

Engine design project: Case study of production engines [100 marks]

BMA3623/ENGINE DESIGN

1. Each group is assigned with a type of production engine configurations.
2. Select a production engine with the configurations and write a case study report which contains the following:
 - a. Kinematics and dynamics analyses
 - b. Main components designs analyses
 - c. Engine balancing analyses
 - d. Discussions:
 - e. Factors affecting the design
 - f. Life of the components
 - g. The discrepancy between prediction in analyses and actual engine

3. Project timeline

- a. List of names and appoint leader **week 2.**
- b. Project topics and scope will be given in **week 3.**
- c. Engine specifications & information in **week 4.**
- d. Engine kinematics analyses in **week 5.**
- e. Engine dynamics analyses in **week 6.**
- f. Components design analyses **week 7.**
- g. Components design analyses **week 8.**
- h. Components design analyses **week 9.**
- i. Report submission **week 10.**
- j. Presentation **week 12-14**

4. Group Structure

- a. Assign group leader, whose responsible are:
- b. Assigned each member's task.
 1. Assistant
 2. Programmer
 3. Researcher
 4. Designer
- c. However, everybody must be involved in the analyses/calculations since it might come out in the exam.
- d. The leader will give contribution rating (in percentage for each member).And update the weekly progress to the lecturer. He/she can also assign somebody else.

Use the following references:

1. R.L. Norton, 2012. Design of Machinery: An Introduction to the Synthesis and Analysis of Mechanisms and Machines, McGraw-Hill Education; 5th edition.
2. Heywood, J. B. (1988). Internal Combustion Engine Fundamentals, McGraw-Hill International.
3. Willard W. Pulkrabek (2013), Engineering Fundamentals of the Internal Combustion Engine Pearson Education Limited; Pearson New International Edition edition

