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新时代课程思政建设配套教材

城市轨道交通 专业英语

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前言

专业英语课程的教学目的是指导学生阅读与专业相关的英语书刊或资料，使学生通过阅读掌握更多的专业知识。

本书以培养学生英语应用能力为目标，主要分为城市轨道交通、城轨车辆设备、城轨控制系统、城轨客运服务四个部分，介绍了城市轨道交通专业的基础术语、应用短文、常用客运服务对话等内容。本书包含 18 个单元，每个单元都有线上练习模块，扫一扫每个单元末的二维码，即可线上练习，可方便学生课后自主学习。同时，书中包含了大量的实物照片，图文并茂，提高了教材的实用性，并增强了趣味性。另外，本书融合“课程思政”理念，设计了“思政园地”模块，旨在坚定学生理想信念、厚植爱国主义情怀、加强品德修养、增长知识见识、培养奋斗精神，提升学生综合素质。

本书由长春职业技术学院具有多年一线教学工作经验的教师编写，王迪、崔凯(长春市轨道交通集团有限公司)任主编，潘宣伊、徐宇卉任副主编，韩冰、吕娜、代兵、彭晶、徐博、李聪冲参与编写。具体编写分工如下：第一部分由代兵、徐博编写，第二部分由吕娜、彭晶编写，第三部分由王迪、潘宣伊编写，第四部分由韩冰、徐宇卉编写；李聪冲负责编写全书课程思政内容；崔凯提供了相关的行业数据和参考资料，并对本书的体例设计和编写思路提出了重要意见。本书由方振龙主审并提出了宝贵建议。

本书可供职业院校城市轨道交通专业学生以及从事轨道交通检修、运营等相关工作的人员使用。

由于编者的水平有限，书中难免存在不足之处，敬请广大读者批评指正。

编者

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Part 1 Urban Rail Transit

- Unit 1 Metro Introduction
- Unit 2 Light Rail
- Unit 3 Metro Culture
- Unit 4 Light Rail History



Unit 1

Metro Introduction



Try to discuss

1. *When did you first take the metro?*
2. *What are the advantages of the metro compared to the bus?*



Text

In English, according to the development origin and usage habits of similar systems in different countries and cities, it is often called: Metro (Paris, parts of Chinese mainland), MRT (Singapore, Taipei, Kaohsiung, etc.), MTR (specially refers to Hong Kong), Overground (specifically on the ground track), Railway (specifically on the ground track), Subway (US and surrounding areas, Beijing), Tube or Underground (specifically London).

The metro is a kind of urban rail transit. It adopts a steel wheel rail system with a standard gauge of 1,435 millimeters. It is mainly operated in tunnels built in the underground space of large cities. When conditions permit, it can also be built on the ground or viaduct. According to the different models, it can be divided into regular metro and small section metro. According to the different passenger transport lines, it can be divided into high-traffic metro and large-capacity metro. The basic models of metro vehicles are A-type, B-type and LB-type (linear motors). The basic width of A-type vehicles is 3,000 millimeters; the width of B-type and LB-type vehicles is 2,800 millimeters. The train formation of the metro system usually consist of 4–8 vehicles, including motor trains and trailers, with a length of 70–190 meters. It is required to match a longer station platform, and the maximum driving speed should be higher than 80 kilometers per hour.



The first underground railway system in the world was the Metropolitan Railway, which opened in 1863, to solve the traffic congestion problem in London at the time.

The first metro line in China was built on July 1, 1965, and opened to traffic on October 1, 1969, which making Beijing the first city in China to have a metro.



Reading Materials

1. The Longest Metro in the World

The metro in the UK that runs through 8 cities is the longest metro in the world, with a total length of nearly 100 kilometers. It has a total of 458 stations and carries about 673,000 passengers a day.

2. The Shortest Metro in the World

Turkey's Istanbul Metro, with a length of 573 meters, is the shortest metro line in the world. The metro line has only two stations, the first and the last stations, which are connected to the two most prosperous areas of Istanbul. It was originally a tunnel for carriages. In 1910, it was changed to laying tracks and being driven by trams. At present, the line is still operating normally, with a driving interval of 3.5 minutes, and each one-way journey takes 1.5 minutes.

3. The Fastest Metro in the World

The San Francisco Metro in the United States operates at speeds of up to 128 kilometers per hour. It's the fastest metro in the world.

4. The Most Advanced Metro in the World

The Lille Metro in France is an unmanned, fully automated metro with a train interval of only 72 seconds during peak hours.



Try to think

1. In different cities in China, what are the different types of metro commonly called?
2. According to the width of vehicles, how many kinds of subways can be divided into?
3. Which city opened the first subway in China?
4. Which city has the fastest subway in the world?



New Words and Expressions

| | | |
|--------|----------|-------------|
| urban | [ˈɜːbən] | adj. 城市的 |
| gauge | [geɪdʒ] | n. (铁道的)轨距 |
| tunnel | [ˈtʌnl] | n. 隧道; 地下通道 |

| | | |
|----------------------|----------------|--|
| viaduct | [ˈvaɪədʌkt] | n. 高架桥 |
| vehicle | [ˈviːəkl] | n. 车辆 |
| trailer | [ˈtreɪlə(r)] | n. 拖车; 挂车 |
| maximum | [ˈmæksɪməm] | adj. 最高的; 最多的; 最大极限的 n. 最大量; 最大限度; 最高限度 |
| congestion | [kənˈdʒestʃən] | n. (交通) 拥塞; 塞车 |
| standard gauge | | 标准轨距 |
| linear motor | | 直线电机 |
| motor train | | 动车 |
| station platform | | 站台 |
| Metropolitan Railway | | (伦敦)大都会铁路; 地下铁道 |



Unit 2

Light Rail



Try to discuss

1. *What is the definition of light rail?*
2. *What are the differences between subway and light rail?*



Text

Light rail or light rail transit (LRT) is a particular class of urban and suburban passenger railway that uses equipment and infrastructure that is generally less massive than that used for rapid transit systems, with modern light rail vehicles usually running along the system.

Metro and light rail are the two most common types of urban rail transit. Some people think that the rail transit under the ground is called the subway, and the light rail is running on the ground. Some people think that the light rail track is light rail and the heavy one is the subway. Both of these divisions are unscientific. So what is the difference between the subway and the light rail?

Both the light rail and the subway can be built on the ground, under the ground or on the viaduct. The basis for the two should be the one-way maximum peak hour passenger flow. The one-way maximum peak hour passenger flow that the subway can adapt to is 30,000–60,000 passengers, and that the light rail can adapt to is 10,000–30,000 passengers. The difference between the subway and the light rail thus designed is that the axle load of the subway is generally greater than 13 tons, while the light rail is less than 13 tons. In addition, the number of vehicles per train of the subway is more than that of the light rail. Metro trains can be organized into 4–10 vehicles, and light rail trains are organized into 2–6 vehicles.

From the perspective of transportation capacity, vehicle design and construction investment, the light rail is less than the subway.



Reading Materials

Babure is the Amharic name for the first light rail system operating in Addis Ababa, capital of Ethiopia. Thanks to the 34-kilometer system, traffic in the city has been flowing more smoothly since September, which intersects Haile Gebresilase Street.

China Railway Engineering Corp completed the \$ 475 million project in three years, with services now operated by Shenzhen Metro Group Co. , Ltd. Eighty-five percent of the funding came from China Export-Import Bank.



Local residents walk outside the first light rail built and operated by Chinese companies in Addis Ababa, capital of Ethiopia.

According to the city government, the aim of developing modern transport infrastructure was to ease congestion and cut costs for low-income workers.

One line, which has blue carriages, covers 16.9 kilometers and runs north to south, serving 20 stations from Menelik to Kaliti. A second line, which has green carriages, stretches 17.4 kilometers and runs east to west, linking Ayat to Tor Hailoch. Daily services run from 6 am to 10 pm.

Mehert Endle, a young entrepreneur, says the 2.7 kilometers stretch through the city center has more than halved his daily transport costs. Although he runs an electronics shop downtown, he says he has to travel around town picking up and delivering orders.

“I spent more than 60 birr (\$ 2.7) a day just running errands. This is in addition to time wasted in traffic jams. Now, this is a thing of the past and I spend about 4 birr.” he says, as he waits for a train to take him home to Ayat.

Endle says the journey used to take more than half an hour by minibus. It takes just 15 minutes on the train.

City officials say the project has created 13,000 jobs, with more than 250 local technicians enrolled in Chinese universities and institutions to receive professional training.

In May 2014, Premier Li Keqiang visited the project while it was under construction and

called for more cooperation between China and Africa.



Try to think

1. What is the main difference between the subway and the light rail?
2. The light rail transportation is more flexible as it can run on the ground rail and also on elevated rail, even in the underground rail, isn't it?
3. Which is lower cost, light rail or subway?
4. What's the name of the first light rail system operating in Addis Ababa, the capital of Ethiopia?



New Words and Expressions

| | | |
|--|---------------------|-------------------------|
| suburban | [sə'bu:zbən] | adj. 郊区的, 城外的 |
| equipment | [i'kwɪpmənt] | n. 设备; 装备 |
| infrastructure | [ˈɪnfɹəstrʌktʃə(r)] | n. (国家或机构的)基础设施; 基础设施建设 |
| massive | [ˈmæsɪv] | adj. 巨大的, 大而重的 |
| division | [dɪ'vɪʒn] | n. 分开; 分配; 分隔 |
| unscientific | [ˌʌnˌsaɪəntɪfɪk] | adj. 不科学的 |
| axle | [ˈæksl] | n. 车轴 |
| perspective | [pə'spektɪv] | n. 视角; 态度; 观点 |
| capacity | [kə'pæsəti] | n. 容量; 容纳能力; 容积 |
| construction | [kən'strʌkʃn] | n. 建筑; 建筑物 |
| investment | [ɪn'vestmənt] | n. 投资; 投资额; 投资物 |
| rail track | | 轨道; 铁路线路 |
| the one-way maximum peak hour passenger flow | | 单向高峰时段最大客流 |
| axle load | | 轴重 |

★ 扫一扫



练习题

Unit 3

Metro Culture



Try to discuss

1. *What do many people usually do when they are in the subway?*
2. *What's the main idea of this passage?*



Text

Paris is the capital of France. Its subway is also very special. You can enjoy its culture when you are in this city. You can see many people reading books in the subway. Whenever they are in the subway or at the station, there is always a book in the hand.

The subway stations in Paris are not big, but each of them has its special acts. Some stations look like ships. Some stations have clothes, caps and shoes. And every station has a big advertisement picture. But many of them are used for selling clothes and cosmetics.

You can meet some beggars in the subway. But the beggars in the Paris subway are also very special. They often play the violin or guitar in the train. They don't feel shy at all. Instead, they think it is natural. After playing, they will go around the train and ask you to give them some money. If you want to learn more about Paris, go to the subway and enjoy its culture by yourself.



Reading Materials

The group of photographs below are the 10 most beautiful subway stations in the world. Each of them is exquisite beyond compare. Some of them are like palaces, and some are like museums. Some are located in romantic ancient cities, such as Vienna or St Petersburg, making you feel as if you were travelling through time and space to the past.



Komsomolskaya Station
Moscow, Russia
俄罗斯莫斯科 共青团站

Bockenheimer Warte Station
Frankfurt, Germany
德国法兰克福 博肯海默瓦特站




Olaias Station
Lisbon, Portugal
葡萄牙里斯本 奥莱尔斯站

Fosteritos Station
Bilbao, Spain
西班牙毕尔巴鄂 小佛斯特站



Fuxing Station
Pyongyang, North Korea
朝鲜平壤 复兴站

| | |
|--|--|
| <p>T-Centralen Station Stockholm, Sweden 瑞典斯德哥尔摩 中央地铁站</p> |  |
|  | <p>Saint Michel Notre Dame Station Paris, France 法国巴黎 圣米歇尔圣母院站</p> |
| <p>City Hall Station New York, US 美国纽约 市政厅站</p> |  |
|  | <p>Champ de Mars Park Station Montreal, Canada 加拿大蒙特利尔 战神广场公园站</p> |
| <p>Sightseeing Tunnel of the Bund Shanghai, China 中国上海 外滩观光隧道</p> |  |



Try to think

1. What do the following logos stand for?





2. In Paris, what do people mainly do when they are in the subway?
3. What's so special about beggars in Paris subway stations?
4. Try to understand the names of the capital subway of the following countries.

| | | |
|--------------------------|--------------------------|---------------------------|
| Athens Metro(Greece) | Bangkok Metro(Thailand) | Berlin U-Bahn(Germany) |
| 雅典地铁(希腊) | 曼谷地铁(泰国) | 柏林地铁(德国) |
| Beijing Subway(China) | Brussels Metro(Belgium) | Sydney Metro(Australia) |
| 北京地铁(中国) | 布鲁塞尔地铁(比利时) | 悉尼地铁(澳大利亚) |
| Budapest Metro(Hungary) | Vienna Metro(Austria) | Valparaiso Subway(Chile) |
| 布达佩斯地铁(匈牙利) | 维也纳地铁(奥地利) | 瓦尔帕莱索地铁(智利) |

New Words and Expressions

| | | |
|--------------|----------------|----------------------------|
| cosmetic | [kɒz'metɪk] | <i>n.</i> 化妆品 |
| beggar | ['begə(r)] | <i>n.</i> 乞丐 |
| violin | [,vaɪə'li:n] | <i>n.</i> 小提琴 |
| guitar | [gɪ'tɑ:(r)] | <i>n.</i> 吉他 |
| instead | [ɪn'sted] | <i>adv.</i> 反而; 代替; 顶替; 反倒 |
| special acts | | 特色 |

★ 扫一扫



练习题

Unit 4

Light Rail History



Try to discuss

Which city has built China's first modern light rail?



Text

From the mid-19th century, horse-drawn trams (or horsecars) were used in many cities around the world. In the late 1880s, electrically-powered street railways became technically feasible after the invention of a trolley system of collecting current by American inventor Frank Sprague who installed the first successful system at Richmond, Virginia. They became popular because roads were then poorly surfaced, and before the invention of the internal combustion engine and the advent of motor-buses, they were the only practical means of public transport around cities.

The light rail systems built in the 19th and early 20th centuries generally only ran in single-car setups. Some rail lines experimented with multiple unit configurations, where streetcars were joined together to make short trains, but this didn't become common until later. When lines were built over longer distances before good roads were common, they were usually called interurban streetcars in North America or radial railways in Ontario.

In North America, many of these original light rail systems were decommissioned in the 1950s and onward as the popularity of the automobile increased. Though some traditional trolley or tram systems still exist to this day, the term "light rail", has come to mean a different type of rail system. Beginning in the 1980s, some cities began reintroducing light rail systems that are more like subway or metro systems that operate at street level. These light rail systems include modern,



multi-car trains that can only be reached at stations that are spaced anywhere from a couple blocks to a mile or more apart. Some of these systems operate within roadways alongside automobile traffic, and others operate on their own separate right-of-way.

As with other rail systems, the rail gauge has had a lot of variations, but today, the standard gauge is dominant. Narrow gauge was common in many earlier systems, though as systems merged or died out, old lines were often upgraded, removed, or replaced. Some systems still use other track gauges, however.

Changchun Light Rail is the first modern light rail line in Chinese mainland.



Reading Materials

Light rail was first created in mainland Europe, as street tramways were upgraded with new rolling stock and segregated alignments. The concept owes much to the planning which took place in Goteborg (Gothenburg) in Sweden, where over a period of 15 years an ordinary city street tramway was extended through new and established suburbs on high-speed reserved track, all rolling stock was replaced by a fleet of high-performance trams, and effective traffic restrictions introduced in the central area to give priority to trams and every encouragement to use public transport. All this was achieved without the expense of digging any tram subways, keeping public transport on the surface as a visible and accessible system.

The upgraded systems have given rise to new terminology to differentiate them from ordinary tramways: Supertram, light rail, light metro, sneltram (express tram) and Stadtbahn (city rail) are just some of the names used, while several German cities market their upgraded subway tramways in the same way as underground metros by using the term U-Bahn (underground). Another reason why the subway solution proved popular in the 1970s and 1980s is that it permitted level boarding of high-floor cars from platforms in the city suburbs. On the surface lines in the suburbs, the room was often install high boarding platforms as well (elsewhere the cars use their folding steps) so the systems gradually became fully-accessible for passengers in wheelchairs, or those with prams and buggies, and boarding and alighting was speeded up for all passengers.

In the 1990s, the development of new technology to provide low-floor trams with step-free entrances only 350 millimeters above rail level has permitted surface systems to achieve the same effect just by building-up kerbs slightly to a matching height at each stop. After trials in France and Germany, now the favoured solution for making trams fully is accessible, and over 2,000 low-floor cars have been delivered or ordered for European systems. In Britain, all new systems are required by law to offer step-free access to their trams, resulting in new rolling stock being supplied by Belgian, German and Italian manufacturers.



Try to think

1. What kind of transportation has replaced light rail in North America?
2. Which city has the first modern light rail line in Chinese mainland?



New Words and Expressions

| | | |
|------------------------------|---------------------|---|
| feasible | ['fi:zəbl] | <i>adj.</i> 可行的; 行得通的 |
| invention | [in'venʃn] | <i>n.</i> 发明; 创意; 创造 |
| trolley | ['trɒli] | <i>n.</i> 手推车; 有轨电车 <i>v.</i> 用手推车运送; 乘电车 |
| practical | ['præktɪkl] | <i>adj.</i> 实用性的; 实际的 <i>n.</i> 实践课; 实验考核 |
| experiment | [ɪk'sperɪmənt] | <i>n.</i> 实验; 试验; 尝试 |
| multiple | ['mʌltɪpl] | <i>adj.</i> 数量多的; 多种多样的 <i>n.</i> 倍数 |
| configuration | [kən'fɪgə'reɪʃn] | <i>n.</i> (计算机的)配置 |
| Ontario | [ɒn'teəriəʊ] | <i>n.</i> 安大略省(加拿大省份) |
| decommission | [,di:kə'mɪʃn] | <i>v.</i> 正式停止使用(武器、核电站等) |
| reintroduce | [,ri:ɪntrə'dju:z] | <i>v.</i> 再次使用; 重新引入 |
| alongside | [ə,lɒŋ'saɪd] | <i>adv.</i> 在……旁边 |
| variation | [,veəri'eɪʃn] | <i>n.</i> (数量、水平等的)变化; 变更 |
| dominant | ['dɒmɪnənt] | <i>adj.</i> 首要的; 占支配地位的 <i>n.</i> 取得对某人的支配地位 |
| horse-drawn trams | | 马拉有轨电车 |
| electrically-powered | | 电力驱动的 |
| internal combustion engine | | 内燃机 |
| motor-bus | | 公共汽车 |
| single-car | | 单一车辆 |
| multiple unit configurations | | 多个单元配置 |
| interurban streetcar | | 都市间的有轨电车 |
| radial railway | | 中心有轨电车 |

right-of-way

通行权

★ 扫一扫



练习题

★ 思政园地

The Highest Speed of High-Rail Development

Worldwide, China is a country boasting the highest speed of high-rail development, the widest range of system technology, the strongest capacity of integration, and longest rail mileage, the fastest speed of operation, and the largest scale of projects under construction. Efforts should be made to invest more in scientific and technological innovation, so as to advance railway technology, equipment development, industrial upgrade and industrial development. In the future, transportation infrastructure construction technology will feature intelligent, green, integrated and implemented lean development.

高铁的快速发展

中国已成为世界上高速铁路发展最快、系统技术范围最广、一体化能力最强、铁路里程最长、运营速度最快、在建项目规模最大的国家。需要进一步加大科技创新投入，推动铁路技术、装备建设、产业升级和产业发展。未来，交通基础设施建设技术将以智能化、绿色化、一体化和精细化发展为特征。

