

Work of Railroad Department at Woosong University, Korea

Yong Sang Lee

Woosong University was founded in 1954 in Daejeon, Korea's fifth largest city and an important hub for transport, science, technology, and education. Daejeon is about 180 km south of the capital Seoul, taking about 50 minutes by the high-speed *Korea Train Express* (KTX).

Daejeon was the first city in Korea to build a railroad in 1905, leading to a development boom. Today, the city has a population of 1.5 million and is home to many government offices, research institutes, and universities. Korea has had a vertically separated railroad since 2004 run by the operator KORAIL, with the infrastructure owned by the Korea Rail Network Authority (KRNA). The head offices of both KORAIL and KRNA are in Daejeon, making it truly a railroad city.

Because Woosong University is in Korea's railroad city, the university is well known for its departments of Railroad,

Civil and Environmental Engineering, Vehicle Systems Engineering, and Business and Management, offering both Masters and PhD programmes. The Railroad Department has about 800 students enrolled.

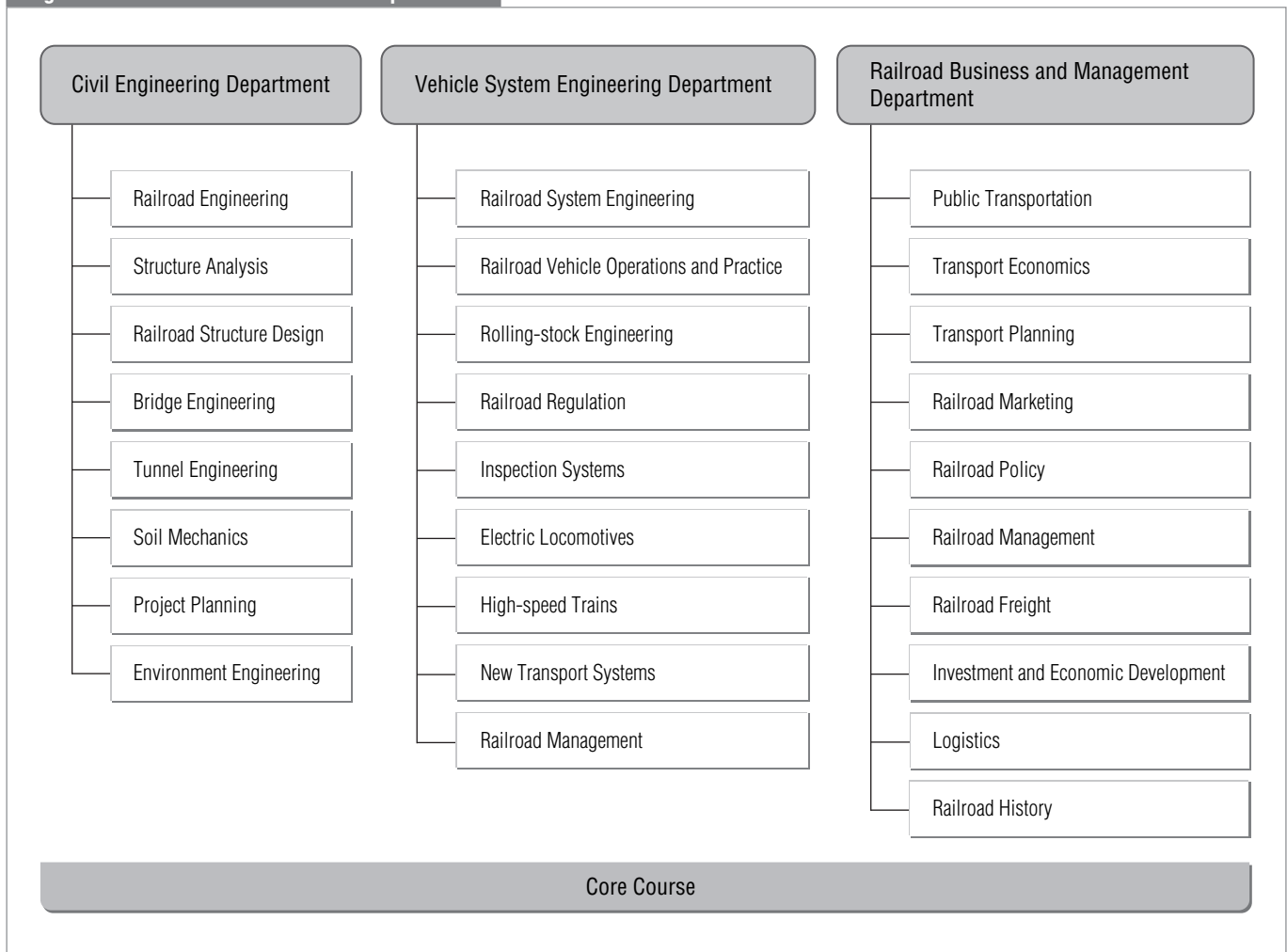
Civil engineering occupies a prominent position as a major field, and the Civil Engineering Department focuses on planning, designing, constructing, operating and maintaining the infrastructure and facilities needed by modern rail systems. The Vehicle System Engineering Department educates competitive rolling-stock engineers with the skills to handle dynamic developments in the railroad industry both in Korea and overseas. The Railroad Business and Management Department cultivates railroad planning and marketing experts who excel in their field both domestically and overseas.



Woosong University and Railroad Department

(Author)

Figure 1 Core Course of Railroad Department



Woosong University is famous for its outstanding faculty, active R&D programmes and a cutting-edge educational environment. Its missions are establishing and offering education customized to the railroad industry, establishment of cooperative networks, and creating a railroad complex. To achieve these goals, we are improving our specialized curricula and strengthening our connection with railroad industries. Since 2004, we have been building government–industry–academia cooperative networks with KORAIL (May 2004), Korea Railroad Research Institute (November 2004), and Seoul Metro (February 2008). Some of Woosong's unique and specialized educational programmes are one student–one skill development, customized programmes fitting the railroad and related industries, and education-on-demand via agreements with railroad-related partners. For example, some students get an engine driver licence during their 4 years or can join the internship programmes of related industries.

As a result, in 2004, Woosong was selected by the Minister of Education, Science and Technology as the only NURI (Korea New University for Regional Innovation) project group in the railroad sector. In addition, we won the best

project group award in the University Specialized Project Section in 2008.

To develop global-minded students, we have student and faculty exchange programmes with sister universities, including the Far Eastern State Transport University in Russia, the Southwest Jiatong University in China, and the University of Birmingham in the UK. About 100 students have joined these programmes so far.

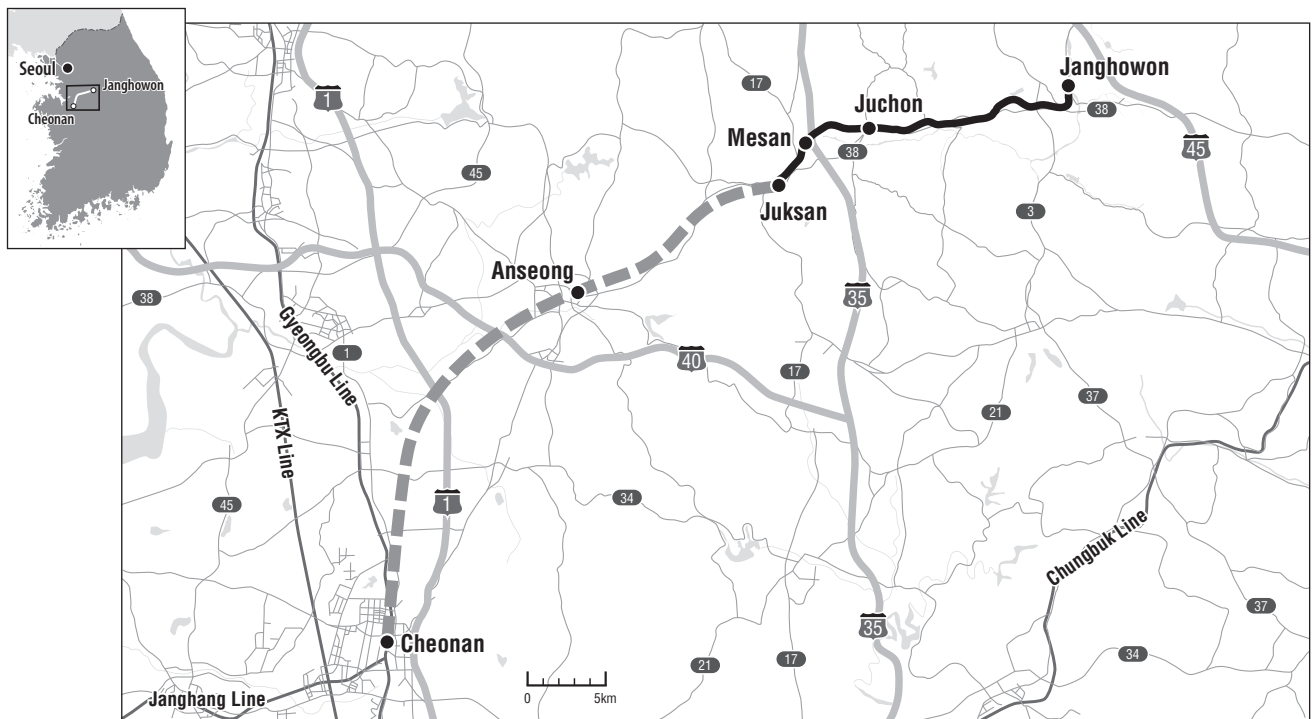
Some examples of important projects and unique programmes are the involvement of the Woosong Rail Research (WRR) group in developing new rail-freight technologies, revitalizing stations, and expanding standardized pallets. Research into railway reform is also a major area of interest, especially international privatization models. Historically, Japan took the first step in 1987 with regional privatization, unifying infrastructure and operations, followed by the UK's 1994 separation of infrastructure and operation. There is still some debate about the different privatization methods with some scholars suggesting that recent rail accidents in the UK are the result of the separation of infrastructure and operation while others insist



2009 field trip to JR Kyushu Kokura Works

(Author)

Figure 2 Route of Abandoned Line between Cheonan and Janghowon



The bold line shows the route between Juksan Station and Janghowon Station redrawn by students' survey.
The dotted line is to be surveyed in the future.



Field trip to rolling-stock manufacturer in Ochang (Ujin Industrial Systems)

(Author)

that the April 2005 accident on JR West's Fukuchiyama Line is attributable to management emphasis on profits. Recent UK policy has shifted to emphasize the greater role of government, and infrastructure and operation now have a closer relationship. For example, the rail infrastructure owner (Network Rail) has been changed from a private company to a fully government-held company.

In contrast, Japan is tending to adopt separation of infrastructure and operations on some lines, especially local lines.

To help understand these policies in the local context, WRR makes research field trips both in Korea and overseas, visiting Japan twice. On the 2008 field trip, we visited the JR Freight Terminal in Tokyo and the new station building in Osaka as well as The Railway Museum in Omiya. The museum's large collection of various old locomotives, carriages and railroad-related items is very impressive. The summer 2009 field trip to JR Kyushu's Kokura Works and Head Office with travel to Kumamoto, Kagoshima, Beppu, and Yuhuin offered a good chance to ride and learn about advanced rail systems like the Kyushu Shinkansen.

Students in the Railroad Department take as many field trips as possible with almost monthly visits to rolling stock factories and workshops. On domestic field trips, we have surveyed closed lines and have been able to redraw the route of the abandoned 70 km of tracks between Cheonan and Janghowon.

The Department held international rail conferences in October and November 2009. In October, Birmingham University joined a joint rail conference with the British Embassy in Korea, focusing on PPP (Public-Private Partnership).

With such hand-in-glove cooperation between industry and academia and through international exchange programmes, we are continuing to foster international railroad experts who are adapted to the future challenges in their field. ■



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Dr Lee is a professor at Woosong University School of Railroad Business & Management. Prior to his current position, he was a director of the R&D Policy Development Division of the Korea Railroad Research Institute. From 2000 to 2004, he participated in the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) as a representative from Korea. He has a PhD on transportation policy from Tsukuba University in Japan. His major publications include: *A study on multi-modal transportation systems in East Asia* and *A study on the Rail Fare System in Korea*, which he presented at the World Congress of Transport Research in Seoul 2001.