学术英语综合教程

An Integrated Course for General Academic English

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大学通识教育中心课程教材

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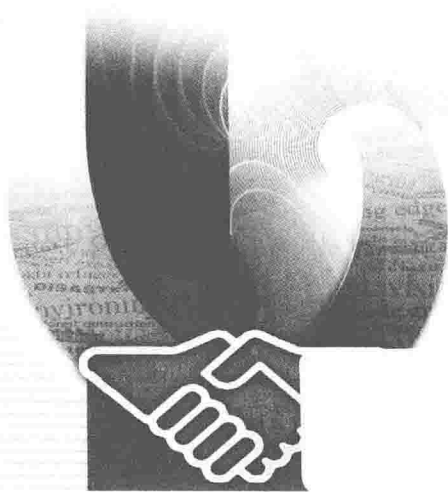# 前言

英语是当今世界学术交流的通用语言,能够熟练使用英语进行学术交流是国际化人才的必备条件之一。在此背景下,教育部和财政部在 2007 年发布的《关于实施高等学校本科教学质量和教学改革工程的意见》中明确指出,"大学英语教学改革要切实提高大学生的专业英语水平和直接使用英语从事科研的能力"。2007年的《大学英语教学要求》也提出,"各高等学校应根据实际情况……将综合英语类、语言技能类、语言应用类、语言文化类和专业英语类等必修课程和选修课程有机结合,确保不同层次的学生在英语应用能力方面得到充分的训练和提高。"近期的教学改革研究也表明,在大学英语基础阶段开设学术英语类的课程,能够有效促进学生语言应用能力及思维能力的同步发展,是大学英语教学未来发展的趋势。为此,我们编写了这本《学术英语综合教程》,旨在帮助已完成大学英语基础阶段学习的学生掌握通用学术英语的语言特征及交际规范,同时提高研究思维能力,为其将来学习专业英语课程及从事科学研究打下坚实基础。

本教材基于"以用促学"的编写思路,将英语学习与专业知识学习相结合,将语言技能、科技知识与批判性思维培养有机融合,着力培养学生运用英语进行学术研究和学术交流的能力,使大学英语教学更具针对性、专业性和实用性。选材注重趣味性、学术性及思辨性,力求选篇结构清晰、语言表述规范、论证逻辑严密。练习设计秉承互动协同的新教学理念,以任务为导向,将输入与产出紧密结合,根据材料的特征灵活设计任务,帮助学生掌握学术英语的交际目的和语言实现手段,以及对研究进行批判性评价的方法。教材具有以下三个主要特色:

* 融语言能力发展与研究思维培养为一体

本教材的内容设计始终围绕三个核心问题:(1)学术语篇具有怎样的语类特征及词汇语法实现手段?(2)语言形式背后反映出怎样的思维构建过程及逻辑推进模式?(3)如何对研究进行批判性的评价并提出自己的创见?每个单元均涵盖研究内容、表层语言形式、逻辑思维模式及批判创新等四个层次的培养目标,避免对语言或思维规则的平面讲解,力求通过任务设计启发、引导学生总结学术英语的使用规律,并以具体研究为案例,提高学生发现问题、解决问题的能力,促进学生研究思维的发展,实现英语教学由单一的语言知识传授转向语言技能与思维能力培养并重。

• 输入与产出紧密结合,最大限度刺激协同效应

本教材以王初明教授提出的"语言习得有效路径"为理论基础,在任务设计中贯穿"输入与产出紧密结合,最大限度刺激协同效应"的原则,每个单元都将听、说、读、写四项语言技能有效融合,所有的输入与产出活动在内容上都高度相关。由此,输入为产出提供语言样例,为协同创造条件;输出作为输入的终极目标,促进理解能力向产出能力的转化,让学生学以致用。编写突破了传统语言教学中单纯强调输入或输出的局限,以学习者理解与产出能力之间的不对称为出发点,以任务设计为途径,促使较弱的产出能力不断趋同于较强的理解能力,催生外语学习的内生动力,提高教学效率。

• 选材及任务设计新颖,兼顾科学性、工具性与人文性

本教材的选材主要来自于国际主流的科普新闻网站及新近出版的学术著作,内容涉及心理学、语言学、生物、认知神经科学等多个领域中的前沿热点问题。所选主题力求贴近学生的日常生活及专业知识学习,强调趣味性及实用性,并以开阔的视角看待科学技术,注重对科学技术的人文思考,在帮助学生掌握科技文献语言知识的同时,启发他们对科学的哲学思考,培养人文情怀,以此激发学生的求知欲,克服通用英语学习中普遍存在的倦怠情绪,提高外语教学效率。

教材编写分工如下:王敏和张艺琼主要负责全书内容的策划、编排、修改及审定,蔡宁、卢燕华、黄奕、王芙蓉、冯娟负责单元的具体编写。

本教材在编写中参考了一些学术著作、期刊论文及网站中的资料(具体的出处和来源见附录),并得到西安交通大学"十二五"规划教材项目的支持,在此一并致谢。另外,感谢西安交通大学外国语学院陈向京教授对本教材提出的宝贵的意见和建议。由于编者水平有限,教材难免有疏漏和不尽完善之处,请各位使用者提出宝贵修订意见。

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编　者

2016 年 7 月

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使用说明

本教材由 10 个单元组成,每个单元围绕一个科技话题展开,涵盖学术演讲、科普新闻及科技评论等内容。每个单元分为四部分:

Part Ⅰ:**Watching an academic talk** 以一个与单元主题相关的学术演讲切入,激发学生对该科技话题的兴趣。学生通过完成 Pre-watching task,Spot dictation 及 Post-watching task 建立对单元科技话题内容的初步认识,为第二部分的阅读做准备,同时提高对学术演讲语言特征和结构的掌握和使用能力。

Part Ⅱ:**Reading science news** 以一篇介绍单元主题前沿研究的科普新闻(Text A)为阅读材料,帮助学生了解研究的目的、意义、方法和主要发现等,并学习科学研究的逻辑推理过程、优点及局限等。每篇文章之前有 Word bank(词汇表),之后附有 Notes 帮助学生了解相关的背景知识。练习包括四个板块:Reading comprehension 通过知识结构图、多项选择和摘要写作等练习考察和提升学生对研究内容的理解;Vocabulary expansion 通过词缀、词性和词义等练习提高学生的词汇掌握量和使用能力;Writing imitation 引导学生模仿课文中的典型句型结构提高写作能力;Further development 通过辩论、小组合作研究、小型调查等多样化的方式培养学生的语言使用能力和批判性思维能力。

Part Ⅲ:**Reading an academic text** 以一篇与 Text A 主题一致的学术论文节选为阅读材料,深化学生对单元科技话题的理解,并进一步熟悉、掌握学术语篇的语言特征。练习包括阅读理解、词汇扩展和翻译等三个部分。

Part Ⅳ:**Learning tips** 以一篇介绍学习策略或方法的短文为阅读材料,设计相关任务帮助学生解决外语学习特别是学术英语学习中普遍存在的一些难点问题,如拖延症、学术阅读策略、数据分类及剽窃规避等。本部分主要供学生课后拓展使用。

单元的内容选材和练习设计难度逐渐增加,建议按章节顺序进行授课。部分词汇练习中对术语(如 collocation,meaning in context)的解释和说明仅在第一单元提供,其他单元仅提供练习指令。

本教材附有练习答案、视频及视频文本,供教师和学生参考。视频资料的观看及下载地址:www. xjtupress. com(登录首页,点击"读者服务"查找)。

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Unit 1 How to Detect a Lie?

Learning Objectives

- Learn to give an account of a study
- Learn terminologies and vocabularies of lie detection
- Learn to fight procrastination

Part I Watching an Academic Talk

How to Spot a Liar

with scientific knowledge of how to spot deception.

http://www. ted. com/talks/pamela_meyer_how_to_
spot_a_liar#t−141296 (retrieved on April 22, 2013).

Pre-watching Task

Step 1 *Work in groups of four and brainstorm on the following statements about lying. Then judge whether they are true or false according to your personal experience. Please specify your reasons when you make the judgments.*

(1) We are all liars.

(2) A lie has power only when someone else agrees to believe it.

(3) People are deceived mainly because they are greedy.

(4) Introverts lie more than extroverts.

Step 2 *Look back at the statements in Step 1 after watching the video clip. Are there any changes in your judgments? Now judge again according to the information in the video. Write T for True and F for False.*

(1) _____ (2) _____ (3) _____ (4) _____

Listening Comprehension

Put a check mark (√) next to the statements or facts in the right column that support the arguments in the left column.

Arguments	Statements/Facts
(1) *Lying is a cooperative act.*	A lie has no power by its mere utterance. (　) We are all liars. (　) A lie has power only when someone else agrees to believe it. (　) You got lied to because you agreed to get lied to. (　)
(2) *Not all lies are harmful.*	We sometimes lie _____. a) for the sake of social dignity (　) b) to keep a secret that should be kept secret (　) c) to compromise our security (　) d) to undermine democracy (　)
(3) *People lie with distinct frequency.*	Men lie more to other people than women do. (　) Strangers lie three times within the first 10 minutes of meeting each other. (　) We lie more to strangers than we lie to coworkers. (　) You may be lied to 10 to 200 times a day. (　)

Spot Dictation

In this task, you'll listen to part of the video clip again. While listening, fill in the blanks with the exact words you hear from the clip.

If you don't want to be deceived, you have to know, what is it that you're hungry for? And we all kind of hate to (1) _____ it. We wish we were better husbands, better wives, smarter, more powerful, taller, richer—the list goes on. Lying is an (2) _____ to bridge that gap, to connect our wishes and our (3) _____ about who we wish we were, how we wish we could be, with what we're really like. And (boy) are we willing to (4) _____ those gaps in our lives with lies? On a given day, studies show that you may be lied to anywhere from 10 to 200 times. Now (5) _____, many of those are (6) _____. But in another study, it showed that strangers lied three times within the first 10 minutes of meeting each other. Now when we first hear this data, we recoil. We can't believe how (7) _____ lying is. We're essentially against lying. But if you look more closely, the plot actually (8) _____. We lie more to strangers than we lie to coworkers. Extroverts lie more than introverts. Men lie eight times more about themselves than they do other people. Women lie more to protect other people. If you're an average married couple, you're going to lie to your spouse in one out of every ten (9) _____. Now you may think that's bad. If you're unmarried, that number (10) _____ three.

Post-watching Task

When people lie, indicators of lying can always be detected from their language or body languages. For example, using formal rather than informal language in one's denial; freezing one's upper body; looking into the listener's eyes most of the time and smiling with contracting muscles in one's cheeks. Work in groups of four, read the following scenarios and decide whether the person is lying or not. Then discuss on other possible clues for people to tell if one is lying.

(1) You invite your friend to have dinner with you. He/She rejects the invitation as follows: "Sorry, I have to do my homework tonight and can't hang out with you. My English teacher is terrible and has asked us to write an essay on water saving in rural areas. I have no idea about it, and I have to go to the

library to search information for it. I don't think I can finish it tonight."

(2) An employer is asking his employee if he has sold the information to a businessman named John Royce. The employee answers: "I did not sell the information to that guy, Mr John Royce. He has a strong network with our staff. He may have got it from Tom, Steward, or even Mary."

Part Ⅱ　Reading Science News

Pre-reading Task

Liars are traditionally identified by trained interrogators. Do you think it is possible for computers to detect lies? Work in pairs and come up with a list of lie-detecting clues, and then discuss whether the clues can be automatically detected by computer. An example has been given.

Example: clue—change of body heat

Currently, computers can automatically detect the change of body heat of people.

(1) _____

(2) _____

(3) _____

Text A

Word Bank

Noun	Verb	Adjective	Adverb
detection	track	promising	typically
deceit	inspire	primary	
cue	prompt	involuntary	
interrogator	verify	distinct	
deviation	cull	consistent	
expertise		foolproof	
incentive		mundane	

Computer Detects Liars' Eye Activity

Inspired by the work of psychologists who study the human face for clues that someone is telling a **high-stakes lie**[1]. University at Buffalo computer scientists are exploring whether machines can also read the visual *cues* that give away *deceit*. Results so far are *promising*: In a study of 40 videotaped conversations, an automated system that analyzed eye movements correctly identified whether 5
interview subjects were lying or telling the truth 82. 5 percent of the time.

That's a better accuracy rate than expert human *interrogators typically* achieve in **lie-***detection* **judgment experiments**[2], says Ifeoma Nwogu, a research assistant professor at UB's Center for Unified Biometrics and Sensors (CUBS) who helped develop the system. In published results, even experienced interrogators 10
average closer to 65 percent, Nwogu says. "What we wanted to understand was whether there are signal changes emitted by people when they are lying, and can machines detect them? The answer was yes, and yes." says Nwogu.

The research was peer-reviewed, published, and presented as part of the 2011 IEEE[3] Conference on Automatic Face and Gesture Recognition. Nwogu's 15
colleagues on the study included CUBS scientists Nisha Bhaskaran and Venu Govindaraju, and UB communication professor Mark G. Frank, a behavioral scientist whose *primary* area of research has been facial expressions and deception. In the past, Frank's attempts to automate deceit detection have used

20　systems that analyze changes in body heat or examine a slew of *involuntary* facial expressions. The automated UB system *tracked* a different trait—eye movement. The system employed a statistical technique to model how people moved their eyes in two *distinct* situations: during regular conversation, and while fielding a question designed to *prompt* a lie. People whose pattern of eye movements

25　changed between the first and second scenario were assumed to be lying, while those who maintained *consistent* eye movement were assumed to be telling the truth. In other words, when the critical question was asked, a strong *deviation* from normal eye movement patterns suggested a lie. Previous experiments in which human judges coded facial movements found documentable differences in

30　eye contact at times when subjects told a high-stakes lie.

　　What Nwogu and fellow computer scientists did was create an automated system that could *verify* and improve upon information used by human coders to successfully classify liars and truth tellers. The next step will be to expand the number of subjects studied and develop automated systems that analyze body

35　language in addition to eye contact. Nwogu says that while the sample size was small, the findings are exciting. They suggest that computers may be able to learn enough about a person's behavior in a short time to assist with a task that challenges even experienced interrogators. The videos used in the study showed people with various skin colors, head poses, lighting, and obstructions such as

40　glasses.

　　This does not mean machines are ready to replace human questioners, however—only that computers can be a helpful tool in identifying liars, Nwogu says. She notes that the technology is not *foolproof*: A very small percentage of subjects studied were excellent liars, maintaining their usual eye movement

45　patterns as they lied. Also, the nature of an interrogation and interrogators' *expertise* can influence the effectiveness of the lie-detection method.

　　The videos used in the study were *culled* from a set of 132 that Frank recorded during a previous experiment. In that original study, 132 interview subjects were given the option to "steal" a check made out to a political party or

50　cause they strongly opposed. Subjects who took the check but lied about it successfully to a retired law enforcement interrogator received rewards for themselves and a group they supported. Subjects caught lying incurred a penalty: they and their group received no money, but the group they despised did.

Subjects who did not steal the check faced similar punishment if judged lying, but received a smaller sum for being judged truthful. The interrogators opened each 55 interview by posing basic, everyday questions. Following this *mundane* **conversation**⁴, the interrogators asked about the check. At this critical point, the monetary rewards and penalties increased the stakes of lying, creating an *incentive* to deceive and do it well.

In their study on automated deceit detection, Nwogu and her colleagues selected 60 40 videotaped interrogations. They used the mundane beginning of each to establish what normal, baseline eye movement looked like for each subject, focusing on the rate of blinking and the frequency with which people shifted their direction of gaze. The scientists then used their automated system to compare each subject's baseline eye movements with eye movements during the critical 65 section of each interrogation—the point at which interrogators stopped asking everyday questions and began inquiring about the check. If the machine detected unusual variations from baseline eye movements at this time, the researchers predicted the subject was lying.

http://www. futurity. org/science-technology/computer-detects-liars％e2％80％99-shifty-eyes/ (Retrieved on April 18, 2013).

Notes:

(1) a high-stakes lie：高风险的谎言。意指该谎言具有高利害关系，撒谎者会因该谎言面临关系重大的利益或损失。

(2) lie-detection judgment experiments：测谎试验。该试验的原理是人在说谎时产生的心理压力会引起一系列的生理反应，如心跳加快、血压升高、肌肉微颤等。由于这些生理反应受人的神经系统控制，因此通常情况下它们是人的主观意志无法控制的。

(3) IEEE：电气和电子工程师协会。全称 Institute of Electrical and Electronics Engineers，是目前全球最大的非营利性专业技术学会。IEEE 致力于电气、电子、计算机工程和与科学有关的领域的开发和研究，在太空、计算机等多个领域已制定 900 多个行业标准，现已发展成为具有较大影响力的国际学术组织。

(4) mundane conversation：日常会话；有关日常生活起居等方面的对话。

→ Reading Comprehension

1. *When you report a study, the answers to the questions in the left column of the table should be involved. Please write in the right column your answers to these questions according to the information you get from Text A.*

Purpose Why to conduct the research?	To explore (1) _____ _____ .
Findings What has/have been found?	An automated system that analyzed eye movements correctly (2) _____ _____ .
Methodology How to get the results?	It detects lies by analyzing changes in eye movements rather than body heat or facial expressions.
Significance Why is the research worth reporting?	(3) _____ than expert human interrogators typically achieve in lie-detection judgment experiments
Future direction How to continue the study?	The next step will be to expand the number of subjects studied and (4) _____ _____ .

2. *Complete the following summary with the information from Text A.*

   Computer scientists from University at Buffalo devised an automated system that can analyze (1) _____ to detect deceit. The proposition underpinning the design of the system is that (2) _____ when they are lying. Based on the previous findings that people exhibit differences in eye contact when they are (3) _____ , the system employed a statistical technique to model the (4) _____ during regular conversation and while fielding a question designed to prompt a lie. People (5) _____ between the two scenarios were assumed to be lying. Though achieving a higher accuracy rate than human interrogators, the new system can only (6) _____ instead of replacing them. The next step for the research will be to (7) _____ and develop automated systems that analyze body language in addition to eye contact.

Vocabulary Expansion

1. Vocabulary in Context

Section A *Context clues will help you guess the meaning of words you are not familiar with. For instance, by looking at the words around an unfamiliar word, you may be able to figure out its meaning. Determine how the words in the box are used in the reading.*

cue (line 3)	deceit (line 4)	involuntary (line 20)
distinct (line 23)	prompt (line 24)	scenario (line 25)
consistent (line 26)	deviation (line 27)	verify (line 32)
foolproof (line 43)	expertise (line 46)	cull (line 47)
incur (line 52)	mundane (line 56)	incentive (line 58)

Then find the words in the box above that correspond to the following meanings.

(1) uniform _____   (2) confirm _____

(3) pick _____   (4) clue _____

(5) motivation _____ (6) lie _____

(7) different _____   (8) ordinary _____

(9) spontaneous _____ (10) situation _____

(11) receive _____   (12) provoke _____

(13) skillfulness _____ (14) divergence _____

(15) unfailing _____

Section B *Complete each sentence by choosing a word from the box in Section A.*

(1) Cities contain things that capture _____ attention dramatically, for example, the horn of the car that is just about to run you over.

(2) _____ with our hypotheses, students working collaboratively performed better than those working individually.

(3) Details of the event are impossible to _____ because the police have barred journalists from the area.

(4) The human tongue can detect five _____ tastes: sweet, salty, sour, bitter and umami.

(5) There were concerns that a criticism from G20 may _____ Japan to alter its aggressive stance.

2. Word Forms in Sentences

Complete the following sentences by choosing one from the words in italic.

(1) Greek myths and songs are the _____ for her books.

  inspire   inspiratory   inspiration

(2) One of the key elements of any network environment is to be able to _____ what is on your network.

  identity   identify   identical

(3) Before analyzing the information, they should reconcile and validate it for _____.

  accuracy   accurate   accurately

(4) In this process, some of the variables are _____ elements that are necessary for input, while others are optional.

  prime   primary   primarily

(5) We disputed with each other on _____ issues.

  vary   various   variety

(6) Though _____ is one of the methods to punish this sort of behavior, it is never the only way.

  penalize   penalization   penalty

(7) Weather _____ has never been a perfect science.

  predict   prediction   predictive

(8) In Japan some firms monitor whether their employees smile _____ enough at customers.

  frequency   frequent   frequently

⟶ Writing Imitation

In this exercise, you are given a discourse unit extracted from Text A, the structure and function of which are explained. An example using the structure is then given to enhance your understanding about it. Please imitate the structure to construct a discourse unit with a similar function describing a different situation.

(1) **Inspired by the work of** psychologists who study the human face for clues that someone is telling a high-stakes lie, University at Buffalo computer scientists are **exploring whether** machines can also read the visual cues that give away deceit. **Results so far are promising:** In a study of 40 videotaped conversations, an automated system that analyzed eye movements correctly identified whether