

GROUND SCHOOL GOALS

I. To gain a working knowledge of:

- A. Safe Work Practices
- B. General Code of Operating Rules
- C. Air Brake and Train Handling Rules:

II. To gain the ability to safely perform:

- A. Getting on and off standing equipment
- B. Getting on and off moving equipment in emergencies only
- C. Climbing and descending ladders
- D. Lifting
- E. Applying and releasing handbrakes
- F. Handling hand-throw switches
- G. Couple and uncouple equipment
- H. Handling air hoses
- I. Changing knuckles
- J. Walking in and along yards and tracks
- K. Walking around and between equipment

III. To work with:

- A. Track warrants
- B. Track Bulletins
- C. Switch lists
- D. Delay reports

IV. To properly perform:

- A. Air tests
- B. Car inspections

ACADEMIC CATALOG OF MATERIALS NEEDED

1. RULE BOOKS

- a) General Code Of Operating Rules
- b) Omnitrax Transportation Safety Rules
- c) Omnitrax Transportation Safety Procedures
- d) Omnitrax Air Brake And Train Handling Rules
- e) Omnitrax Instructions For Handling Hazardous Materials

2. OTHER BOOKS

- a) Emergency Response Guide Book

3. VIDEOS

- a) UP - SAFETY SPOTS 5:50
- b) CN - A Guide To Safer Railroading
- c) CR - Two Way, End Of Train Telemetry
- d) SP - Blue Signal Protection

4. REFERENCE MATERIALS

- a) Track Warrant Forms
- b) Track Bullitens
- c) GCOR Study Guides
- d) Delay Reports
- e) Yard List With Hazmat Lists
- f) **TESTS: DAILY**
 - i) Safety Tests
 - ii) CH. 1-5 Tests
 - iii) CH. 6-9 Tests
 - iv) CH. 10-15 Tests
 - v) Air Brake Tests
 - vi) General Knowledge Tests
- g) **TESTS: Finals**
 - i) Safety
 - ii) GCOR
 - iii) HazMat

5. MISCELLANEOUS

- a) Name Tags
- b) Pencils
- c) Paper

Basic Conductor Ground School Curriculum

Day One

0800 - 0900	<p>Orientation: Have students introduce and tell a little about themselves. Instructor to do the same. Example: Railroad, Former positions/jobs, career goals, etc.</p> <ol style="list-style-type: none">1. Introductions (instructor and all students)2. House Rules:<ol style="list-style-type: none">A. No smoking inside buildingB. Talking should be orderly; question welcomeC. Speech is not to be offensive to othersD. No alcohol or drug use (or influence of) allowedE. No shortsF. No caps allowed in classroomG. Dressed or prepared to work outdoors every dayH. Assign one student each for calling 911, 1st aid and CPRI. Designate exits and re-convening area
0900 - 1000	Basic Railroading 101 - Pictures And Explanations
1000 - 1015	Break
1000 - 1200	Basic Railroading 101 - Pictures And Explanations
1200 - 1300	Lunch
1300 - 1500	<p>Transportation Safety Rules & Recommended Work Guidelines</p> <ol style="list-style-type: none">A. Section I: Core Safety RulesB. Section II: Rules, Recommended Work Guidelines and PPE chartsC. Section III: Appendix/Glossary terms
1500 - 1515	Break
1515 - 1700	<p>Transportation Safety Procedures</p> <ol style="list-style-type: none">A. Review all Safety Procedures, Best Practices & Support Information - discuss
Homework:	Read the material without the study guide. Then re-read, answering question in the study guide.

Day Two

Field Exercises

0800 - 1200	<p>Track Components - <i>Try to include a qualified mechanical department employee.</i></p> <ol style="list-style-type: none">a. Switch componentsb. Frogc. Tiesd. Platese. Rail
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f. Angle bars

Car wheels and Car parts - *Include inspection items.*

1. Wheels

- a. Flange
- b. Tread
- c. Plate
- d. Hub
- e. Bearings
- f. Axle

2. Car parts

- a. Trucks
- b. Air piping
- c. Retainers
- d. Cutout cocks
- e. A & B ends
- f. Hand brakes
- g. Air brake cylinders and pistons
- h. Safety appliances
- i. Knuckles
- j. Drawbars / cushion vs. non-cushioned

1200 - 1300

Lunch

1300 - 1630

1. Demonstrate and practice - *Depending on availability of engine and engineer.*

- a. Getting on and off moving equipment
- b. Coupling and uncoupling
- c. Coupling air hoses OR

2. Demonstrate and practice - *Depending on availability of engine and engineer.*

- a. Changing Knuckles
- b. Getting on and off standing equipment
- c. 3 point contact
- d. Climbing ladders
- e. Handling switches and de-rails

1630 - 1700

Assign homework: Finish GCOR Glossary terms and chapters 1 -

5. Questions 1- 57 on the study guide.

Day Three

0800 - 0830

Read and discuss GCOR Glossary Terms

0830 - 0900

Read and discuss GCOR Glossary Terms

0900 - 0915

Read and discuss GCOR Glossary Terms

0915 - 1000

Break

1000 - 1130

Discuss Chapter One

- 1. 1.1 Safety
- 2. 1.2 Personal Injuries and accidents
- 3. 1.3-1.4 Rules in effect and carrying them out
- 4. 1.5 Drugs and alcohol

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5. 1.6-1.16 Behavior as employees
 6. 1.17 Hours of service
 7. 1.18-1.30 Activities as train service employees
 8. 1.31-1.43 Cars and engines, inspections and repairs
 9. 1.44-1.47 Duties of various employees
- Discuss Chapter Two Radio rules
1. All rules in section
 2. Demonstrate use of hand held radio
- Discuss Chapter Three: Standard time
- Discuss Chapter Four: Timetables
1. Look at various timetables
 2. Issue Timetable test (Physical Characteristics)
 - a. Grade with class and correct, showing locations in TT

1130 - 1145

1145 - 1200

1200 - 1300

1300 - 1500

Break

Lunch

Discuss Chapter Five. *Demonstrate with white board track. Include requirements for ditch lights. Some railroads require crews to call signals over the radio which allows dispatcher and supervisors to hear.*

1. 5.1 Signal equipment
2. 5.2 Receiving and giving signals
3. 5.3-5.3.7 H (Hand and radio signals)
4. 5.4 Flags for temporary track conditions
5. 5.5 Permanent speed signs
6. 5.6-5.7 Fusees and torpedoes
7. 5.8 Whistles and bells
8. 5.9 Headlight display
9. 5.10-5.11 Markers and engine numbers
10. 5.12-5.14 Protection of occupied cars, men, and equipment with signs
11. 5.15 Improperly displayed signals
12. 5.16 Observe and call signals

1500 - 1515

1515 - 1535

1535 - 1600

1600 - 1700

1700

Break

Film: SP "Blue Signals"

Review GCOR chapters 1-5

Test on GCOR Chapters 1-5. Grade in class - discuss and correct

Assign homework: Read GCOR chapters 6 thru 9 and complete study guide questions 58 thru 155.

Day Four

0800 - 0830

0830 - 0845

0845 - 0930

Discuss homework, answer questions

Film:

Read and discuss Chapter Six (theory)

1. Authority and control
2. All track is treated as Main track or Other than main track
3. 12 ways to get authority

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0930 - 0945

0945 - 1100

4. One way to provide protection for yourself

Break

Read and discuss Chapter Six. *Note - tie in 15.1 paragraph two. Point out the differences (reverse vs. shoving.)* **AUTHORITY AND CONTROL: Authority is required to allow occupancy of a track. Control is required to allow movement without collisions.**

1. 6.1 Repeat instructions
2. 6.2 Initiating movement
3. 6.3 Main track authorization (12 WAYS) (flag)
4. 6.4 Reverse movements
5. 6.5 Handling cars ahead of an engine
6. 6.6 Picking up crew member
7. 6.7-6.12 (Instructions while moving on main track)
8. 6.13-6.14 Yard limits and restricted limits
9. 6.15 Block register territory
10. 6.16-6.18 (Danger points)
11. 6.19 Flag protection
12. 6.20 Portion of train left on Main track
13. 6.21 Precaution against unusual conditions
14. 6.22 Maintaining control of train or engine
15. 6.23 Emergency stop or severe slack action
16. 6.27 Movement at restricted speed
17. 6.28 Movement on other than main track
18. 6.29 Inspecting trains
19. 6.30 Maximum authorized speed
20. 6.32 Road crossings (rules governing when working around crossings)

1100 - 1115

1115 - 1130

1130 - 1200

1200 - 1300

1300 - 1320

1320 - 1445

Break

Explain spur tracks: A leading cause of derailments when violated.

Film. "Bottling The Air"

Lunch

Film: "UPRR Annual Rules Presentation, 1997" segment on Switching and Switches

Read and discuss Chapter Seven

1. 7.1 Switching safely and efficiently
2. 7.2-7.4 (Safety precautions while switching)
3. 7.5-7.9 (Measures to ensure safe securing or movement while switching)
4. 7.10 Movement through gates or doorways
5. 7.11 Charging necessary air brakes
6. 7.12 Movements into spur tracks

1445 - 1500

Break

1500 - 1630

Read and discuss Chapter Eight. *Dual, spring and others are treated as hand switches when operated by hand. Train movements over facing points. Definition of sidings. Do not foul tracks until switches are lined. (8.2). Definition of variable.*

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1. 8.1 Hand operation of switches
2. 8.2 Position of switches
3. 8.3-8.7 (Main track switches and their use)
4. 8.8 Switches equipped with locks, hooks, or latches
5. 8.9-8.10 Movement over spring switches
6. 8.11 Switches in sidings
7. 8.12 Crossover switches
8. 8.13 Scale track switches
9. 8.14 Conflicting movements approaching switch
10. 8.15 Switches run through
11. 8.16 Damaged or defective switches
12. 8.17 Avoid sanding over movable parts
13. 8.18 Variable switches
14. 8.19 Automatic switches
15. 8.20 Derail location and position

1630 - 1645

Assign homework: Finish reading GCOR chapters 6 thru 9 and complete study guide questions 58 thru 155. **Be able to write 6.27 word for word.**

Day Five

0800 - 0830

Discuss homework, answer questions

0830 - 0900

Write out GCOR 6.27 word for word

0900 - 0945

Film

0945 - 1000

Break

1000 - 1030

Read and discuss Chapter Nine. Definitions of aspect and indication. Rule 5.15 is very similar to 9.4.

1. 9.1 Signal aspects and indications
2. 9.2 Location of signals
3. 9.3 What signals govern
4. 9.4 Improperly displayed signals or absent lights
5. 9.5 Where stop must be made
6. 9.6 Change of signal indication
7. 9.7 Failure to display most restrictive indication
8. 9.8 Next governing signal
9. 9.9 Train delayed within a block
 - a. ABS
 - b. CTC or manual interlocking
 - c. Automatic interlocking
10. 9.10 Initiating movement between signals
11. 9.11 Movement from signal requiring restricted speed
12. 9.12 Stop indications
 - a. CTC
 - b. Manual interlocking
 - c. Automatic Interlockings
 - d. ABS

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13. 9.13 When instructed to operate dual control switches by hand
 14. 9.16 Stop and proceed indications
 15. 9.17 Entering main track at hand-operated switch
 16. 9.18 Electrically locked switches and derails
 17. 9.19 Leaving equipment in interlockings
 18. 9.20 Clear track circuits
 19. 9.21 Overlap circuits
 20. 9.22 Standing on sanded rail
 21. 9.23 Suspension of block system
 22. 9.24 Call lights
- 1030 -1115 Review and discuss GCOR Chapters 6-9
- 1115 -1130 **Break**
- 1130 - 1200 Test on GCOR chapters 6-9
- 1200 - 1300 **Lunch**
- 1300 - 1320 Review and discuss test scores
- 1320 - 1330 Assign homework for weekend: Read chapters 10, 14, and 15 - finish the study guide and be prepared to turn it in on Monday.
- 1330 - 1700 Field Exercises:
1. Demonstrate and practice
 - a. Getting on and off moving equipment
 - b. Coupling and uncoupling
 - c. Coupling air hoses OR
 2. Demonstrate and practice
 - a. Changing Knuckles
 - b. Getting on and off standing equipment
 - c. 3 point contact
 - d. Climbing ladders
 - e. Handling switches and de-rails

Day Six

- 0800 - 0845 Discuss homework, answer questions
- 0845 - 0905 Film:
- 0905 - 1030
1. Chapter ten—Rules applicable only in CTC
 - a. 10.1 Authority to enter CTC limits
 - b. 10.2 Clearing through hand-operated switches
 - c. 10.3 Track and time
 - 1) Additional time
 - 2) Track and time release within the limits
 - 3) 10.3.1 Protection of limits
 - 4) 10.3.2 Protection of machines, track cars or employees
 - 5) 10.3.3 Joint track and time
 - 6) 10.3.4 Record track and time

1030 - 1045

1045 - 1200

Break

1. Chapter Eleven - Rules applicable in ACS and ATS territories.
Dispatchers rule Discuss 11 and 13 only if CSO people are present.
2. Chapter Thirteen—Rules applicable only in ACS territories
 - a. 13.1 General information
 - b. 13.2 Normal operation
 - c. 13.3 Unusual conditions

1200 - 1300

1300 - 1320

1320 – 1500

Lunch

Film:

Read and discuss Chapter Fourteen. Use white board track to demonstrate limits of authority.

1. Go over the suggested form line by line
2. 14.1 Authority to enter TWC limits
3. 14. 2 Designated limits
 - a. First named point
 - b. Last named point
 - 1) With siding
 - 2) Without siding
4. 14.3 Operating with track warrants
 - a. Proceed
 - b. Work between
5. Occupying same track warrant limits
 - a. Flag
 - b. Two work between trains
 - c. Proceed through work between limits
6. 14.5 Protecting men or equipment
 - a. Trains authorized to proceed and authority behind the trains
 - b. All trains at restricted speed
7. 14.6 Movement against the current of traffic
8. 14.7 Reporting clear of limits
 - a. Crew must know that the train is clear before reporting clear
 - b. Must "know" by one of five ways.
 - c. Main track switches must be lined for the main track
9. 14.8 Track warrant requests
10. 14.9 Copying track warrants
 - a. Transmitting warrants
 - b. In effect when OK time is shown
11. 14.10 Track warrant in effect
 - a. Crew member reports clear of the limits
 - b. Warrant is made void on line one of a subsequent warrant
 - c. Time limit shown
12. 14.11 Changing track warrants
13. 14.12 Voiding track warrants (write void)
14. 14.13 Mechanical transmission of track warrants

1500 - 1515

Break

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- 1515 - 1630 Pass out Track Warrant Forms and practice taking track warrants.
Go over Track Warrant Slides and scenarios
- 1630 -1700 Review GCOR chapters 10-14. Assign homework. Finish chapters 10, 14 and 15 - finish the study guide and be prepared to turn it in on Tuesday.

Day Seven

- 0800 - 0820 Discuss homework, answer questions
- 0820 - 0840 Film:
- 0840 - 1000 Read and discuss Chapter Fifteen. *See 15.12 on comparison*
1. Go over suggested forms for form A & B
 2. 15.1 Track bulletins
 - a. Receipt and comparison of track bulletins
 - b. At the initial station
 - 1) Must receive warrants OR determine if any are needed.
 - 2) Received from inbound crew.
 - c. 15.1.1 Changing address of track warrants or track bulletins
 - d. Protection by track bulletin form B
 - 1) Verbal permission
 - 2) Repeat instructions
 - 3) Stop column
 - e. 15.2.1 Protection for on-track equipment
 3. 15.4 Protection when tracks removed from service
 4. 15.5 Protection when tracks blocked with equipment
 5. 15.6 Change of a rule, general order, or special instruction
 6. 15.8 Duplicating track bulletins
 7. 15.9 Additional copies of track bulletins
 8. 15.10 Retaining track bulletins
 9. 15.11 Restriction to crew members
 10. 15.12 Relief of engineer or conductor during trip
 11. 15.13 Voiding track bulletins
 - a. Voiding verbally
 - b. Voiding with another bulletin or with a track warrant
 12. 15.14 Delivering track bulletins
 13. 15.15 Mechanical transmission of track bulletins
- Break**
- 1000 - 1015 Read and discuss Chapter Sixteen. *Point out the required format.*
- 1015 - 1200
1. Authority to enter DTC limits
 2. DTC block authority
 - a. Recorded in writing
 - b. Multiple authorities
 3. 16.3 Movement in a specified direction
 - a. 16.3.1 directional authority,
 - 1) One or two blocks
 - 2) More than two blocks

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- b. 16.3.2 restricted authority
- 4. 16.4 Work and time
 - a. Issue requirements
 - b. Issue format
 - c. Additional time
- 5. 16.5 Change authority
- 6. 16.6 Reverse movements within a DTC block
- 7. 16.7 Releasing DTC block authority
 - a. Release format
 - b. Operating in non-signaled territory (knowing you are clear)
 - c. 16.8 Withdrawing DTC block authority
 - d. 16.9 Communication failure

1200 - 1300

1300 - 1330

1310 - 1340

1340 - 1350

1350 - 1400

1400 - 1415

1415 - 1700

Lunch

Review and discuss GCOR chapters 10 - 16

Test on GCOR chapters 10 - 16

Grade tests and discuss

Assign homework: Read and study AIR BRAKE AND TRAIN HANDLING rules Chapters 100 and 201

Break

1. Visit automatic interlocking
 - a. Look at signals
 - b. Read instructions in box (over box)
 - c. See it work if possible
2. (Depending on availability of engine and engineer)
 1. Demonstrate and practice
 - a. Getting on and off moving equipment
 - b. Coupling and uncoupling
 - c. Coupling air hoses OR
 2. Demonstrate and practice
 - a. Changing Knuckles
 - b. Getting on and off standing equipment
 - c. 3 point contact
 - d. Climbing ladders
 - e. Handling switches and de-rails

Day Eight

0800 - 0820

0820 - 0840

0840 - 1000

Review homework and answer questions

Film:

DISCUSS Chapter 100 rules below

1. 100.1 Taking charge of locomotive
2. 100.2 Standing locomotive air test
3. 100.4 Locomotive daily inspection requirements
4. 100.8 Leaving locomotive unattended / unoccupied

1000 - 1015

Break

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1015 - 1035	Film: CR - Two Way Telemetry
1035 - 1055	Film: UPARP 97 Segment on Air brake and train handling
1055 - 1200	DISCUSS chapter 201 rules below
	1. 201.1 Responsibility for train inspection and test
	2. 201.2 Coupling to train and charging
	3. 201.3 Calibrated telemetry system
	4. 201.4 Leakage procedure
	5. 201.5 Initial terminal road train air test
	6. 201.6 Initial terminal road train air test from yard air
	7. 201.7 Transfer train and yard train movement air test
	8. 201.8 Application and release air test
	9. 201.10 Detaching locomotive or separating train
	10. 201.11 Inbound train brake inspection (discuss 601b reduction)
	11. 201.12 Recoupling locomotive or cars
	a. Separated more than two hours
	b. Separated less than two hours
	12. 201.13 Picking up cars in route
	a. Not previously tested
	b. Previously tested
1200 - 1300	Lunch
1300 - 1400	Review and discuss ABTH chapters 100 and 201
1400 - 1430	Test on Air brakes
1430 - 1445	Grade tests and discuss
1445 - 1500	Break
1500 - 1700	Perform air test:
	1. Standing engine air test
	2. Coupling and charging
	3. Initial terminal air test
	4. Transfer air test
	5. Picking up cars in-route air test (previously tested & not previously tested)

Day Nine

0800 - 1000	Bring in Office Manager — review train delay/time sheets. Discuss:
	1. FRA requirements
	2. Railroad requirements
1000 - 1015	Break
1015 - 1200	Bring in Trainmaster / Superintendent / Operations Manager - review: (Use white board for switching practice.)
	1. Track/switch lists
	a. How to read and interpret
	2. Train consists
	a. How to read and interpret

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3. Required paperwork and reports
 - a. Delay reports
 - b. Injury/accident reports
 - c. Grade crossing accident reports
4. Practice switching with switch lists

1200 - 1300

Lunch

1300 - 1400

Discussion and review for Final Exam

1400 - 1430

Break and individual study time

1430 - 1545

Final Examination. Grade each test with individual and look up incorrect answers

1545 - 1600

Break

1600 - 1700

Give SOFA presentation

Day Ten

0800 - 0945

Teach HazMat course. HAZMAT VIDEO. Demonstrate how to use the Emergency Response Guidebook. Give Hazmat Presentation and test.

0945 - 1000

Break

1000 - 1030

Pass out certificates for those that passed final exam (Take student pictures.) Graduates may leave.

1030 - 1200

Review and discussion for Final Make-up exam

1200 - 1300

Lunch

1300 - 1500

Final exam make-up

1500 - 1545

Grade tests, go over errors for understanding, pass out certificates.

NOTES: