

SECTION ONE

Pre-reading task

Work in pairs to answer the following questions before you read the text.

- ❖ How would you define a mechanical engineer?
- ❖ What does mechanical engineering deal with?

Reading 1

Read the text below to check your answers to the questions of the pre-reading task.

An introduction to the field of mechanical engineering

Professionals dealing with mechanical engineering design, test, build, and operate machinery of all types. They also work on a variety of manufactured goods and certain kinds of structures. The field of mechanical engineering is divided into (1) machinery, mechanisms, materials, *hydraulics*, and *pneumatics*; and (2) heat as applied to *engines*, *work* and *energy*, *heating*, *ventilating*, and *air conditioning*. The mechanical



engineer, therefore, must be trained in *mechanics*, *hydraulics*, and *thermodynamics* and must be fully grounded in such subjects as *metallurgy* and *machine design*. Some mechanical engineers specialize in particular types of machines such as *pumps* or *steam turbines*.

A mechanical engineer designs not only the machines that make products but the products themselves, and must design for both economy and efficiency. A

typical example of the complexity of modern mechanical engineering is the design of an automobile, which entails not only the design of the engine that drives the car but also all its attendant accessories such as the *steering* and *braking*

systems, the *lighting system*, the *gearing* by which the engine's power is delivered to the wheels, the controls, and the body, including such details as the door latches and the type of seat upholstery.

Source: Adapted from http://en.wikipedia.org/wiki/Mechanical_engineering

➔ Reading task – Comprehension questions

Read the text again and answer the following questions.

1. What main categories does the field of mechanical engineering cover?
2. What does the knowledge of a mechanical engineer include?
3. What is the purpose of a mechanical engineer's work?
4. Why is the automobile a typical example of the complexity of modern mechanical engineering?

Word study 1

Match the terms on the left with their definitions on the right using the information provided in Reading 1.

1. gearing	<i>a. any of various devices in which mating mechanical parts engage to fasten but usually not to lock something</i>
2. pump	<i>b. materials (as fabric, padding, and springs) used to make a soft covering especially for a seat</i>
3. latch	<i>c. the parts by which motion is transmitted from one portion of machinery to another</i>
4. upholstery	<i>d. a device that raises, transfers, or compresses fluids or that attenuates gases especially by suction or pressure or both</i>

1.	2.	3.	4.
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Use of English

Fill in the gaps in the following text using the words from the list below.
One word is used twice.

ultra-miniature	ability	host
environmental	development (2)	continuing
quality	growing	computational
resource-efficient	high-tech	attracting

An Evolving Profession



The explosive 1. and expansion in computer technology has literally changed the face of mechanical engineering. The drawing board has given way to computer-aided design (CAD), and sophisticated 2. software tools have enabled mechanical engineers to develop efficient solutions to complex technical problems. For example, the emerging 3. field of nanotechnology is 4. mechanical engineers to design 5. machines and tiny implantable medical devices that navigate the human body searching for disease and damaged tissue. Also, the 6. concern for the planet and the 7. of life for future generations have spurred 8. efforts by mechanical engineers to design 9. and recyclable products and develop equipment and processes to clean-up existing 10. problems and prevent their reoccurrence. These technologies and a 11. of others will have an impact on lives in the 21st century, and their 12. and refinement require the skills, intuition and creative 13. of mechanical engineers.



Writing – What is a mechanical engineer?

You are applying for a postgraduate program in the university. In the application form, you are asked to write a paragraph to describe what you believe the profession of a mechanical engineer entails.

Clues: Think about the functions and the scope of mechanical engineering, the knowledge and abilities a mechanical engineer must have, the development of technology, etc.



Listening – Toward a career in mechanical engineering

You will hear a short presentation of a mechanical engineer talking to students about the skills required in his profession. Listen carefully and circle the answer choices that best complete the following sentences.

1. A solid foundation in mathematics, science and the is critical.
a. **speech skills** b. **liberal arts** c. **language arts**
2. Mechanical engineering uses computer science, methods, electronics and advanced technologies.
a. **arithmetic** b. **numerical** c. **numerous**
3. Mechanical engineering is a broad engineering discipline which extends across many specialties.
a. **inter-reliant** b. **interdependent** c. **interplaying**
4. The mechanical engineer must have a deep understanding of physical principles.
a. **underlying** b. **underplaying** c. **underlining**
5. Some clubs sponsor day trips and similar to companies, laboratories and industrial facilities.
a. **expeditions** b. **discursions** c. **excursions**

SECTION TWO

Pre-reading task

In which industrial sectors are mechanical engineers employed?

Reading 1

Read the text below to check your answer to the question of the pre-reading task.

Some sectors where mechanical engineers work

Employment prospects for mechanical engineers are strong, particularly where local economies are growing. In the United States, for example, the profession is growing by 16 percent, or 35,000 jobs annually, which is a rate of growth expected to continue the years to come. *Industrial sectors* in which mechanical engineers have traditionally made substantial contributions include aerospace, *automotive*, chemical, computer and electronics, construction, consumer products, energy, *engineering consulting* and



government. In addition, the medical and pharmaceutical industries present exciting opportunities for mechanical engineers to join forces with the life sciences. Even the entertainment industry relies heavily on mechanical engineers for special effects and *amusement park equipment*. The vast majority of this work is done in thousands of companies ranging from large multinationals to small, local firms. Job functions and responsibilities range from product and production design engineering and systems design to power

plant operations, quality control and project management. With experience and further education, some mechanical engineers move into legal or management positions that build upon their scientific and technical skills and expertise. Others choose the path of

academic research and teaching. The work of the mechanical engineer is diverse and worldwide, and the careers of mechanical engineers are marked by an important common factor: *continuous learning*.

Source: Adapted from http://www.prengh.org/individual_members.htm



Fig. 1: A manufacturing plant

➡ Reading task – Comprehension questions

Read the text again and answer the following questions.

1. Why do mechanical engineers have a good prospect for career development?
2. What kinds of jobs is a mechanical engineer expected to perform?
3. What do mechanical engineers need to do for professional purposes?