

Construction & Building Engineering Courses (CB)

Transportation Engineering Courses Group

CB 576 – Special Topics in Railway Engineering

COURSE INFORMATION

Course Title: Special Topics in Railway Engineering

Code: CB 576

Hours: Lecture – 2 Hrs. Tutorial – 2 Hrs. Credit –3.

Prerequisite: CB 472

GRADING

Class Performance/Attendance: 10%

Midterm # 1/Assignments – (7th Week): 30%

Midterm # 2/Assignments – (12th Week): 20%

Final Exam: 40%

COURSE DESCRIPTION

Railway dynamics , Tractive effort and resistances , Acceleration and braking ; Railway Alignment , Longitudinal and cross sections , Vertical and horizontal curve design ; Structural design of track , Jointed and welded rail design , Sleeper and ballast design ; Turnouts and switches , Switch , Crossover , Diamond crossing , Scissor crossover , slip , Double junction ; Stations and yards , Passenger and freight stations , Locomotive and stabling yard , Sorting and marshalling yards ; Signaling ; Train traffic management , Automatic block system (ABS) , Centralized traffic control (CTC) , Automatic control system (ATC) ; Railway capacity ; Railway cost , Price and subsidy ; Railway renewal and maintenance management.

TEXT BOOK

Modern Railway Track, second edition by Coenraad Esveld Publisher: MRT-production.2001.

REFERENCE BOOKS

Standard Handbook for Civil Engineers by F.S.Merritt Publisher: McGraw Hill book NY, 1983.

Railway Engineering by Hemeda and Salem, Alexandria University, 2002.

COURSE AIM

The course aims at introducing the student to the fundamentals of Railway planning and design and their relation to the field of transportation.

SPECIFIC OUTCOMES OF INSTRUCTION

- The student should be aware with the procedures and special considerations for railway planning & design.
- The student should be able to understand the sequence in the analysis process and the factors affecting the design of the major components of railway project.

COURSE OUTLINE

<i>Week Number 1:</i>	Basic components of passenger and freight trains, tractive force, movement resistance
<i>Week Number 2:</i>	Acceleration and braking
<i>Week Number 3:</i>	Basic principles of track alignment
<i>Week Number 4:</i>	Design of horizontal and vertical curve.
<i>Week Number 5:</i>	Basic components track elements, jointed and welded rail design
<i>Week Number 6:</i>	Sleeper and ballast design.
<i>Week Number 7:</i>	Railway turnouts. 7th Week Exam
<i>Week Number 8:</i>	Alignment of passenger and freight stations.
<i>Week Number 9:</i>	Locomotive and stabling yard, Sorting and marshalling yards
<i>Week Number 10:</i>	Railway signaling.
<i>Week Number 11:</i>	Train traffic management
<i>Week Number 12:</i>	Railway capacity. 12th Week Exam
<i>Week Number 13:</i>	Railway cost , Price and subsidy
<i>Week Number 14:</i>	Railway renewal and maintenance management.
<i>Week Number 15:</i>	Track construction equipments
<i>Week Number 16:</i>	Final Exam.

COURSE COORDINATOR AND DEMAND

Course Coordinator: Dr. Akram Soltan Kotb.

Course Demand: Elective