

# SEM VI (MECH): CRASH COURSE BATCH



## MECHATRONICS

Sanjay Sir

Fees: 3500/-

DATE	DAY	TIME	TOPICS	AUTOMATION SYSTEM
11/04/19	THU	6:30 pm to 10 pm	<b>Pneumatic Systems</b> <ul style="list-style-type: none"><li>• Concept development</li><li>• Pneumatic Circuit design for Industrial Automation</li></ul>	
16/04/19	TUE	6:30 pm to 10 pm	<b>Electropneumatic Systems</b> <ul style="list-style-type: none"><li>• Concept development</li><li>• Electropneumatic Circuit design for Industrial Automation</li></ul>	
18/04/19	THU	6:30 pm to 10 pm	<b>Electrohydraulic Systems</b> <ul style="list-style-type: none"><li>• Concept development</li><li>• Electrohydraulic Circuit design for Industrial Automation</li></ul>	
19/04/19 (Good Friday)	FRI	9 am to 1 pm	<b>Programmable Logic Controller (PLC)</b> <ul style="list-style-type: none"><li>• Concept development of PLC Diagram</li><li>• Ladder Programming for Industrial Process Control</li></ul>	

### Note:

- As per the revised syllabus of Mechatronics, we are aware that **30%** of syllabus is based on **Control System**, which is already covered in MMC (Sem V). Hence the crash course is designed to cover only **Automation System** which constitutes **40%** of Syllabus.
- Module 1, 2 & 3 are **theory** based which constitutes **30%** of syllabus, for which students can refer "**Mechatronics**" by K. P. Ramachandran.
- Students should carry Pencil, Color gel pens and drawing sketch book.
- **Simulation of Industrial Automation Circuit Design will be taught through advanced software.**
- For Admission Contact: **9820 341 855.**
- **Combo Fees: Mechatronics + FEA = 8000/-**

**Record Marks**  
Anirudh Iyer 90/100  
(DBIT)

# FEA CRASH COURSE (May '19 Exam)

BY SANJAY SIR



LEC.	DATE	DURATION	TOPICS COVERED
1	29/04/19 (MON)	2 pm to 5:30 pm 3 hr 30 mins	<b>Introduction to FEA</b> <b>Non Weak Form</b> Numericals on - ✓ Galerkin Method ✓ Petrov-Galerkin Method ✓ Subdomain Method ✓ Least Square Method ✓ Collocation Method <b>Comparison with Exact Method</b>
2	30/04/19 (TUE)	2 pm to 5:30 pm 3 hr 30 mins	<b>Weak Form</b> <b>R-R Method Mapped Over Entire Domain</b> Two Parameter / One Parameter Solution
3	01/05/19 (WED)	2 pm to 5:30 pm 3 hr 30 mins	<b>Direct Application of EME</b> Analysis of <ol style="list-style-type: none"> <li>1. Stepped Bar</li> <li>2. Tapered Bar</li> <li>3. Spring Cart systems</li> <li>4. Stepped Bar subjected to Thermal Effect</li> </ol>
4	02/05/19 (THU)	2 pm to 5:30 pm 3 hr 30 mins	<b>Direct Application of EME</b> Analysis of <ol style="list-style-type: none"> <li>5. Stepped Bar subjected to Torsion</li> <li>6. Fluid Flow Network</li> <li>7. Heat Transfer by Conduction</li> <li>8. Heat Transfer by Conduction &amp; Convection</li> </ol>
5	03/05/19 (FRI)	2 pm to 5:30 pm 3 hr 30 mins	<b>Shape Functions for 1D Element</b> Derivations of Shape Function for Linear, Quadratic & Cubic elements by - ✓ Serendipity Method ✓ Lagrange's Polynomial Method
6	04/05/19 (SAT)	2 pm to 5:30 pm 3 hr 30 mins	<b>2D Finite Element Analysis</b> Derivations of Shape Functions for <ul style="list-style-type: none"> <li>✓ 3 Noded Triangular Element</li> <li>✓ 4 Noded Quadrilateral Element</li> <li>✓ 8 Noded Quadrilateral Element</li> <li>✓ 9 Noded Quadrilateral Element</li> </ul> Numerical on Stress Strain Analysis Concept of Jacobian Matrix
7	05/05/19 (SUN)	2 pm to 5:30 pm 3 hr 30 mins	<b>Vibration Analysis</b> Numerical on <ol style="list-style-type: none"> <li>1. Consistent Mass Matrix</li> <li>2. Lumped Mass Matrix</li> </ol> <b>Potential Energy Approach for Spring Elements – Numericals</b>

## Note:

- Crash Course has been designed to cover 80% of syllabus. By keeping 20% uncovered syllabus in option, students can attempt **full 80 Marks Paper**.
- For Admission Contact : **9820341855**
- Fees: **5500/-**
- **Combo Fees: Mechatronics + FEA = 8000/-**

