

**M.E Semester: 2 Mechanical Engineering (Thermal Engineering)**  
**Subject Name: FANS, BLOWERS & COMPRESSORS**

**A. Course Objective**

- To present a problem oriented in depth knowledge of Fans, Blowers & Compressors
- To address the underlying concepts and methods behind Fans, Blowers & Compressors

**B. Teaching / Examination Scheme**

SUBJECT		Teaching Scheme				Total Credit	Evaluation Scheme					Total Marks
		L	T	P	Total		THEORY		IE	CIA	PRACT.	
CODE	NAME	Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	
METH204	Fans, Blowers & Compressors	3	0	0	3	3	3	70	30	20	0	120

**C. Detailed Syllabus / Lesson Planning**

**1 PRINCIPLES OF TURBO MACHINERY**

Introduction to turbo machines - Transfer of energy to fluids - Performance characteristics - fan laws - Dimensionless parameters - Specific speed - selection of centrifugal, axial, and mixed flow machines.

**2 ANALYSIS OF CENTRIFUGAL BLOWERS AND FANS**

Centrifugal Blowers: Theoretical characteristic curves - Eulers characteristics and Eulers velocity triangles - losses and hydraulic efficiency - flow through impeller inlet volute – diffusers - leakage disc friction mechanical losses multi-vane impellers of impulse type - cross-flow fans.

**3 ANALYSIS OF COMPRESSOR**

Rotor design airfoil theory - vortex theory - cascade effects - degree of reaction - blade twist stage design - surge and stall - stator and casing - mixed flow impellers.

**4 TESTING AND CONTROL OF FANS**

Fan testing - noise control - materials and components blower regulation - speed control – throttling - control at discharge and inlet.

**5 APPLICATIONS OF BLOWERS**

Applications of blowers - induced and forced draft fans for air conditioning plants - cooling towers - ventilation systems - booster systems.

**D. Detailed Syllabus / Lesson Planning**

Sr.No.	Date/Week	Unit No.	% Weightage	Topic No:
1	1 <sup>st</sup> , 2 <sup>ed</sup> , 3 <sup>ed</sup>	Unit 1	20 %	1
2	4 <sup>th</sup> , 5 <sup>th</sup> , 6 <sup>th</sup>	Unit 2	20 %	2
3	7 <sup>th</sup> , 8 <sup>th</sup> , 9 <sup>th</sup>	Unit 3	20 %	3
4	10 <sup>th</sup> , 11 <sup>th</sup> , 12 <sup>th</sup>	Unit 4	20 %	4
5	13 <sup>th</sup> , 14 <sup>th</sup> , 15 <sup>th</sup>	Unit 5	20 %	5

**E. Instructional Method & Pedagogy**

1. At the start of course, the course delivery pattern , prerequisite of the subject will be discussed
2. Lecture may be conducted with the aid of multi-media projector, black board, OHP etc. & equal weightage should be given to all topics while teaching and conduction of all examinations.
3. Attendance is compulsory in lectures and laboratory, which may carries five marks in overall evaluation.

4. One/Two internal exams may be conducted and total/average/best of the same may be converted to equivalent of 30 marks as a part of internal theory evaluation.
5. Assignment based on course content will be given to the student for each unit/topic and will be evaluated at regular interval. It may carry an importance of ten marks in the overall internal evaluation.
6. Surprise tests/Quizzes/Seminar/Tutorial may be conducted and having share of five marks in the overall internal evaluation.

**F. Students Learning Outcomes**

- The student can identify different areas of Fans, Blowers & Compressors
- Can find the applications of all the areas in day to day life.

**G. Recommended Study Materials**

• **REFERENCES**

1. S.M. Yahya, " Fundamentals of Compressible Flow ", New Age International Pvt. Ltd,1996
2. Stepanoff A.J., Turbo blowers, John Wiley & Sons, 1970
3. Brunoeck, Fans, Pergamon Press, 1973
4. Austin H. Church, Centrifugal pumps and blowers, John Wiley and Sons, 1980
5. Dixon, Fluid Mechanics, Thermodynamics of turbo machinery Pergamon Press, 1984
6. Dixon, Worked examples in turbo machinery, Pergamon Press, 1984

• **WEB REFERENCES**

1. <http://www.petropager.com>
2. <http://www.tamil.org>
3. <http://www.erichson.com>
4. <http://www.apgate.com>

