AALIM MUHAMMED SALEGH COLLEGE OF ENGINEERING

DEPARTMENT OF MECHANICAL ENGINEERING

CIRCULAR

AMSCE/ME/VAC001/2019-2020

It is informed to all the students of Mechanical Engineering, it is proposed to conduct Value Added Courses on **"ADVANCED AUTOMOTIVE ASSEMBLY"** (30 hours duration) offered in our campus **ENGINES LAB** that the course starts from 12.02.2020. Detailed Schedule along with information for taking up this Industry based courses are shared before the commencement of the program. All the students of Second year Mechanical Engineering are requested to follow the guidelines given to derive the maximum benefits from the resource person.

Note:

*Minimum 80 % attendance mandatory to receive the certificates.

*Assessment Test will be conducted at the end of session.

RESOURCE PERSON:

Er.M.PRABHU

PRODUCT ENGINEER

I3 design Technologies-Chennai.

08/2/20

Head – Mechanical Engineering

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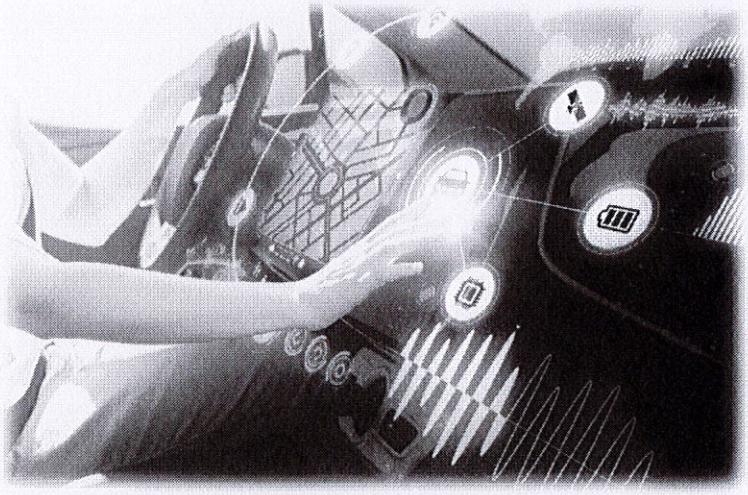
DEPARTMENT OF MECHANICAL ENGINEERING

Organise

Value Added Course

on

"Advanced Automotive Assembly"



Course Details:

Resource Person:
Mr. M. Prabhu, Product Engineer, i3 Design Technologies, Chennai.

Duration: 30Hrs

Course start: 12/02/2020 to 05/03/2020

Time: 1.00pm to 5:00pm.

Venue: Engines Laboratory, Mechanical/Civil Block.

Contact (resource person): +91-9003298576

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Course Objectives:

- **In-Depth Understanding of Advanced Automotive Assembly Techniques:** Provide participants with comprehensive knowledge of advanced automotive assembly methods and technologies. This includes learning about modern assembly line processes, automation, robotics integration, and the latest trends in automotive manufacturing. Participants will gain insights into how these advanced techniques contribute to efficiency, quality, and innovation in the automotive industry.
- **Technical Proficiency in Assembly Process Optimization:** Develop practical skills in optimizing automotive assembly processes. Participants will learn to analyze and improve workflow, implement lean manufacturing principles, and use advanced tools and software for process simulation and optimization. Hands-on training and real-world examples will equip participants with the ability to enhance productivity and reduce waste in assembly operations.
- **Application of Quality Control and Safety Standards:** Equip participants with the knowledge and skills to ensure high standards of quality and safety in automotive assembly. This includes understanding and applying industry regulations, quality control techniques, and safety protocols. Participants will learn to conduct inspections, perform root cause analysis, and implement corrective actions to maintain the integrity and safety of assembled vehicles.

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DEPARTMENT OF MECHANICAL ENGINEERING

REPORT FOR THE VALUE ADDED COURSE ON ADVANCED AUTOMOTIVE ASSEMBLY

Course Name: ADVANCED AUTOMOTIVE ASSEMBLY
Date: 12/02/2020 to 05/03/2020

Time: 1.00pm to 5.00pm

Course Hours:30

Attended Students:30

Students Certified:30

An **Advanced Automotive Assembly Course** typically covers a range of topics aimed at equipping students with the skills and knowledge required to efficiently assemble modern vehicles, taking into account the complexities of contemporary automotive manufacturing processes. The course focuses on both the technical aspects of assembly and the broader context of the automotive industry, including automation, quality control, and supply chain management. Here's a summary of what such a course may include:

1. Introduction to Automotive Assembly

- Overview of the automotive manufacturing industry
- Understanding the vehicle production life cycle, from design to delivery
- Key stages of assembly: body-in-white, paint shop, trim and final assembly
- Introduction to the various vehicle systems: powertrain, chassis, electrical, HVAC, and infotainment

2. Assembly Line Technologies

- **Manual Assembly vs. Automated Systems:** The role of robotics, automation, and human workers in the production process
- **Lean Manufacturing Principles:** Just-in-time (JIT), Kaizen, and other methods aimed at improving efficiency and reducing waste
- **Robotic Systems and Automation:** Application of robots in welding, painting, and component placement
- **Conveyor Systems:** How material and parts move through the assembly process

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3. Materials and Components Handling

- **Material Flow Management:** Efficient handling of parts and sub-assemblies to minimize downtime
- **Inventory Management:** Methods such as Kanban for tracking parts and reducing inventory holding costs
- **Component Standardization:** Benefits of using standardized components in mass production to reduce complexity and improve efficiency

4. Body Assembly

- **Structural Assemblies:** How vehicle frames, chassis, and body panels are assembled and welded together
- **Joining Technologies:** Techniques like spot welding, MIG/TIG welding, rivets, adhesive bonding, and laser welding
- **Panel Alignment and Fitting:** Ensuring proper fit and function of body panels

5. Power train Assembly

- **Engine and Transmission Assembly:** Steps in assembling the engine block, transmission, and integration into the vehicle
- **Mounting and Alignment:** Methods for ensuring that engine and powertrain components are properly aligned with the vehicle chassis
- **Integration of Exhaust, Fuel, and Electrical Systems:** Fitting of exhaust systems, fuel tanks, and integration of electrical wiring and sensors

6. Electrical and Electronic Systems

- **Wiring Harnesses:** Overview of wiring assembly and installation of electrical systems
- **Infotainment and Connectivity:** Installation of multimedia systems, touch screens, and connectivity features
- **ADAS (Advanced Driver Assistance Systems):** Integration of radar, cameras, and sensors into the vehicle

7. Quality Control and Testing

- **Inspection Procedures:** How to identify defects in components and assemblies
- **Tolerance and Fitment Checks:** Ensuring that parts meet specified dimensions and tolerances for proper function
- **Final Vehicle Testing:** On-road and static tests to ensure performance, safety, and compliance with regulatory standards

8. Safety and Ergonomics in Assembly

- **Safety Protocols:** Addressing potential hazards in the workplace and using appropriate protective gear
- **Ergonomic Design:** Designing assembly stations to minimize worker fatigue and injury
- **Lean Ergonomics:** Optimizing workstations for both productivity and worker health

9. Sustainability in Automotive Assembly

- **Green Manufacturing Practices:** Incorporating energy-efficient processes, recycling, and waste reduction
- **Electric Vehicle (EV) Assembly:** Understanding the differences in assembling electric powertrains versus traditional internal combustion engines
- **Battery Technology and Assembly:** Handling and assembling EV battery packs, including safety protocols

10. Emerging Trends in Automotive Assembly

- **Smart Factories:** Role of IoT, AI, and big data in automating and optimizing assembly lines
- **3D Printing:** Potential for additive manufacturing in producing parts and prototypes
- **Customization and Flexible Assembly:** Meeting consumer demand for personalized vehicle features and configurations

11. Post-Assembly Processes

- **Vehicle PDI (Pre-Delivery Inspection):** Final checks before the vehicle leaves the factory
- **Logistics and Distribution:** How vehicles are prepared for shipping to dealerships or customers
- **Post-Assembly Adjustments:** Handling recalls, repairs, and quality improvement feedback

Learning Outcomes

Upon completion of an **Advanced Automotive Assembly Course**, students are expected to:

- Understand the key stages and technologies involved in automotive assembly
- Be proficient in assembly line automation, including robotic systems and manufacturing principles
- Have hands-on experience with vehicle assembly processes
- Apply quality control and safety measures during assembly
- Understand the emerging trends and challenges facing the automotive industry, such as electrification and automation.

Conclusion

This summary represents the core topics that might be covered in an Advanced Automotive Assembly Course. It would prepare participants for working in a highly technical and evolving field with an emphasis on practical skills, technological innovation, and industry best practices.

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From

Date: 03/02/2020

The Head of the Department
Department of Mechanical Engineering,
Aalim Muhammed Salegh college of Engineering,
Muthapudupet, Avadi,I.A.F,
Chennai- 600 055.

To

The Principal,
Aalim Muhammed Salegh college of Engg.
Muthapudupet, Avadi I.A.F.,
Chennai - 600 055.

Sub: Requisition for the Approval to conduct Value Added Course in Mechanical department - Regarding.

Respected Sir,

We would like to conduct a Value Added Course on the title **"Advanced Automotive Assembly"** for second year mechanical students by the resource person Mr. M Prabhu, Product Engineer, i3 Design Technologies, Chennai. who will be leading the course. The scheduled date for the value added course is from 12/02/2020 to 05/03/2020. We kindly request you to provide approval for the same.

Thanking you

Yours Faithfully

03/02/2020

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Permitted

03/02/2020.

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Value Added Course Details

Course Name: Advanced Automotive Assembly **12-02-2020 to 05-03-2020**

Time:-1.00 pm to 5.00 pm

Week	Content	Total Hours
1	**1.Basic Engine Assembly** • Component identification • Correct assembly sequence • Torque specifications	8
2	**2.Engine Disassembly and Inspection** • Safe disassembly techniques • Component wear assessment • Cleaning and reconditioning	8
3	**3.Troubleshooting and Diagnostics** • Identify common engine problems • Use diagnostic tools • Replace faulty components	8
4	**4. Advanced Engine Assembly** • Understand complex engine • Precision alignment • Sealing and gasket installation	6
Total Hours		30

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Approved by All India Council for Technical Education - New Delhi, Affiliated to Anna University, Chennai
NAAC Accredited Institution
"Nizara Educational Campus", Muthapudupet, Avadi - IAF, Chennai - 600 055.
ANNA UNIVERSITY COUNSELLING CODE : 1101

Value Added Course Tentative Time Table And Schedule

Value Added Course Name: Advanced Automotive Assembly
Date of Commencement: From 12/02/2020
Timing1.00 pm to 5.00 pm
Tentative Date of Exam- 05/03/2020
Tentative Course Schedule - 12/02/2020to 05/03/2020 (As per following)
No. Of Days: 8
Course Hours: 30
Speaker: Er.M.Prabhu

1. Topic -1: Basic Engine Assembly – 12/02/2020 & 13/02/2020 – 8 hrs
2. Topic -2: Engine Disassembly and Inspection– 19/02/2020 & 20/02/2020– 8 Hours
3. Topic -3: Troubleshooting and Diagnostics - 26/02/2020 & 27/02/2020– 8 Hours
4. Topic -4: Advanced Engine Assembly – 04/03/2020 & 05/03/2020 – 6 Hours

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DEPARTMENT OF MECHANICAL ENGINEERING

COURSE ON "ADVANCED AUTOMOTIVE ENGINE ASSEMBLY & DISMANTLING"

STUDENTS ATTENDANCE LIST

COURSE INSTRUCTOR: MR. M. PRABHU

REG NO	NAME	12/2/20	13/2	19/2	20/2	26/2	27/2	4/3	5/3/20
110118114002	ABDUL BASITH.D								
110118114003	AFZAL KHAN . A								
110118114006	AHAMED MUNASIM. S								
110118114008	AKASH. R								
110118114010	ASRAR AHAMED IBRAHIM . M								
110118114011	FAHIM AHMED S								
110118114013	HAFEEZULLAH KHAN .R								AB
110118114018	MAHMOOTH NAFIL .U								
110118114021	MOHAMED AL HAFEES.M								
110118114022	MOHAMED AYAS.M								
110118114027	MOHAMED SALMAN FARZI		AB						
110118114032	MOHAMMED ABOOBACKER SIDDIQUE								
110118114038	MOHAMMED IRFAN M								
110118114039	MOHAMMED IRFAN M								
110118114040	MOHAMMED RASHEED.B								
110118114041	MOHAMMED TAWFEEQ NASAR								
110118114042	MUHAMMED MUSHARRAF ALI S M B								
110118114043	MUSTAFA M						AB		
110118114046	RAGHUL.D								
110118114047	SADHAM HUSSAIN MA.A								
110118114048	SEYED ABUBACKER MI								
110118114053	SHOIAB KHAN.A								
110118114054	SYED IMRAN.S								
110118114058	ZARAR AHAMED.A			AB					
110118114303	KADHER MOHIDEEN M								
110118114305	MOHAMED AL IMRAN								
110118114306	MOHAMED ASLAM M								
110118114307	MOHAMED IMRAN A W								
110118114309	SARAVANAN AJ								
110118114310	SHAHUL HAMEED J								

HEAD/MECH

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RAGHUL.D

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DATE: 09 MARCH 2020

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AMS College of Engineering
Avadi, Chennai - 55

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