

# 现代科技英语

English of Advanced Science and Technology

大学专业英语教材

College Specialized English Course

盛世忠 李洪太 编著  
胡小锐 高胜平



军事谊文出版社

# 现代科技英语

English of Advanced Science and Technology

大学专业英语教材

College Specialized English Course

主 编 盛世忠 李洪太

副主编 胡小锐 高胜平 何苏宁

---

军事谊文出版社

## 图书在版编目 (CIP) 数据

现代科技英语/盛世忠等编著, - 北京: 军事谊文出版社,  
1999.8

ISBN 7-80027-980-4

I. 现… II. 盛… III. 科学技术-英语 IV. H31

中国版本图书馆 CIP 数据核字 (1999) 第 32027 号

**书 名: 现代科技英语**

---

**著 者:** 盛世忠 李洪太等

**出版者:** 军事谊文出版社(北京安定门外黄寺大街乙一号)

(邮编 100011)

**发行者:** 新华书店北京发行所

**印刷者:** 北京天利华印装厂

---

**开 本:** 850×1168 毫米 1/32

**版 次:** 1999 年 8 月第 1 版

**印 次:** 1999 年 8 月第 1 次印刷

**印 张:** 16.625

**字 数:** 430 千字

**印 数:** 1—2000 册

---

**书 号:** ISBN 7-80027-980-4/G·226

**定 价:** 24.00 元

# 前 言

根据国家教委高教司 1996 年 10 月颁发的《大学英语专业阅读阶段教学基本要求》，专业英语教学应列为大学教学的必修课。对理工科大学生来说，学习专业英语的目的，就是通过阅读专业英语书刊和文献，进一步提高阅读和翻译英语科技资料的能力，学习国外的先进科学技术，获取专业所需要的信息，了解所学学科前沿的发展状况，从而准确地进行科研选题，作开题报告等。

为了提高当代大学生的科学文化素质，结合现代科学技术发展的特点，我们从英文外刊和文献中节选一些能反映现代科学技术的文章，编写了《现代科技英语》一书作为大学专业英语教材。该书能反映出当代最新科技动态和科技发展趋势；具体反映在高能物理、航空航天、信息技术、材料技术、生物工程、人工智能等高科技领域。按照邓小平同志提出的军队要“面向世界，面向未来，面向现代化”的要求，我们还精选了一些军事高科技文章作为《现代科技英语》的教学内容。这不仅适用于军队院校教学的需要，也可作为对地方的理工科大学生进行国防科技教育的内容。

专业英语课程的重点应放在培养学生的阅读、理解和翻译英语文献资料的能力上。《现代科技英语》设置

了理解练习，句子翻译练习和短文翻译练习。学生可以通过这些练习，加深对科技词汇的记忆，巩固所学的翻译技巧，提高文字表达能力和修辞水平，丰富专业知识，增强创新意识。

《现代科技英语》内容新，覆盖面广，选材精，适于课堂教学，有关专家、教授认为，该书完全可以作为理工科大学的英语专业教材。

编 者

一九九八年十二月

## Contents

### Unit One

Text: Vision 2020

2020 年展望 ..... (1)

Study & Practice ..... (15)

### Unit Two

Text: Digitizing Force in the 21st Century

二十一世纪的数字化部队 ..... (18)

Study & Practice ..... (38)

### Unit Three

Text: Early morning DEW: Directed Energy Weapons Come of Age

发展中的定向能武器: 定向能武器趋于完善 ..... (41)

Study & Practice ..... (49)

### Unit Four

Text: Defense against Smart Weapons

对(激光)制导武器的防御 ..... (52)

Study & Practice ..... (60)

### Unit Five

Text: Roles for UAVs

无人机的用途 ..... (64)

Study & Practice ..... (71)

### Unit Six

Text: UAV Support for FA Operation

无人机对野战炮兵作战的保障 ..... (77)

Study & Practice ..... (86)

### Unit Seven

Text: All about Monitors

监测器概述 ..... (90)

Study & Practice ..... (105)

### Unit Eight

Text: Computer Viruses Loom as Future Era Weapons

计算机病毒就要成为划时代的武器..... (108)

Study & Practice ..... (123)

### Unit Nine

Text: New Scientific Breakthroughs

科学技术的新突破..... (126)

Study & Practice ..... (133)

### Unit Ten

Text: Scientists Laboring to Make Computers Learn to think

科学家竭力使计算机学会思维..... (138)

Study & Practice ..... (144)

### Unit Eleven

Text: A Robot about the House

家用机器人..... (150)

Study & Practice ..... (156)

### Unit Twelve

Text: Armour-suited Warriors of the Future

未来身穿铠甲的武士..... (162)

Study & Practice ..... (168)

### Unit Thirteen

Text: Major Research Areas in Physics Today

当代物理学主要研究领域..... (173)

Study & Practice ..... (182)

#### **Unit Fourteen**

Text: From Apple Fall to Superstring

从苹果下落到超弦理论..... (186)

Study & Practice ..... (193)

#### **Unit Fifteen**

Text: From Fission and Fusion to Enhanced X – Rays and Microwaves

从裂变和聚变到增强的 X 射线和微波 ..... (201)

Study & Practice ..... (209)

#### **Unit Sixteen**

Text: Frequency War of Airborne Radar

空载雷达的频率战..... (214)

Study & Practice ..... (221)

#### **Unit Seventeen**

Text: Satellites Weapons in Battle of Deception

卫星欺骗战中的武器..... (227)

Study & Practice ..... (234)

#### **Unit Eighteen**

Text: Lasers

激光..... (240)

Study & Practice ..... (251)

#### **Unit Nineteen**

Text: The Age of Superstuff

超级材料时代..... (256)

Study & Practice ..... (265)

#### **Unit Twenty**

Text: Genetic Engineering



遗传工程.....	(270)
Study & Practice .....	(275)
Extensive Reading Materials 泛读材料 .....	(281)

Unit One

Text

## VISION 2020

[1] This future focus, known as Vision 2020, was recently unveiled at the Senior Fire Support Conference, hosted by the Field Artillery School, Ft. Sill Okla. The evolving vision includes an intuitive assessment of future system requirements for the next quarter century as well as a projection of the capabilities that such future forces must possess.

[2] Vision 2020 has not evolved in isolation. In fact, one essential aspect of the vision is the way it dovetails with the Army's larger vision of landpower in the 21st century. Specific aspects of the fire support vision address full - dimensional warfare, tying the role of fire support to the joint force of the future and merging technological possibilities with warfighting capabilities to produce a seamless force of unified combat power. Moreover, the vision also offers a clear focus for research and development, organization, doctrine, materiel and soldier development.

[3] "Our challenge is depicted by the 'brick wall' planted firmly at the end of the POM [program objective memorandum]," noted Brig. Gen. Leo J. Baxter, assistant commandant of the U.S. Army Field Artillery School, when he unveiled Vision 2020 at the Senior Fire Support Conference. "And this is good news and bad news. The good news is that we are surviving on the near side of the

wall, bringing on new doctrine and new systems that take us to the very edge of the 21st century. . . . And there's more good news. We look beyond the wall as well, with systems like HIMARS, our high - mobility artillery rocket system. . . . The bad news is that our focus and energy have been almost exclusively on this side of the wall. But technology is evolving so rapidly that this approach is grossly inadequate. We must start now to find the capabilities we will need in 2020—capabilities unconstrained by resources, constrained only by the limits of technology we believe will be available.”

[4] “What we are seeking is not some modest increase in the POM,” he added, “but to energize the ability to look far beyond the POM, and to be prepared to meet the needs of an uncertain and unpredictable future.” Vision 2020 recognizes that combined arms are the 20th - century end state for warfighting. However, it also contains the realization that the days of combined arms warfare may be coming to an end, to be replaced by the application of a new concept, “unified combat power.” Execution of this power is envisioned as being “instantaneous and lethal beyond description.”

[5] Adaptive artillery forces are seen as the key fire support component of this unified combat power. Field artillery units will operate in unison with armor and infantry units, providing combat power that will merge close, deep and rear operations into a single seamless battle-space.

[6] The fundamental requirements of fire support and support of maneuver elements will not change; however, battlefield capabilities will increase dramatically because current awkward manual processes for synchronizing the various systems within the fighting force

will become embedded within the systems. The result of unified execution at all levels will provide the commander with the means to dominate the battle-space.

[7] Future field artillery forces will be able to act as part of this unified combat power. Working in a shared – information environment of expanded battle-space awareness, future artillery forces will have the ability to engage the enemy with hair – trigger responsiveness. They will be netted to every element of the forces, providing the ability for instantaneous reaction to changing situations.

[8] Most important, the forces are being envisioned as universally adaptable for the full range of military operations. This adaptability translates to mission packages in which artillery forces are organized and allocated to accomplish specific battlefield tasks.

[9] Vision 2020 also includes an intuitive assessment of what these future artillery forces and systems might look like. The assessment reflects a logical growth from current and near – term programs to 2020 systems that may incorporate evolving, projected and leap – ahead technologies.

[10] For example, current primary fire support targeting sensors are the AN/TPQ – 36 and AN/TPQ – 37 Fire – finder radar systems. Near – term programs include capability upgrades for both systems.

[11] Fire-finder TPQ – 36 Block II features an electronics upgrade for force package I and II units. Improvements include a new signal processor, lightweight modular shelter, data on hard drive and compact disc, enhanced probability of location and the capability for remote operations 100 meters from the shelter. The upgrade pro-

gram is fully funded with first unit equipped (FUF) projected in fiscal 1997.

[12] Enhanced Fire-finder TPQ - 37 BLOCK I is also fully funded with FUE in fiscal 1996 for force packages I and II. Enhancements include a track suspension system, C - 130 transportable design, incorporation of self - survey, improved maintainability, an upgraded cooling system and the ability to place the shelter on a high - mobility, multipurpose wheeled vehicle.

[13] Looking beyond the brick wall, artillery planners have also identified a midterm program, Fire-finder TPQ - 37 preplanned product improvement (P<sup>3</sup>I). An overview of the P<sup>3</sup>I effort projects the introduction of advanced technologies that will allow high - speed processing, an objective range of 300 kilometers and the possibility of bistatic operation. Additional advantages will include a reduction in crew size from 12 to six. Research, development, test and evaluation funding has been identified for this P<sup>3</sup>I program with FUE planned for fiscal 2005.

[14] Vision 2020 reflects a leap ahead from these near - term and midterm improvements to a sensor, not necessarily a target acquisition asset, that is tentatively called Distant Eyes. While it may or may not be an artillery system, it must be designed to meet the needs of unified combat power by providing several critical capabilities.

[15] Specifically, it must have a range equal to the attack capabilities of the adaptive force. It must be able to identify friend or foe (IFF) in a non-cooperative environment. It must find and identify potential targets. Finally, to fulfill the promise of a shared - in-

formation environment, it must have the connective ability to transmit data in an instant to a command system that will distribute the information to relevant users. Similar philosophies are reflected in other areas of field artillery materiel.

[16] Command, control, communications and intelligence systems are seen as evolving through the near-term advanced field artillery tactical data system to a system identified as Napoleon. The notional system will provide artillerymen with the means to access the common relevant data base while making tactical and technical fire direction processes reflex actions within the system.

[17] Planners note that it will be completely transparent to the user and that it must allow artillerymen to see the battlefield in all three dimensions. Finally, it may have the ability to learn through a system of neural networks or comparable technology.

[18] Current light artillery forces field a mixture of 105mm and 155mm cannon systems. Near-term improvements will likely include further improvements to the 105mm as well a new 155-mm towed system. Vision 2020 planners describe a single notional system, identified as Panther, that could achieve the performance characteristics of both calibers. The system would be characterized by high mobility, precision and lethality.

[19] Medium cannon considerations label the field artillery's current Paladin as the crowning achievement of the 20th century. However, Vision 2020 emphasizes that the new advanced field artillery system (AFAS) is the cannon system that the Army must have for the 21st century.

[20] By 2020, planners envision new technologies and evolu-

ing requirements that will allow even further improvement of AFAS. These technologies, being grouped under a package identified as AFAS + + , will provide greater range, the ability to hit moving targets, the ability to operate the weapon from a remote location, and enhanced survivability through the development of new armor-like materials and a suite of new detection sensors. A 2020 rocket and missile launching system is envisioned with many of the combined characteristics of the multiple-launch rocket system and HIMARS.

[21] The future launcher, tentatively called Scorpion, has the following notional characteristics: easily deployable with early entry forces, high survivability, IFF capabilities, threat warning devices covering the entire electro-optical spectrum and a turret-mounted self-protection weapon.

[22] The fire support vision also reflects the need for weapons to be armed with spectrum of effects—from lethal blast to non-lethal materiel and personnel incapacitating agents—to meet the indirect fire needs of the adaptive artillery force.

[23] New technologies will also raise the possibilities of brilliant munitions with warheads and submunitions capable of locating, identifying, discriminating and attacking targets with precision accuracy. Some of these munitions may actually have the capability of communicating with each other to provide new targets of other battlefield assessments. Some requirements may call for anti-radiation homing and directed energy munitions. Other possible munitions advances will focus on low-observable munitions and loiter munitions with the ability to shift locations.

[24] “We are no more than five years away from the first mission need statements for the 2020 force,” explained Gen. Baxter as he summarized the effort before Senior Fire Support Conference attendees. “We want to start the momentum for modernization now. The Army has already begun with the efforts called Brigade 96, Division 97 and Corps 99. These are guiding us toward the force – projection Army of the 21st century. The 2020 vision provides our framework to focus these efforts, to inspire our partners in industry and academia and to ensure that the field artillery leads the way in the 21st century. We have made a first step in postulating an end state. We believe that field artillery units will remain a vital part of America’s future land-power and that that is a future we can secure. What we ask now is your wisdom, your insight and your reflection to help us focus and chart these future steps.”

### **New Words**

project v. 设计, 规划; 投掷; 映; 突(凸)出

upcoming a. 即将来临的

military planner 军事策(规)划者

ever-widening a. 广泛的

diverse a. 多种多样的, 形形色色的; 多变化的; 不同的

dramatic a. 戏剧性的, 惹人注目的; 显著的

departure n. 启程, 离开; 违背, 背离

scenario n. [意] 剧情说明; 电影剧本; 方案

doctrine n. 理论, 学说; (军事) 条令

U.S. Army's support community 美国陆军火力支援委员会

assessment n. 估价, 评价



unveil vt. 除去…的面纱；揭（显）露；展出

senior Fire support Conference 火力支援高级会议

host vt. 作主人招待；在…上作主人

Field Artillery school, Ft, Sill, Okla. 俄克拉何马州西尔堡  
野战炮兵学校

intuitive a. 直觉（观）的

dovetail v. 和…吻合；使相呼应

land—power n. 陆军力量；地面力量

full - dimensional a. 全方位的

joint force 联合部队（由两个或以上的军种组成的部队）

depict vt. 描绘（写，述）

program objective memorandum (POM) 规划目标备忘录

U.S. Army Field Artillery school 美国陆军野战炮兵学校

high - mobility artillery rocket system (HIMARS) 高机动火  
箭炮系统

unconstrained a. . 非强迫的；不勉强的；不受约束的

unpredictable a. 无法预言的

unified combat power 联合战斗力

combined arms 联合兵种

envision vt. 预想；展望

instantaneous a. 瞬间的，即刻的

lethal a. 致死（命）的

adaptive a. 适应（合）的

field artillery units 野战炮兵部队

unison n. 一致；调和

armor n. [总称] 装甲板 [总称] 装甲部队；装甲兵（种）

infantry units 步兵部队