赵 纬 张敬源 主编

新编研究生综合英语教程

学生用书（上）

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A New Comprehensive English Course for Graduate Students

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FOREWORD

近年来，我国研究生教育迅猛发展，研究生招生人数以较大幅度逐年递增。如何全面提高研究生的培养质量已成为当前我国研究生教育急需探讨的课题，而其中研究生运用外语知识进行国际交流，获取专业学习所需最新信息的能力又严重影响和制约着研究生的培养质量。由于种种原因，目前我国研究生英语教材建设依然滞后于研究生教育的发展，目前已有的教材多为系列分立式教材，这些教材虽各成一体，便于向纵深拓展，但由于目前研究生英语教学学时较少，要想有效利用这些教材并使之融合为一体，几乎不可能。基于多年来在研究生英语教学方面的探索及对学生需求的了解，在反复征求学生对现有研究生教材的意见以及从事一线研究生教学工作的老师对现行教材分析和讨论的基础上，我们认为有必要编写一本较为实用的研究生综合英语教程，有选择地将研究生必须掌握的文献阅读、写作、翻译三种技巧融合在同一本教材中，既能满足社会的需求与学生的需要，又便利教师的课堂教学。

一、 教材特色

《新编研究生综合英语教程》学生用书（上、下）力争使研究生阶段语言知识的传授与语言运用能力的提高做到相辅相成、有机互补。既不片面强调语言知识的传授，也不片面强调没有坚实语言基础的语言能力的提高。做到边学边用，以用促学。在语言使用中发现和弥补语言知识的不足。此外，该教材还具有以下特色：

1. 集"读、写、译"三种基本技巧于同一教程。
2. 题材新颖、广泛，大部分材料取自近两年国外最新科技文献。涵盖面较宽，包括科技、文史、艺术、文化、哲学等诸多方面。
3. 语言规范、标准、严谨、注重书面语。

4. 选文思想内涵深刻,有助于学生就某些问题运用所学的语言知识发表自己的看法。
5. 练习的编配侧重学以致用,注重素质和技能的培养。加大主观题型比例,培养学生积极运用语言的能力,克服语言学习中的被动性。

二、 内容结构

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课文绝大部分选自近年来发表的原文材料,正课文长度在1000词以上,主要用来训练学生的理解能力,要求学生课前预习、课后复习,在教师的帮助下达到完全理解。副课文长度比正课文略短,后面同样附有生词表,主要用来扩大词汇量,提高阅读速度。正课文后面的四项练习形式紧扣原国家教委颁发的《非英语专业硕士研究生学位课程考试大纲》,因此,与北京市研究生统考试卷的形式相同。每个单元中所包含的读、写、译技巧旨在语用能力方面的培养,帮助理工科研究生在较大程度上掌握与运用英语知识与技能,以求适应社会与学术上的需求。其练习的设计形式在一定程度上与研究生统考试卷中的作文与翻译形式吻合。《教程》的最后附有词根与词缀一览表,以便使学生掌握一些常用的词根、前缀、后缀,其目的在于扩大词汇量,解决阅读中的生词问题。全部练习编写既侧重学以致用,又紧扣《大纲》,而且内容丰富,形式多样,难易程度搭配适当。教师可根据具体情况酌情使用。

教师参考书中备有每篇正课文的翻译与练习答案,供教师备课时参考使用。

三、 编写人员

本教程由北京科技大学张敬源、赵纬负责全书编写体例的策划以及全部书稿的修改、补充和审定工作,编写人员全部为多年来一直从事研究生英语教学的一线教师。参加教材编写的教师有(按姓氏笔画为序):许芳、李晓东、范虹、杨兰、柴晋梅、唐艳军、贾文学、梁卿。贾文学与唐艳军老师分别负责学生用书与教参的文本编辑和排版工作。

限于编者水平,疏漏错讹之处在所难免,敬请读者批评指正。

编 者

2003年5月1日

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UNIT 1

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Reading: Word Study from Context Clues

TEXT A

Pre-reading

I. Answer the following questions before reading the passage.

1. What do you think is the greatest invention in human history?
2. It is said that life is so beautiful just because it only lasts limited years. If technology gives ordinary people an everlasting life, can we also obtain a colorful course?
3. Every coin has two sides. What is the threat brought about by high-tech?

II. Define the following terms.

genome ____________________

fabulous ____________________

eugenics ____________________

polymorphism ____________________

chromosome ____________________

The Gene Dream

Natalie Angier

[1] At first glance, the Petersons (not their real name) of Utah seem like a dream family, the kind you see only on television. They're devout, traditional and very, very loving. Bob Peterson works at a hospital near home to support the family while he finishes up a master's program in electrical engineering. Diane, who studied home economics at Brigham Young University, is a full-time wife and mother. And her time is certainly full: The Petersons have five sons and two daughters, ranging in age from two to thirteen. (As Mormons①, the parents don't practice birth control.)

[2] The children are towheaded, saucer-eyed, and subject to infectious fits of laughter. During the summer months, the backyard pool is cheerily deafening. Says Diane, "Our kids really like just spending time together."

[3] Yet for all the intimacy and joy, the Petersons' story is threaded with tragedy. One of the daughters has cerebral palsy, a nerve- and muscle-cell disorder. The malady isn't fatal, but the girl walks with great difficulty, and she's slightly retarded. Three of the other children suffer from cystic fibrosis, a devastating disease in which the lungs become clogged with mucus, the pancreas fails, malnutrition sets in, and breathing becomes ever more labored. Thus far, their children's symptoms have been relatively mild, but Bob and Diane know the awful truth. Although a person with cystic fibrosis may live to be twenty or even thirty, the disease is inevitably fatal.

[4] "Right now, the kids don't act sick," says Bob. "They go on thinking 'I have a normal life'." But, he admits softly, "We know it won't last forever. If they do get bad, then we won't have a choice. We'll have to put them in a hospital."

[5] The Petersons realize their children's ailments aren't likely to be cured in the immediate future, but they're battling back the best way possible. Bob, Diane, and their seven children, as well as the three surviving grandparents, have all donated blood samples to biologist Ray White and his team at the University of Utah in Salt Lake City. Scientists are combing through the DNA in the blood, checking for the distinctive chemical patterns present only in cystic fibrosis patients.

[6] Their work is part of a vast biomedical venture recently launched by the government to understand all the genes that either cause us harm or keep us healthy. It's

medicine's grandest dream: By comprehending the genome — the complete set of genetic information that makes us who we are—in minute detail, scientists hope an answer to answer the most enigmatic puzzles of human nature. The effort is so immense in its scale and goals that some have called it biology's equivalent of the Apollo moonshot②, or the atom bomb's Manhattan project③.

[7] In fact, it's the most ambitious scientific project ever undertaken; it will cost a whopping $3 billion and take at least fifteen years to complete. By the time researchers are through, they will have deciphered the complete genome. They'll have drawn up a detailed genetic "map", with the size, position, and role of all 100,000 human genes clearly marked. And they'll have figured out each gene's particular sequence of chemical components, called nucleotides.

[8] Though there are only four types of nucleotides, represented by the letters A, T, C, and G, spelling out all the combinations that make up our total genetic heritage will fill the equivalent of one million pages of text. "What we'll have," says Dr. Leroy Hood, a biologist at the California Institute of Technology in Pasadena, "is a fabulous 500-volume 'encyclopedia' of how to construct a human being." Nobel laureate Walter Gilber goes so far as to describe the human genome as "the Holy Grail④ of biology."

[9] Some scientists, however, think their colleagues are chasing a will-o'-the-wisp⑤. Current genetic engineering techniques, say critics, are too embryonic to attempt anything as massive as sequencing the entire genome. Dr. Robert Weinberg of the Whitehead Institute in Cambridge, MA, calls the whole project "misguided" and doubts that scientists will gain major insights even if they can sequence it.

[10] Still, researchers involved in the Human Genome Initiative insist the knowledge will revolutionize the fields of medicine, biology, health, psychology and sociology, and offer a bounty of applications. Using advanced recombinant DNA techniques, scientists will pluck out the genes that cause the 4,000 known hereditary diseases, including childhood brain cancer, familial colon cancer, manic depression, Huntington's disease — the neurological disorder that killed folk singer Woody Guthrie — and neurofibromatosis, or Elephant Man's disease. Beyond analyzing rare inherited disorders, researchers will glean fresh insights into the more common and complicated human plagues such as heart disease, hypertension, Alzheimer's, schizophrenia, and lung and breast cancer. Those studies will enable scientists to develop new drugs to combat human disease.

[11] But the Genome Initiative is not restricted to the study of sickness. As biologists decode the complete "text" of our genetic legacy, they'll be asking some profound

questions: Are there genes for happiness, anger, the capacity to fall in love? Why are some people able to gorge themselves and still stay slim, while others have trouble losing weight no matter how hard they diet? What genetic advantages turn certain individuals into math prodigies, or Olympic athletes? "The information will be fundamental to us forever," says Hood, "because that's what we are."

[12] The most imaginative scientists foresee a day when a physician will be able to send a patient's DNA to a lab for scanning to detect any genetic mutations that might jeopardize the patient's health. Nobel laureate Paul Berg, a biochemistry professor at Stanford, paints a scenario in which we'll each have a genome "credit card" with all our genetic liabilities listed on it. We'll go to a doctor and insert the card into a machine. Instantly reading the medical record, the computer will help the doctor to put together a diagnosis, prognosis, and treatment course. Says Caltech's Hood, "It's going to be a brave new world⑥."

[13] Coping with that new world will demand some bravery of our own. Once our genetic heritage has been analyzed in painstaking detail, we'll have to make hard choices about who is entitled to that information and how the knowledge should be used. This technology is proceeding at an incredible rate, and we have to be sure that it doesn't lead to discrimination in jobs, health insurance or even basic rights, says Dr. Jonathan Beckwith, a geneticist at Harvard Medical School. "We don't want a rerun of eugenics, where certain people were assumed to be genetically inferior, or born criminal."

[14] For better or worse, politicians are convinced that the knowledge is worth seeking. This year, Congress has earmarked almost $50 million for genome studies and, if current trends continue, by 1992 the government should be spending about $200 million annually. Opponents worry the price tag could leave other worthy biomedical projects in the lurch.

[15] Even at that level of funding, the genome project could be beyond the resources of any single country. That's why research teams from Europe, Asia, North America, and New Zealand have joined to form the Human Genome Organization. Among other goals, the newly created consortium plans to distribute money for worthwhile projects worldwide. Meanwhile, the Paris-based Center for the Study of Human Polymorphism distributes cell samples to researchers and shares their findings through an international data bank.

[16] In this country, Nobel laureate James Watson, the co-discoverer of the molecular structure of DNA, is in charge of human genome research at the National Institutes of Health. And Dr. Charles Cantor, a highly respected geneticist from New York's Columbia

University has accepted the top spot at the Department of Energy's Human Genome Center.

[17] The Genome Initiative is sure to affect everybody. Doctors estimate that each of us carries an average of four to five severe genetic defects in our DNA. The majority of those mutations are silent: They don't affect you. However, if you were to marry someone who carries the same defect, you could have a child who inherits both bad genes and is stricken with the disease.

[18] Most genetic flaws are so rare that your chances of encountering another silent carrier are slim — let alone marrying and conceiving a child with such a person. But some defects are widespread. For example, five out of one hundred blacks carry the trait for sickle cell anemia. Bob and Diane Peterson are both cystic fibrosis carriers—but they didn't realize their predicament until they gave birth to afflicted children.

[19] For all the improvements of the last ten years, prenatal diagnosis techniques remain limited. Doctors can screen fetuses for evidence of about 220 genetic disorders, but most of the tests are so time-consuming and expensive they won't be done unless family history suggests the child may have a disease.

[20] One reason it's difficult to screen for birth defects is that most genes are devilishly hard to find. The 50,000 to 100,000 genes packed into every cell of your body are arrayed on 23 pairs of tiny, sausage-shaped chromosomes, which means that each chromosome holds a higgledy-piggledy collection of up to 4,400 genes. Scientists can't look under a microscope to see the individual genes for cystic fibrosis, Down's syndrome, or any other birth defect; instead, they must do elaborate chemical operations to distinguish one human gene from another. So daunting is the task of identifying individual genes that scientists have determined the chromosomal "address" of only about 2 percent of all human genes. "It's like finding a needle in a haystack," says Utah's Ray White.

[21] Scientists must first chop up the twenty-three pairs of human chromosomes into identifiable pieces of genetic material and then study each fragment separately. To make the cuts, they use restriction enzymes — chemicals that break the bonds between particular sequences of nucleotides, the chemical components of genes.

[22] Normally, restriction enzymes snip genetic material at predictable points, as precisely as a good seamstress cuts a swatch of fabric. But scientists have found that the enzymes also cut some fragments at unexpected places, yielding snippets that are longer than normal. It turns out that these variations are inherited, and many have been linked to certain genetic abnormalities. The fragments even serve as reference points for map-making efforts. The DNA segments produced by this technique are nicknamed "riff-lips" ⑦, for restriction fragment length polymorphisms (RFLPs).

[23] In the past three years, DNA sleuths have used the technique to isolate the genes for Duchenne's muscular dystrophy, one of the most common genetic diseases; a grizzly childhood eye cancer; and a hereditary white-blood-cell disease commonly called CGD. But the technique remains labor-intensive and in some ways old-fashioned. Armies of graduate students and postdoctoral fellows do the bulk of the work, using tedious, error-prone methods.

[24] Scientists everywhere are racing to build superfast computers to sort through chromosome samples and analyze RFLP patterns. Until they're devised, researchers are learning to make do. At White's lab, for instance, researchers have jerry-rigged a device that automatically dispenses exceedingly small samples of DNA into rows of test tubes. "It can do in two days what used to take a researcher two weeks," says a technician.

NEW WORDS

1. **devout** /di'vaut/**a.** devoted to religion or to the fulfillment of religious obligations 虔敬的，诚恳的
2. **towheaded** /'təuhedid/**a.** of white-blond hair resembling tow 浅黄头发的，亚麻色头发的
3. **retarded** /ri'tɑːdid/**a.** backward in physical or (esp.) mental development 智力迟钝的，精神发育迟缓的
4. **devastating** /'devəsteitiŋ/**a.** overwhelming; desolate 破坏性的，全然的
5. **clog** /klɔg/**v.** to obstruct movement on or in; block up 障碍，阻塞
6. **mucus** /'mjuːkəs/**n.** the viscous, slippery substance that consists chiefly of mucin, water, cells, and inorganic salts and is secreted as a protective lubricant coating by cells and glands of the mucous membranes 粘液
7. **pancreas** /'pænkriəs/**n.** gland near the stomach, discharging a juice which helps digestion 胰腺
8. **ailment** /'eilmənt/**n.** (mild) illness 疾病(尤指微恙)
9. **enigmatic** /enig'mætik/**a.** puzzling 谜一般的，高深莫测的，神秘的
10. **whopping** /'(h)wɔpiŋ/**a.** exceptionally large 巨大的，庞大的
11. **genome** /'dʒiːnəum/**n.** complete haploid set of chromosomes with its associated genes 基因组，又称染色体组
12. **nucleotide** /'njuːkliətaid/**n.** any of various compounds consisting of a nucleoside combined with a phosphate group and forming the basic constituent of DNA and RNA 核苷酸
13. **fabulous** /'fæbjuləs/**a.** incredible; astonishing 难以置信的；惊人的；巨大的
14. **encyclopedia**/in,saiklə'piːdiə/**n.** a comprehensive reference work containing articles on a wide range of subjects or on numerous aspects of a particular field 百科全书
15. **embryonic** /embri'ɔnik/**a.** being an embryo; rudimentary; incipient [生]胚胎的，开始的
16. **pluck** /plʌk/**v.** to pull out the hair or feathers of; to remove; tug at 拔去(鸡、鸭等)毛，采集
17. **manic** /'meinik/**a.** affected by, or resembling mania [医]狂躁的