MECH2100 Assignment #1 Task

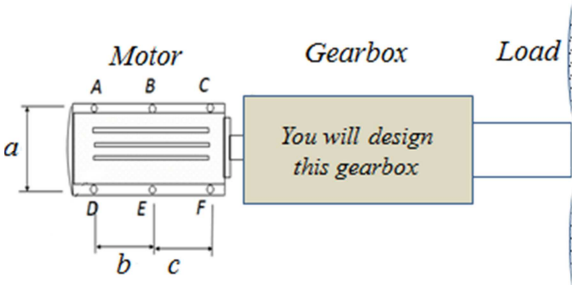

Figure 1 Assignment Task description

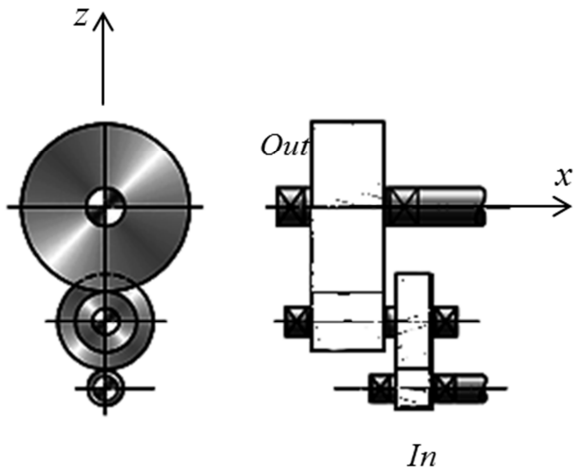

Figure 2 Two-stage compound gear train

The task is to design a gearbox as a component for an OEM (Original Equipment Manufacturer). Two gear stages and three shafts to be used. All three shafts will be on the same plane as shown in Figure 1. All shafts are ground and polished after machining. The following section lists the specifications.

Component System Specifications

Some of the specifications will vary. These are referred to as "customised variables" in the following table. Each student will have a different data set.

Parameter	**Specified Value**
The product	Customised variable (defined in your Assignment template)
Gear type	Spur gears cut to a pressure angle of 20°.
Type of gearbox	Two-stage compound gear train in an enclosed gearbox
Max ratio/stage	Maximum reduction ratio of 10.0 for each stage.
Input speed, rpm	n_{in} (customised variable)
Output speed, rpm	n_{out} (customised variable)
Motor power, kW	P (customised variable)
Bearings	Select single-row deep-groove ball bearing from Mott , Table 14-3

How to do this Assignment

1. Download your assignment template using the Blackboard link.
2. Design the gearbox and fill in the blank output cells in the template
3. Using the BB link, submit the Excel template with the numerical results
    a. Your submission will be automatically marked.
    b. Review your mark. Read the feedback report to see where you made mistakes.
    c. If you want to, you can try again after correcting your mistakes. If you do, your Assignment #1 mark will be the weighted average of the two marks.
    d. No third submission is allowed.

4. Using the drawing submission link in BB, submit a two-dimensional drawing for the second shaft in the gearbox
    a. Fully dimensioned
    b. Fully detailed (e.g. keyways, fillets, chamfers, etc.)
    c. The drawings will be marked by your tutors. You will be marked only once.

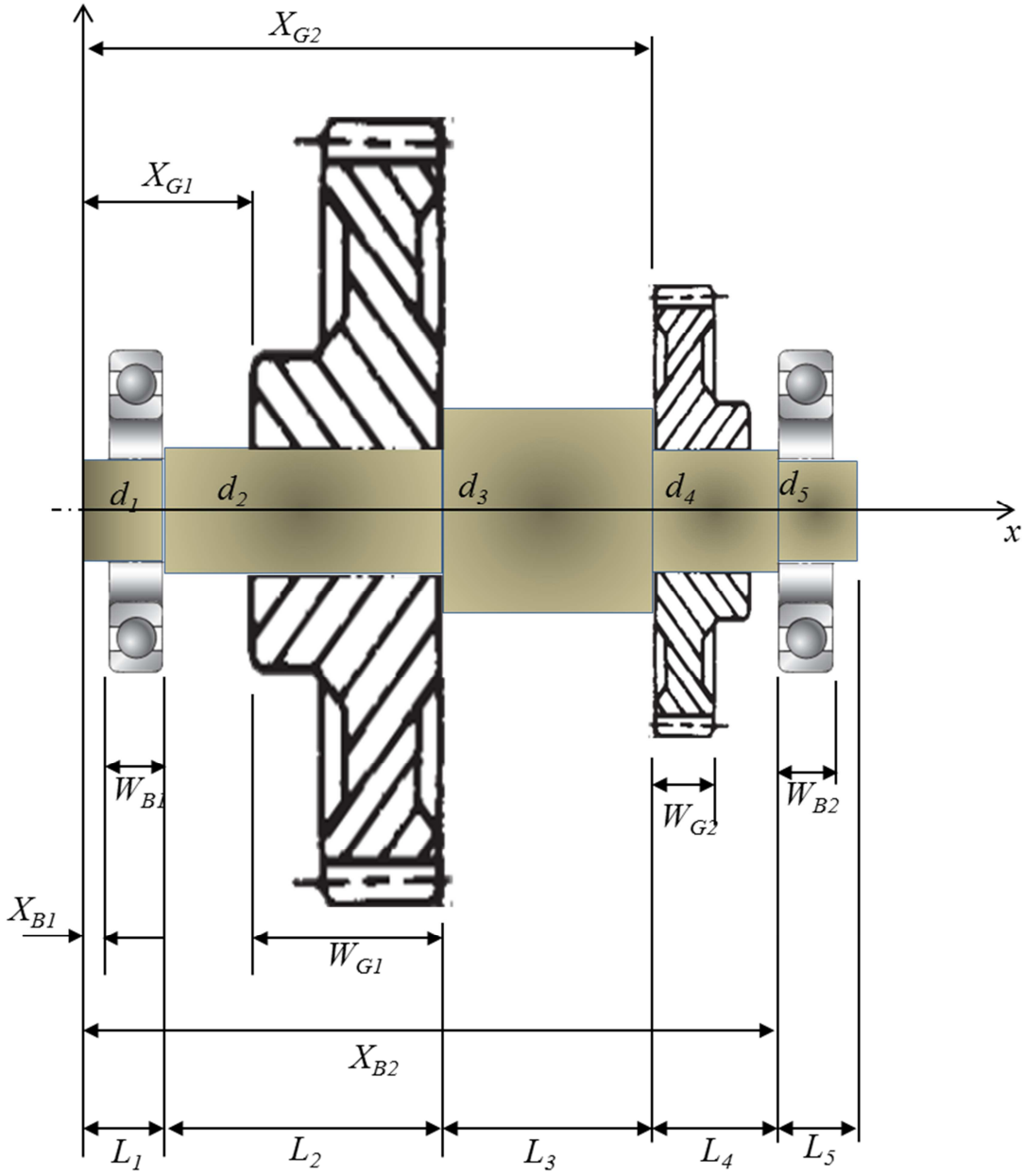

Figure 1. Key for the data used in the solution template