

Workplace English

总主编 安晓灿 车贵成

21世纪应用型本科教育行业英语系列教材

Workplace English
for
Chemical Engineering
化工行业英语

刘清波 赵三银 主编



暨南大学出版社
JINAN UNIVERSITY PRESS

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前言

2002 年教育部启动新世纪大学英语教学改革, 2007 年颁布《大学英语课程教学要求》。在该教学文件的指导下, 大学英语课程教学改革与建设蓬勃发展, 取得了令人瞩目的成绩: 创建出以现代信息技术, 特别是网络技术为支撑的教学模式, 确立了学生在教学过程中的主体地位, 建设了资源共享的大学英语学习网站和自主学习视听说学习中心, 使英语学习朝着个性化和自主式学习方向发展; 课程内容体系也开始向综合英语类、语言技能类、语言应用类、语言文化类和专业英语类的必修课程和选修课程相结合的方向扩展。

在过去的 10 年中, 许多地方应用型本科院校的大学英语课程建设经历了从专科教育向本科教育的过渡, 包括师资队伍建设和教学文件建设、基础英语教学内容体系和教学方法的改革等方面取得比较显著的成效。但是, 目前大多数院校把教学内容定位在基础英语, 教学目标定位在大学英语四级考试合格率。显然, 这样的教学目标与地方院校应用型人才的培养目标和社会需求是不完全吻合的。地方高校大学英语教学深化改革面临的重大研究课题应该是: 根据应用型人才的培养目标和社会需求扩展课程内容体系, 做到辅助专业, 注重实用, 面向社会, 服务行业。开发应用型本科教育行业英语教材正是基于上述的分析和改革的需要, 目的是培养学生在职场环境下使用英语进行交际的能力, 为提升就业竞争力及未来的可持续发展打下必要的基础。

本系列教材的开发是积极与专业课教师合作, 针对应用型本科院校大学英语开设拓展课程的教学需要进行设计的, 其突出特色是:

(1) 突出大行业职场交际所需要的英语知识与技能的训练, 注重交际语言和技能的实用性、通用性、时效性、典型性和可模拟性。

(2) 选用的材料反映该行业的发展史和在技术应用方面的最新或重大成果。听说材料与职场情景密切相关, 简短精练; 阅读文章的题材以职场交际需求为主线, 体裁多样化, 如行业人物访谈、行业发展趋势与动向、企业或公司简介、新产品/技术引进与开发介绍等, 既体现行业涉外交际的需要, 又生动有趣; 选用的应用文体现职业需求, 简短典型, 易读易模拟。

(3) 练习的设计体现以完成职场任务为导向和引导学生主体参与的教学理念, 充分利用 group work, pair work, discussion, presentation, project, survey report 等学习方式, 使练习体现职业性、实践性、交际性和协作性, 不仅能为学生创造参与课堂活动的



机会，还能指导他们到相关企业进行现场学习和实践，完成 group project, survey report 等学习任务。

本系列教材的每册书均由 8 个单元组成，每个单元包括 5 个部分，即单元目标 (Unit Objectives)、听与说 (Let's Listen and Talk)、读与写 (Let's Read and Write)、职场项目 (Workplace Project) 和职业沙龙 (Career Salon)。书后附有练习答案、参考译文、听力会话和短文的文字材料及光盘。

本书以化工行业为背景，涉及的题材包括化工领域的职业前景、化工行业展望、化工与现代生活、绿色化工与环境保护、化工产品与食品安全、化学原料与产品设计、产品市场调研与营销以及世界著名企业家访谈录。

本系列教材的总主编是韶关学院外语学院安晓灿教授和车贵成教授；《化工行业英语》由韶关学院外语学院教师团队和化工行业专家合作完成，主编是韶关学院外语学院的刘清波副教授和化学与环境工程学院赵三银教授，副主编是外语学院的刘少丽和宋春晖老师，编者有刘清波（第一单元）、叶昆（第二单元）、刘少丽（第三单元）、彭卓（第四单元）、钟安林（第五单元）、张永平（第六单元）、廖庆生（第七单元）、宋春晖（第八单元）。

本系列教材的开发是一次大胆的尝试，目的是推进应用型本科教育大学英语课程的改革与建设，其中定会存在不当和疏漏之处，敬请使用者批评指正。

编 者
2014 年 5 月

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Unit 1

The Career Path in Chemical Engineering

Unit Objectives

- * Learn how to prepare and attend a job interview.
- * Learn about the career prospects and the nature of a job in chemical engineering.
- * Learn how to write an application letter.

Let's Listen and Talk

Listening

Situation 1 Talking about a career in chemistry and chemical engineering

Task 1

Listen to a conversation and tick the advices the professor gives.

- ☐ 1. The career goal and objectives are vital in choosing the degrees.
- ☐ 2. Chemical engineers usually work in a laboratory.
- ☐ 3. Modern chemical engineering is closely related to the use of computers.
- ☐ 4. Chemical engineering majors have more opportunities for career advancement.
- ☐ 5. Math is essential for chemical engineering majors.
- ☐ 6. It is important to develop a way of creative thinking for chemical engineering majors.
- ☐ 7. Chemistry is more complex than chemical engineering.

Task 2

Listen to the conversation again and complete the sentences according to what you've heard.

Michael: Hi, Prof. Tomkins. I'm in a 1 of what degree to choose at the university. I'm primarily torn between chemistry and chemical engineering.

Tomkins: Practically speaking, I think the big decider is your 2 and objectives.

Michael: What are the career differences between them?



Tomkins: Chemical engineers scale up a ____ 3 ____ that a chemist has developed on a very small scale. A chemist working for the drug company, for instance, works in a lab to develop a new drug. But the drug is on a small scale, in micrograms. After the drug has been tested and once the company decides to go ahead and make the drug, on a ____ 4 ____, that's where the chemical engineer comes in.

Michael: What kind of high school students should consider ____ 5 ____ in chemical engineering in college?

Tomkins: Students who are good at chemistry and math and like both subjects should consider it.

Michael: What about those who not only love computer science but also have an interest in engineering? Has chemical engineering ____ 6 ____ the use of computers?

Tomkins: Yes. Modern chemical engineering involves an ____ 7 ____ of computers for process simulation and design, product characterization and process control. So students who like math and chemistry and physics as well as computer science would do well to ____ 8 ____ chemical engineering.

Michael: What advice would you offer to someone who is interested in chemical engineering?

Tomkins: I think it's important to understand ____ 9 ____, to understand mathematics. Chemical engineering is more of a way of ____ 10 ____ rather than what you learn.

Situation 2 Getting prepared for a job interview

Task 3

Listen to a passage and answer the following questions.

1. What should you grab for a job interview?
2. If you're not sure how to get there, what are you advised to do?
3. What will you put in your pack if you look prepared?
4. If you get stuck in a job interview, what will help you?
5. What can you do to try to look prepared?

Task 4

Listen to the passage with some blanks for you to fill in.

Get everything ready for the interview, so that the following day you can just grab your things and go. These include what you'll be ____ 1 ____, your CV, and a map of the destination.

If you're not sure how to get there, try and make the journey ____ 2 _____. Being late doesn't send out a great first ____ 3 _____.

Always remember to take important _____ 4 _____ profile materials with you. Take a pack containing your CV, _____ 5 _____, examples of your work and any _____ 6 _____ of merit or qualification levels.

Even if some of these things are not needed during your interview, you'll not only be prepared—you'll look _____ 7 _____ too. Also, they are a great point of _____ 8 _____ when demonstrating a point or if you get stuck.

Speaking

Situation 3 Asking about a job opening over the phone

Sample Dialogue 1

Mr. Rice: Eastman Chemical Company, Richard Rice speaking. How may I help you?

Stephen: Hello, Mr. Rice! I'm Stephen. I'm answering the advertisement for a chemistry technician in your company. Do you still have that vacancy?

Mr. Rice: Yes, there will be an opening in one month.

Stephen: What are the qualifications for the job?

Mr. Rice: The applicants should have a B. S. degree in chemistry.

Stephen: I've got the degree two years ago.

Mr. Rice: OK. Then do you have any experience for the job?

Stephen: I've been working as a laboratory technician at a medium-sized cosmetics company for two years.

Mr. Rice: What is your typical workday like?

Stephen: It consists of various tasks such as conducting tests, interpreting and analyzing data, compiling results, preparing reports and presenting conclusions.

Mr. Rice: Maybe you are the right candidate for the position.

Stephen: What should I do to apply for the job?

Mr. Rice: You should send us your cover letter and resume.

Stephen: Where can I get the details about the job?

Mr. Rice: You can get easy access to the details from the homepage of our company website.

Stephen: Thanks! It's very kind of you to offer me the information.

Task 5

Pair work. Start a conversation with your partner according to the following situation:

You've come across a job opening for a chemical analyst advertised by Starwood Food Corporation, and now you are calling the company to ask about it.

Language tips:

answer the advertisement for



the qualifications for the job
detailed job description
the right candidate for the position
apply for
download an application form
get access to

Situation 4 Attending a job interview

Sample Dialogue 2

Stephen: Good morning, Mr. Rice! I am glad to be here for this interview.

Mr. Rice: Please take a seat. We'll just have a free talk here.

Stephen: Thank you. It's my honor to answer your questions.

Mr. Rice: There are a range of roles and responsibilities for the position. The daily routines include the operation and maintenance of laboratory equipment and sample preparation.

Stephen: I think most of them are closely related to my previous job. I'm confident for this job.

Mr. Rice: Great! The job may involve emergency shifts at night or during the weekends. What's more, sometimes you need to fulfill emergency call-out duties. Can you work overtime?

Stephen: Yes, I can. Would there be any opportunity to work from home occasionally?

Mr. Rice: Very few. You can't request flexible working hours for this position.

Stephen: Is there any opportunity to advance?

Mr. Rice: Of course. There're good prospects for promotion.

Stephen: What about the income range for a laboratory technician, may I ask?

Mr. Rice: The average annual income is about \$ 90,000, but it depends on working hours and above all, the performance of your work.

Stephen: When can I know the interview result?

Mr. Rice: Our final decision will be available next week. If we decide to hire you, we will notify you by mail. Thank you for coming to the interview.

Stephen: Thank you for considering my application.

Task 6

Pair work. Role-play a job interview with your partner according to the following situation:

You are attending a job interview with the personnel manager of Procter&Gamble Company.

The manager is introducing the roles and responsibilities of a chemical engineer and you are asking about the qualifications for it.

Language tips:

duties and responsibilities for the position

The daily routines include...

be closely related to

be involved in

income range

It depends on the performance of your work.

interview result

final decision

Let's Read and Write**Reading****Task 7**

Read Passage 1 and then work in pairs to speak out the common expressions given in brackets.

1. Chemical engineering is often called the _____ (“万金油” 工程专业) due to the almost universal potential for chemistry to be applied in a technical setting.
2. Chemists are tasked with discovering _____ (商业上可行的化合物) on a limited scale in a laboratory setting.
3. The energy industry is where chemical engineers can specialize in petroleum engineering and the _____ (原油提炼) into gasoline and other petrochemical products.
4. Maintenance work for a chemical engineer is in effect the monitoring of an existing chemical plant to ensure safety procedures are followed and to _____ (检测技术问题) that may arise as a result of day to day operations.
5. A chemical engineer who works in the research field can advise other researchers on which research pathways may be more fruitful and be more efficiently translated into _____ (产业的规模化生产).
6. Engineers that specialize in _____ (石油开采) and refinement may spend months at a time at oil fields or even out on oil derricks at sea.
7. A chemical engineer working in a chemical plant will be exposed to an industrial environment which may include _____ (危险物) in the event of an accident.
8. Many chemical engineers work in an office environment or are even self-employed, offering _____ (工程咨询服务) on a contract basis.
9. Chemical engineers are near the top of the earnings statistics for all _____ (工程科目).
10. The average starting salary for a chemical engineer _____ (刚出校门) in that same year was \$ 65,000.



Passage 1

The Nature of Chemical Engineering Career

Chemical engineers apply the principles of mathematics, physics, and above all chemistry to solving problems of a technical nature in the most efficient manner possible. Chemical engineering is often called the **jack of all trades** engineering specialty due to the almost universal potential for chemistry to be applied in a technical setting. For example, a civil engineer must choose what material will be best suited for a major construction project, and a chemical engineer's technical knowledge can be **invaluable** in determining the strength and **durability** of the various materials available. Likewise, a computer hardware manufacturing company largely **staffed** by circuit focused electrical engineers needs the **expertise** of a chemical engineer when designing a new computer **chip** in order to find the best combination of semi conducting elements to promote processing speed as well as to manage the process of producing the materials used in creating the chip.

Chemical engineers are responsible for the design and production of chemically valuable products on a large scale and as efficiently as possible. Where chemists are tasked with discovering commercially **viable** compounds on a limited scale in a laboratory setting, the chemical engineer is responsible for taking this small scale discovery and **replicating** the creation of the compound on a sustainable, economically viable scale. The actual product produced varies depending on the industry—**biomedical** applications of chemical engineering involve the efficient mass production of pharmaceuticals, the computer hardware industry requires semiconductors of a particular element type or **alloy** of elements that are grown in **crystals** and then cut to a specific **width**. And there is, of course, the energy industry, where chemical engineers can specialize in **petroleum** engineering and the **refinement** of **crude** oil into **gasoline** and other petrochemical products.

Many engineers do more than simply design chemical production systems. Senior engineers routinely move into management and maintenance positions. The management track involves **coordinating** the efforts of increasingly larger groups of engineers and support staff. There is potential for engineers in management to rise to the executive level. Many chief executive officers of major petrochemical have been chemical engineers. Maintenance work for a chemical engineer does not mean physically repairing machinery. It is in effect the monitoring of an existing chemical plant to ensure safety procedures are followed and to **troubleshoot** technical issues that may arise as a result of day to day operations.

Finally, increasing numbers of chemical engineers are employed in research and development efforts. The skill set and knowledge base of a chemical engineer can be valuable in the research stage of product development. A chemical engineer can advise other researchers on which research pathways may be more fruitful and be more efficiently translated into industrial scale operations.

百事通

无价的；耐用性

支撑；专门知识
芯片

可行的

复制

生物医药的

合金

晶体；宽度

石油

提炼；天然的；汽油

协调

故障检测

<p>The work environment of a chemical engineer varies with the industry. Engineers that specialize in petroleum extraction and refinement may spend months at a time at oil fields or even out on oil derricks at sea. They often work in normal business hours but can be on call in case of an emergency. Chemical engineers in the healthcare field are more likely to split their time between a laboratory and a standard office environment during standard business hours. A chemical engineer working in a chemical plant will be exposed to an industrial environment which may include hazardous materials in the event of an accident. But just many chemical engineers work in an office environment or are even self-employed, offering engineering consulting services on a contract basis. Engineers who find their way into academia may find that they are expected to perform teaching and mentoring work with dozens of students. In all cases, impending deadlines or key milestones in the product design or development process may add stress to the work environment and increase the number of weekly hours the chemical engineer will be expected to work.</p>	<p>提取 井架</p> <p>分裂</p> <p>危险的</p> <p>学术界 紧迫的</p>
<p>Chemical engineers are near the top of the earnings statistics for all engineering disciplines. The median annual wage for chemical engineers in 2011 was nearly \$ 90,000. The average starting salary for a chemical engineer fresh out of college in that same year was \$ 65,000—a far higher starting salary than offered to virtually all non-engineers with only a bachelors degree. Indeed, the only engineering discipline with higher starting salaries than chemical engineering is petroleum engineering. Breaking down the earnings of chemical engineers by percentile shows that even the lowest paid ten percent of chemical engineers earn at least \$ 56,000 per year, and this likely corresponds to engineers who are starting out or in semi-retirement. Twenty-five percent of chemical engineers make at least \$ 70,000 per year, and fifty percent make at least \$ 88,000 per year. At the top end of the spectrum, the top twenty-five percent of engineers earn over \$ 108,000 in annual salary and the top ten percent bring in around \$ 130,000 a year. All in all, chemical engineering is one of the most lucrative professions, and the top ten percent of chemical engineers make more than the top ten percent of engineers in any other discipline save petroleum engineering and aerospace engineering.</p>	<p>学科; 中间的</p> <p>实质上</p> <p>百分位</p> <p>符合</p> <p>系列</p> <p>有利可图的</p> <p>除……以外</p>

Task 8

Read the passage again and supply the missing words or expressions to complete the following statements in pairs.

1. Chemical engineers use the principles of chemistry to solve _____ in the most efficient manner possible.
2. Namely, the responsibilities of a chemical engineer is to develop _____ on a large scale and as efficiently as possible.
3. While chemists study commercially viable compounds on a limited scale in a laboratory setting, the chemical engineers find practical application for this small scale discovery



on _____.

4. In addition to the design of chemical production systems, many senior engineers routinely move into _____.

5. In the research stage of product development, _____ of a chemical engineer can play an important role.

6. The chemical engineers' _____ varies with the industry they work in.

7. Petrochemical engineers often work in normal business hours but may work extra hours _____.

8. Engineers who move into academia are expected to perform _____ with dozens of students.

9. Indeed, the only engineering discipline with higher _____ than chemical engineering is petroleum engineering.

10. Generally speaking, chemical engineering is one of the most _____, and the top ten percent of chemical engineers make more than the top ten percent of engineers in any other discipline except _____ and aerospace engineering.

Task 9

Work in groups and discuss the following questions.

1. What is the difference between the job of a chemist and that of a chemical engineer?
2. What are the other career fields for chemical engineers except chemical production?
3. Why can a chemical engineer's skill set and knowledge base be valuable in the research stage of product development?
4. What is the work environment for engineers that specialize in petroleum extraction and refinement?
5. What should be the salary expectation for a chemical engineer?

Task 10

Read the sentences taken from Passage 1 and work in groups to translate them into Chinese.

1. A chemical engineer's technical knowledge can be invaluable in determining the strength and durability of the various materials available.

2. A computer hardware manufacturing company largely staffed by circuit focused electrical engineers needs the expertise of a chemical engineer when designing a new computer chip.

3. The management track involves coordinating the efforts of increasingly larger groups of engineers and support staff.

4. There is potential for engineers in management to rise to the executive level. Many chief executive officers of major petrochemical have been chemical engineers.

5. Chemical engineers in the healthcare field are more likely to split their time between a laboratory and a standard office environment during standard business hours.

Task 11

Work in pairs to complete the statements with the information from Passage 2.

1. Last May, the chemical engineering seniors took their last final examinations, attended graduation ceremonies, enjoyed their farewell parties, and then set off in _____.

2. Because almost every type of skilled work we can think of is somewhat related to chemical engineers, no universally accepted _____ exists.

3. About 45% of the graduates went to large companies related to chemical, petrochemical, pulp and paper, _____, or textile engineering.

4. Another 35% of the graduates acquired positions in government agencies, design centers, consulting firms and companies in emerging fields such as _____.

5. About 10% of the graduates went to graduate schools, where they would receive advanced education in traditional chemical engineering areas and get jobs doing process or control systems design or _____.

6. The remaining 10% went into graduate school in an area other than chemical engineering, such as medicine, law, and business on the basis of their _____.

7. In addition, several graduates went to work for companies manufacturing _____ such as pharmaceuticals, paints and dyes, and cosmetics.

8. To remain competitive in the career, those who work for companies manufacturing specialty chemicals have to concentrate on such things as mixing efficiency, heat transfer, automatic temperature and liquid level control, statistical quality control, and _____.

9. It is not unusual for some graduates to find employment in electronics companies that manufacture _____.

10. The graduates working in the electronics field may be required to _____ that can be used to produce the desired films, _____ at which to run the reactions, design the reactors, and continue to improve their operation.