

Course Syllabus - Fall Semester 2015 Railroad Mechanical Practicum (RTE 404)

Instructor: Bryan W. Schlake

Contact Info:

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Office Hours: 1-4 pm Tues & Wed (or by appointment)

Class Meeting Times and Locations:

- Lectures on Tues & Thursday 10:50am-12:05pm (209 Force)
- Labs on Thursday 1:15pm-4:05pm (EMS / TBD)
- Periodically class will be held at either the Sheetz Center for Entrepreneurial Excellence (SCEE) or the Penn Building in Downtown Altoona

Lab Support Contacts:

Office: 105 Force Advanced Technology
Center Phone: 814-949-5573
Supervisors:

- Mr. Lucas Jones: LAJ143@psu.edu
- Mr. Thomas E. Hatch: TEH17@psu.edu



<https://up.jobs/freight-car-repairer.html>



Course Description:

Railroad Mechanical Practicum (lectures, labs, supervised field experiences) covering the repair of locomotives and freight cars. This course is required for all RTE majors.

Course Expectations:

Students will gain an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice in the design, repair, maintenance, and safe transportation of freight cars and locomotives. Students are expected to demonstrate an ability to communicate effectively through oral and written exercises and working in teams. Finally, students will identify, formulate and solve engineering problems applicable to railroad mechanical department practices.

Prerequisites: RTE 303, PHYS 211, PHYS 212, E MCH 213

Students who do not meet these prerequisites may be dis-enrolled during the first 10-day free add-drop period after being informed in writing by the instructor (see: <http://www.psu.edu/dept/oue/aappm/C-5.html>). If you have not completed the listed prerequisites, then promptly consult with the instructor if you have not done so already. Students who re-enroll after being dis-enrolled according to this policy are in violation of Item 15 on the Student Code of Conduct (<http://studentaffairs.psu.edu/conduct/codeofconduct/>).

Required Textbooks:

- Armstrong, John H. The Railroad, What it is and What it Does, 5th Ed., Simmons-Boardman. 2008.

Recommended Textbooks:

- Cary, Howard B. and Scott C. Helzer. Modern Welding Technology, 6th Ed., Pearson Prentice Hall. Upper Saddle River, NJ. 2005.
- Brady, Robert N. Modern Diesel Technology, Prentice-Hall, Inc. Englewood Cliffs, NJ. 1996.

Course Content:

- Part I: Freight Cars (Armstrong, chaps 5, 6, 9, 10, 14, 15, and various other readings)
 - Freight Car Design and Loading Calculations
 - Railcar Mechanical Components & Safety Appliances
 - Freight Car Inspection
 - Wayside Inspection Systems
 - Laser-based Measurement of Overdimensional Loads using SafeLoad©
 - AAR Open Top Loading Rules & Closed Car Guidelines
 - Welding
 - Welding Safety
 - Metallurgy of Welding
 - Techniques and best practices
 - Identifying weld defects (destructive and non-destructive testing)
- Part II: Locomotives (Armstrong, chapter 4 and various other readings)
 - Train Resistance
 - Tractive Effort and Horsepower
 - Diesel Engines
 - Auxiliary Equipment
 - Braking Systems
 - Routine Maintenance & Federal Inspections
 - Midlife and Overhaul Programs
 - Electric Traction
 - Electric Locomotives
 - Traction Motors
 - Alternators/Generators

Internet Materials and Links

Additional materials will be made available electronically on Angel.

Attendance:

This course abides by the Penn State Class Attendance policies given at <http://senate.psu.edu/policies/42-00.html#42-27>, <http://www.psu.edu/oue/aappm/E-11.html>, <http://www.psu.edu/ufs/policies/44-00.html#44-35>, <http://studentaffairs.psu.edu/health/welcome/illnessVerification/>, and <http://www.psu.edu/oue/aappm/R-4.html>. Students who miss class for legitimate reasons will be given a reasonable opportunity to make up missed work, including exams and quizzes. Students are not required to secure the signature of medical personnel in the case of illness or injury and should use their best judgment on whether they are well enough to attend class or not; the University Health Center will not provide medical verification for minor illnesses or injuries. Other legitimate reasons for missing class include religious observance, family emergencies, and regularly scheduled university-approved curricular or extracurricular activities. Students who encounter serious family, health, or personal situations that result in extended absences should contact the Office of Student and Family Services for help: <http://studentaffairs.psu.edu/familyservices/>. Whenever possible, students participating in University-approved activities should submit to the instructor a Class Absence Form, available at www.psu.edu/oue/aappm/classabs.pdf, at least one week prior to the activity.

Lab, Classroom, and Field Safety:

In order to prepare students for the highly safety conscious environment of the railroad industry, all students will be expected to conduct themselves at all times in a manner that promotes safety to both self and others. Students are expected to know, understand and lead others in the adherence of all rules provided in the RTE 404 Safety and General Conduct Rulebook, a facsimile of a Class I railroad safety rulebook.

Cell Phone Policy:

Cell phones must be silenced during all lectures and lab sessions and during field visits, while on host property. Only emergency calls will be allowed if and when the student is in a safe environment. Texting will not be allowed during instructional times, except by permission of the instructor.

Grade Calculation:

Job Safety Briefings	3 per semester, graded by peers	10%
Executive Summaries of Pre-class Readings	Due each lecture with JSB notes	15%
Lab Reports	5 individual, 5 team lab reports	40%
Midterm Exam	October 15	15%
Final Exam	December 15-18	20%
Total		100%

Grade Determination:

A (94-100)	C+ (77-79)
A- (90-93)	C (70-76)
B+ (87-89)	D (60-69)
B (84-86)	F (0-59)
B- (80-83)	

Grading Policy

*All lab reports must be turned in on time and all guidelines must be strictly followed. A 10% late penalty will be assessed for each day the report is late.

*The Job Safety Briefing grade will be a participation grade based on three (3) oral presentations given in class. Instructor assessment will comprise two thirds (67%) of this grade, while the remaining one third (33%) will be based on peer evaluations.

Academic Integrity Statement

Students in this class are expected to write up their weekly assignments and lab reports individually, to work the exams on their own, and to use their own words (using proper citations) for all individual assignments. Class members may work on the problem sets in groups, but then each student must write up the answers separately. As an exception, team lab reports will be prepared and completed in teams. Students are not to copy problem or exam answers from another person's paper and present them as their own; students may not plagiarize text from papers or websites written by others. Students who present other people's work as their own will receive at least a zero (0) on the assignment and may well receive an F or XF in the course. For information about the Earth and Mineral Sciences Academic Integrity Policy, which this course adopts, please see:

http://www.ems.psu.edu/current_undergrad_students/academics/integrity_policy.

Accommodations for Students with Disabilities

The Office of Disability Services (<http://equity.psu.edu/ods/>) requests and maintains disability-related documents; certifies eligibility for services; determines academic adjustments, auxiliary aids, and/or services; and develops plans for the provision of academic adjustments, auxiliary aids, and/or services as mandated under Title II of the ADA Amendments Act (ADAAA) of 2008 and Section 504 of the Rehabilitation Act of 1973. A list of these services is provided at <http://equity.psu.edu/ods/student-information>.

Campus Emergencies and Hazardous Weather

Campus emergencies, including weather delays, are announced on Penn State News (<http://news.psu.edu/>) and communicated to cellphones, email, the Penn State Facebook page, and Twitter via PSUTXT (to sign up, please see <http://psutxt.psu.edu>). Please feel free to contact your instructor with questions about weather related delays or cancellations.

Absence for Illness or Emergency

Students should inform instructors when missing classes for reasons beyond their control (e.g., illness, family emergency, etc.). If circumstances prevent a student from contacting instructors, the Altoona Registrar's office, [814-949-5035](tel:814-949-5035), will notify the appropriate departments. Students should make contact with instructors as soon as circumstances permit and provide documentation if requested.

