

A Certificate Course ON ACTIVE SUSPENSION SYSTEMS WITH MATLAB AND SYSTEM DESIGN

From 01st February 2021 to 06th February 2021



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



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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



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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

HC

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

Schedule

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.

COORDIN

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

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	01.02.2022	~	4	~	~	~
2	18811A0303	APPALLA SAI ROHAN RAKEND	~	×	1	~	~	~
3	18811A0304	ASGAR KHAN	~	~	4	~	~	~
4	18811A0306	BODDAPU SAI TEJA	~	~	~	-	v	~
5	18811A0307	BUDDALA ANAND	~	V	1	~	~	~
6	18811A0308	DHARMIREDDY VAMSI	v	~	V	~	~	~
7	18811A0309	GORLE NAGA SAI KRISHNA	~	v .	~	~	~	-
8	18811A0310	GORRUPOTU ANIL	~	~	~	~	~	X
9	18811A0311	GUMMUDU PRAVEEN	~	V	~		V	~
10	18811A0313	KARANAM JAGADEESH	~	V	V	~	~	~
11	18811A0314	KONDRA TRINADH	~	V	V	X	~	~
12	18811A0315	KOVVADA MANIKANTA	~	r	~	V	~	~
13	18811A0316	LALAM SAMPATH KUMAR	~	~	~	~	~	~
14	18811A0318	LOKAVARAPU NAIDU	~	~	~	~	~	~
15	18811A0319	MARRI SIVA	~	~	X	1	~	~
16	18811A0321	PALIPINI SURYA APPALA RAJU	~	V	r	-	~	~
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19	18811A0325	PUCHHA RAVI KUMAR	~	-	~	1 -	~	· ·
20	18811A0326	RAPARTHI SAI	~	v	~	~	~	~
21	18811A0327	RONGALA GNANESWAR	×	~	~	V	v	~
22	18811A0329	RUTTALA KALYAN	-	~	V	V	~	~
23	18811A0330	SINGAMPALLI CHANDRA SEKHAR	~	~	~	-	- x	~

24	18811A0332	SURISETTI SAI RAM	×	~		~	~	~
25	18811A0333	VENUKOTI PRASANTH	~			~	~	~
26	18811A0334	YAKA DEVA BHASKAR	×	~	~		~	~
27	18811A0335	YENNAMSETTI MAHESH	-	~	~	~	~	~
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31	18811A0339	KANDREGULA YASWANTH	~	~	~		v	~
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53	19815A0321	GULLA YAMINI VEERABHADRA PRASAD	~	v	V	~	V	~
54	19815A0322	GURRAM TEJA	V	v	V	~	~	1
55	19815A0323	DOPPA RAJESH	~	v	v	~	V	1
56	19815A0324	KANDREGULA HEMAVENKATKUMAR	V	×	v	1 V	×	V

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95	19815A0363	PENTAKOTA ARUNKUMAR	~	V	1	~	~	~
96	19815A0364	PERICHARLA LAKSHMIPATHIRAJU	~	V	1	~	~	~
97	19815A0365	PILAKA NAVEEN SAI KUMAR	<i>✓</i>	~	1	V	~	~
98	19815A0366	POLUPARTHI VARAHALABABU	~	V	~	~	~	~
99	19815A0367	PRAGADA GIRI ANANDA KUMAR	~	~	×	~	~	~
100	19815A0368	RAJANA HARISH	~	~	V	~	~	~
101	19815A0369	RAVVA RAKESH RAVINDRA	~	~	V	V	~	~
102	19815A0370	RELANGI TEJASWINI	~	V	~	~	~	~
103	19815A0371	SARVASIDDHI DURGAPRASAD	~	\checkmark	~	~	~	~
104	19815A0372	SEERAM SRI RAM	~	~	~	~	\checkmark	X
105	19815A0373	SHEKHARAMANTHRI NIKHILKUMAR	~	~	~	~	~	r
106	19815A0374	SOMIREDDI MANIKANTA	~	~	~	~	v	r
107	19815A0375	SURLA GANGADHAR	r	~	~	V	~	~
108	19815A0376	SURLA SIVA	~	~	~	~	~	~
109	19815A0377	THOTA ASHA HRUTHIK	~	V	~		~	~
110	19815A0378	TIRUMALASETTY VEERA SIVA SAI GANESH	~	\checkmark	~	-	X	~
111	19815A0379	UGGINA LVS VARAHA PRASAD	~	~	~	1 1	~	~
112	19815A0380	VARADA SRINIVAS	~	~	~	V		~
113	19815A0381	VASETTI SUNIL	~	~	~	1 ~	V	V
114	19815A0382	VICHARAPU SAI CHANDU	~	~	~	V	~	1
115	19815A0383	YELLAPU PAVAN GANESH	~	V	~	X	~	
116	19815A0384	YELLETI RAJ KUMAR	~	v	~	V	1	~
117	19815A0385	PALLELA KUSHAL KUMAR	~	V	~	~	V	r
118	19815A0386	KANDELA SWARNA	~	~	~	~	~	~
119	19815A0387	POTNURI MAHESH	~	v	V	~	~	V
	19815A0388	PILLALA MALLUNAIDU	~	V	1	V	~	~
120	19815A0389	TERLI SRINU	~	x	~	V	~	~
121		MATHA RAJU	×		1 V	r	V	~
122	19815A0390	MATHARASO					_	

* ÷

				STONE				
123	19815A0391	SUNKARA RUDRI		~	~	1	~	
124	19815A0392	PANCHADARLA RAJESH		×	~	~	~	
125	19815A0393	MADAKA SATISH	~	~	~	V	~	
126	19815A0394	GADAMALA SURENDRA	~	~	~	~	~	v l
127	19815A0395	VELUGULA MANIKANTA	~	~	~	~	~	
128	19815A0396	UMMIDI DEVANDRA PRASAD	X		~	~	×	~
129	19815A0397	BADDETI ANJANEYULU	~	~	~	~	-	~
130	19815A0398	BADDETI ANJANEYULU	~	~	~		~	~
131	19815A0399	BETHALA SAI KUMAR	~	~		X		
132	19815A03A0	CHINTALA RAMESH	~	~			V.	\checkmark
133	19815A03A1	GAMPA BHASKAR BABU	~	-			V	~
134	19815A03A3	GOUTHU SAIKIRAN	~				V	~

COORDINATOR



Head of the Department Department of Mechanical Engr. Avanthi Institute of Engr. & Tech Makavarapalem, Visakhapatham-53111



AVANTHI INSTITUTE OF ENGINEERING ANDTECHNOLOGY

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

CERTIFICATE OF PARTICIPATION

This is to certify that Mr/Ms______of______

_____ has participated in the Certificate Course entitled

on "ACTIVE SUSPENSION SYSTEM WITH MATLAB AND SYSTEM DESIGN" during

from 1st February 2021 to 6th February 2021 in Department of Mechanical Engineering.

COORDINATOR

HOD

PRINCIPAL



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

DEPARTMENT OF MECHANICAL ENGINEERING

BRIEF REPORT

Date: 08/02/2021

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 06th 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 institution (From & Tech., Makavarapalem, Visakhapathum-531113.