



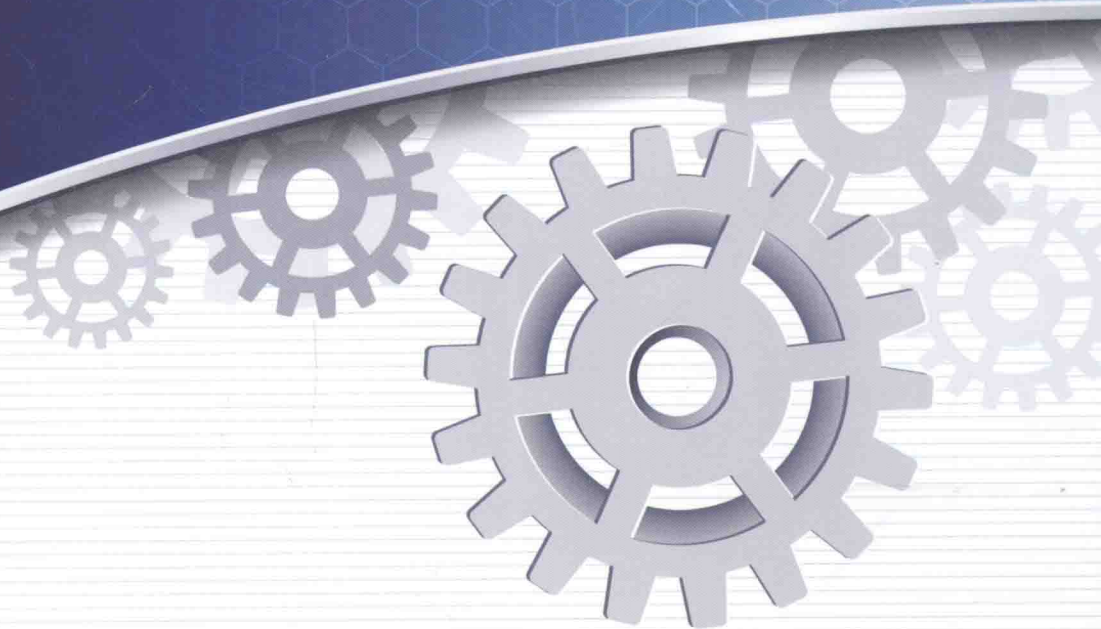
中等职业教育“十二五”规划教材

**双解**  
Double Solutions

# 实用机械英语

of Practical English for Machinery

姜鹤 编著



航空工业出版社

中等职业教育“十二五”规划教材

# 双解实用机械英语

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北 京

## 内 容 提 要

本教材是职业教育国家规划教材,严格依据劳动部提出的“职业教育的英语教学要专业为专业课服务”的宗旨并结合广大职教生英语实际状况,由长期教学工作在东北老工业基地职教城一线的教师亲笔编写而成。

本教材的主要内容包括:车床、铣床的结构及使用方法、工业材料的选择与加工、机械元件的类型与制造、测量技术与台面工具的使用、数控技术的编程和应用等。全书共设 16 个单元,每个单元包括机械对话篇、阅读理解篇、语法精讲篇和拓展训练篇等部分,其最大优势是考虑了职校学生英语基础薄弱的特点,为每篇课文进行了双解(解析译文,解析语法),使其成为一本无障碍读物。本教材既可作为中、高等职业学校机械类专业的英语教材;亦可成为相关行业的岗位培训手册或自学用书。

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随着生产技术的发展,企业国际化进程的加速,生产现场使用英语的情况日益增多。进口设备、仪器说明书与使用手册,国际通用技术标准,正在应用的成熟技术和先进技术的原始资料等多用英语写成,给众多在生产一线的技术工人、现场管理者及现代化设备操作者带来了诸多困难。为帮助职业院校学生打好语言基础,满足未来从业时市场对从业者的技能需求,我们精心编写了这本应用型教材《双解实用机械英语》。

本教材的主要特色有:

(1) 内容丰富,逐步深入。教材中每个单元由四个部分(section)组成,分别是机械英语对话演练、机械短文双解、语法精讲和全文综合练习部分。藉此令专业英语学习循序深入,令词汇、语法、术语巧妙结合,丰富多彩。

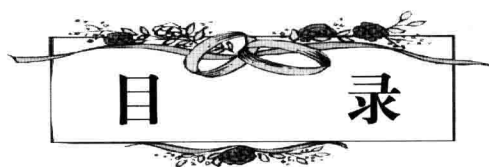
(2) 结构编排新颖、实用。机械短文在一个版面中进行英、汉两种文字排版,译文、分析与课文并行相随,专业词汇与音标附在课文后部。英语基础佳者可以直接畅读左侧英文;弱者可以边读左侧英文边看右侧解析,依照点拨徐徐前行。

(3) 图例生动。本教材专业图片量多质好,并配以双语说明,为理论性的诠释提供了生动立体实例,展现了所叙设备的实况或操作方法。

为保证本教材的精品质地,除了编者姜鹤老师外,还邀请了鞍山钢铁集团高级工程师高凤家、郭天辉作为技术顾问,美国密歇根州底特律钢铁公司驻鞍钢专家 Mr. Van Tennyson 先生进行审阅,学院机械系骨干教师张俊杰负责校对。同时,本教材在编写过程中参阅了大量有关机械、数控、模具等相关专业的书籍和文献资料及相关案例,在此谨向编著这些著作、资料的专家和学者致以诚挚的感谢!

当然,因编者水平有限和时间仓促,不足之处在所难免,恳请各位专家和读者不吝赐教,以期在日后修订再版时予以更正。

编者  
2012年6月



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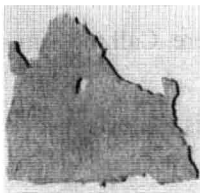
# UNIT 1

## History of Mechanical Engineering in the World

### Preview

**M**echanical engineering is a discipline of engineering that applies the principles of physics and materials science for analysis, design, manufacturing, and maintenance of mechanical systems. It is the branch of engineering that involves the production and usage of heat and mechanical power for the design, production, and operation of machines and tools. It is one of the oldest and broadest engineering disciplines. The engineering field requires an understanding of core concepts including mechanics, kinematics (运动学), thermodynamics (热力学), materials science, and structural analysis.

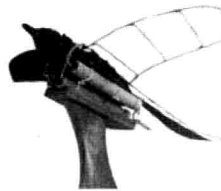
Mechanical engineers use these core principles along with tools like computer-aided engineering and product lifecycle management to design and analyze manufacturing plants, industrial equipment and machinery, heating and cooling systems, transport systems, aircraft, watercraft, robotics, medical devices and more.



Paper  
纸



compass  
司南



gunpowder  
火药



typography  
活版印刷



## SECTION ONE DIALOGUE



### Task1: Speaking and Acting

#### I'm Fond of my Major

(This is the first day of a new term, Simon and David meet at the school gate; they are walking toward the teaching building and talking about the major they love.)

S: Excuse me, may I have a few words with you?

D: Sure, Please!

S: How can I get to the NO. 4 Teaching Building? I'm a new student here. Call me Simon!

D: Oh, nice to meet you! I'm David. What's your major?

S: My major is mechanical engineering. I love it, because my father is a mechanical engineer who gives me a good influence, I think!

D: How lucky you are! I hope I had a dad as yours! Come on with me, we are in the same department, all the students of mechanical department are in the NO. 4 teaching building.

S: Oh, that's a coincidence! Mechanical engineering is associated with the design and manufacture of tools and all sorts of machines, so there are lots of labs and training sites, I can go there often.

D: Enjoy your time on learning. Let's go!

influence ['influəns] 影响      department [di'pɑ:tment] 系      coincidence [kəu'insidəns] 巧合  
be associated with 与...有关      training sites 实训场地



## 我爱专业课

(这是新学期开学的第一天，西蒙和大卫在学校大门口相遇，他们边向教学楼走边谈论自己所喜爱的专业。)

S: 打扰了，可以和您聊几句吗？

D: 当然，请吧！

S: 我怎样才能到四号教学楼？我是新生，叫我西蒙。

D: 噢，见到你很高兴！我叫大卫。你是学什么专业的？

S: 我的专业是机械工程学，我爱它。因为我父亲是一名机械工程师，给了我很大影响，我想。

D: 你真幸运！我真希望我父亲和你的一样！跟我来吧，我们在同一个系，所有机械系的学生都在四号教学楼。

S: 噢，太巧了！机械工程学与工具及各式机器的设计与制造相关，所以有很多实验室和实训场地，我可以常去那里啊。

D: 好好享受学习时光吧，我们走。



## 老外如是说

How do you do? My name's Bob.

您好，我是鲍勃。

Hi! I am Susan, nice to meet you!

嗨！我叫苏珊，见到您很高兴！

What's the matter?

有什么事吗？

He is very quiet but still waters run deep.

他寡言少语，但其实深藏不露。

Good afternoon, Linda here.

下午好，我是琳达。

First, allow me to introduce myself: my name's John, your new student.

首先允许我自我介绍一下：我叫约翰，您的新学生。

Ah, Lucia! Just the person the dean wanted to see.

嗨，露西娅！系主任正找你呢！



## SECTION TWO READING

### Task2: Reading Comprehension

## **History of Mechanical Engineering** **in the World**

Text: 世界机械工程史

Mechanical engineering is associated with the design and manufacture of tools and all sorts of machines.

Dates to ancient Greece and China, where mechanisms like screw pumps, ironware, seismograph, clocks, and even differential gears were invented. Chain drives, crankshafts and camshafts date to the Middle Ages. Mechanical engineering turned analytical with Newton's Laws of Motion and the invention of the calculus.

The invention of the steam engine in the latter part of the 18th century, providing a key source of power for the Industrial Revolution, gave an enormous impetus to the development of machinery of all types.

机械工程涉及到工具和机器的设计与制造问题。【“be associated with”为“涉及”的意思。】

早在古希腊和中国，螺旋泵、铁质器具、地动仪、时钟、乃至差速齿轮等机械装置就已被发明。链传动、曲轴和凸轮轴也于中世纪出现。机械工程已经用牛顿运动定律和微积分来阐释原理。【“where”引导的非限定性定语从句，修饰了“ancient Greece and China”，对二者进行拓展说明。】

十八世纪后期蒸汽机的发明为工业革命提供了关键性的动力能源，极大地推动了各式机械装置的开发。【现在分词短语作了插入语，对“steam engine”进行补充说明，而后面的“gave”才是真正的谓语。】



As a result, a new major classification of engineering dealing with tools and machines developed, receiving formal recognition in 1847 in the founding of the Institution of Mechanical.

By 1825, the U.S. had three schools of mechanical engineering: the U.S. Military Academy, Norwich University, and Rensselaer Polytechnic Institute.

因此，与工具和机械有关的新的工程学科得到了发展，并随着 1847 年机械学会的成立得到了正式认可。【现在分词短语作后置定语，“developed”才是真正的谓语。】

到 1825 年，美国已有三个机械工程学校：美国军事学院，诺维奇大学和伦塞勒理工学院。

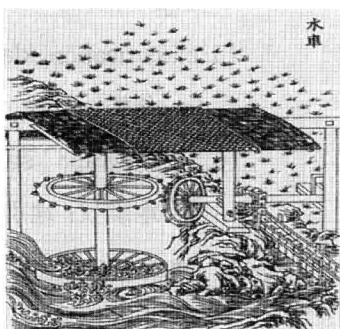


Fig1-1 Waterwheel in ancient China  
中国古代水车

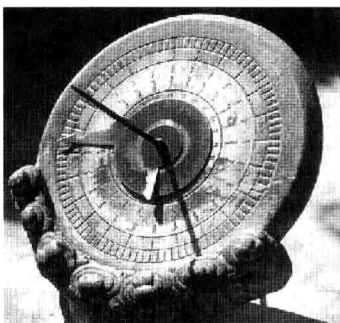


Fig1-2 The Erquatorial Sundial (evolved from Ancient Chinese Sundial)赤道式日晷  
(据传由中国古代圭表演变而来)

1. mechanical [mi'kænikə]  
adj. 机械的；力学的；手工操作的；技工的
2. engineer [ˌendʒi'niə]  
n. 工程师；vt. 设计
3. engineering [ˌendʒi'niəriŋ]  
n. 工程，工程学
4. manufacture [ˌmænju'fæktʃə]  
n. 制造业 vt./vi. 制造，加工
5. ironware ['aɪənwɛə]  
n. 五金；铁器；金属器具
6. seismograph ['saizməgrɑ:f]  
n. 地震仪
7. pump [pʌmp]  
vt. 打气；用抽水机抽 vi. 抽水  
n. 泵，抽水机
8. crankshafts ['kræŋk, ʃɑ:ft]  
n. 机轴



Fig1-3 Galileo and his first telescope  
伽利略和他设计的第一台望远镜

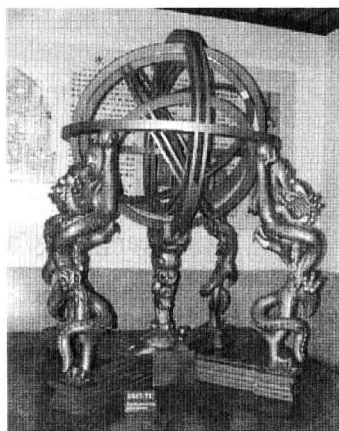


Fig1-4 Armillary sphere in ancient China (restored map)  
中国古代浑天仪（复原图）

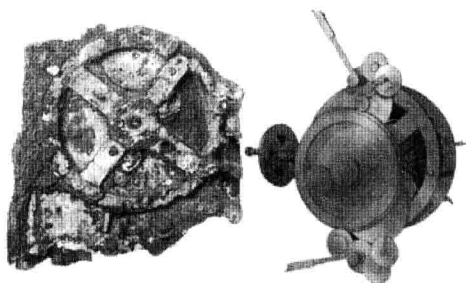


Fig1-5 Antikythera mechanism in ancient Greek  
designed to calculate astronomical positions  
(restored map)古希腊安蒂基西拉装置,  
用来计算天体的位置（复原图）

9. camshaft ['kæmʃɑ:ft]

n. [机]凸轮轴

10. analytical [ˌænə'litikəl]

adj. 分析的；解析的；善于分析的

11. enormous [i'nɔ:məs]

adj. 巨大的

12. impetus ['impitəs]

n. 动力；促进；冲力

13. machinery [mə'ʃi:nəri]

n. 机械；机器；机械装置

14. ancient ['eɪnfənt]

adj. 古代的

15. classification [ˌklæsifi'keɪʃən]

n. 分类；类别，等级

16. seismograph ['saizməgrɑ:f]

n. 地震仪；地震记录仪；（古）

17. recognition [ˌrekəg'nɪʃən]

n. 识别；承认

18. mechanism ['mekənizəm]

n. 机制；原理，机械装置

19. astronomical [ˌæstrə'nɒmɪkəl]

adj. 天文的，天文学的；极大的

20. armillary [ˈɑ:mləri]

adj. 手镯的；圆环的

21. sphere [sfɪə]

n. 范围；球体；球状物



## Task3: Comprehend the text and finish the following parts.

### I. Think and answer.

1. What is the mechanical engineering associated with?
2. What invention of the 18th century, providing a key source of power for the Industrial Revolution?
3. What does “a new major classification of engineering” in the fourth paragraph refer to?

### II. Translate these technical terms into English/Chinese.

- |                                        |                       |
|----------------------------------------|-----------------------|
| 1. the latter part of the 18th century | 2. is associated with |
| 3. screw pump                          | 4. primary process    |
| 5. differential gear                   | 6. 机械工程               |
| 7. 牛顿运动定律                              | 8. 动力能源               |
| 9. 蒸汽机的发明                              | 10. 工具的设计与制造          |

### III. Make sentences according to the examples given below.

1. machinery [n. (总称) 机器, 机械]

例: (1) Much machinery has been installed. 已经安装了许多新机器。

(2) We can't afford to have all this expensive machinery lying idle.

让所有这些机器闲置着, 我们可承担不起损失。

2. associate (vt. 把……联系在一起, 使有联系 n. 同事, 合伙人 adj. 副的)

例: (1) I didn't want to be associated with it at all. 我根本不想与这事有牵连。

(2) He is an associate editor of the newspaper. 他是报纸的副主编。

3. deal with (对付, 涉及)

例: (1) She has a lot of correspondence to deal with. 她有大批信件需要处理。

(2) The committee will deal with this complaint. 委员会将要处理这份投诉。



## SECTION THREE GRAMMAR

### Task4: Grammatical Structures

#### 定语从句 (一)

##### 定语从句

定语从句 (Attributive Clauses) 在句中做定语, 修饰一个名词或代词, 被修饰的名词、词组或代词被称作“先行词”。定语从句通常出现在先行词之后, 由关系代词或关系副词引出。

关系代词有: who, whom, whose, that, which 等。

关系副词有: when, where, why 等。

##### 关系代词引导的定语从句

关系代词所代替的先行词是人或物的名词或代词, 并在句中充当主语、宾语、定语等成分, 在定语从句中作主语时, 从句谓语动词的人称和数要和先行词保持一致。

1) who, whom, that 代替的先行词是人的名词或代词。

如: He is the man who/that wants to sell his farm. 他就是那个要卖农场的人。(who/that 在从句中作主语)。

2) Whose 用来指人或物, (只用作定语, 若指物, 它还可以同 of which 互换)。

如: Please pass me the skirt whose size is 79. 请吧 79 号的裙子递给我。

3) which, that 所代替的先行词是事物的名词或代词, 在从句中作主语或宾语。

如: The package (which / that) you are carrying is so nice. 你拿的那个包裹真好看。(which / that 在句中作宾语)

### Grammar Drills:

#### Fill the blanks with “which” or “where”.

1. This is the factory \_\_\_\_\_ they want to visit.
2. My sister works in a bookshop \_\_\_\_\_ we can read many kinds of books
3. Have you visited the city \_\_\_\_\_ the famous scientist was born?
4. Is this the museum \_\_\_\_\_ they visited last month?
5. He built a telescope through \_\_\_\_\_ he could study the skies.
6. The pencil with \_\_\_\_\_ he wrote was broken.
7. Is this the shop \_\_\_\_\_ sells children's clothing?





## SECTION FOUR EXERCISES

### Task5: Comprehensive Practices

#### I. Discriminate the option in each question, and choose the best answer to tick “✓”.

1. The place \_\_\_\_\_ interested me most was the Children's Palace.  
A. which                      B. where                      C. what                      D. in which
2. Do you know the man \_\_\_\_\_?  
A. whom I spoke                      B. to who spoke  
C. I spoke to                      D. that I spoke
3. This is the hotel \_\_\_\_\_ last month.  
A. which they stayed                      B. at that they stayed  
C. where they stayed at                      D. where they stayed
4. Do you know the year \_\_\_\_\_ the Chinese Communist Party was founded?  
A. which                      B. that  
C. when                      D. on which
5. That is the day \_\_\_\_\_ I'll never forget.  
A. which                      B. on which                      C. in which                      D. when
6. The factory \_\_\_\_\_ we'll visit next week is not far from here.  
A. where                      B. to which                      C. which                      D. in which
7. Great changes have taken place since then in the factory \_\_\_\_\_ we are working.  
A. where                      B. that                      C. which                      D. there
8. This is one of the best films \_\_\_\_\_.  
A. that have been shown this year                      B. that have shown  
C. that has been shown this year                      D. that you talked
9. Can you lend me the book \_\_\_\_\_ the other day?  
A. which you talked                      B. about which you talked  
C. about that you talked                      D. that you talked
10. The pen \_\_\_\_\_ he is writing is mine.  
A. on which                      B. in which  
C. by which                      D. with which

#### II. Extensive reading: Read the following paragraph with the help of an dictionary and decide whether the statements are true(T) or false(F).

The history of science and technology in China is both long and rich with many contributions to science and technology. In antiquity, independently of Greek philosophers and other civilizations,