ENGLISH FOR SPECIFIC PURPOSES

ENGLISH FOR MECHANICAL ENGINEERING

Editor:
Hartono

Penerbit Universitas Muhammadiyah Malang
ENGLISH FOR
MECHANICAL ENGINEERING

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PREFACE

*English for Mechanical Engineering* is written to fulfill students’ needs to learn English as a preparatory for job communication. This book is designed to provide an opportunity to develop students’ English skills more communicatively and meaningfully.

It consists of twenty eight units. Each unit presents reading, writing, and speaking section. Reading section consists of pre-reading, reading comprehension and vocabulary exercises related to the topic of the text. In writing section, some structures and sentence patterns are completed with guided writing exercises. Meanwhile, in speaking section, students are provided with models and examples followed by practical activities which are presented in various ways. In addition, students are also equipped with listening comprehension skill which is presented in a separate textbook. The materials have been arranged and graded in accordance with their language levels.

Above of all, to improve the quality of this textbook, criticism and suggestions for better editions are highly appreciated.
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Objectives

After completing this unit, students are expected to master three language skills:

1. **Reading**
   - Students are able to find the main idea of the text.
   - Students are able to find explicit information from the text.
   - Students are able to find implicit information from the text.
   - Students are able to find word definition related to the text.
   - Students are able to relate information to their life.

2. **Writing**
   - Students are able to write daily activities.

3. **Speaking**
   - Students are able to tell daily activities.
Before reading the text, have a look at the following cut picture and do some activities based on these instructions.
1. Work in groups of three or four students.
2. Combine those cut pictures into a complete picture.
3. Discuss with your groups what the picture describes.
4. One of the members in your group should present the result of your discussion in front of the class.

Let's read.

**WHAT IS A MECHANICAL ENGINEERING?**

Mechanical engineering plays a dominant role in *enhancing* safety, economic vitality, enjoyment and overall quality of life throughout the world. Mechanical engineers are concerned with the principles of force,
energy and motion. The men and women who work as mechanical engineers are professionals with expert knowledge of the design and manufacture of mechanical systems and thermal devices and processes.

Some examples of products and processes developed by mechanical engineers include engines and control systems for automobiles and aircraft, electric power generation plants, lifesaving medical devices and consumer products ranging from air conditioners to personal computers and athletic equipment. They also design the machines that mass-produce these products. Virtually, every aspect of life is touched by mechanical engineering. If something moves or uses energy, a mechanical engineer was probably involved in its design or production.

Recently, the explosive development 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 computational software tools have enabled mechanical engineers to develop efficient solutions to complex technical problems. For example, the emerging high-tech field of nanotechnology is attracting mechanical engineers to design ultra-miniature machines and tiny implantable medical devices that navigate the human body searching for disease and damaged tissue. Also, the growing concern for the planet and the quality of life for future generations have spurred continuing efforts by mechanical engineers to design resource-efficient and recyclable equipment. Moreover, they also develop equipment and processes to clean-up existing environmental problems and prevent their reoccurrence. These technologies and a host of others will have an impact on lives in the 21st century, and their development and refinement require the skills, intuition and creative ability of mechanical engineers.

At the same time, mechanical engineers are expected to understand and convey the real-world consequences of technology development alternatives to decision-makers and the public.

Moreover, 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, mechanical engineers also play an important role. 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 multi-nationals 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 *scholarly* 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.

Adapted from: Anonymous. 2015. *What is Mechanical Engineer.*

**Vocabulary list in context:**

- **amusement park** (n): large area with many special machines that you can ride on, such as roller coasters and merry-go-rounds
- **enhancing** (v): improving
- **implantable** (adj): pertaining to a device
- **motion** (n): process of moving or the way that someone or something moves
- **refinement** (n): repair
- **scholarly** (adj): well designed and complicated
- **spurred** (v): encouraged
- **substantial** (adj): important
- **thermal** (adj): heated
- **virtually** (adv): practically
**Task 1**

Arrange the jumbled letters into a meaningful word. Use the provided clue, and find it on the above text. Number one has been done for you.

<table>
<thead>
<tr>
<th>No.</th>
<th>Scrambled letter</th>
<th>Words</th>
<th>Clues</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>e - y - r - g - e - n</td>
<td>ENERGY</td>
<td>The capacity of a physical system to do work.</td>
</tr>
<tr>
<td>2.</td>
<td>c - r - m - a - u - f - n - t - a - u - e</td>
<td>.....................</td>
<td>The process to produce goods in a large numbers, usually in a factory by using machines</td>
</tr>
<tr>
<td>3.</td>
<td>s - g - d - n - e - i</td>
<td>.....................</td>
<td>To make or draw plans for something, for example clothes, machines or buildings</td>
</tr>
<tr>
<td>4.</td>
<td>e - i - q - e - p - m - t - n - u</td>
<td>.....................</td>
<td>The set of necessary tools, clothing, etc. for a particular purpose</td>
</tr>
<tr>
<td>5.</td>
<td>r - c - c - a - l - e - l - b - e - y</td>
<td>.....................</td>
<td>able to be recycled</td>
</tr>
<tr>
<td>6.</td>
<td>e - o - a - p - s - e - a - r - c</td>
<td>.....................</td>
<td>The human effort in science, engineering and business to fly in the atmosphere of Earth (aeronautics) and surrounding space (astronautics)</td>
</tr>
<tr>
<td>7.</td>
<td>a - u - t - m - e - i - b - o - l - u</td>
<td>.....................</td>
<td>A motorized vehicle consisting of four wheels and powered by an internal engine</td>
</tr>
<tr>
<td>8.</td>
<td>o - c - s - n - u - o - i - c - r - t - n - t</td>
<td>.....................</td>
<td>The work of building or making something, especially buildings, bridges, etc.</td>
</tr>
<tr>
<td>9.</td>
<td>s - t - e - r - f - w - o - a</td>
<td>.....................</td>
<td>A series of instructions that directs computer to perform specific tasks or operations</td>
</tr>
<tr>
<td>10.</td>
<td>e - l - t - c - o - e - i - s - c - r - n</td>
<td>.....................</td>
<td>It deals with electrical circuits that involve active electrical components such as vacuum tubes, transistors, diodes and integrated circuits, and associated passive electrical components and interconnection technologies.</td>
</tr>
</tbody>
</table>
Task 2
Tick (√) T (True) if the statement reflects the information in the above text. F (False) if it contradicts the information, or NG (Not Given) if it is not found in the above text. If it is false, write the correct statement. Number one has been done for you.

<table>
<thead>
<tr>
<th>No.</th>
<th>Statements</th>
<th>T</th>
<th>F</th>
<th>Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mechanical engineers are not capable of the design and manufacture of mechanical systems and thermal devices and processes.</td>
<td>√</td>
<td></td>
<td>Mechanical engineers are professional in the design and manufacture of mechanical systems and thermal devices and processes.</td>
</tr>
<tr>
<td>2</td>
<td>Mechanical engineers have an unimportant role in entertainment industry.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>None of the athletic equipment is touched by mechanical engineers.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Working on management position, mechanical engineers improve their scientific and technical skills.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Mechanical engineers have no responsibility to create sustainable products.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>For developing automobile products, mechanical engineers only work on engines.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Some mechanical engineers prefer to contribute their knowledge in education field such as teaching.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Intuition is not merely necessary for a mechanical engineer.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Mechanical engineers collaborate closely with medical scientists in life sciences.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Task 3
Complete the following mind map with the appropriate information provided in the above text.
Let’s write.

WRITING DAILY ROUTINE

Daily routine refers to activities that people usually do every day or continuously. In connection with daily routine, basically there are several regular activities for a day, a week, a month, a year in home, campus, office, and so on.

Study the following example of daily routine.

I wake up at 6 o’clock. I get up at 6.50 a.m. I make a cup of tea and iron my clothes. I have a shower and get dressed. I usually wear jeans, a blouse, a jumper or cardigan and boots in the winter, or a shirt and blouse in the summer. I pack my bag with all my working stuffs. I then put on my coat and leave the house. I always walk to the bus stop. I catch the bus at 8.15 a.m., and then I pay my fare and sit down. It takes about 45 minutes to get to my destination three miles away. I get off the bus and walk to the Mitsubishi Central Company.

Day to day, I love my job. As a mechanical engineering technician, I design my work at my desk, build prototypes, and test the prototype to failure. Once a week, I work with vendors to manufacture my prototypes. Sometimes, I travel to the world to manufacturing facilities to ensure my design is implemented properly. In the afternoon, I take a break for lunch at 12.30 p.m. I eat a baguette or sandwich at the local cafe. I sometimes do some shopping before I come back to my office. Then, I make phone calls, mark my employees’ work, do the laundry. Then, I go on Facebook, or watch TV, and about 11 p.m. I go to bed.
We use the Simple Present Tense to write about habits and routines. It is important to write daily activities, especially to have a well-ordered life. However, there are some other rules necessary to use in writing the daily activities.

**Present Simple**

Form:

\[
\begin{align*}
S + \text{verb} + \text{object} & \ldots \\
\text{I/we/they/you} + \text{likes} + \text{tea}. \\
\text{He/she/it} + \text{likes} + \text{tea}. \\
S + \text{don’t/doesn’t} + \text{verb} + \text{object} & \ldots \\
\text{I} + \text{don’t} + \text{like} + \text{tea}. \\
\text{She} + \text{doesn’t} + \text{like} + \text{tea}. \\
\text{Do/Does} + S + \text{verb} + \text{object} \? \\
\text{Do} + \text{you/we/they/I} + \text{like} + \text{tea} \? \\
\text{Does} + \text{he/she/it} + \text{like} + \text{tea} \? \\
\end{align*}
\]

http://thumbs.dreamstime.com/

**Task 4**

Label what each the persons in the following pictures is doing. Number one has been done for you.
Task 5
Then, complete the following chart using the verb in the Task 4.

<table>
<thead>
<tr>
<th>Jeremy’s Daily Routine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi, my name is Jeremy. I’m 28 years old and I’m a manager of machine maintenance department at Toyota Incorporation. Every day, I <strong>get up</strong> at 5:00 o’clock then I __________. At 6:00 a.m. I __________ to go to my office. After that, at 7:00 a.m. I start to __________. When I have a project with my clients, I __________ my work in front of them. I often __________ with my colleagues during coffee break. At home, before I go to bad, I __________ and __________ around 08:00 p.m.</td>
</tr>
</tbody>
</table>

Task 6
Look at the following example.

**What Do their Daily Routine Look Like?**

1. Every morning, I usually **get up at 6 o’clock**.
   Then, I take a bath. After that, I accompany my wife to buy some vegetables at the traditional market. While my wife is preparing some foods for our breakfast, I check my work on my desk. Sometimes, I continue my work such as drawing the machine design. At 7 o’clock, I eat breakfast. Then, I go to my office by train. I work starting from 8 o’clock.
Describe, in a paragraph, the daily routine following professions. Number one has been done for you.

Every day, Steven always

In the morning, the first activity I do is

As my routine, I usually

As a biomedical engineer, Angelia
Task 7
Complete the following chart of your daily routine.

![Timetable](http://thumbs.dreamstime.com/)

Then, write your daily routine in a paragraph.

My daily routine as a student of Mechanical Engineering Department starts at 5 o’clock in the morning. Every day, I

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Let’s speak.

**TELLING DAILY ROUTINE**

After studying how to write your daily routine in the previous section, you are going to learn how to talk about your daily routine. In speaking about daily routine, you need also to pay attention to the use of the simple present tense. Here are some common expressions to express your daily routine:
I usually ..........  
I ........................ everyday.  
Every weekend, my family and I ..........  
I ........................ twice a day.  
My friends and I ........................ every morning.  
I often ..........  

Have a look at the following example of telling daily routine.

Have a look at the following example of telling daily routine.

I usually get up at 7 o’clock and have a big breakfast. I walk to work, which takes me about half an hour. I start to work at 8.45. I usually have lunch at cafeteria. I finish my work at 5 o’clock. I’m always tired when I get home. I usually cook a meal in the evening. I don’t usually go out. I go to bed at about 11 o’clock. I always sleep well.

Hi, Dahlia. It seems that you have a hectic day. What do you usually do in a day?

I see. I have the same routine as you.

http://cache4.asset-cache.net/
Task 8
Tell your daily routine based on your answer of the following questions. Then, tell the class.
1. What time do you get up?
2. Do you usually have a shower in the morning?
3. How do you go to work or college?
4. What time do you start your work or college?
5. Where do you usually have lunch?
6. What do you have for lunch?
7. What time do you have dinner?
8. Who do you have dinner with?
9. What do you do in the evening?
10. What time do you go to bed?

Task 9
Now, work in pairs. Draw a line through the picture of Sarah’s Daily Routine. Present it in front of the class.
Example:

We are going to tell about Sarah’s daily routine. She always wakes up at 6:25 every morning during the work. Then, __________________________
________________________________
________________________________

Yesterday, I interviewed with a foreigner. His/her name is........ I will tell you about his/her daily routine.

Task 10
Do the following instructions.

1. Find one of the foreigners in your city.
2. Interview him/her about his/her daily routine in a week.
3. Report it in front of the class.

If you follow the classical pattern, you are understanding the routine, the tradition, the shadow – you are not understanding yourself.
Objectives

After completing this unit, students are expected to master three language skills:

1. Reading
   ● Students are able to find the main idea of the text.
   ● Students are able to find the explicit information from the text.
   ● Students are able to find the implicit information from the text.
   ● Students are able to find word definition related to the text.
   ● Students are able to relate information to their life.

2. Writing
   ● Students are able to write about tips.

3. Speaking
   ● Students are able to practice about giving tips.
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