



SRI VENKATESWARA COLLEGE OF ENGINEERING
(AUTONOMOUS)
COURSE DELIVERY PLAN - THEORY

FT/GN/68/01/23.01.16

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Department of Marine Engineering	LP: Sub OE18003
B.E/B.Tech/M.E/M.Tech : MARINE ENGINEERING	Rev. No: 00
PG Specialisation : _____ Regulation:2018	Date:17.6.2020
Sub. Code / Sub. Name : OE18003 / ELEMENTS OF MECHANICAL COMPONENTS	
Unit : I	

Unit Syllabus: MECHANICAL COMPONENTS

Introduction to various mechanical components, selection of materials – Mechanical Characteristics of Materials -design criteria-Factor of safety-Theory of Failure. Couplings, shafts, spring.

Objective:

To understand the basics of machine components in mechanical engineering.

Session No *	Topics to be covered	Ref	Teaching Aids
1.	Introduction to various mechanical components	1,Ch-2,Pg13-23 1,Ch-3,Pg 32-35	Online-PPT
2.	Introduction to various mechanical components-Fasteners, Rivets	1,Ch-7, Pg 219-223	Online-PPT
3.	Introduction to various mechanical components-Keys and Bearings	1,Ch-9, Pg 346-350 1,Ch-9, Pg 564-568	Online-PPT
4.	selection of materials	1,Ch-2, Pg 25-51	Online-PPT
5.	Mechanical Characteristics of Materials	1,Ch-2, Pg 23-25	Online-PPT
6.	design criteria-Factor of safety -Theory of Failure	3,Ch-3, Pg 116-117,129-130	Online-PPT
7.	Couplings	3,Ch-3, Pg 117-124,131-136	Online-PPT
8.	shafts	1,Ch-3, Pg 58-59,60-63	Online-PPT
9.	spring	4,Ch-4, Pg 138-142	Online-PPT
Content beyond syllabus covered (if any):		3D Printing	

* Session duration: 50 minutes



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Sub. Code / Sub. Name : OE18003 / ELEMENTS OF MECHANICAL COMPONENTS

Unit : II

Unit Syllabus: TRANSMISSION COMPONENTS

Design of Flat belt drive - V-belt drive – chain drive-Gears-Types-terminology- Speed ratios
- number of teeth - Gear materials - Spur Gears –Gear train.

Objective:

To familiarize the various transmission components involved in the power transmission

Session No *	Topics to be covered	Ref	Teaching Aids
10.	Introduction to various transmission components	1,Ch-13, Pg 499	Online-PPT
11.	Flat belt drive	1,Ch-4, Pg 120-124 1,Ch-4, Pg 131-134 5,Ch-4, Pg 149-150	Online-PPT
12.	Simple problems on flat belt design	4,Ch-5, Pg 166-169	Online-PPT
13.	V-belt drive	1,Ch-14, Pg 522-524	Online-PPT
14.	chain drive	1,Ch-14, Pg 549-547	Online-PPT
15.	Gears-Types- Gear materials	1,Ch-14, Pg 646-647	Online-PPT
16.	Terminology -Speed ratios - number of teeth - Spur Gears	1,Ch-14, Pg 648-653	Online-PPT
17.	Gear train and its classification	1,Ch-14, Pg 648-653	Online-PPT
18.	Speed ratios of Gear train	1,Ch-14, Pg 648-653	Online-PPT

Content beyond syllabus covered (if any):

* Session duration: 50 mins



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Unit : III

Unit Syllabus: HYDRAULIC COMPONENTS

Sources of Hydraulic power: Pumping Theory – Pump Classification- pumps, Hydraulic Actuators: Cylinders – Types and construction, Hydraulic motors Control Components, Pressure control valves- Types, Construction and Operation- Applications.

Objective:

To impart knowledge on the principles operation of hydraulic system components.

Session No *	Topics to be covered	Ref	Teaching Aids
19.	Introduction to fluid power	2,Ch-1,Pg-1-09	Online-PPT
20.	Components of Fluid power system and its applications	2,Ch-1,Pg-10-14	Online-PPT
21.	Pumping Theory – Pump Classification	2,Ch-5,Pg142-146	Online-PPT
22.	Rotary pumps : Construction and Operation	2,Ch-5,Pg147-163	Online-PPT
23.	Hydraulic Actuators: Cylinders, Types and construction	2,Ch-6,Pg195-200	Online-PPT
24.	Hydraulic Actuators: hydraulic motors, Types and construction	2,Ch-6,Pg227-238	Online-PPT
25.	Control Components: Directional control valve, introduction	2,Ch-8,Pg262-265	Online-PPT
26.	Control Components: flow control valve introduction	2,Ch-8,Pg284-287	Online-PPT
27.	Pressure control valves- Types, Construction and Operation- Applications	2,Ch-8,Pg275-280	Online-PPT

Content beyond syllabus covered (if any):

* Session duration: 50 mins



Sub. Code / Sub. Name : OE18003 / ELEMENTS OF MECHANICAL COMPONENTS

Unit : IV

Unit Syllabus: PNEUMATIC COMPONENTS

Importance of Pneumatic system, Compressors- Filter, Regulator, Lubricator, Muffler, Air control Valves, Quick Exhaust valves, Pneumatic actuators, Servo systems.

Objective:

To impart knowledge on the principles operation of pneumatic system components.

Session No *	Topics to be covered	Ref	Teaching Aids
28.	Importance of Pneumatic system its applications	2,Ch-8,Pg275-280	Online-PPT
29.	Components of pneumatic power system	2,Ch-8,Pg275-280	Online-PPT
30.	Compressors	2,Ch-13,Pg460-465	Online-PPT
31.	Filter, Regulator	2,Ch-13,Pg469-470	Online-PPT
32.	Lubricator, Muffler	2,Ch-13,Pg471-470	Online-PPT
33.	Air control Valves	2,Ch-13,Pg482-485	Online-PPT
34.	Quick Exhaust valves	2,Ch-13,Pg488-490	Online-PPT
35.	Pneumatic actuators	2,Ch-13,Pg490-493	Online-PPT
36.	Servo systems	2,Ch-17,Pg580-585	Online-PPT

Content beyond syllabus covered (if any):

* Session duration: 50 mins



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Sub. Code / Sub. Name : OE18003 / ELEMENTS OF MECHANICAL COMPONENTS

Unit : V

Unit Syllabus: MACHINE TOOLS

Machine tool -lathe, milling machine, drilling machine Components – linear and reciprocation motion generation- components.

Objective:

To gain knowledge of the various machine tool components

Session No *	Topics to be covered	Ref	Teaching Aids
37.	Introduction to Machine tool	4,Ch-1,Pg1-6	Online-PPT
38.	Lathe machine components-1	4,Ch-1,Pg20-23	Online-PPT
39.	Lathe machine components-2	4,Ch-1,Pg20-23	Online-PPT
40.	Milling machine components-1	4,Ch-1,Pg36-37	Online-PPT
41.	Milling machine components-2	4,Ch-1,Pg38-39	Online-PPT
42.	Drilling machine components-1	4,Ch-1,Pg23-25	Online-PPT
43.	Drilling machine components-2	4,Ch-1,Pg25-27	Online-PPT
44.	linear motion generation- components	4,Ch-1,Pg44-47	Online-PPT
45.	reciprocation motion generation- components	4,Ch-1,Pg51-53	Online-PPT

Content beyond syllabus covered (if any):

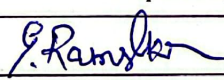
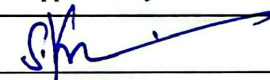
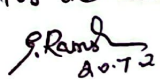


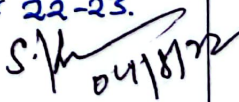
* Session duration: 50 mins



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REFERENCES:

1. Bhandari V, "Design of Machine Elements", 4th Edition, Tata McGraw-Hill Book Co, 2016.
2. Anthony Esposito, "Fluid Power with Applications", PHI / Pearson Education, 2005.
3. Bolton, "Mechatronics", Printice Hall, 2014
4. Sen G C and A. Bhattacharya.A, "Principles of Machine Tools", New Central book Agency, 2010.

	Prepared by	Approved by
Signature		
Name	G.RAMESHKANNAN	S.KRISHNAN
Designation	ASSISTANT PROFESSOR	PROFESSOR & HOD
Date	17.6.2020	17.6.2020
Remarks*:	The same lesson plan will be followed for the academic year 21-22.  20.7.21  20/7/21	
Remarks*:	The same lesson plan will be followed for the academic year 22-23.  25.7.21  04/8/22	

* If the same lesson plan is followed in the subsequent semester/year it should be mentioned and signed by the Faculty and the HOD