

Associate in Science Degree
Certificate of Achievement

Department of Advanced Transportation Technology
Division of Advanced Technology
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Program Information

This program is designed for students pursuing a career as a Railroad Conductor, Engineer, or Manager of Train Operations.

Career Opportunities

Sacramento City College's Certificate of Achievement and degree program in Railroad Operations prepares students for an exciting and well-paying career. The more than five hundred companies that make up the United States Railroad industry provide the country's freight and passenger transportation service on a network of some 300,000 route-miles of track. Railroads employ a substantial workforce to service, maintain, and manage this extensive transportation network.

Railroad Operations is a 19-unit, six-course program. The curriculum is approved by the Railroad Education and Training Education. In addition to normal student expenses, the Railroad Operations Program requires an additional expenditure of approximately \$350.00 for protective clothing, work boots, and safety equipment. Contact the Financial Aid office for possible assistance before entering the program.

Recommended High School Preparation

English, mathematics, physics, electronics, mechanics, and computers.

Enrollment Limitations

To be eligible for enrollment in the program, the student must meet the following criteria:

- be a high school graduate or have obtained a GED;
- must have no criminal record; must have no moving violations within the last three years;
- must have no drug convictions;
- must be capable of lifting 90 pounds.

Upon completion of this program, the student will be able to:

- qualify for an interview for a Conductor, Engineer or Management Position.
- demonstrate the knowledge and skills appropriate for an entry level railroad position.
- demonstrate the knowledge and skills pertaining to industry history, careers, operations, safety, quality, environment, procedures, and operating rules.

Required Program

Units

RAILR 100 History of Railroading.....	3
RAILR 102 Railroad Technical Careers.....	3
RAILR 120 Railroad Operations.....	3
RAILR 122 Railroad Safety, Quality and Environment.....	3
RAILR 140 General Code of Operating Rules.....	4
RAILR 142 Ground School.....	3

Total Units Required

19

Associate in Science (A.S.) Degree

The Railroad Operations Associate in Science Degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See SCC graduation requirements.

Certificate of Achievement

The Certificate of Achievement may be obtained by completion of all courses in the required program with grades of "C" or better.

Railroad Operations (RAILR)

RAILR 100 History of Railroading 3 Units

Prerequisite: None

Hours: 54 hours LEC

This course covers the history and traditions of railroading and the industry's role in North American Economic Development. Upon successful completion of this course, students should be able to list and explain the significance of major events in North American Railroading. There is an alternate learning site for this class at the California State Railroad Museum. Admission may be charged to enter the California State Railroad Museum. If this causes a financial hardship, please contact your instructor.

RAILR 102 Railroad Technical Careers 3 Units

Prerequisite: None

Hours: 54 hours LEC

This course includes information about technical careers in railroading, thereby, enabling student to choose suitable career paths. This course includes alternate learning sites that will demonstrate the relationship among technical work groups in day-to-day railroad operations. Students must provide their own transportation. Upon successful completion of this course, students should be able to describe basic technical job functions, requirements and characteristics.

RAILR 120 Railroad Operations 3 Units

Prerequisite: None

Hours: 54 hours LEC

This course includes information about the industry, its major assets, structures, and typical operations. Upon successful completion of this course, students should be able to define the current North American railroad industry characteristics, basic operations, components and processes, and industry structure and administrative processes.

RAILR 122 Railroad Safety, Quality, and Environment 3 Units

Prerequisite: None

Hours: 54 hours LEC

This course covers the importance of safety quality, personal health, and environmental awareness to the railroad industry and emphasizes the basic tools and techniques for improving these conditions on the job. Upon successful completion of this course students should be able to define and explain the needs for improved safety, quality, health, and environmental awareness, describe their basic principles, explain the elements of successful programs, and apply these elements to typical tasks on the job.

RAILR 140 General Code of Operating Rules 4 Units

Prerequisite: RAILR 120 and 122 with grades of "C" or better

Hours: 72 hours LEC

This course provides instruction in the use and application of railroad rules, timetables, general orders, track bulletins, track warrants, and train orders. The students will learn their interpretation, origin and use in the railroad industry. Students are required to pass the General Code of Operating Rules Examination with an 85 for the mid-term exam and will be required to write and re-write general orders, timetables, and rules. Students are required to purchase an account on etestmaker.com to take the required railroad rules examination. This course provides an in-depth study of the GCOR. Upon completion of this course, the students should be able to demonstrate abilities to apply the General Code of Operating Rules to safe and efficient train movement and operations. Special requirements - Students must pass the prerequisite courses before registering for this course. See an instructor about special requirements.

RAILR 142 Ground School 3 Units

Prerequisite: RAILR 120, RAILR 122, and RAILR 140 with grades of "C" or better. Pass grade for General Code of Operating Rules (GCOR).

Hours: 36 hours LEC; 54 hours LAB

This course provides for use and application of railroad rules, timetables, general orders, track bulletins, track warrants and train orders. The students will apply these in a railroad setting, making up trains, and switching boxcars from switch lists and work orders. Students are required to show that they have passed the General Code of Operating Rules examination on their first day of class. Students not qualified in the rules will not be allowed to continue in the class. Students will be required to make up trains, couple and uncouple cars and locomotives, troubleshoot air brakes systems, get on and off moving equipment, remove and apply knuckles of cars (knuckles weigh 75 pounds) and throw switches. Students are required to wear steel toe boots with defined heels, leather gloves, loose fitting jeans or coveralls, and head covers. The students will work as a conductor on a minimum of one student trip and ride as an observer for an additional fifteen trips.

RAILR 144 Air Brakes 3.5 Units

Prerequisite: None

Advisory: RAILR 120 and 122

Hours: 54 hours LEC; 27 hours LAB

This course offers an overview of the train air brake system from the rear of the engine to the flashing rear end device with a focus on the American brake valve. Emphasis is placed on Federal Railroad Administration requirements for Initial Terminal Brake Test, as well as industry Air Brake Rules on the use and application of the air brake system. The course includes inspection of the load, under carriage, air brake connections, hand brake systems, drain valves, and cut-out cocks.

**RAILR 294 Topics in Railroad .5-4 Units
Operations**

Prerequisite: None

Hours: 54 hours LEC; 162 hours LAB

See Topics in (Subject)

**RAILR 295 Independent Studies in 1-3 Units
Railroad Operations**

Prerequisite: None

Hours: 54 hours LEC

See Independent Studies

**RAILR 297 Internship in Railroad 1-3 Units
Operations**

Prerequisite: RAILR 142 with a grade of "C" or better.

Hours: 54 hours LEC; 54 hours LAB

Enrollment Limitations: Students are required to wear steel toe boots with defined heels, leather gloves, loose fitting jeans or coveralls, and head covers. The students must pass a Federal Railroad Administration Drug test prior to the first class and a Department of Transportation Physical requiring a Class I (one) back as defined by the American Medical Association as well as perfect color vision. Vision must be corrected to 20/20. Student must demonstrate strength in a doctor supervised setting including grip and muscle tone as to Class I specifications and general physical fitness that verifies a student's ability to lift 75 pounds.

This course provides on the job site use and application of railroad rules, timetables, general orders, track bulletins, and track warrants. The students will apply these in a working railroad setting, making up trains, and switching boxcars from switch lists and work orders. Students are required to show proof of passing the Railroad rules exam or successfully passing the exam within the first sixteen hours of scheduled course time as required by the Federal Railroad Administration. Students not qualified in the rules will not be allowed to continue in the class. Students will be required to make up trains, couple and uncouple cars and locomotives, troubleshoot air brake systems, get on and off moving equipment up to 20 miles per hour, remove and apply knuckles of cars (knuckles weigh 75 pounds) and throw switches. This course will require the student to get on and off a train moving up to 20 miles per hour.

**RAILR 299 Experimental Offering in .5-4 Units
Railroad Operations**

Prerequisite: None

Hours: 54 hours LEC; 108 hours LAB

See Experimental Offerings