



21 世纪高职高专规划教材

公共基础系列

土木工程英语

English for Civil Engineering

(修订本)

主编 马彩玲
参编 张梅英 郭玉兔
主审 乔寿宁



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· 北京 ·

内 容 简 介

本书依据教育部高等教育司于2000年制定并颁布的《高职高专教育英语课程教学基本要求(试行)》编写而成。全书共有12个单元,每单元分为对话、课文、语法、阅读材料和模拟写作五个部分,重在培养学生实际从事涉外交际活动的能力,其中包括口语、阅读、翻译和应用文写作的能力。本书选材新颖、内容丰富、语言规范,突出了土木工程的针对性和实用性,适合高等专科院校和高等职业院校使用,也可供各类成人院校及广大科技、管理人员自学使用。

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出版说明

高职高专教育是我国高等教育的重要组成部分，它的根本任务是培养生产、建设、管理和服务第一线需要的德、智、体、美全面发展的高等技术应用型专门人才，所培养的学生在掌握必要的基础理论和专业知识的基础上，应重点掌握从事本专业领域实际工作的基本知识和职业技能，因而与其对应的教材也必须有自己的体系和特色。

为了适应我国高职高专教育发展及其对教学改革和教材建设的需要，在教育部的指导下，我们在全国范围内组织并成立了“21世纪高职高专教育教材研究与编审委员会”（以下简称“教材研究与编审委员会”）。“教材研究与编审委员会”的成员单位皆为教学改革成效较大、办学特色鲜明、办学实力强的高等专科学校、高等职业学校、成人高等学校及高等院校主办的二级职业技术学院，其中一些学校是国家重点建设的示范性职业技术学院。

为了保证规划教材的出版质量，“教材研究与编审委员会”在全国范围内选聘“21世纪高职高专规划教材编审委员会”（以下简称“教材编审委员会”）成员和征集教材，并要求“教材编审委员会”成员和规划教材的编著者必须是从事高职高专教学第一线的优秀教师或生产第一线的专家。“教材编审委员会”组织各专业的专家、教授对所征集的教材进行评选，对所选教材进行审定。

目前，“教材研究与编审委员会”计划用2~3年的时间出版各类高职高专教材200种，范围覆盖计算机应用、电子电气、财会与管理、商务英语等专业的主要课程。此次规划教材全部按教育部制定的“高职高专教育基础课程教学基本要求”编写，其中部分教材是教育部《新世纪高职高专教育人才培养模式和教学内容体系改革与建设项目计划》的研究成果。此次规划教材按照突出应用性、实践性和针对性的原则编写并重组系列课程教材结构，力求反映高职高专课程和教学内容体系改革方向；反映当前教学的新内容，突出基础理论知识的应用和实践技能的培养；适应“实践的要求和岗位的需要”，不依照“学科”体系，即贴近岗位，谈化学科；在兼顾理论和实践内容的同时，避免“全”而“深”的面面俱到，基础理论以应用为目的，以必要、够用为度；尽量体现新知识、新技术、新工艺、新方法，以利于学生综合素质的形成和科学思维方式与创新能力的培养。

此外，为了使规划教材更具广泛性、科学性、先进性和代表性，我们希望全国从事高职高专教育的院校能够积极加入到“教材研究与编审委员会”中来，推荐“教材编审委员会”成员和有特色的、有创新的教材。同时，希望将教学实践中的意见与建议，及时反馈给我们，以便对已出版的教材不断修订、完善，不断提高教材质量，完善教材体系，为社会奉献更多更新的与高职高专教育配套的高质量教材。

此次所有规划教材由全国重点大学出版社——清华大学出版社与北京交通大学出版社联合出版，适合于各类高等专科学校、高等职业学校、成人高等学校及高等院校主办的二级职业技术学院使用。

21世纪高职高专教育教材研究与编审委员会

2007年8月



前言

(修订本)

教育部高等教育司于2000年制定并颁布了《高职高专教育英语课程教学基本要求(试行)》,文中明确指出:“在完成《基本要求》规定的教学任务后,应结合专业,开设专业英语课程,这既可保证学生在校期间英语学习的连续性,又可使他们所学的英语得到实际的应用。”

本书从培养高等技术应用性专门人才的目标出发,结合土木工程专业学生毕业后的实际,提供了建筑领域所需要的英语知识和实用交流材料,旨在通过多项训练来培养学生实际从事涉外交际活动的能力,其中包括口语、阅读、翻译和应用文写作的能力。

本书共12个单元,每单元分以下5个部分。

1. DIALOGUE (对话)

每篇对话后面安排了小组活动,旨在通过学习、练习与本单元主题相关的对话,培养学生进行土木工程涉外口语交际的能力。

2. TEXT (课文)

通过学习、运用与本单元内容相关的文章,重点培养学生阅读和翻译土木工程专业英语材料的能力。

3. GRAMMAR (语法)

本书编排了一些英语语法的难点和在科技英语中常见的语法现象,目的是使学生在学习专业英语的同时,夯实英语基础、系统相关内容、提高语言运用的准确性,重点培养学生在听、说、读、写、译中准确运用语法的能力。

4. READING MATERIAL (阅读材料)

旨在拓宽专业领域内容,丰富单元教学材料,重点培养学生阅读和自学的能力。

5. GUIDED WRITING (模拟写作)

内容涉及本专业领域商务往来的种种类型。为了便于学生掌握,每一种类型都有范文,并附有译文,突出了土木工程的针对性和实用性,目的是培养学生在实际工作中用英语进行交际的能力。

在编写过程中,我们遵循了以下3项原则。

- (1) 重视语言学习的规律,坚持“全面提高听、说、读、写、译能力”的原则。
- (2) 遵循“以实用为主、够用为度”的原则,体现培养高等应用型专门人才的特点。

(3) 注重“打好语言基础和培养多种能力并重”的原则,有利于培养学生的交际能力和自学能力。

本书由马彩玲任主编并编写了1~12单元的对话、小组任务、课文、语法及语法练习、阅读材料、阅读技巧和模拟写作的全部内容。张梅英编写了1~6单元的课后练习、阅读理解和补充阅读材料的1~3。郭玉兔编写了7~12单元的课后练习、阅读理解和补充阅读材料的4~6。全书由马彩玲统稿,由乔寿宁教授审阅。

在编写过程中,我们参阅了大量的国内外出版物,广泛听取了学生、教学专家和专业教师的意见,特别是华北电力大学专门从事教育、教学理论和其他理论研究的马卫华教授和山西建筑职业技术学院多年来从事建筑设计和“结构”、“施工”等课程教学的张维俊副教授给予了很大的帮助,在此向他们表示衷心的感谢。

由于作者水平有限,书中难免有不妥之处,敬请广大读者予以指正。

编者
2007年8月

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Unit 1

Structural Elements 结构构件

DIALOGUE

A: The structure is a very important part of the works.
Now let's go and have a close look at the fabrication of the steel structure step by step, OK?

B: That's good. Let's have a look at the erection of the steel structure. The principle sequence of erection works is from low level to high level, from column to beam, from the main beam to secondary beams and from center to outer sides.



A: All columns and beams are connected by high strength bolts. It's not allowed to have a single bolt to be fixed by over force. How can you manage it?

B: During the fabrication of the steel structure we adopt high accuracy for connection molds in which the sizes and position of the holes are controlled below 25% the tolerance of the specification, which allows a limitation of erection error.

A: Are all the molds made in the same factory?

B: Yes, they are.

A: I have another question. Can you make the shop drawings if we provide you the basic design drawings?

B: Yes, we can. We have a design office equipped for CAD (computer aided design). We have specialists to make drawings like this. They are qualified engineers.

A: That's fine. If you don't mind, I'd like to see the certificates of your engineers and skilled workers.



Word Bank

structure	/ˈstrʌktʃə/	n.	结构, 建造物
works	/wɜ:kz/	n.	工程
fabrication	/fæbrɪˈkeɪʃn/	n.	制配, 工序
erection	/ɪˈrekʃn/	n.	直立, 安装
principle	/ˈprɪnsɪpl/	n.	原理, 原则
sequence	/ˈsi:kwəns/	n.	顺序
column	/ˈkɒləm/	n.	柱
beam	/bi:m/	n.	梁
secondary	/ˈsekəndəri/	a.	第二的, 次要的
bolt	/bəʊlt/	n.	螺栓
		vt.	关上, 拴住
adopt	/əˈdɒpt/	vt.	采用, 采纳
accuracy	/ˈækjʊrəsi/	n.	精确度, 准确度
tolerance	/ˈtɒlərəns/	n.	容忍, 误差
specification	/ˌspesɪfɪˈkeɪʃn/	n.	说明, 规范
limitation	/ˌlɪmɪˈteɪʃn/	n.	极限, 限制
equip	/ɪˈkwɪp/	vt.	安装, 配备
qualify	/ˈkwɒlɪfaɪ/	vt.	给予资格
certificate	/səˈtɪfɪkət/	n.	证书



Phrases and Expressions

steel structure 钢结构
 step by step 逐步地
 from ... to ... 从……到……
 connection mold 连接件
 skilled worker 技术工



Notes

1. It's not allowed to have a single bolt to be fixed by over force.
任何一个螺栓都不允许以超紧度力拧进。
2. During the fabrication of the steel structure we adopt high accuracy for connection molds in which the sizes and position of the holes are controlled below 25% the tolerance of the specification, which allows a limitation of erection error. 在钢结构的安装过程中, 我们采用了高精度的连接件, 它的洞孔大小和位置控制在比规范误差低 25% 的范围内, 这就限制了安装误差。
在这个长句中, 用了两个定语从句, 第一个定语从句是 “in which the sizes and position of the holes are controlled below 25% the tolerance of the specification”, 由于介词提前, 关系代词只能用 which。第二个定语从句 “which allows a limitation of erection error” 是非限制性定语从句, 所以关系代词也只能用 “which”。
3. Can you make the shop drawings if we provide you the basic design drawings?
如果我们提供初步的设计图, 你们是否能制出施工图?
“shop drawings” 是指 “施工图”。



Group Work

Make a dialogue on the topic “The Fabrication of the Steel Structure”, using the words and expressions you have just learned.

TEXT

A structure is the part of a building that carries its weight. For civil engineers, structures are the most part of civil engineering. The structure of all buildings is made up of various combinations and forms of walls, columns, beams, trusses, arches, etc.

Buildings can be classified on the basis of the function of the walls. If the walls carry their share of the dead, live and other loads, in addition to keeping out the weather, etc., the building is called the wall bearing construction. But if the loads, including the weight of the walls, are carried by structural frame consisting of columns, beams and girders, the building is called skeleton construction.

According to types of construction, buildings are classified into timber construction, steel

construction, reinforced concrete construction and so on.



Steel construction consisting of steel beams, columns, and trusses is extensively used for high buildings. For buildings up to about sixty storeys high, steel and reinforced concrete construction are competitive, but for higher buildings, steel construction is without a rival. Great speed is possible with steel construction. Sometimes the structural frame and floor slabs can be constructed at the rate of a storey a day after foundations are in place.

Reinforced concrete construction may be used for nearly all kinds of buildings. Office buildings, school buildings and industrial buildings are often built of reinforced concrete. In buildings with a steel framework the floors and roofs are usually of reinforced concrete. For tall buildings, the columns may be made of steel or of reinforced concrete. For buildings five or six storeys high, exterior bearing walls may be used, but above that height, skeleton construction is usually adopted.

Suspended structures are among the most interesting at the moment. The first large ones were completed in London in 1966. In all these structures, the columns are made fewer and larger so as to reduce the buckling effects on them and to increase their effective length. In the two that were recently built in London, there is only one column in the center of each building. And this is a hollow concrete tower some 12 meters square. It carries the lifts, stairs, ducts, pipes and cables. The tower may be called the core of the building. As a result, for such a building there is no noticeable obstruction to sight or horizontal movement in any direction outwards from the core.



Word Bank

combination	/ˌkɒmbɪˈneɪʃn/	n.	组合, 结合
truss	/trʌs/	n.	木桁架
arch	/ɑːtʃ/	n.	拱
classify	/ˈklæsɪfaɪ/	vt.	分类
share	/ʃeə/	n.	一份
		vt.	分享, 分担
load	/ləʊd/	n.	担子, 荷载
frame	/freɪm/	n. / vt.	构造, 框架; 给……装框架
girder	/ˈɡɑːdə/	n.	大梁
skeleton	/ˈskelɪtn/	n.	骨架, 骨骼
timber	/ˈtɪmbə/	n.	木材

storey	/ˈstɔːrɪ/	n.	(层) 楼
rival	/ˈraɪvl/	n.	竞争者
slab	/slæb/	n.	平板
foundation	/faʊn'deɪʃn/	n.	地基
exterior	/ɪks'tɪəriə/	a.	外部的
suspend	/səs'pend/	vt.	吊, 悬挂
buckle	/ˈbʌkl/	v.	压弯, 使弯曲; 扭曲
hollow	/ˈhɒləʊ/	a.	空的
square	/skweə/	a.	四方的, 正方形的
duct	/dʌkt/	n.	通道
pipe	/paɪp/	n.	管子
cable	/ˈkeɪbl/	n.	电缆, 缆线
core	/kɔː/	n.	核心
obstruction	/əb'strʌkʃn/	n.	障碍物
horizontal	/ˌhɒrɪ'zɒntl/	a.	水平的



Phrases and Expressions

- be made up of ... 由……组成
- civil engineering 土木工程
- on the basis of ... 在……的基础上
- in addition to ... 除……之外
- keep out 置之之外, 防止
- wall bearing construction 承重墙结构
- consist of ... 由……组成
- according to ... 按照, 根据
- reinforced concrete 钢筋混凝土
- and so on 等等
- be built of ... 由……建造的
- in the center of ... 在……的中心



Notes

1. If the walls carry their share of the dead, live and other loads, in addition to keeping out the weather, etc., the building is called the wall bearing construction. 如果除了挡风隔雨等作用外, 墙壁还承受一部分静荷载、动荷载和其他荷载, 这种建筑物就叫承重墙结构。
dead load 静荷载
live load 动荷载
wall bearing construction 承重墙结构
2. ... and those above of concrete (= ... and those above may be made of concrete.)
……以上楼层的柱子可用混凝土建造。
3. ... exterior bearing walls may be used, but above that height skeleton construction is usually adopted. 可用外承重墙结构, 高度更大时, 常采用框架结构。
4. And this is a hollow concrete tower some 12 meters square.
这是一个大约 12 米见方的空心混凝土塔。
“some” 和数词连用表示“大约”。
5. As a result, for such a building there is no noticeable obstruction to sight or horizontal movement in any direction outwards from the core. 因此, 对于这样的建筑, 从核心向外的任何方向上没有明显的障碍物挡住视线或妨碍在楼面上的活动。



Exercises

I. Answer the following questions.

1. Does “wall bearing construction” mean that it only keeps out the weather? What does skeleton construction mean?
2. What kind of construction is used for a building of one hundred storeys high?
3. May “exterior bearing wall” be used for a building of five storeys high?
What kind of construction is used?
4. Can you say something about types of construction? What are they?
5. There are fewer columns in all the suspended structures, aren't there?

II. Complete the sentences with the given words or expressions. Change the form where necessary.

consist of
in the center of

according to
keep out

be built of
in addition to

and so on
civil engineering

1. The hut _____ mud , branches and leaves.
2. In hot dry countries houses are built _____ the heat.
3. The skyscraper is _____ New York City.
4. Water _____ hydrogen and oxygen.
5. _____ the plan, a modern building will be put up here next year.
6. _____ bricks, people also used stones to build houses.
7. I am a graduate of _____ Department in Shanxi Architectural Technical College.
8. Now I can name many technical terms: beam, column, truss, arch _____.

III. Translate the following words or phrases into English.

- | | |
|----------|---------|
| 1. 静荷载 | 2. 动荷载 |
| 3. 承重墙结构 | 4. 框架结构 |
| 5. 木结构 | 6. 钢结构 |
| 7. 钢筋混凝土 | 8. 悬挂结构 |
| 9. 压曲效应 | 10. 电梯 |

IV. Translate the following sentences into Chinese.

1. The structure is a very important part of the works.

2. According to types of construction, buildings are classified into timber construction, steel construction, reinforced concrete construction and so on.

3. Steel construction consisting of steel beams, columns, and trusses is extensively used for high buildings.

4. Reinforced concrete construction may be used for nearly all kinds of buildings.

5. I'd like to see the certificates of your engineers and skilled workers.

V. Explain the following words, phases or expressions in English.

- | | |
|-------------------|------------------------|
| 1. timber | 2. foundation |
| 3. structure | 4. consist of |
| 5. in addition to | 6. reinforced concrete |