

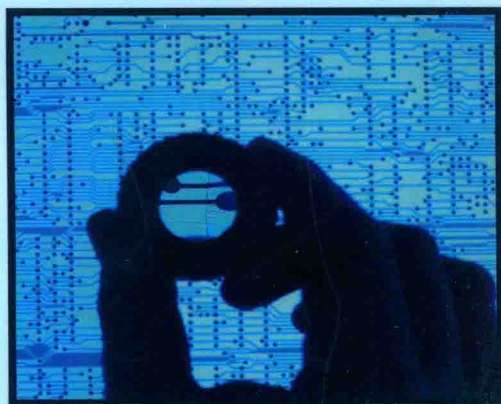
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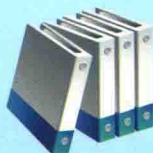
职业教育课程改革规划新教材

# 电工电子 专业英语

徐红梅 主编



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机械工业出版社  
CHINA MACHINE PRESS

职业教育课程改革规划新教材

# 电工电子专业英语

主编 徐红梅

参编 姜有奇 张 宇 杨英英



机械工业出版社

本书紧扣中等职业学校英语教学大纲,贯彻少而精的原则,精选内容。全书共16个单元,涉及电学及电子学的基本原理、电路的基本知识、电子技术、常见的电工电子元器件等内容。主要内容包括电、电子学、电势差与电压、电流、电路、电阻器、欧姆定律、电感器、电容器、半导体器件、集成电路、万用表、示波器、电动机、数字计算机、PLC等。每单元后都有配套的练习,以巩固所学的知识。

本书可作为中等职业学校电工电子类专业的教材,也可作为工人培训教材和相关专业学生的自学用书。

本书配有辅助教学的电子资源,凡选用本书作为教材的学校均可登录机械工业出版社教材服务网 [www.cmpedu.com](http://www.cmpedu.com) 免费注册、下载,流程见本书最后一页。

## 图书在版编目(CIP)数据

电工电子专业英语/徐红梅主编. —北京:机械工业出版社,2011.9

职业教育课程改革规划新教材

ISBN 978-7-111-35575-5

I. ①电… II. ①徐… III. ①电工技术—英语—中等专业学校—教材  
②电子技术—英语—中等专业学校—教材 IV. ①H31

中国版本图书馆CIP数据核字(2011)第158694号

机械工业出版社(北京市百万庄大街22号 邮政编码100037)

策划编辑:张值胜 责任编辑:张值胜 张利萍

版式设计:霍永明 责任校对:刘 岚

封面设计:马精明 责任印制:乔 宇

北京瑞德印刷有限公司印刷(三河市胜利装订厂装订)

2011年9月第1版第1次印刷

184mm×260mm·6.75印张·161千字

0001—3000册

标准书号:ISBN 978-7-111-35575-5

定价:16.00元

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# 前 言

随着经济全球化的浪潮，现代的产业工人必须不断提高自身的综合素质，专业外语作为行业交流中的主要媒介语言，越来越显示出其重要作用。

随着电工电子技术的不断发展，专业英语的教学内容必须不断更新；同时随着中等职业教育专业外语教学改革不断推进，电工电子类专业英语的教学方式也必须随之变化。基于这样的理念，本书在编写过程中注意了以下几点：

1. 在教学内容的选择上做了一些新的探索，除了选择常见的电工电子类基本知识作为专业英语教学素材之外，还特意选择了一些新的素材如 PLC 等内容。
2. 注重对应用性专业外语知识的介绍，如加入了仪表和仪器的内容等。
3. 增加了大量真实的插图，加深学生对专业知识的了解。
4. 每个单元的语法是对基础英语中重要语法的回顾，使学生能将语法与专业英语翻译联系起来，提高学生的语法应用能力。

本书共 16 个单元，每个单元包含对话、课文、语法。每个单元教学建议 4 学时，全书共 64 学时。

本书由徐红梅主编。参加编写的有姜有奇、张宇、杨英英。

本书在编写的过程中参考了一些专业网站的内容，在此对相关作者表示衷心的感谢。

由于编者水平有限，书中难免有不足之处，敬请广大读者和同行批评指正。

编 者

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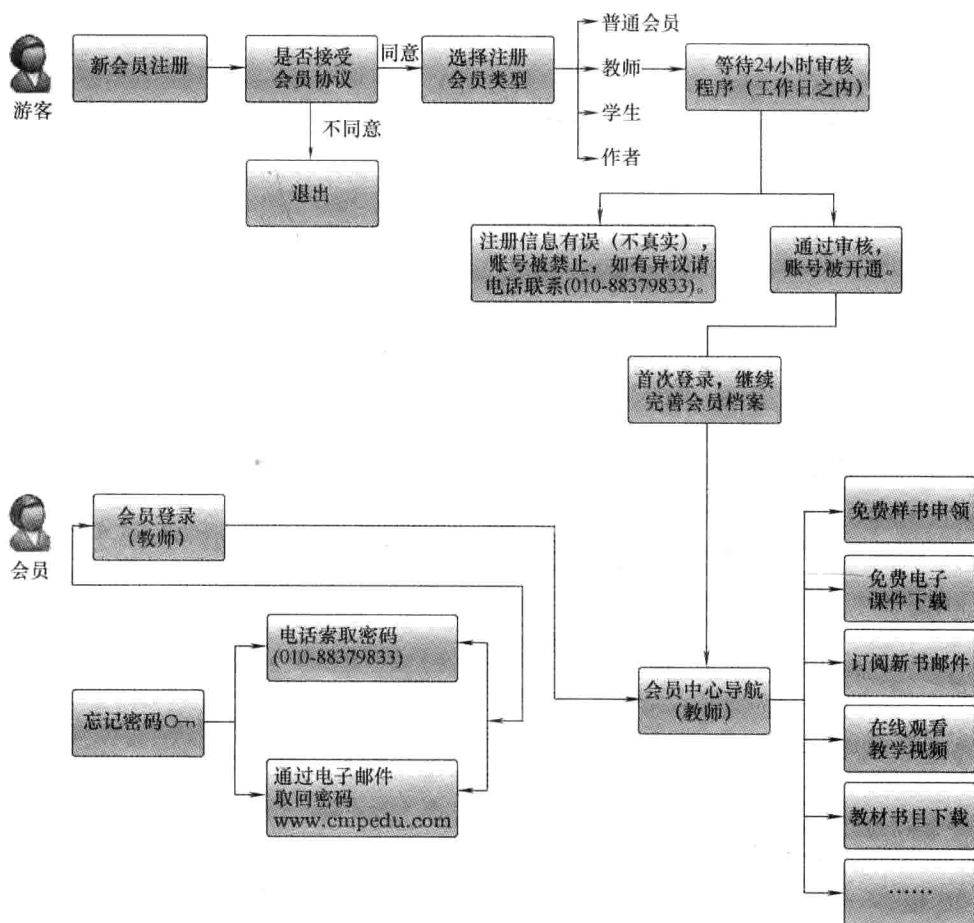
通信地址：100037 北京市西城区百万庄大街 22 号 机械工业出版社中职教育分社

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# 教学资源网上获取途径

为便于教学，职业教育课程改革创新教材配有电子教案、助教课件、视频等教学资源，选择这些教材教学的教师可登录机械工业出版社教材服务网（[www.cmpedu.com](http://www.cmpedu.com)）网站，注册、免费下载。会员注册流程如下：

教材服务网会员注册流程图



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# Unit 1 Electricity

## Warming up

### A. Dialogue: Greeting

( At the beginning of the new term, Jerry and Jim are greeting each other outside the teaching building. )

Jerry: Hello, Jim.

Jim: Hi, Jerry. I haven't seen you for a long time. How's everything going?

Jerry: Fine, thanks.

Jim: Jerry, I'd like you to meet our new teacher, Mr. White. He will teach us a new subject E-lectronic English.

Jerry: How do you do? Pleased to meet you, Mr. White.

Mr. White: Me too. Welcome to my class.

### B. Match the English expressions with the Chinese translations

- |                               |          |
|-------------------------------|----------|
| 1. out of control             | a. 直流电   |
| 2. Alternating Current ( AC ) | b. 动力电   |
| 3. under control              | c. 失去控制  |
| 4. Direct Current ( DC )      | d. 交流电   |
| 5. dynamic electricity        | e. 在控制之下 |

## Comprehensive English ( Text )

### Electricity

We use electricity every day. It can do work for us. It supplies power and gives us heat and light.

Electricity is the most useful energy in our everyday life. It is carried by wires, cables, etc. At night, roads are brightly lit, enabling people and traffic to move freely. Neon lighting used in advertising has become one of the characteristics of every modern city. Even in homes, many labor-saving appliances are powered by electricity.

We use dynamic electricity in industry and in our life. Dynamic electricity is of two types: AC and DC.

But electricity can be dangerous if it is not properly handled. It may cause burns or fires. People may get an electric shock or even be killed. However, all such accidents can be prevented



if we are careful enough and keep it under control. Under control electricity can do work for us. Out of control it is harmful.

### New words and Expressions

electricity	[ilek'trisiti]	<i>n.</i> 电
work	[wə:k]	<i>n.</i> 功
supply	[sə'plai]	<i>v.</i> 提供
heat	[hi:t]	<i>n.</i> 热
light	['lait]	<i>n.</i> & <i>v.</i> 灯; 点燃
energy	['enədʒi]	<i>n.</i> 能量
carry	['kæri]	<i>v.</i> 运送, 传送
wire	['waɪə]	<i>n.</i> 导线
cable	['keɪbl]	<i>n.</i> 电缆
enable	['neɪbl]	<i>vt.</i> 使……能够
traffic	['træfik]	<i>n.</i> 交通
freely	['fri:li]	<i>adv.</i> 自由地
advertising	['ædvə'taɪzɪŋ]	<i>n.</i> 广告
characteristic	['kærɪktə'rɪstɪk]	<i>n.</i> 特性
appliance	[ə'plaiəns]	<i>n.</i> 用具, 器具
power	['paʊə]	<i>v.</i> 赋予……动力
dynamic	[dai'næmɪk]	<i>adj.</i> 动力的
industry	['ɪndəstri]	<i>n.</i> 工业
dangerous	['deɪndʒərəs]	<i>adj.</i> 有危险的
properly	['prɒpəli]	<i>adv.</i> 正确地
handle	['hændl]	<i>v.</i> 运用, 操纵
shock	[ʃɒk]	<i>n.</i> 冲击
accident	['æksɪdənt]	<i>n.</i> 事故
harmful	['hɑ:mfəl]	<i>adj.</i> 有害的
neon lighting		霓虹灯
labor-saving		节省劳力的
AC: Alternating Current		交流电
DC: Direct Current		直流电
under control		在控制下
out of control		失去控制

### Notes to the text

1. Neon lighting used in advertising has become one of the characteristics of every modern city.

注: 句中的 used in advertising 作后置定语。

译：用于广告中的霓虹灯已经成为每个现代城市的特征。

2. Even in homes, many labor-saving appliances are powered by electricity.

注：此句使用了被动语态，被动语态在科技文体中经常使用。

译：甚至在家里，许多节省劳力的家用电器都是电驱动的。

## Exercises

### I. Answer the following questions.

1. What can electricity do for us?
2. Why is electricity the most useful energy in our everyday life?
3. How many types is dynamic electricity of?
4. Is electricity dangerous?
5. What are AC and DC?

### II. Are the following statements correct? If the sentence is correct, say "True" aloud, if not, say "False".

1. We use electricity every day.
2. Electricity is not the most useful energy in our everyday life.
3. Neon lighting is dangerous in modern cities.
4. Electricity is useful if it is properly handled.
5. People may get an electric shock if they use electricity.

### III. Translate the following sentences into Chinese.

1. Electricity is the most useful energy in our everyday life.
2. We use dynamic electricity in industry and in our life.
3. Under control electricity can do work for us.
4. But electricity can be dangerous if it is not properly handled.
5. It supplies power and gives us heat and light.

## ◆ Practical English

用电器	electrical appliance
霓虹灯	neon lighting
动力电	dynamic electricity
交流电	Alternating Current (AC)
直流电	Direct Current (DC)
集成电路	Integrated Circuit (IC)

## Grammar：科技英语翻译技巧

### 1. 正确使用专业词典及网络词典

一个人的英语水平再高也不可能记下所有的英语单词，而且专业英语中许多单词的词义与基础英语完全不同，所以必须养成勤查词典的习惯。在选用词典时，必须选择专业词典，如翻译电子类专业英语就需要电类专业英语词典，必要时还要使用网络词典，因为有的单词

字典上是没有的，但却可以在网络词典中找到。

e. g. The conductor has the resistance.

导体有电阻。

## 2. 词义选择及固定搭配的翻译

英语中大多数单词为一词多义，一定要根据词类来选择正确的词义，然后根据上下文的联系进行翻译。有时还需要根据汉语的习惯来进行翻译。

e. g. Metals are good conductors.

金属是良导体。

## 3. 注意科技文中常用的时态及语态

在科技文中最常用的时态是一般现在时，大家可能会发现大量英文科技论文都采用被动语态，翻译时要根据汉语的习惯使意思明确、句子流畅。

e. g. A transistor may be used for amplifying current, voltage or power.

晶体管可以用来放大电流、电压或功率。

## Grammar Exercises:

To use a dictionary to translate the following sentences.

1. Ceramics may be used as insulator.

2. Electricity can be dangerous if it is not properly handled.

3. Robots come in many shapes and colors.

4. Steel is stronger than iron.

5. Electricity is the most widely used form of energy in production and daily life.

# Unit 2 Electronics

## Warming up

### A. Dialogue

(Where can I buy some electronic elements?)

A: I need some electronic elements to fix my TV set.

B: Oh, there is a newly opened electronic elements center on the West Street.

A: Do you know when it was opened?

B: Yes, on December 1, 2006.

A: What are the business hours?

B: They are from 9:00 in the morning to 8:30 in the evening.

A: How can I get there?

B: You can take No. 66 bus or No. 36 bus. I can go with you.

A: Thank you very much.

### B. Match the English expressions with the Chinese translations

- |                         |         |
|-------------------------|---------|
| 1. electron tube        | a. 功率放大 |
| 2. Integrated Circuit   | b. 电子元件 |
| 3. power dissipation    | c. 电子管  |
| 4. electronic component | d. 功耗   |
| 5. power amplification  | e. 集成电路 |

## Comprehensive English (Text)

### Electronics

Electronics is a branch of electricity. The basic principles of electricity are also common to electronics.

The field of electronics includes the electron tube, transistor, integrated circuit and so on.

Electron tube is an electronic component which is capable of producing amplification and oscillation of a signal. It was invented by Fleming in 1904. But its big volume, high power dissipation, and short life made it be substituted by transistors soon after its application. In early time, it was widely used in television, radio and loudspeaker.

The early transistors were made from germanium. Silicon transistors began to replace germanium transistors in the late 1950s. Transistors are made from three layers of semiconductors, i. e.

NPN or PNP (two types of transistors). It is often used in **power amplification**, rectification, and signal modulation etc.

Integrated circuit, or IC is a combination of a few interconnected circuit elements such as transistors, diodes, capacitors and resistors. All these components are fabricated on one small piece of silicon, which form a whole amplifier or electronic system. The advantages of an integrated circuit are as followings: a tremendous saving in space, high reliability, low cost and low power dissipation.

Electronic technology is developing rapidly in the world.

## New words and Expressions

electronics	[ilek'trɒniks]	n. 电子学
electricity	[ilek'trisiti]	n. 电
principle	['prinsəpl]	n. 原理
common	['kɒmən]	adj. 普通的, 共同的
field	[fi:ld]	n. 领域
transistor	[træn'sistə]	n. 晶体管
integrated	['intigreitid]	adj. 集成的
component	[kəm'pəunənt]	n. 成分, 元件
amplification	[æmplifi'keifən]	n. 放大
oscillation	[ɔsi'leifən]	n. 振荡
dissipation	[disi'peifən]	n. 消耗, 损耗
substitute	['sʌbstɪtju:t]	v. 替代
loudspeaker	['laud'spi:kə]	n. 扬声器
advantage	[əd'vɑ:ntɪdʒ]	n. 优势, 好处
germanium	[dʒə:'meiniəm]	n. 锗
silicon	['silikən]	n. 硅
power	['paʊə]	n. 功率
rectification	[ˌrektifi'keifən]	n. 整流
modulation	[ˌmɒdju'leifən]	n. 调制
interconnect	[ˌintəkə'nekt]	v. 相互连接
fabricate	['fæbrikeit]	v. 构造
tremendous	[tri'mendəs]	adj. 极大的, 非凡的
reliability	[riˌlaɪə'biliti]	n. 可靠性
be common to		同样……
be capable of		能够……
integrated circuit		集成电路
power dissipation		功耗
power amplification		功率放大

### Notes to the text

1. The basic principles of electricity are also common to electronics.

注：句中主语的中心词是 principles，所以谓语动词也要用复数形式 are。

译：有关电学的基本原理同样也适用于电子学。

2. But its big volume, high power dissipation, and short life made it be substituted by transistors soon after its application.

注：此句主语为 its big volume, high power dissipation, and short life，谓语动词为 made，不定式的被动语态 be substituted by transistors 作 it 的补足语。

译：由于它体积大、功耗高、寿命短，所以在应用不久后就被晶体管所替代。

### Exercises

#### I. Answer the following questions.

1. What does the field of electronics include?
2. What's the relationship between electronics and electricity?
3. What are the advantages of IC?
4. Who invented the electron tube?
5. What are transistors made from?

#### II. Are the following statements correct? If the sentence is correct, say "True" aloud, if not, say "False".

1. Electron tubes are more useful than transistors.
2. The early transistors were made from germanium.
3. The field of electronics doesn't include integrated circuit.
4. The basic principles of electricity are not common to electronics.
5. Electron tube was invented by Fleming in 1904.

#### III. Translate the following sentences into Chinese.

1. Electronics is a branch of electricity.
2. Transistors are made from three layers of semiconductors.
3. The advantages of an integrated circuit are as followings.
4. The early transistors were made from germanium.
5. IC is a combination of a few interconnected circuit elements such as transistors, diodes, capacitors and resistors.

#### IV. Put the following expressions into Chinese.

1. basic principle
2. electron tube
3. integrated circuit
4. electronic component
5. power dissipation
6. electronic system

7. the field of electronics

8. germanium transistor

#### V. Fill in the blanks according to the text.

Electron tube is an electronic \_\_\_\_\_ (元器件) which is capable of producing amplification and oscillation of a signal. It was \_\_\_\_\_ (发明) by Fleming in 1904. But its big volume, high power dissipation, and \_\_\_\_\_ (寿命短) made it be substituted by transistors soon after its \_\_\_\_\_ (应用). In early time, it was \_\_\_\_\_ (广泛应用) in television, radio and loudspeaker.

#### ◆ Practical English

信号调整	signal modulation
电学原理	the principles of electricity
电子元件	electronic component
功耗	power dissipation
功率放大	power amplification
集成电路	integrated circuit

#### Grammar: Gerunds 动名词

构成：一般式 using/ being used

完成式 having used/ having been used

1. The function of a capacitor is storing electricity.

电容器的功能是储存电。

2. Heating materials brings about changes in their volumes.

将材料加热会使它们的体积发生变化。

3. The factory began producing generators in 1970.

这家工厂于1970年开始生产发电机。

4. I'm sorry for not having finished the work.

我很抱歉没完成任务。

5. On being heated, many solids are changed into liquids.

许多固体一加热就变成液体。

#### Grammar Exercises:

1. It's no use \_\_\_\_\_ (tell) him anything. He never listens.

(跟他说任何事情都没用, 他从来都不听。)

2. Our task is \_\_\_\_\_ (develop) our science and technology at a higher speed.

(我们的任务是以更快的速度发展我们的科学技术。)

3. The advantage of an integrated circuit is a tremendous \_\_\_\_\_ (save) in space when compared with discrete components.

(和分立元器件相比, 集成电路的优势在于极大地节约了空间。)

---

4. This is a clear case of electricity \_\_\_\_\_ (convert) into heat.

(这是电转化为热的一个明显的例证。)

5. They pass alternating current in a circuit while \_\_\_\_\_ (block) direct current.

(它们在电路中通交流、阻直流。)



# Unit 3 PD and Voltage

## Warming up

### A. Dialogue

( Jerry and Tom are talking about EMF. )

Jerry: Do you remember what EMF is?

Jim: It's short for electromotive force.

Jerry: Pardon me? Would you explain it in detail?

Jim: I am sorry. I have no time right now. Look it up in the text, I believe you will find the answer.

### B. Match the English expressions with the Chinese translations

- |                         |         |
|-------------------------|---------|
| 1. voltage waveform     | a. 电动势  |
| 2. Electromotive Force  | b. 电势差  |
| 3. Potential Difference | c. 电压表  |
| 4. Potential Drop       | d. 电压降  |
| 5. voltmeter            | e. 电压波形 |

## Comprehensive English (Text)

### PD and Voltage

PD stands for potential difference. It is also called voltage. The potential difference of a component is the potential drop between the terminals of the component in a circuit. It is measured in Volts. Its symbol is  $U$  or  $V$ . It may be obtained by several ways.

Electrons are forced through a circuit by the voltage or PD. When the voltage is applied to an electrical conductor, electrical charges flow in the conductor. When the voltage is applied across a circuit, a current will flow in it.

As each Coulomb of charge travels through the various components in a circuit, all the energy is converted into other forms.

The potential difference of a component can be measured by a voltmeter, which is connected across the component.

### New words and Expressions

potential

[pə'tenʃəl]

n. 电位, 电势