

广西高等教育教学改革规划教材

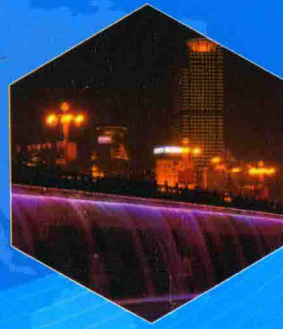
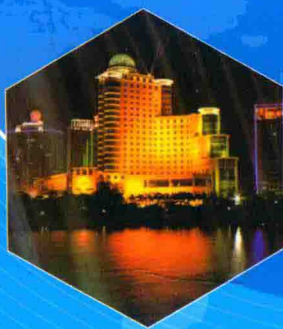
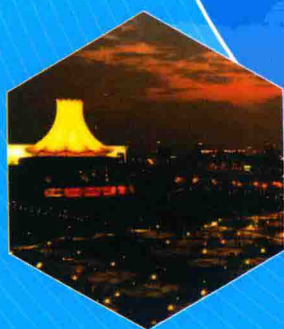
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English for Civil Engineering
at Beibu Gulf

北部湾

建筑英语

唐国卿 叶晟 黄英初 编著



航空工业出版社

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北 京

内 容 提 要

本书是自治区级项目“北部湾视野下广西高职建筑房地产类专业大学英语教学模式改革的探索”研究项目和成果,为广西高等教育教学改革工程特色教材。本书首次以中国-东盟合作为背景,以欣欣向荣的广西北部湾经济区建设和蓬勃发展的建筑房地产业为中心,以南宁、钦州、北海、防城港、凭祥等北部湾和泛北部湾城市著名的城建项目和重点企业建设项目为支点,系统地介绍了建筑施工的大致流程和主要内容,突出了南宁、钦州、北海、防城港四大核心城市的建筑、城建发展成就和各自在政治、经济、社会、文化、历史等方面的鲜明特色,展现了举世瞩目的历届中国-东盟博览会盛况、广西北部湾经济区建设的辉煌成就和泛北部湾合作的灿烂前景。

本书内容独特,视角新颖,地域性突出,民族风情浓郁,乡土特色明显,时代感强,实用性大,将公共英语与土建大类专业相结合、土建大类专业大学英语教学与介绍广西北部湾经济区建筑房地产特点与成就以及广西北部湾经济区社会经济发展规划与成就相结合,是广西区内甚至是国内第一部专门为北部湾建筑大类专业大学英语教学量身定做的,带有浓郁的北部湾地区特色的英语教材。

本书既可以作为英语专业、土建专业的中专生、专科生、本科生的公共课、双语专业课的教材,也可以作为建筑工人、技术人员的指导手册,还可以作为广大英语爱好者、建筑爱好者、旅游爱好者的参考资料。

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前言

近年来,蓬勃发展的北部湾成为广西房地产和建筑发展最快、最繁荣的地区,当地的房地产和建筑业成为广西 GDP 增长的一大亮点和推动广西地方经济发展的重要支柱产业。市场和经济发展的刚性需求也大大推动了广西高职土建大类专业的发展。广西现有 39 个高职院校,其中 26 个集中在北部湾城市,很多高职院校都开设了土建大类专业,这些专业成为不少高职院校的主打专业,在校生人数多,规模大。因此,如何对土建大类专业把土建大类专业教育和大学英语教育相结合,改革不分专业、不分岗位、不分应用层次都使用同一教材、同一教学大纲、同一教学模式和评估手段,建立国际视野、北部湾视野下的土建大类专业大学英语的新教学模式,意义尤为重大。它既能解决目前教学面临的问题,丰富土建大类专业大学英语的新的教学模式和新的教学理论,催生新的教学大纲和教材,推动广西高职土建大类专业的发展壮大,也能满足建筑企业的生产需要,推动北部湾地区建筑和城镇建设的发展,从而帮助解决土建大类高职毕业生就业问题和民生问题,促进北部湾经济区建设和城镇化建设的科学发展、可持续性发展。

尽管国内对高职高专大学英语教改做了多方面的探讨,从教学大纲、教材到教学手段都有不少改进,英语教学一步步接近生产和实践以及未来职业的需要,但是,到本项目立项前为止,面对蓬勃发展的北部湾建筑房地产大好形势和市场对高职土建大类专业毕业生既懂专业,又懂英语的需求,高职教学中还没有专门的科研项目对北部湾视野下广西高职院校土建大类专业大学英语教学模式进行探讨,也没有相应的既有土建特点又有北部湾特点的针对土建大类专业的大学英语教材。这方面的教改严重滞后,不适当当前北部湾地区建筑行业的发展和高职土建大类专业的健康发展,也不适应北部湾经济区建设的发展。

正是在此形势下,“北部湾视野下广西高职建筑房地产类专业大学英语教学模式改革的探索”作为自治区级教改项目成功立项和结题,本书作为该项目的重要成果和广西高等教育教学改革特色教材,对以《广西北部湾经济区发展规划(2006—2020 年)》和北部湾经济区的城市建设和建筑房地产业发展高职土建大类专业英语的要求为指导,设置了强化土建大类英语专业性、建立土建大类专业“建筑化”和“北部湾化”的大学英语教学模式,把大学英语“北部湾化”“土建专业课英语化”“案例化”“口语化”、区域化、地方化、特色化,以引领学生了解工作过程为导向,以真实的北部湾建筑工程、案例、工地、场景为

内容，辅以经典案例，使学生熟悉专业、提前进入角色，解决了教学和建筑行业对人才需求的问题。

由于本书作者的水平和经验有限，书中难免存在不足之处，且做引玉之砖。恳请各位建筑专家、英语专家及广大读者不吝赐教，以便修正。

著 者

2017 年 1 月

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Unit 1

Introducing Design Process at Nanning Design and Plan Bureau



Section A Introducing Design Process at Nanning Design and Plan Bureau

Mr. Zhao is a senior architectural designer from Nanning Design and Plan Bureau. He is introducing design process to the students who major at civil engineering at the Nanning Studio.

Mr. Zhao: Good morning, everybody. In this class I shall introduce design process to you. As we know, most good landscape architects usually employ various analytical and creative thinking steps as the “Design Process” to arrive at a built site that meets all the necessary requirements in the most efficient and aesthetically pleasing manner possible.

Student A: May I ask a question?

Mr. Zhao: Certainly.

Student A: Is the design process very important?

Mr. Zhao: Yes. It provides a logical and organized framework for creating a design solution and aids in determining the best use of the land for the client, so the design process is also called “problem solving process”, which including a series of steps that usually follow a sequential order.

Student A: How many steps are there in the design process?

Mr. Zhao: There are six steps, They are client contrast, research and analysis, design, implementation, maintenance and post-construction evaluation.

Student B: Oh, there are so many steps.

Mr. Zhao: Yes. The key steps are the second and the third ones. In the stage of research and analysis, a site designer must make a base plan preparation, a site inventory and analysis, a client interview and a programme development whereas he must make an ideal functional diagram, a site related functional diagram, a concept plan, a form composition study, a preliminary design, a total design, a detailed design in the stage of design.

Student B: What are the requirements towards a novice designer?

Mr. Zhao: A novice designer must understand that good designs require a great deal of sensitive observation analysis, studying thinking, inspiration and creativity. As a matter of fact, designing involves both rational aspects and intuitive aspects such as the feeling of putting forms and shapes together, aesthetic appreciation, etc.

Student B: What is the relationship between design and construction process?

Mr. Zhao: There is a close relationship between design and construction process, which forms the two processes as an integral system. Designing is a process that create the description of a new facility represented by detailed plans and specifications whereas construction is a process that identifies activities and resources required to make the of a physical reality. In fact, construction is merely the implementation of a design envisioned by architects and engineers.

Student B: I see. Thank you.

Mr. Zhao: You are welcome. Now let me introduce several characteristics of design and construction proesses. Both the design and construction of a facility must meet the given conditions to a concret site and each project is usually influenced by natural, social and other factors like labour supply, local building codes, etc. Since the service life of a facility is rather long, the anticipation of future requirements is accordingly difficult. Generally speaking, in the integral system, the planning for both design and construction can proceed almost simultaneously, examining various alternatives, eliminating the necessity of extensive revions under the guise of value engineering.

Student C: Would you please tell us something about building drawings?

Mr. Zhao: This is what I want to tell you next. Now you see, these are the building drawings of Nanning Hotel. Generally speaking, building drawings are the designs drawn minutely and accurately by the method of orthogonal projection in accordance with the relevant regulations for the proposed buildings in the content of the internal and external shape and site, the structure, construction, decoreation and equipment of different parts, and so on.

Student C: So, building drawings are rather important to a construction project, aren't they?

Mr. Zhao: Yes, they are. Building drawings are usually regarded as the norm and the guide of a construction project.

Student D: How many parts are there in a complete set of building drawings?

Mr. Zhao: Look at the building drawings of Nanning Hotel. From these examples we know that a complete set of building drawings generally include the catalogue, the general design specification, the building construction drawing, the structure working drawing and the equipment construction drawing according to the professional content and functions.

Student D: How can I tell the difference between the building construction drawing and the structural working drawing?

Mr. Zhao: The building construction drawing specifies the inside layout, the external shape and the requirements of decoration, structure and construction whereas the structure working drawing specifies the layout, the type, the size and construction of the load-bearing parts of a building.

Student D: What information is included in building drawings?

Mr. Zhao: Building drawings contain all kinds of lines such as border lines, visible lines, invisible lines, section lines, central lines, down-lead lines, dimension lines, broken lines and phantom lines. All the sizes and the figures on the drawings are calculated exactly and they are the norm and guide of our construction work. Besides these, the building drawings also include other important information like drawing number, drawing size, scale, weight, sheet number and number of sheets, drawing title and signatures of persons preparing, checking and approving the drawing. Look, this is a floor plan and it contains general layout, general arrangement, detail, section, installation, floor sheet, civil construction, electrical, control and instrumentation, piping and isometric project. So reading and studying drawings carefully is an essential prerequisite for students major at civil engineering.

Student E: What kinds of precise instruments are used to make these complicated drawings?

Mr. Zhao: The drawing pen, the drawing-compasses, the T-square, the French curve are usually used.

Student E: Are they mainly used in manual drawings?

Mr. Zha: Yes. Many architectural drawings are made by AutoCAD software. Their advantages are outstanding.

Student E: What is AutoCAD?

Mr. Zha: AutoCAD is a kind of automated computer-aided design software. It is developed by the American Autodesk Corporation for two-dimensional and three-dimensional design and graphing. Next period I'll teach you how to make building drawings by using manual tools and AutoCAD respectively.

Words and Expressions for Civil Engineering

| | |
|-----------------------------|--------|
| ancient buildings | 古代建筑 |
| modern architecture | 现代建筑 |
| multi-storey building | 多层建筑 |
| high-rise building | 高层建筑 |
| low-rise building | 低层建筑 |
| bungalow | 平房 |
| the English residence | 英式建筑 |
| the American residence | 美式住宅 |
| western style architecture | 西式建筑 |
| Chinese style architecture | 中式建筑 |
| European style architecture | 欧式建筑 |
| Spanish style architecture | 西班牙式建筑 |
| diagram <i>n.</i> | 示意图 |
| sketch <i>n.</i> | 草图 |
| developed drawing | 展开图 |
| earth-work drawing | 土方工程图 |
| topographical map | 地形图 |
| formwork drawing | 模板图 |
| standard drawing | 标准图 |
| plan | 平面图 |
| schematic plan | 平面示意图 |
| sectional plan | 平剖面图 |
| plan of provision of holes | 留孔平面图 |
| section | 剖面 |
| longitudinal section | 纵剖面 |
| cross/transverse section | 横剖面 |
| elevation <i>n.</i> | 立面 |
| front elevation | 正立面 |
| side elevation | 侧立面 |
| perspective drawing | 透视图 |
| general layout | 总图 |

| | |
|-----------------------|----------|
| building drawing | 建筑图 |
| roof/foundation plan | 屋面/基础平面图 |
| typical drawing | 定型图 |
| installation drawing | 安装图 |
| equipment drawing | 设备图 |
| process flow diagram | 工艺流程图 |
| reinforcement drawing | 配筋图 |
| dimensioned drawing | 标有尺寸的图纸 |
| make/read drawings | 制/识图 |
| legend | 图例 |
| scale of a drawing | 图纸比例 |
| copy of a drawing | 图纸副本 |
| drawing instruments | 绘图仪器 |
| drawing pen | 绘图笔 |
| drawing compasses | 绘图圆规 |
| T-square | 丁字尺 |
| drawing scale | 绘图比例尺 |
| drawing paper | 绘图纸 |
| tracing paper | 描图纸 |
| French curve | 曲线尺 |
| drawing board | 绘图板 |

Section B Urban Building Achievements of Nanning City: Regional Metropolis

Nanning is located in the southern part of Guangxi Zhuang Autonomous Region, 160 km far from the border with Vietnam. It has an area of 22,293 square kilometers. The city is also located on the north bank of the Yong River, the chief southern tributary of the Xi River, and lies some 30 km below the confluence of the You River and the Zuo River. The Yong River (lately called the Yu River) affords a good route to Guangzhou and is navigable by shallow-draft junks and motor launches, even though it is obstructed by rapids and sandbanks.

I. The Local Advantages of Nanning

1. Favorable geographical conditions

Nanning, the capital of Guangxi Zhuang Autonomous Region, is located in Southern Guangxi in the sub-tropical region between 107°19'—109°38' East Longitude and 22°12'—24°2' North Latitude. With an area of 22,293 square kilometers, it is situated in the middle of Nanning Basin through which Yongjiang River runs.

Nanning enjoys favorable geographical conditions in Southwestern China, connecting the Indo-China Peninsula to the west and Guangdong Province, Hong Kong, Macao and Hainan Province to the east, making it not only an important economic center along the Beibu Gulf, but also a rapid growing gateway city to Southeast Asia in the southern and southwestern parts of China. The city is only 104, 173 and 204 kilometers far from the Ports of Qinzhou, Fangcheng and Beihai respectively, and only 204 and 230 kilometers from the cities of Dongxing and Pingxiang bordering Vietnam respectively. Moreover, it is at both railways and Yongjiang River. Four key railways meet here, namely, Hunan-Guangxi Railway, Guizhou-Guangxi Railway, Litang-Zhanjiang Railway and Nanning-Kunming Railway, making the city an important hub in Southwestern China. The completion of the 2nd Phase Project of dredging Xijiang River, a branch of the Pearl River, enables thousand-ton ships to sail directly from Nanning to Hong Kong and Macao. As an important gateway to Southeast Asia for Southwestern China, Nanning is a hub, a regional center and an opening city that plays an active role in the communication between China and ASEAN (Association of Southeast Asian Nations) countries. It is becoming a new and booming economic zone and a hotspot for foreign investment in China. With its rapid urbanization, Nanning attaches great importance to improve natural environment and it enjoys the reputation of “the Green City of China” because of its best green coverage in the country.

There are five landscapes in Nanning, namely, flat ground, low hills, stone mountains, hilly land and bench terraces. Flat ground covers the largest area in Nanning, totaling 1,037.33 square kilometers, accounting for 57.78% of the total area of the city. It mainly spreads out from the confluence of the lower branches of the Zuojiang River and the Youjiang River, as well as along the banks of the Yongjiang River. Low hills cover an area of 82.64 square kilometers, accounting for 4.6% of the total area. They mainly spread out from Phoenix Mountain, located at the western edge of the urban area with an elevation of 300 meters; while the rest spreads out from the Gaofeng Hill, located at the northern part of the urban area with an elevation of 250 meters. The stone mountains cover an area of 46.7 square kilometers, accounting for 2.61% of the total area. There are two categories of stone mountains: mountains of isolated peaks or

mountains of fungling. The isolated peaks are generally 200 meters above sea level. The mountains of fungling have an elevation of about 300 meters and connected to each other by narrow (roughly 80 meters) valleys at elevations about 120 meters. Hilly land covers an area of 279.86 square kilometers, accounting for 15.59% of the total area. Bench terraces are mostly erosion surface in tertiary period, micro-cut, slightly wavy, with an elevation of 120 meters. They are generally plane of denudation in ancient times, with gentle slopes and flat plane.

There are more than 48,000 almond trees growing in Nanning. The almond tree was chosen to be the city tree of Nanning at the 4th session of the 8th NPC (National Peoples Congress) of the municipal congress in June, 1986. As an evergreen broad-leaf plant, the tree has a straight trunk that can be over 30 metres tall with a diameter as large as 1 metre. The tree has an oval, thick oval crown with a beautiful texture. Its fruit, which is tasty and nutritious and has a sweet smell, is famous in sub-tropical areas. Almond trees can be found all over the city, such as parks, greenbelts, scenic spots, universities and institutions. People can enjoy both its fragrance and its lovely shapes.

Chinese Hibiscus (*Hibiscus rosa-sinensis*) was chosen to be the city flower of Nanning at the 7th session of the 8th NPC of the municipal congress in Dec. 1986. The Chinese Hibiscus is also called the China Rose, *Hibiscus rocasinensis*, or hybrid peony, and produces lush flowers and leaves all year round. The color of its bloom can be crimson, purplish red, pink, bright yellow or white, depending on the variety. Its root, leaves and flowers can be used as medicine for heat clearing and de-toxifying, and it is good for diuresis and apocatastasis. Characterized by rapid production and growth, the flower can be found all over the city as an open field plant, a potted plant, or a flower fence. In the year of 2002, there were altogether 170,000 hibiscus trees of 16 varieties in Nanning, including *Hibiscus rocasinensis*, pink horn, Thailand yellow, hybrid peony, crimson China rose, black peony, yellow China rose, bellflower, and *H. schizopetalus*.

Nanning is the center of politics, economy, science and technology, culture, education and information in Guangxi. With the approval of the State Council Nanning has enjoyed the preferential policies for coastal cities since 1992. It was designated as an important region for the West China Great Development Project in 2000. It is also the only capital city in the minority autonomous regions that enjoys both the preferential policies for coastal cities and the preferential policies for the middle and western parts of China.

2. Rich agricultural, mineral, and tourist resources

A. Agricultural resources: Nanning enjoys a subtropical monsoon climate with plentiful sunshine and rainfall. During all of the four seasons of the year, the city is covered with luxuriant verdant vegetation. As a bread basket and a cash crops base in Guangxi, Nanning is rich in local

and special agricultural products such as rice, corns, cassava, sugarcane, peanuts, beans, fiber crops, tea, jasmine flowers, Chinese chestnuts and tobacco leaves, and more than 40 kinds of subtropical fruits like banana, pineapple, mango, longan, litchi, flat peach, orange, and over 300 kinds of Chinese medicinal herbs including amomun villosum, Chinese yam rhizome, Pinellia ternata Breit, Poria cocos, honeysuckle, panax notoginseng and Chinese cinnamon.

B. Tourist resources: As a distributing center for tourists and commodities, Nanning and its surrounding areas boast abundant tourist resources. One of the four tourism divisions in Guangxi is Nanning. Nanning is only 200 km away from the Detian Waterfall, a transnational waterfall between China and Vietnam. A number of scenic spots are scattered in the city, for instance, Qingxiu Mountain, Liangfengjiang National Forest Reserve, Yangmei Ancient Town, Daming Mountain, Jiulong Waterfalls, Jinlun Primitive Cave, Longhushan Natural Reserve, and Kunlun Pass.

C. Mineral resources: Nanning is located in the Lingnan (South of the Five Ridges, mainly referring to the region covering Guangdong and Guangxi) non-ferrous metal zone. 41 kinds of minerals have been found here, including manganese, zinc, aluminum, gold, silver, coal, quartz sand, rock crystal, barite, dolomite and granite. The deposits of 18 types of minerals, which fall into 6 categories, are verified. A number of minerals found in Nanning take the lead in their deposits throughout Guangxi. Dominant mineral resources include vanadium, copper, tungsten, kaoline, tile clay, quartz sandstone, turf, saggar, and limestone.

3. Perfect industrial bases

A. The aluminum industry: The deposit of bauxite in Guangxi covers two-thirds of the national total, which benefits Nanning a lot in its aluminum industrial development. Alnan Aluminum Co., Ltd. is a leading enterprise in aluminum industry. With strong technical advantages and advanced manufacturing equipment, the company's major lines are aluminum with high precision, aluminum alloy strips, aluminum windows, aluminum doors, aluminum walls, aluminum pipes, and other aluminum materials. An aluminum industrial zone has been established in Nanning to deal with the production of electrolytic aluminum, alumina, electrolytic aluminum ingot, extruded section for construction utility, home appliances, decoration board materials, PS boards, aluminum anti-theft cover, aluminum soft packaging, matching products for aluminum industry, and automobile aluminum parts.

B. The chemical industry: With some comparative advantages, the chemical industry in Nanning has developed its strength in inorganic chemicals, organic chemicals, pesticide, fertilizer, rubber processing, and fine chemicals, which can meet the demands of the domestic markets. By 2004, the overall industrial output of Nanning has amounted to 2.187 billion yuan.