

**SYLLABUS:
FIRE 155 FIRE SERVICE HYDRAULICS
SPRING 2021**



South Portland, Maine 04106

Fire Science

Title: Fire Service Hydraulics

Catalog Number: Fire 155

Credit Hours: 3

Total Contact Hours: 45

Lecture (or Lab): Lecture

Assistant Professor Robert Lindstedt

Office Hours – Location: Rm 205 Howe Hall

Contact Information: rindstedt@smccme.edu

(O) 207-741-5750

FIRE 155-01: Tuesday 11:00 – 12:30 (zoom) and Thursday 08:00 to 09:45 LIVE

FIRE 155-02: Tuesday 11:00 – 12:30 (zoom) and Thursday 10:00 to 11:45 LIVE

Required Text: IFSTA. By Michael A. Wieder. Fire Service Hydraulics and Water Supply, 3rd Edition.
ISBN: 978-0-87939-708-1

Required Equipment: Calculator capable of calculating square roots, Scientific Calculator

Course Description: This is a foundation course in the principles of hydraulics as applied to fire service hose, appliances, and other community resources. Topics include principles involving hydrostatics, hydrodynamics, solving hydraulic problems in fire hose layouts by exact mathematical calculation and fireground estimation; the ability to make rapid fireground hydraulic determinations, and to evaluate the efficiency and effectiveness of various hydraulic systems including hydrant flows and community water supply resources. Additionally, we will examine pump mechanics concepts including common problems with advised solutions and pump testing processes.

CO-REQUISITE: *MATH-140 College Algebra or MATH-130 Technical Math.* Because of the nature of this subject, students should be well versed in mathematics - particularly algebra, solving for unknowns, importance of units, and use of equations -- before enrolling in this course.

In Spring 2022 this course will be offered in hybrid mode, with weekly Zoom class meetings, online discussions and assignments, and face-to-face hands-on sessions. Each section of the course will meet during the assigned class times each week via Zoom, and a “Weekly Follow-up” Live Lecture. Student engagement in all sessions will be required (ESSENTIAL) and documented. Strict procedures for screening and social distancing will be followed during any possible face to face class meetings.

Fire Science Learning Outcomes

Successful completion of an associate degree in Fire Science from Southern Maine Community College will prepare students to:

- 1) Analyze and apply proactive fire prevention and control methods for safe and cost-effective fire protection.
- 2) Analyze and apply reactive fire and emergency scene operations for safe and cost-effective fire protection.
- 3) Examine and appraise principles of supervision and management necessary for effective leadership and administration in the fire/rescue service.

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Course Outcomes: At the end of this course, successful students will be able to:

- Explain specific theories behind water characteristics at motion and at rest;
- Apply mathematical and physics theories to the movement of water in fire suppression activities;
- Explain the design principles of fire service pumping apparatus;
- Analyze community fire flow supply and demand issues
- Use mathematical formulas to compute flows and various hydraulic losses for fire service pumping scenarios
- Explain how fire service pumps operate, what some common pump failures are and how to trouble shoot these failures
- Assist in an annual fire pump test procedure

Lesson Objectives: The learning objectives of each course unit are listed at the beginning of each chapter. The objectives form the basis of the presentations and the exams. *You are encouraged to pay close attention to learning objectives to ensure that at the end of each unit, you can demonstrate the behaviors listed in the objectives.*

Course Requirements

Students are expected to complete pre-class assignments, attend all classes, take notes, and actively participate in classroom discussions and any group assignments. There are weekly written assignments, and individual (and/or group) presentations. Quizzes and tests will also be used to assess student academic progress.

Student Classroom Behavior & Expectations

- *Students are expected to attend all classes. You are expected to arrive to class on time, with your pre-class work done.* See details below.
- *Students are expected to stay engaged in class, whether via Zoom or in person.* Stay on task. Keep your camera on. Please do not be distracted by personal discussions, electronic devices, etc. during class.
- *Students are expected to submit original work unless other sources are clearly credited.* Students are expected to equitably share the load in group work. Cheating will not be tolerated. Student's found cheating may result in penalizing actions up to and including a failing grade in this course following policies in the student code of conduct.
- *Students are expected to prepare for class and complete all assignments.* Readings and homework provide the foundation for class lectures, discussions, and projects. Weekly quizzes will be given over the assigned readings. Homework will be assigned each week and must be submitted at beginning of the next class. *You cannot pass this course without doing your homework every week!*
- *Students are expected to take notes during class.* Notes and handouts should be organized in your Task Book binder. This is a class requirement and will be graded. *If it's on the whiteboard or in PowerPoints it should be in your notes!*
- *Students are expected to respect the class environment, fellow students and faculty.* Listen thoughtfully when others speak, even if you disagree with what they are saying. Challenge your own notions. Defend your positions with facts.
- *Students are expected to actively participate and think critically.* This is necessary for knowledge sharing and to get the most from practice/application opportunities.
- *Students are expected to set pagers, or cell phones on vibrate* during class time and ignore unless emergency.
- *Students are expected to not use tobacco of any kind in the classroom.* Food and drinks should be used respectfully of others and the facility.
- *Students are expected to doff hats and not wear any distracting attire* during class time.
- *Students will be held accountable.* ... For working hard, staying engaged, persisting, asking for help as needed (earlier, rather than later), taking responsibility and holding yourself accountable, meeting expectations + mastering course materials.

Homework and Written Assignments

- *Assignments, typed in specified formats (APA, etc.) will be due as indicated in Brightspace. . All work not completed by the due date will automatically be reduced by 50% of the earned grade for the assignment. There will be a limited 1 week "Grace Period" for students to turn in any work not submitted on time. No credit will be awarded for work completed after the end of the 1 week "Grace Period".*
- All written assignments (other than your class notes) are to be typed neatly, spell- and grammar-checked, and in MSWord DOCX file format (or PDF for scanned documents).
- You will not be allowed to submit work in "PAGES" format, I can't open them at my end.

COURSE ASSIGNMENTS

All course assignments are expected **on the day they are due.**

- **Quizzes.** Quiz material will be based on new material from the reading and related lecture information.
- **Assigned reading and Accompanying Note Taking Guide.** Students are responsible for keeping up with reading and will be required to show evidence that they have read the assignment. Additional professional publication review and analysis may be required as appropriate throughout the semester.
- **In Class Activities:** One of the reasons that attendance is so important is because of the in-class group work activities **a grade of zero will be awarded to students who fail to show for these learning opportunities.** All during-class activities are graded as daily quizzes.
- **Projects.** Students will be assigned 7 writing/research projects in addition to other course work.
- **Exams.** There will be three exams given at approximately 1/3rd of the way through the course, 2/3rds of the way through the course and at the end of the course (the last test is a cumulative final and thus is worth more of your semester grade). Each successive test may require the retention of information from previous examinations to be successful.

Grading:

- Reading Notes =10% of total (GPCNTG)
- 2 Exams, 15% each =30% of total
- Projects =15% of total
- Quizzes = 25%
- Final Exam =20% of total

Add/Drop: SMCC's course add/drop deadline for each semester is Tuesday of the second week. If you drop this course before the deadline, you will receive a tuition refund. If not, you will be billed the full cost of the course.

Early Warning Letters: After students have completed Week 5 and week 8 of the course, early warning letters will be sent home to students who have demonstrated unsatisfactory performance. Unsatisfactory performance will be determined by the instructor based on a combination of grades and participation.

Course Policies: Students are expected to:

- The primary way for you to communicate with me and vice versa is by direct face to face communications. In the event that this is not possible/timely, E-mail is an important secondary method of communication. All students are responsible for checking their SMCC e-mail for communications related to this course.
- Interact respectfully and professionally with fellow students and faculty. Remember that e-mail messages and postings lack non-verbal hints – be very careful not to send the wrong impression.
- Do your own work. Students are expected to submit original work unless other sources are clearly credited. Students are expected to equitably share the load in group work. Cheating will not be tolerated. Students found to have cheated will be penalized with actions up to and including a failing grade following policies listed in the SMCC Code of Student Conduct. All work is to be done as an individual unless expressly indicated in writing.
- Complete pre-class readings, self-assessments, discussions, assignments and exams on time.
- **Reading of assigned materials prior to class is expected. Weekly quizzes may be given over the assigned readings.**
- **Notetaking is necessary during each class. Notes and handouts must be organized in a binder.**
- Respect the classroom, fellow students, faculty
- Active participation and critical thinking is necessary for knowledge sharing and to get the most from practice opportunities.
- No pagers, or cell phones during class time
- No food or tobacco of any kind used in the classroom
- No hats worn in the classroom
- *Really important: Ask for help when needed. We want you to succeed in this course.*

Attendance + Participation

- Attendance and engagement will be recorded multiple times during Zoom and face to face classes and will affect student's course grade. SMCC requires instructors to report the names of students to the registrar's office who stop attending class. *Missing a portion of a Zoom or face to face class will be recorded as ½ an absence. Instructor will report students as no longer attending after two consecutive – or a total of three total absences from the class, resulting in a grade of "AF" being recorded for the student.*
- *FMI, please refer to the SMCC Student Handbook. Students are expected to notify the instructor, in advance, concerning absences. Students are responsible for all material – and meeting deadlines – regardless of absences.*

Human Dignity and Integrity: All class participants are expected to treat others with respect. Some of the communication in this course will be via e-mail and on-line discussions that lack the benefit of in-person, non-verbal communications, students are cautioned to carefully select the words and phrases that they use, and maintain a professional on-line demeanor at all times. Students are expected to submit original work unless other sources are clearly credited. Students are expected to equitably share the load in group work. Cheating will not be tolerated. Student's found cheating may result in penalizing actions up to and including a failing grade following policies in the student code of conduct.

MCCS NONDISCRIMINATION STATEMENT

Southern Maine Community College is an equal opportunity/affirmative action institution and employer. For more information, please call 207-741-5798. If you have a disabling condition and wish to request accommodations in order to have reasonable access to the programs and services offered by SMCC, you must register with the disability services can be reached at 741-5629 (TTD 207-741-5667). Further information about services for students with disabilities and the accommodation process is available upon request at this number. Or you may speak directly with your instructor.

Plagiarism Statement

If an instructor suspects that a student has knowingly committed a violation defined in the Maine Community College System Policy on Student Grade Appeals and Academic Misconduct, the instructor has the authority to review the alleged misconduct and determine the grade that the student should receive for the assignment and the course. The instructor may assign a failing grade for the assignment or course and/or may require the student to complete additional work for the course. The instructor may consult with the department chair and/or the College's chief academic officer prior to making such decisions. If a student seeks to challenge an instructor's determination, the student should submit a grade appeal. Grade appeal forms are available in the Advising Office on the South Portland Campus or in the administrative offices in the Learning Commons on the Midcoast Campus. An instructor may also refer the matter to the College's disciplinary officer for review under the procedures of the MCCS Student Code of Conduct