

通 信 英 语

(第四版)

ENGLISH ON TELECOMMUNICATIONS

张筱华 石方文 编著

北京邮电大学出版社

· 北 京 ·

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编 者 的 话

为了适应我国通信信息产业飞速发展的新形势,提高工程技术人员的专业英语水平,我们编写了这本《通信英语》。

本书共 16 个单元。内容涉及数字通信,数据通信,计算机与互联网,光纤通信,SDH,波分复用(WDM),寻呼技术,移动通信,交换技术,ATM,多媒体技术,电话网,N-ISDN 和 W-ISDN 等方面,基本覆盖了当代 IT 业的所有新技术领域。

本书的课文主要选自美国高等院校的教科书和一些高级别的通信技术刊物。这些课文语言朴实,文字流畅,易于阅读和理解。同时,由于文章出自不同的作者,体现了不同的文风和文体,极有助于提高读者的视野和阅读能力。因此,相信它会受到读者的欢迎。

考虑到读者学习过公共英语,已具有一定的英语基础,所以本书的编写是以扩大通信技术的英语词汇量、熟悉专业术语、了解科技文章的表达特点和掌握英语翻译技巧为宗旨的。我们认为,只要读者能熟练地阅读和翻译本书的课文,则看一般的通信专业英语文章就不会再感到费力。

衷心希望本书的出版能为我国 IT 业的发展,为通信信息产业职工整体素质的提高,为我国高等教育的发展做出贡献。

张筱华、石方文

1998 年于北京邮电大学

第四版前言

《通信英语》已经走过了十年的历程,它的第四版于今日问世。

书,尤其是教科书的生命力,首先在于读者的认同,在于学生与教师的认同。自 1994 年始,《通信英语》先后作为邮电系统工程技术人员继续教育的指定用书、全国自学考试《计算机通信》专业(本科)的考试用书、全国邮电函授和网络教育教材、多所大学本科和研究生的教学用书使用,读者群体越来越大,印刷次数和册数不断增加。作者以为,这表明《通信英语》已得到人们的广泛认可。

专业英语类教科书的生命力,又在于它的语言。由于《通信英语》的课文主要选自美国高校的教科书和一些高级别的技术刊物,因而句法地道,语言朴实,文字流畅。同时,由于课文出自不同作者之手,因而展示了不同的文风和文体,较全面地提高读者的视野和英文水平。作者以为,这正是《通信英语》深受好评的原因所在。

专业英语类教科书的生命力,还在于它的专业。《通信英语》的课文,涵盖了当代通信领域的所有新技术领域,对专业的描述深入浅出,使读者更易集中精力,专注英语学习。作者以为,这亦是本书长盛不衰的重要原因。

本应在《通信英语》第四版的修订之际,选一些更新的文章,对原书再做一些调整。但由于它的姊妹篇《网络英语》正在做幅度较大修改和《信息英语》正在出版印刷,且《通信英语》一书又库房告罄,只好作罢,先用原书救急吧。

对十年来支持本书出版和积极推广和使用本书的单位和朋友们表示衷心的感谢!

北京邮电大学

张筱华 教授

2004 年 6 月 29 日

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第一部分

教学大纲

《通信英语》教学大纲

一、课程的性质与设置目的

通信英语是通信信息类专业的一门专业基础课。随着我国通信信息产业的迅猛发展,提高工程技术人员的专业英语水平已成为当务之急。设置通信英语课程,就是为了扩展学生在通信信息专业方面的英语词汇量,熟悉该领域的专业术语,了解科技英语的表达特点及掌握专业英语翻译技巧,从而大大提高他们的业务素质并增强他们在专业上与国际接轨的能力。

二、课程的基本内容

本课程选用教材为《通信英语》,张筱华、石方文编写。

《通信英语》共分 16 个单元。内容涉及数字通信与数据通信,计算机与 Internet,光纤与传输设备,寻呼与移动通信,交换技术,电信网与 ISDN 等方面,基本覆盖了当代通信的所有新技术领域。

《通信英语》的课文主要选自美国的一些高级别的通信技术刊物。这些课文语言朴实,文字流畅,易于阅读和理解。由于文章出处不同,写作风格各异,语法现象也各有侧重,因而对于读者专业英语水平的提高,必定会有所帮助。

三、课程的基本要求

1. 词汇

(1) 对课文(正文)中出现的词汇能说出其汉语词义。

(2) 对课文(正文)中常见的通信专业词组要能够英汉互译,并要求拼写正确。

2. 语法

应熟练掌握下述常见的语法现象:

- 动词不定式
- 动名词
- 现在分词
- 过去分词
- 被动语态

- 常用介词
- 各类从句

3. 阅读

能读懂课文(正文)或与课文(正文)难易程度相当的课外(本专业)英语材料,生词不超过所读材料词数的 2%,速度达每分钟 30 个词,理解基本正确。

4. 翻译

能将阅读的材料译成汉语,译文应文字通顺,意思基本正确,笔译速度达到每小时 300 个英语单词。

5. 听,说和写

暂不作考试要求。

四、学习方法

1. 要认真掌握一些常见的语法现象

一些语法现象在专业英语文章中出现的频度很高,例如: The signal received from a satellite, located in far outer space, is very weak.

在这个很短的句子中,过去分词就出现过两次。因此,建议学生在第一次遇到这类语法现象时,就应该将其作用和翻译方法真正掌握,这样才能将文章理解好,翻译好。

2. 要掌握一些常见的词头,词干和词尾

词干是一个词的躯体,是不变化的部分,体现了该词的基本含义;词头是词干之前的部分,它能赋予该词干以新的词义,派生新词;词尾是词干之后的部分,它也能赋予该词干以新的词义,派生新词。所以,掌握了常用的词干,词头和词尾,就能大大地扩展自己的词汇量。

例如英语中的-duce-或-duct-都是词干,该词干的意义为“引导”,如果配以不同的词头和词尾,便衍生出许多英语单词,例如:

conduct *v.* 传导

conductor *n.* 导体

deduce *v.* 推演

deduct *v.* 扣除;演绎

induce *v.* 引起;引诱

inductance *n.* 电感

introduce *v.* 引入;介绍

produce *v.* 生产

reduce *v.* 减少

reproduce *v.* 再生产

3. 要精读课文

教材中所选的许多课文都是较典型、地道的专业英语文章。这些文章用词严谨,语法现象规范,专业词组出现频度很高。因此,只要认真地精读几篇文章,即不仅将语法弄懂弄通,而且将词汇熟记在心,则英语水平就会大有长进。

五、学时分配

本课程学习的总学时为 216 学时,即 18 周。学习进度大约为每周一课。

六、考 试

考试方式为闭卷,笔试,考试时间为 2 小时。不允许查字典。

评分用百分制,60 分为及格。

七、参考书目

《实用英语语法》(第三次修订本),张道真编,商务印书馆,1992。

《新英汉词典》,上海译文出版社,1988。

第二部分

主要语法现象

《通信英语》主要语法现象

一、动名词

动名词的作用相当于名词,它在句子中可作主语、宾语或介词宾语。例如:

- (1) Reading is a good habit.

动名词在句子中作主语。

- (2) I enjoy working with you.

动名词在句子中作宾语。

- (3) I am interested in reading.

动名词在句子中作介词宾语。

动名词的作用虽然相当于名词,但它仍然具有一些动词的特征。例如,它可以有自己的宾语和状语。请看以下的例句:

- (4) I am interested in carefully reading books.

- (5) He insisted on doing it in his own way.

- (6) What would you suggest for overcoming the difficulties?

在《通信英语》中,动名词的应用相当普遍,再请看下面的例子:

- (7) Digital transmission provides a powerful method for overcoming noisy environments.

- (8) Consequently there is an inherent advantage for overcoming noisy environments by choosing digital transmission.

- (9) The telephone contains a transmitter and receiver for converting back and forth between analog voice and analog electrical signals.

二、现在分词

1. 现在分词一般作形容词用,可修饰动作的发出者,有主动的意义。可译成“……的……”,此时多作定语。例如:

- (1) The smiling girl is Wangling.

- (2) This is an amusing story.

在更多情况下,我们可以用现在分词短语作定语,在意思上和一个定语从句差不多。例如:

- (3) The girl standing by the window talked to her friend.
(4) There are a lot of boys on the sports ground playing football.
(5) They built a highway leading into the mountains.

在《通信英语》中,现在分词的应用相当普遍,我们来看下面的例子:

- (6) Furthermore, we shall prove that a minimum theoretical sampling frequency of order 6.8 kilohertz is required to convey a voice channel occupying the range 300 Hz to 3.4 kHz.
(7) Thus the output to the codec may be seen as a sequence of 8 pulses relating to channel 1, then channel 2, and so on.
(8) Fig. 3-1 illustrates a typical full-duplex data transmission system including the originating data processing equipment and the interface assembly which consists of buffer and control units.
(9) In addition to defining standards covering the NNI, CCITT also embarked on a series of standards governing the operation of synchronous multiplexers and SDH network management.
(10) The unquestionable success of the first generation of paging systems using wired networks with signaling devices was followed in the early 1950s by technological progress in the miniaturization of electronic circuitry.

2. 现在分词(分词短语)还可以作状语,用来表示方式、目的、条件、结果和背景等等;有时表示主语在做一动作的同时还进行的另一动作,此时称之为伴随状态。例如:

- (1) Every evening they sit in sofa watching TV.

现在分词起伴随作用。

- (2) I read the English book, using my dictionary.

现在分词表示条件或背景。

还可以列出一些例子:

- (3) I ran out of the house shouting.
(4) I got home, feeling very tired.
(5) Not knowing her address, we couldn't get in touch with her.
(6) She got to know them while attending a conference in Beijing.
(7) By comparison, most other forms of transmission systems convey the message information using the shape, or level of the transmitted signal; parameters that are most easily affected by the noise and attenuation introduced by the transmission path.

- (8) At the receiving end of an asynchronous serial data link, the receiver continually monitors the line looking for a start bit.
- (9) Generally, this link has lower capacity than the total number of PBX subscribers, reflecting the fact that, at any given time, only a fraction of the subscribers will be engaged in external calls.
- (10) Today, certain models of pagers are even equipped with a display capability of providing optical messages consisting of 10 to 80 characters, and thus substantially increasing the efficiency of the system.

三、过去分词

1. 过去分词(短语)一般作形容词用,可修饰动作的对象,有被动的意义。可译成“被……的……”或“由……的……”,此时多作定语。例如:

- (1) The trees planted by me have grown up.
- (2) We've already met the target set in the program.
- (3) What's the language spoken in this area?
- (4) Suddenly there appeared a young woman dressed in green.
- (5) For example, the signal received from a satellite, located in far outer space, is very weak and is at a level only slightly above that of the noise.
- (6) Once the start bit has been detected, the receiver waits until the end of the start bit and then samples the next N bits at their centers, using a clock generated locally by the receiver.
- (7) Paging solutions to the above communication situations were introduced in the first half of this century by means of simple optical and acoustical signaling devices installed on the premises of enterprises, hospitals, offices, etc.
- (8) The ideal mobile telephone system would operate within a limited assigned frequency band and would serve an almost unlimited number of users in unlimited areas.
- (9) This is actually a collection of national networks interconnected to form an international service.
- (10) In addition to the five classes of switching centers listed above, the network is augmented with additional switching nodes called tandem switches.

2. 过去分词还可以作状语,例如:

- (1) Although originally designed and implemented to service analog telephone subscribers, it handles substantial data traffic via modem, and is gradually being converted to a digital network.
- (2) Compared with you, we still have a long way to go.
- (3) Moved by their speech, we were momentarily at a loss what to say.
- (4) He returned us the papers uncorrected.

四、动词不定式

在《通信英语》中,动词不定式大量地用来作状语或定语。

1. 动词不定式在句首或句末常常用来表示目的,可译成“为了……”“以便……”,可见这时候起状语作用。例如:

- (1) To do a good job, we use good tools.
- (2) We use good tools to do a good job.
- (3) We must do everything we can to help them.

由于英语中常用被动语态,所以上面的例(2)可表示为:

- (4) Good tools are used to do a good job.

注意此例中的下划线部分,这类句型在《通信英语》中大量出现。类似的句型还有:

…is required to do…

…is arranged to do…

- (5) A circuit of the demultiplexer is arranged to detect the synchronization word, and thereby it knows that the next group of 8-digits corresponds to channel 1.
- (6) Furthermore, we shall prove that a minimum theoretical sampling frequency of order 6.8 kilohertz is required to convey a voice channel occupying the range 300 Hz to 3.4 kHz.
- (7) As each incoming bit is sampled, it is used to construct a new character.
- (8) Timing signals from the interface assembly at the transmitter are applied to the data modem to synchronize the computer and the data set.
- (9) The switching centers are linked together by trunks. These trunks are designed to carry multiple voice-frequency circuits using either FDM or synchronous TDM.
- (10) The 10 regional centers are meshed together to provide full connectivity.

2. 动词不定式在名词之后常用来表示定语,译成“……的……”。例如:

- (1) She usually has a lot of meetings to attend in the evenings.
- (2) I want to get something to read during the vacation.
- (3) She was the first person to think of the idea.
- (4) This will be a good opportunity to exchange experience.
- (5) The operator of a local telephone switchboard had an option to transmit an optical or acoustical signal for the searched person over a wired network.
- (6) Why 800 MHz? The FCC's decision to choose 800 MHz was made because of severe spectrum limitations at lower frequency bands.
- (7) Any communication systems which can provide customers with means to communicate from any place, at any time and at any distance gives social and economic advantages.

五、一个重要的语法现象——被动语态

被动语态在《通信英语》中被大量使用,这里给出几个例子:

- (1) If we consider binary transmission, the complete information about a particular message will always be obtained by simply detecting the presence or absence of the pulse.
- (2) Noise can be introduced into transmission path in many different ways, perhaps via a nearby lightning strike, the sparking of a car ignition system, or the thermal low-level noise within the communication equipment itself.
- (3) An asynchronous serial data link is said to be character oriented, as information is transmitted in the form of groups of bits called characters.
- (4) When the received character has been assembled, its parity is calculated and compared with the received parity bit following the character.
- (5) The first low-loss silica fiber was described in a publication which appeared in October of 1970. The date of this publication is sometimes cited as the beginning of the era of fiber communication.

当然,在《通信英语》中还有许多重要的语法现象,请读者参阅作者建议的相关书籍,这里不再一一赘述。

第三部分

课 文