

OVERVIEW OF THE TASK

Articulated Arm

Target audience:	2 nd cycle of secondary school (3 rd year)
Teamwork:	2
Class time required:	6 - 75 minute periods

Educational Aim

(Conceived for training: the context and resources are to be completed).

The purpose of the task is to require the student to use technical drawing to resolve the mandate as set out in the LES. It allows the student to develop an understanding of all the concepts of the technological world in regards to the language of lines.

The student receives drawings of a section of a prosthesis. With the help of a technical file, the student must conceive the part that can be inserted perfectly into this prosthesis. He tests his prototype.

Targeted disciplinary competencies:

Competencies 1 and 3 are mainly targeted in this task. The student is at the heart of a problem resolution situation where he must interpret and produce a technological message. He must present his solution starting from the supplied technical drawings (multi-view and isometric projections, sections) using the language of lines, the notions of scale and dimensioning as well as tolerances. From his drawing, he must conceive and test his prototype.

C-1 Seeks answers or solutions to scientific or technological problems

C-3 Communicates in the languages used in science and technology

Targeted cross-curricular competencies:

C-1 Uses information

C-3 Solves problems

Broad Area of Learning

Career planning and entrepreneurship
Axis of development: knowledge of the working world, of social roles, of trades and professions.

The student plays the role of an engineer in the field of research and development in orthopedics. He will come to understand the interrelation between the different players in the health field (physicians, orthopedists, engineers...). In addition, he develops a comprehension of the choices developers face as to the choice of materials (biotechnologies).

Involved worlds and compulsory concept(s)**Living world :**

Musculoskeletal system (bones, articulations, muscles)

Function of bones, articulations and muscles

Types of muscles

Types of articular movements (wrist and hand)

Technological World:

Language of lines

Basic lines

Scales

Orthogonal projections

	Sections Dimensioning and tolerances Standards and representations (diagrams and symbols) <i>Mechanical engineering</i> Types of mechanical links Types of functions
Involved worlds and compulsory concept(s)	Montreal Rehabilitation Institute Lucie Bruneau Rehabilitation Center War Amputees
Possible Evaluation:	
Global Context: A team of engineers receives a technical file, including diagrams and a drawing, for a prosthetic forearm and hand from BESTARM, an engineering firm. The mandate of the team of engineers is to conceive drawings for the part that simulates the movements of the fingers and to produce its prototype from these drawings.	

Working document