QL3: Design of a passive exoskeleton suit system on carrying heavy load for backpacker

BACKGROUND INFORMATION

The exoskeleton can be referred to as "wearable robots". They can be battery-powered and computer-operated, incorporating motors and hydraulics. Alternatively, they can be more simple, passive designs that use springs and dampeners. A passive light-weight exoskeleton system can be useful in helping to carry a heavy load for backpackers for providing supplies of short distance.

PROJECT DESCRIPTION - THE BRIEF

This project requires students to design an exoskeleton system for carrying heavy loads.
Hopefully, the system allows an ordinary person to carry a load of 30kg~40kg in the backpack to walk for a short distance. As an engineering design project, students also need to provide mechanical analyses of the system by hand calculation and FEA analyses wherever it is required.

SCOPE OF THE PROJECT

1. Evaluation of existing exoskeleton systems for assisting backpacker
2. Select the material and design the geometry of the parts and the whole exoskeleton system.
3. Conduct strength and deformation analysis.
4. Design the connections of different parts and final assemble.
5. Specify maintains and inspection requirements.

TIME ALLOCATION AND MARKING SCHEME

The marks for technical content will be distributed approximately equally among the requirements 1-4 above.

CLIENT'S REPRESENTATIVE/PROJECT SUPERVISOR:

Q Long

SUBMISSION REQUIREMENTS & MARKING SCHEME

A single report in separate volumes. Each group member will be individually responsible for the preparation and presentation of one volume. The first volume will contain a preface indicating the work and individual areas of responsibility of each group member.
You are also required to submit your log book, objective review sheets and an optional group portfolio.