 81  | 19815A0349  | MINNAKURTHI SATISH                        | V        | V        | V        | ~           | ~          | X |
| 82  | 19815A0350  | MOHAMMAD KHAJA SUBHANI                    | ~        | ~        | V        | <b>V</b>    | <b>✓</b>   | ~ |
| 83  | 19815A0351  | MOLUGU GYANESHWAR                         | ~        | V        | V        | ~           | <b>~</b>   | ~ |
| 84  | 19815A0352  | MUVVALA ANIL                              | ~        | -        | ~        | ~           | ~          | ~ |
| 85  | 19815A0353  | MUVVALA KRISHNA RAO                       | ~        | -        | V        | ~           | ~          | ~ |
| 86  | 19815A0354  | NANDARAPU VASANTH KUMAR                   | ~        | ~        |          | ~           | X          | ✓ |
| 87  | 19815A0355  | NANDAVARAPU CHANDRA SEKHAR                | 101      | V        | ~        | · V         | V          | V |
| 88  |             | PAKKURTI TALUPULA RAO                     | ~        | ~        | V        | ~           | ~          | V |
| 89  |             | PALLA GANGADHAR                           | ~ ~      |          |          | -           | 1          | V |
| 03  | 17015110501 |   |          | 7.5 M    | X        |             |            |   |

| 20. |            |                                     |                |          | 1        |      |          |              |
|-----|------------|-------------------------------------|----------------|----------|----------|------|----------|--------------|
|     |            | ·                                   |                |          |          |      |          |              |
| 90  | 19815A0358 | In                                  |                | ~        |          |      |          |              |
| 91  | 19815A0359 | PANCHADARLA SAI PAVAN KUMAR         |                | ~        | ~        | ~    | ~        | $\checkmark$ |
| 92  | 19815A0359 | PAVAN KALYAN DODDI                  |                |          | -        |      | ~        | ~            |
| 93  |            | PEDAGADI RENUKA MOHAN PRASANTH      |                | ~        | ~        |      | ~        | ~            |
| 94  | 19815A0361 | PEDAPUDI ANAND                      | ×              |          | ~        | ~    | ~        | ~            |
| 95  | 19815A0362 | PEDIREDLA SAI                       | <del>`</del>   | ~        | ~        | ~    | ~        | ~            |
|     | 19815A0363 | PENTAKOTA ARUNKUMAR                 | _ <del>`</del> | ~        | 1        |      | ~        | ~            |
| 96  | 19815A0364 | PERICHARLA LAKSHMIPATHIRAJU         |                | ~        | 1        |      | ~        |              |
| 97  | 19815A0365 | PILAKA NAVEEN SAI KUMAR             |                | ~        |          | ~    | ~        |              |
| 98  | 19815A0366 | POLUPARTHI VARAHALABABU             |                | ~        | ~        | ~    |          |              |
| 99  | 19815A0367 | PRAGADA GIRI ANANDA KUMAR           |                | ~        | ×        | _    | ~        |              |
| 100 | 19815A0368 | RAJANA HARISH                       |                | ~        | -        | ~    |          | ~            |
| 101 | 19815A0369 | RAVVA RAKESH RAVINDRA               |                | ~        | 7        | ~    | V        |              |
| 102 | 19815A0370 | RELANGI TEJASWINI                   | ~              | ~        | ~        | ~    | ~        |              |
| 103 | 19815A0371 | SARVASIDDHI DURGAPRASAD             | ~              |          | 1986     | ~    | ~        |              |
| 104 | 19815A0372 | SEERAM SRI RAM                      |                |          |          | 1967 |          | X            |
| 105 | 19815A0373 | SHEKHARAMANTHRI NIKHILKUMAR         | <u> </u>       | ~        | ~        | ×    | <u> </u> | ~            |
| 106 | 19815A0374 | SOMIREDDI MANIKANTA                 | <b>✓</b>       | ~        |          |      |          | ~            |
| 107 | 19815A0375 | SURLA GANGADHAR                     | ~              | <b>✓</b> | VI       | V    | V        | ~            |
| 108 | 19815A0376 | SURLA SIVA                          | ~              |          | ~        | ~    | <u> </u> |              |
| 109 | 19815A0377 | THOTA ASHA HRUTHIK                  | ~              | <u> </u> | ~        | /    |          | -            |
| 110 | 19815A0378 | TIRUMALASETTY VEERA SIVA SAI GANESH | ~              | <b>V</b> | ~        |      | X        | -            |
| 111 | 19815A0379 | UGGINA LVS VARAHA PRASAD            | ~              | ~        | /        |      | ~        |              |
| 112 | 19815A0380 | VARADA SRINIVAS                     |                | <b>✓</b> | ~        | V    | /        | ~            |
| 113 | 19815A0381 | VASETTI SUNIL                       | <b>~</b>       | ~        | ~        |      | V        | V            |
| 114 | 19815A0382 | VICHARAPU SAI CHANDU                | <b>~</b>       | ✓        | ~        | V    | <u> </u> |              |
| 115 | 19815A0383 | YELLAPU PAVAN GANESH                | ~              | <b>V</b> | ~        | ×    | /        | ✓            |
| 116 | 19815A0384 | YELLETI RAJ KUMAR                   | ~              | V        | <b>✓</b> | V    | ~        |              |
| 117 | 19815A0385 | PALLELA KUSHAL KUMAR                | ~              | V        | ~        |      | V        |              |
| 118 | 19815A0386 | KANDELA SWARNA                      | ~              | V        | ~        | ~    |          | V            |
| 119 | 19815A0387 | POTNURI MAHESH                      | V              | V        | V        | ~    | V        | V            |
| 120 | 19815A0388 | PILLALA MALLUNAIDU                  | ~              | V        | 1        | V    | ~        |              |
| 121 | 19815A0389 | TERLI SRINU                         | ~              | X        | V        | V    |          | 1            |
| 122 | 19815A0390 | MATHA RAJU                          | ~              | ~        | V        | ~    |          |              |
| 122 |            |                                     |                |          |          | N.   |          |              |
|     |            |                                     |                |          |          |      |          |              |
|     |            |                                     | _              |          | _        |      |          |              |

|     |            |  |           | Principle Company |          | -        |     |         |
|-----|------------|--|-----------|-------------------|----------|----------|-----|---------|
| 123 | 19815A0391 | SUNKARA RUDRI                                |           | 1                 | ~        |          | ~   |         |
| 124 | 19815A0392 | PANCHADARLA RAJESH                           |           | ×                 | ~        | ~        | ~   | ~       |
| 125 | 19815A0393 | MADAKA SATISH                                |           |                   | 2        | V        | ~   |         |
| 126 | 19815A0394 |  |           |                   | ~        | ~        | ~   | ~       |
| 127 | 19815A0395 | GADAMALA SURENDRA<br>VELUGULA MANIKANTA      |           |                   | ~        |          | ~   | <i></i> |
| 128 | 19815A0396 |  |           |                   | ~        | ~        | ×   | ~       |
| 129 | 19815A0397 | UMMIDI DEVANDRA PRASAD<br>BADDETI ANJANEYULU |           | ~                 | <u> </u> | <b>V</b> | /   | ~       |
| 130 | 19815A0398 | BADDETI ANJANEYULU                           | 7.9680    |                   | ~        | /        | V   | ~       |
| 131 | 19815A0399 | BETHALA SAI KUMAR                            |           | ~                 | ~        | ×        | /   | V       |
| 132 | 19815A03A0 | CHINTALA RAMESH                              |           | ~                 | ~        | /        | V   | V       |
| 133 | 19815A03A0 | GAMPA BHASKAR BABU                           |           |                   | ~        | /        | ✓ · | V       |
| -   |            |  |           |                   | V        | /        | ~   |         |
| 134 | 19815A03A3 | GOUTHU SAIKIRAN                              | V(189) 32 | 7,500             | 111      |          |     |         |

COORDINATOR

HOD

Head of the Department
Department of Mechanical Engg
Avanthi Institute of Engg & Tech
Makavarapalem, Visakhapatnam-531113



## AVANTHI INSTITUTE OF ENGINEERING ANDTECHNOLOGY

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## **CERTIFICATE OF PARTICIPATION**

| This is to certify that Mr/Ms            | of                           |                          |
|--|------------------------------|--------------------------|
|  | has participated in the Cer  | tificate Course entitled |
| on "ACTIVE SUSPENSION SYSTEM             | WITH MATLAB AND SYST         | TEM DESIGN" during       |
| from 1st February 2021 to 6th February 2 | 2021 in Department of Mechan | nical Engineering.       |
|  |                              |                          |
|  |                              |                          |
|  |                              |                          |
|  |                              |                          |
| COORDINATOR                              | HOD                          | PRINCIPAL                |



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Tamaram, Makavarapalem, Narsipatnam (RD), Visakhapatnam-531113

## DEPARTMENT OF MECHANICAL ENGINEERING

Date: 08/02/2021

### BRIEF REPORT

Department of Mechanical Engineering, Avanthi Institute of Engineering and Technology had organized a certificate course on "ACTIVE SUSPENSION SYSTEM WITH MATLAB ANDSYSTEM DESIGN" from 01st FEB 2021 to 06<sup>th</sup> FEB 2021

We had Pramod Butty, Sr. Manager Projects, 4C Design Engineering Solutions as the speaker, he started off with the information and the need about MAT lab. And extensively explained the plus points of this technology. One of the major advantages is data analysis profession computational mathematics. Then after he went on to explain defined functions with multiple outputs variables string concepts integration and differentiation.

Mr. Siva Narayana, Design Engineer, 4C Design Engineering solutions as another speaker he gave in the limitations, it takes more time to execute than other compiled languages. They are generally used for deep learning and machine learning, signal processing, control systems. He concluded the course with feature of MAT lab utilised by mechanical engineer in industries.

COORDINATOR

HEAD OF THE DEPARTMENT

Head of the Department
Department of Mechanical Engg.
Avanthi institute of Engn. & Tech.,
Makavarapalem, Visakhapainam-531113.