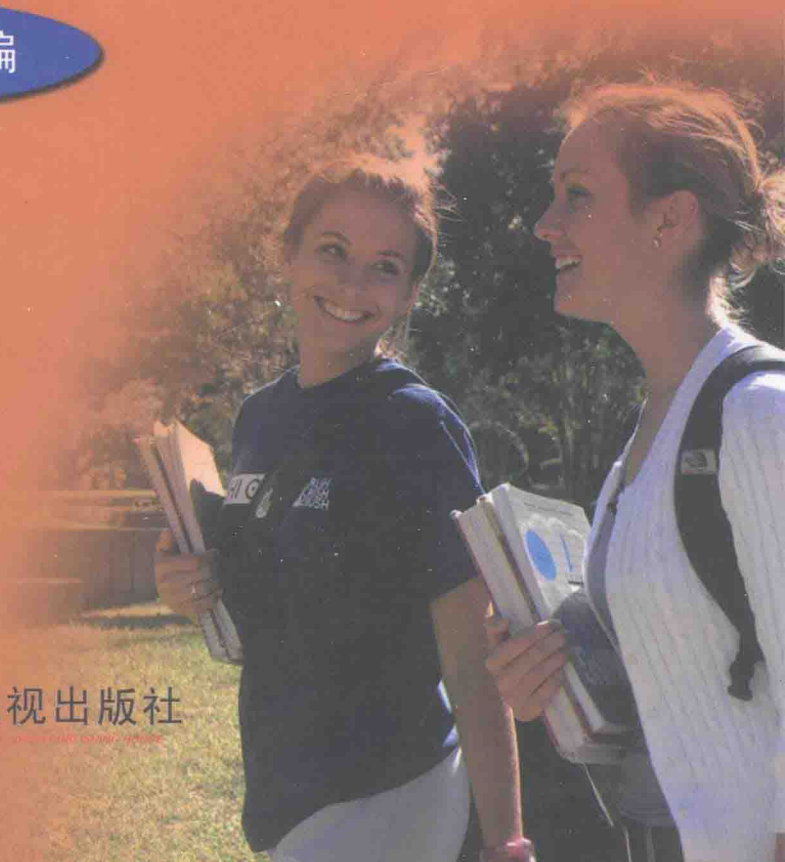
高等教育精品课程规划教材

当代大学生英语 ESP教程

Contemporary College ESP Course

董建明 曾祥玲 主编



中国广播电视出版社

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编审说明

为适应我国高等教育发展的新形势，深化教学改革，尤其是教学模式的改革，提高教学质量，满足新时期国家和社会对人才培养的需要，2007 年教育部制定并颁布了《大学英语课程教学要求》，将大学阶段英语教学分为三个层次：一般要求、较高要求和更高要求。一般要求是高等学校非英语专业本科毕业生应达到的基本要求；较高要求和更高要求是对那些学有余力、英语基础好的大学生设置的。这就提出了要保持大学英语四年学习不断线的问题。因此，我们编写了这部《当代大学生英语 ESP 教程》，为那些基础好的学生进一步提高英语水平提供学习素材和学习方法。

本书在编写时主要考虑到以下两个方面：

一、语言学习的特点就是日积月累，每天读一点，背一点，积少成多，而阅读是继续保持和提高语言水平最直接和最有效的手段之一；

二、将大学英语教学与学生所学专业相结合，提高大学生学术英语能力及专业英语水平，为以后使用英语从事本专业工作或继续深造打下坚实的基础。

教材特点：

一、选材新颖。本书选取的 16 篇文章所涉内容均是目前较为流行的领域，内容涵盖了理工、经管和人文社科等方面的学术文献，既可使学生了解所涉及领域的前沿知识，又为学生提供了标准、规范的学术语言，做到寓知识于语言学习当中。

二、安排合理。本书共八个单元。每个单元分为 Text A 和 Text B。Text A 为精读，教师对课文的背景知识及语言点作主要讲解；Text B 为学生课下自学内容。每单元除单词表外，还列出了相关短语、专有名词等供学生学习参考。

三、讲练结合。本书每个单元均配有大量练习。练习以 Text A 为主，包括回答问题、多项选择、选词填空、完形填空、单词词组以及句子翻译和写作等。Text B 的练习形式包括回答问题、词汇填空等。练习的设计均以各单元内容为主题，使课文和练习融为一体，成为一个系列。

教材使用建议：

本教材涵盖的内容比较广泛，教师可以根据不同的课程设置和学生实际情况，选择全部或部分章节的内容。教材供一学期使用。可采取教师讲解，学生讨论、学生讲解等教学模式。

使用对象：

编写本书的目的主要是为了提高学生的学术英语阅读、翻译及应用文写作的能力。本书主要供高等学校非英语专业提高阶段使用，也可作为大学英语选修课程教材使用。

本教材在编写过程中，得到北京外国语大学中国外语教育研究中心第六批“中国外语教育

基金”的支持和资助，在此特别表示感谢。

由于本教材涉及的学科领域较广，在编写过程中，专业知识方面的疏漏之处在所难免，敬请各位使用本教材的同仁给予批评指正。

编　者

2013 年 9 月

于东北电力大学

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Unit 1

TEXT A

Pagodas

Visitors to Kyoto and Nara, Japan's ancient capitals, invariably retain in their memories the evocative silhouette of a wooden pagoda—at times towering gracefully above the tiled rooftops of an old neighborhood, at times rising abruptly from the midst of a huddle of modern buildings. Most people familiar with the Kansai region will know the stately five-story pagoda of Kyoto's Toji (Kyoto Gokokuji) temple, clearly visible from the Shinkansen bullet train, or the pagoda of Nara's Kofukuji, standing at the edge of Sarusawa Pond.

At 55 meters in height, the pagoda of Toji is the tallest such structure in Japan. It is far from the tallest pagoda ever built, however. The octagonal nine-story pagoda of Kyoto's Hoshoji was 83 meters tall, and the seven-story pagoda of Shokokuji, also in Kyoto, is said to have risen a full 108 meters. These towering structures, along with many other wooden pagodas built over the centuries, were destroyed by fire—generally either struck by lightning or caught in the crossfire of civil war.

Because of their wood construction, Japan's pagodas have always been extremely vulnerable to fire. At the same time, these tall, slender towers, built of interlocking posts and beams, are so resistant to earthquakes and typhoons that Japan's long architectural history records only a very few instances of their collapsing. Some 1,300 years after it was built, the five-story pagoda of Horyuji in Nara, recently added to UNESCO's "world heritage" list of cultural assets, shows not the slightest sign of instability.

Although built primarily of wood, pagodas are by no means lightweight structures. Like most traditional wood-frame architecture in Japan, they display wide eaves, giving considerable prominence to the tiled roof. If we compare the charming octagonal Yumedono, or "Dream Hall" of Horyuji with the octagonal pagoda of Fogongsi temple in China's Shanxi Province, the difference is instructive: The eaves overhang of the Yumedono is 3 meters, more than one-fourth the building's total diameter of 11 meters. The pagoda of Fogongsi, which measures 29 meters across, has an overhang of only 2.5 meters—less than one-tenth the building's diameter.

The jutting eaves of Japan's wooden pagodas lend a powerful rhythm to their silhouette, but their purpose is by no means solely aesthetic.

A wide overhang means a larger roof relative to the rest of the structure. The large roof, consisting of clay and tiles laid on top of wood rafters, is extremely heavy. A heavy roof relative to the size of the building is one of the main characteristics of traditional Japanese wood architecture. With five such overhanging roofs, a five-story pagoda is a heavy structure indeed.

Why such pagodas, despite their height and weight, have remained upright and intact through numerous earthquakes and typhoons is something that no one has been able to explain satisfactorily from the standpoint of modern architectonics. This is because building science evolved in the West as a discipline dealing with the structural mechanics of rigid bodies, that is, buildings of stone, brick, or concrete. In the article that follows, architect Ueda Atsushi elucidates the ingenious techniques by which the Japanese of earlier times built their pagodas to withstand even the strongest winds and earthquakes.

Of course, high towers have been built in the West ever since the Middle Ages. In all cases, however, the material is masonry—stones or bricks joined to form a single mass of wall capable of withstanding this or that impact. In the case of Japan's wooden pagodas, however, each story is structurally independent.

Each story of the pagoda is basically a square box with no bottom, built around twelve outer pillars, or gawabashira. The pagoda as a whole is, in essence, five stacked boxes. Since each story is smaller than the one beneath it, the placement of the gawabashira moves inward as one proceeds up the pagoda, meaning that horizontal beams are needed to support the gawabashira of each story above the first. In fact, these pillars rest on horizontal bases, which in turn are supported by taruki—slanting beams that run from the inside of the structure diagonally downward to the outside, where they support the eaves.

The weight of the upper story, pushing down on the inner ends of the taruki, would cause the outer ends to rise if there were no counterweight. The heavy tiled roof of the eaves performs precisely this function. In short, the taruki functions as a lever arm, while the top of the gawabashira serves as the fulcrum.

The story above bears down on the inner end of the lever, and the overhanging roof balances this load at the outer end. Or, to put it another way, the heavy eaves are in effect supported by the story above. When one reaches the uppermost level, of course, there is no story above to counterbalance the overhang. Here, however, the tall copper or iron spire, or finial, performs that function. The finial of the Horyuji pagoda, we are told, weighs a full three tons.

Ueda explains in detail how this lever construction ensures that, during typhoons and earthquakes, pagodas swing and sway but almost never collapse. Built not to resist the forces of nature head-on but to accept and absorb their impact, pagodas epitomize the ingenuity of traditional Japanese wood architecture. This solution to the problem of structural stability could be said to manifest the Japanese approach to nature—not only to observe it carefully but also to learn from it and coexist harmoniously with it.

Ueda's essay concludes with a discussion of the central pillar, or shinbashira, a feature absent in the wood pagodas extant in China, where the form originated, but present in virtually all Japanese pagodas. Ueda's theory regarding the changing religious and structural significance of this basically free-standing (or hanging) pillar provides much food for thought on the dynamics of Japan's adoption and transformation of mainland culture.

Pagoda followed Buddhism into China around the first century, and developed into pavilion-like pagoda on which one can view scenery after immediate combination with traditional Chinese architecture.

Most Chinese pagodas are multistoried ones. Early pagodas were usually wooden and had quadrangle, hexangle, octagonal and twelve sided ichnographies. During the Sui and Tang dynasties, pagodas tended to be stone and brick. In the Liao Dynasty, solid pagoda appeared. After, in the Song, Liao and Jin dynasties, flower pagodas were introduced which were decorated with assorted carved flowers, honeycombed shrines, animals and Buddha and disciple sculptures, looked like flowers. Generally speaking, pagodas became more and more decorative.

The main reasons early pagodas in China had many storeys were, first, since pagodas were originally built to preserve Buddhist relics, which were considered the most sacred objects in the world, representing Buddha, they should be majestic and striking in style. Second, multistoreyed buildings were traditionally used by the ruling class to show off its power and wealth; they were also believed to be the residences of the mysterious Buddha, the highest saint among the immortals. Third, high buildings of many storeys were usually awe inspiring and mysterious looking.

NEW WORDS

invariable /ɪnˈveəriːəbəl/	*adj.*	never changing; always the same; constant 永不变的；始终如一的；恒定的
invariably	*adv.*	总是
evocative /ɪˈvəukətiv/	*adj.*	～ (of sth.): that evokes or is able to evoke memories, feelings, etc. (of sth.) 引起回忆的；唤起感情的
silhouette /ˌsɪluːˈet/	*n.*	1. dark outline of sb./sth. seen against a light background 黑色轮廓；侧影：*the silhouettes of the trees against the evening sky* 夜空衬托出树木的轮廓 2. picture showing sb./sth. as a black shape against a light background 黑色轮廓像；剪影：(idm 习语) *in silhouette as a silhouette* 以黑色轮廓像或剪影形式
huddle /ˈhʌdl/	*v.*	[Ipr, Ip, Tn. pr esp. passive 尤用于被动语态] (cause sb./sth. to) crowd or be heaped together, esp. in a small space (使某人/某物)聚集在一起(尤指在某狭小空间内) (phr v.) ～ up (against/to sb./sth.): curl one's body up into a small space; snuggle 把身子蜷成一团；蜷缩
	n.	1. number of people or things close together without order 挤作一团的人；杂乱地堆在一起的东西 2. (idm 习语) go into a huddle (with sb.) (infml 口) hold a private or secret conference 进行私下商议；举行秘密会议
octagonal /ɔkˈtægənəl/	*adj.*	八边形的，八角形的
vulnerable /ˈvʌlnərəbl/	*adj.*	1. ～ (to sth./sb.): that can be hurt, wounded or injured 能受伤害的 2. (*fig.* 比喻) exposed to danger or attack; unprotected 暴露于危险面前的；易受攻击的；无防御的
slender /ˈslendə/	*adj.*	1. (a) not very wide but comparatively long or high 细长的；纤细的 (b) (of people) slim(指人)瘦长的，苗条的 2. small in amount or size; inadequate; scanty 微薄的；不足的；微小的
interlock /intəˈlɔk/	*v.*	[I, Ipr, Tn, Tn. pr] ～ (sth.) (with sth.): fit (things which are joined together) firmly so they do not come apart 使(东西)结合、连接、连锁、互锁
eave /iːv/	*n.*	屋檐

overhang /ˌəʊvəˈhæŋ/ *v.* /ˈəʊvəhæŋ/ *n.*	(*pt*, *pp* overhung /ˌəʊvəˈhʌŋ/) [I, Tn] hang over or stand out over (sth.) like a shelf 悬于或突出于(某物)之上 part that overhangs 悬垂的部分
aesthetic /iːsˈθetɪk/ (US also esthetic /esˈθetɪk/) *adj.*	[usu. attrib 通常作定语] 1. (a) concerned with beauty and the appreciation of beauty 有关美的;美学的 (b) appreciating beauty and beautiful things 对美和美的事物欣赏的;审美的 2. pleasing to look at; artistic; tasteful 悦目的;艺术的;雅致的
rafter /ˈræftə/ *n.*	any of the parallel sloping beams supporting the tiles, slates, etc. of a roof 椽
elucidate /ɪˈluːsɪˌdeɪt/ *v.*	[I, Tn] (*fml.* 文) make (sth.) clear; explain 使(某事物)清楚;解释;阐明
ingenious /inˈdʒiːnjəs/ *adj.*	1. ~ (at sth./doing sth.): (of a person) clever at finding new or simple solutions for complex problems (指人)善于用新的或简单的方法解决复杂问题的;心灵手巧的 2. (of a thing) original in design and well suited to its purpose (指物件)设计独特而精巧的 3. (of an idea) very clever and original (指主意)别出心裁的,奇妙的
masonry /ˈmeɪsənrɪ/ *n.*	石工技术,石屋
gawabashira	[日(側柱)] 柱子
taruki	[日(垂木)] 椽,椽子
diagonal /daɪˈægənəl/ *adj.* *n.*	1. crossing a straight-sided figure, eg. a rectangle, from corner to corner (长方形等直边图形的)对角的,对角线的 2. slanting; oblique 倾斜的;斜线的 straight line crossing a straight-sided figure from corner to corner; slanting line 对角线;斜线
counterweight /ˈkauntəweɪt/ *n.*	平衡物,平衡力,砝码
lever /ˈliːvə/ *n.*	1. bar or other device turning on a fixed point (the fulcrum) which lifts or opens sth. with one end when pressure is applied to the other end 杠杆;杠杆装置 2. handle used to operate or control machinery (机器的)控制杆,操作杆 3. (*fig.* 比喻) means of exerting moral pressure (施加道德压力的)手段,方法
fulcrum /ˈfulkrəm, ˈfʌl-/ *n.*	(pl. ~s or fulcra /ˈfulkrə, ˈfʌlkrə/) point on which a lever is supported 支撑杠杆的点;支点

counterbalance /ˈkauntəˌbæləns/	*n.*	～ (to sth.): weight or force that balances another 平衡重;平衡块;平衡锤;平衡力
/ˌkauntəˈbæləns/	*v.*	[Tn] act as a counterbalance to (sb./sth.) 对(某人/某事物)起平衡作用
spire /spaɪə/	*n.*	pointed structure in the form of a tall cone or pyramid, esp. on a church tower (圆锥形或角锥形的)尖顶;(尤指)教堂塔尖
head-on /ˈhedˌɔn, —ˌɔːn/	*adj.*	迎面的,正面反对的
	adv.	迎面,正面针对地
epitomize /iˈpitəmaɪz/	*v.*	摘要,概括,成为……的缩影,作为典范
manifest /ˈmænɪfest/	*adj.*	～ (to sb.) (*fml* 文) clear and obvious 明白的;明显的
	v.	1. show (sth.) clearly; demonstrate 清楚地表明,显示(某事物);证明 2. ～ itself/themselves: show itself/themselves; appear 显露;出现
shinbashira		[日(心柱)] 塔等的顶心柱
pavilion /pəˈvɪljən/	*n.*	1. (*Brit*) building next to a sports ground, esp. a cricket field, used by players and spectators (运动场旁,尤指板球场旁供运动员和观众用的)建筑物 2. light building used as a shelter, eg. in a park 亭子,阁(如公园中的)
quadrangle /ˈkwɔdˌræŋgəl/	*n.*	1. plane figure with four sides, esp. a square or rectangle 四边形;(尤指)正方形,长方形 2. (*fml* 文) four-sided courtyard surrounded by large buildings, eg. in an Oxford college (四周由大型建筑物围绕的)方形庭院(如于牛津大学学院的)
hexangle	*n.*	六方形
octagonal /ɔkˈtægənəl/	*adj.*	having eight sides 八边形的;八角形的
ichnography /ɪkˈnɔgrəfɪ/	*n.*	平面图
assorted /əˈsɔːtɪd/	*adj.*	of different sorts; mixed 各种各样的;混杂的;什锦的
shrine /ʃraɪn/	*n.*	1. any place that is regarded as holy because of its associations with a special person or event 神圣的地方或处所;圣地;圣坛;圣祠;神龛 2. tomb or container in which holy relics are kept 圣陵;圣骨匣
disciple /dɪˈsaɪpəl/	*n.*	follower of a religious, political, artistic, etc. leader or teacher (宗教、政治、艺术等领袖人物或导师的)追随者,门徒,信徒

relic /ˈrelɪk/	*n.*	1. [C] trace or feature surviving from a past age and serving to remind people of it 遗物；遗迹；遗风；遗俗 2. [C] part of the body, clothes, belongings, etc. of a holy person kept after his death as sth. to be deeply respected 圣者遗物(圣者的部分遗骸、衣物、所有物等供人崇奉者) 3. relics [pl] (parts of a) dead body surviving destruction or decay; remnants 遗骸(的部分)；残存部分
majestic /məˈdʒestɪk/	*adj.*	having or showing majesty; stately; grand 威严的；壮丽的；高贵的；宏伟的
immortal /ɪˈmɔːtl/	*adj.*	1. living for ever; not mortal 不朽的；永世的 2. (a) famous for ever; that will be remembered for ever 流芳百世的；万古流芳的；名垂千古的 (b) that will last for a long time or for ever; unfading 永存的；永世的；不泯的
	n.	(usu. pl. 通常作复数) 1. person of lasting fame 不朽的人物；千古流芳之士 2. immortal being, esp. a god of ancient Greece and Rome 永生不朽者(尤指古代希腊和罗马的神)
awe /ɔː/	*n.*	[U] feeling of respect combined with fear or wonder 敬畏；惊惧
	v.	[usu passive 通常用于被动语态; Tn, Tn. pr] ~ sb. (into sth.): fill sb. with awe 使某人敬畏或惊惧

PHRASES AND EXPRESSIONS

bullet train	高速火车
along with	和……一道，和……一起
be/feel vulnerable to	易受到……的攻击/伤害；经受不住
be resistant to	对……有抵抗作用；抵制，反抗
by no means	绝不，并没有
from the standpoint of	从……的观点/角度看
a mass of	许多，大量
in the case of	就……来说，在……的情况下
as a whole	作为一个整体，整个看来
in essence	本质上，实质上，基本上
bear down	竭尽全力，用力；(on)压倒，击败
conclude with	结束(缔结，签订)
show off	炫耀，卖弄

PROPER NAMES

Kyoto /ˈkjəutəu/	京都(日本城市)
Nara /ˈnɑːrə/	奈良(日本城市)
Kansai	[日(関西)]关西(以京都和大阪为中心的地方)
Toji	东寺
Gokokuji	教王护国寺
Kofukuji	[日(興福寺)]兴福寺
Sarusawa Pond	[日(猿沢池)]猿泽池
Hoshoji	a small temple in Kyoto on the site of the original Hoshoji Temple
Shokokuji	相国寺
Horyuji	法隆寺
UNESCO /juːˈneskəu/	*abbr.* 缩写 = United Nations Educational, Scientific and Cultural Organization 联合国教育、科学及文化组织
Yumedono	梦殿
Fogongsi	佛宫寺(位于中国山西省)
solid pagoda	实心塔
Buddha /ˈbudə/	佛,佛像
solid pagoda	实心塔
flower pagoda	花塔

EXERCISES

Comprehension of the Text

I. Answer the following questions.

★Questions 1－5★

Do the following statements agree with the views of the writer?

You should write

YES **if the statement agrees with the views of the writer**

NO **if the statement contradicts the views of the writer**

NOT GIVEN **if it is impossible to say what the writer thinks about this**

1. The pagoda of Toji is the tallest pagoda ever built in Japan.
2. Pagoda of Kyoto's Hoshoji and pagoda of Shokokuji fell during the nineteenth century.
3. Many wooden pagodas were built 300 years ago.
4. The wooden towers were destroyed by earthquakes.
5. Architects in Japan had a powerful rhythm to protect pagodas from collapsing under terrible weather conditions.

★Questions 6－10★

Classify the following statements as being related to

A. Japan's pagodas

B. China's pagodas

C. Both of them

6. Used as observation.
7. Easier interior access to top.
8. The eaves overhang up to half the width.
9. Ingenuity of traditional wood pagodas.
10. Pagodas were introduced from other countries.

★Questions 11－13★

Choose the correct letter A, B, C or D.

11. The difference between Chinese pagoda and Japanese pagoda is that _____.

A. diameter

B. roof

C. tiles

D. height

12. The writer mentions Ueda's theory in order to _____.

A. improve skyscraper design

B. be able to build new pagodas

C. learn about the dynamics of pagodas

D. understand ancient mathematics

13. The storeys of a Japanese pagoda are _____.

A. linked only by wood

B. fastened only to the central pillar

C. fitted loosely on top of each other

D. joined by special weights