AE-670
AEROSPACE STRUCTURAL ANALYSIS-I

L-T-P-D: 3-0-0-0 Units: 4
Course Instructor: Dr. PM Mohite
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Course Content:

- Free body diagram, Equilibrium equations,
- Examples from three dimensional truss problems,
- Bending moment and shear force,
- Introduction to the theory of elasticity, stress, strain, stress-strain relations, constitutive relations, basic equation of elasticity, Plane strain and plane stress problems in elasticity,
- Bending of beams, symmetrical and unsymmetrical sections, temperature effects, non-homogeneous materials, modulus weighted sectional properties, thin walled sections, deflection of beams,
- Torsion of circular and non-circular sections, thin-walled sections, single and multiple closed cell sections,
- Shear in thin walled sections, shear centre and multiple cell sections, combined bending and torsion
- Euler's buckling of columns

Reference:

1. Theory and Analysis of Flight Structures, RM Rivello.
2. Aircraft Structures for Engineering Students, THG Megson.
3. An Introduction to the Mechanics of Solids, SH Crandall, NC Dhal, TJ Lardner.
4. Energy and Finite Element Methods in Structural Mechanics, IH Shames, CL Dym. Hemisphere Publishing Corporation, New York.
5. Any other relevant book

Examination:

Mid semester Examination: 40%
Assignments + Quizzes (announced and surprise): 15%
End semester Examination: 45%

Extra classes will be held on Saturdays for announced Quizzes. There will be 3 to 4 Quizzes. Depending upon the performance of the whole class the best of the 2 or 3 Quizzes **may be** considered.

Note:

- Assignments should be submitted on the due date. Late submission and copying of assignments will be penalized.
- Attendance is compulsory and will be monitored regularly. Attendance will have no weightage towards final grading. However, it can be used to recommend de-registration from this course if attendance below 85% or you will get an F grade!

- Absolute 40% marks are must for a passing grade. Relative grading after that.

Class schedule: As per given time table. Extra lectures may be held, if required.