



COURSE OUTLINE: CJS0428 - INTRO TO FIRE SCIENC

Prepared: Dan Fraser

Approved: Martha Irwin, Chair, Community Services and Interdisciplinary Studies

Course Code: Title	CJS0428: INTRODUCTION TO FIRE SCIENCE
Program Number: Name	1120: COMMUNITY INTEGRATN 1225: PROTECTION SECURITY
Department:	C.I.C.E.
Semesters/Terms:	20W
Course Description:	This course will cover material from a scientific perspective. Elements of Chemistry, Physics and Math are discussed to develop an understanding of the chemistry of fires and the operation of fire fighting equipment. Characteristics of matter exposed to heat will be introduced to study the reaction that heat has on all forms of matter during fire fighting operations. Included in this course are the principles of hydraulics and formulas related to pump operation and water flow. This course will also introduce the student to the realities of dealing with hazardous materials. The fundamentals NFPA training and the recognition, control and evaluation of hazards are examined. Students will develop skills to interpret safety data sheets and to determine the appropriate course of action to take for the hazard present.
Total Credits:	3
Hours/Week:	3
Total Hours:	45
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course:	1225 - PROTECTION SECURITY
Please refer to program web page for a complete listing of program outcomes where applicable.	VLO 1 Work in compliance with established standards and relevant legislation in the protection, security and investigation fields.
	VLO 2 Make decisions in a timely, effective and legally defensible manner to uphold protection and security.
	VLO 3 Carry out delegated duties and responsibilities in compliance with organizational policies and procedures.
	VLO 4 Act equitably and justly with diverse populations.
	VLO 5 Work effectively as a member of a protection and security team.
	VLO 6 Prevent and resolve crisis, conflict and emergency situations by applying effective techniques.
	VLO 7 Conduct and/or contribute to investigations by collecting, preserving and presenting admissible evidence.
	VLO 8 Monitor, evaluate and accurately document behaviours, situations and events.
	VLO 9 Develop and implement ongoing effective strategies for personal and professional development.
Essential Employability Skills (EES) addressed in this course:	EES 1 Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience. EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective



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communication.

- EES 3 Execute mathematical operations accurately.
- EES 4 Apply a systematic approach to solve problems.
- EES 5 Use a variety of thinking skills to anticipate and solve problems.
- EES 6 Locate, select, organize, and document information using appropriate technology and information systems.
- EES 7 Analyze, evaluate, and apply relevant information from a variety of sources.
- EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others.
- EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.
- EES 10 Manage the use of time and other resources to complete projects.
- EES 11 Take responsibility for ones own actions, decisions, and consequences.

General Education Themes: Science and Technology

Course Evaluation: Passing Grade: 60%, C

Course Outcomes and Learning Objectives:

Upon successful completion of this course, the CICE student, with the assistance of a Learning Specialist will acquire varying levels of skill development relevant to the following learning outcomes:

Course Outcome 1	Learning Objectives for Course Outcome 1
1. Public Fire Protection	1.1 Identify the origins of modern fire protection 1.2 Describe the evolution of fire protection 1.3 List the cause for the change from volunteer to public fire departments 1.4 List and describe the responsibilities of a public fire department 1.5 Describe the evolution of equipment and protective clothing 1.6 Discuss the current fire problems in existence 1.7 Describe the different ranks and responsibilities and organization of the fire department in Sault Ste. Marie 1.8 Describe the process and requirements of becoming a firefighter in Ontario 1.9 List and discuss the principles of life safety 1.10 Describe the code of ethics and firefighter's creed 1.11 List and describe the myths about fire
Course Outcome 2	Learning Objectives for Course Outcome 2
2. Fire Safety Legislation in Ontario (www.gov.on.ca/OFM/)	2.1 List and describe pertinent building code sections for fire 2.2 List and describe pertinent Occupation Health and Safety Act sections for fire 2.3 List and describe Ontario Fire Code sections 2.4 List and describe Fire Protection and Prevention Act sections
Course Outcome 3	Learning Objectives for Course Outcome 3
3. Chemistry and Physics of Fire	3.1 Define and describe the fire triangle and fire tetrahedron 3.2 Describe what constitutes an oxidizer 3.3 Describe what constitutes a fuel 3.4 Describe the three states of matter



	<p>3.5 Describe the properties or characteristics that affect solids, liquids and gas</p> <p>3.6 Describe the differences between heat and temperature</p> <p>3.7 Describe the four methods of heat transfer</p> <p>3.8 Describe the four classifications of fire</p> <p>3.9 Describe the three phases of fire</p> <p>3.10 Describe the fire extinguishment theory as it applies to each class of fire</p> <p>3.11 Define and explain fire terminology</p>
Course Outcome 4	Learning Objectives for Course Outcome 4
4. Fire Protection Systems and Equipment	<p>4.1 Describe the components of a water supply system</p> <p>4.2 Describe fire detection equipment and their use</p> <p>4.3 Describe various types of fire extinguishments systems and components</p> <p>4.4 Describe the types of extinguishments agents and their uses</p> <p>4.5 Explain how various types of extinguishment agents work to extinguish fire</p> <p>4.6 List and describe fire protection equipment used for personal protection of a firefighter</p> <p>4.7 List and describe the comprehensive fire safety effectiveness model and its sub-components</p> <p>4.8 List and discuss the 10 rules of engagement for structural fires</p> <p>4.9 Define and describe types of fire apparatus and equipment</p>
Course Outcome 5	Learning Objectives for Course Outcome 5
5. Fire Prevention	<p>5.1 Describe the importance of prevention</p> <p>5.2 Describe typical fire prevention activities</p> <p>5.3 List and describe methods of public education as they relate to prevention</p> <p>5.4 List and describe the uses of fire-related statistics</p> <p>5.5 Describe leading causes of fire in industrial and domicile locations</p> <p>5.6 List and describe arson characteristics to determine fire cause</p>
Course Outcome 6	Learning Objectives for Course Outcome 6
6. Fire Prevention Surveys	<p>6.1 Define the term fire risk analysis</p> <p>6.2 List and describe the components of a fire prevention/inspection survey</p> <p>6.3 Complete a fire prevention survey</p>

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Assignment	10%
Final Examination	40%
Mid Term Examination	30%
Test	20%

CICE Modifications:

Preparation and Participation

1. A Learning Specialist will attend class with the student(s) to assist with inclusion in the class and to take notes.
2. Students will receive support in and outside of the classroom (i.e. tutoring, assistance with homework and assignments, preparation for exams, tests and quizzes.)
3. Study notes will be geared to test content and style which will match with modified learning outcomes.
4. Although the Learning Specialist may not attend all classes with the student(s), support will always be available. When the Learning Specialist does attend classes he/she will remain as inconspicuous as possible.

A. Further modifications may be required as needed as the semester progresses based on individual student(s) abilities and must be discussed with and agreed upon by the instructor.

B. Tests may be modified in the following ways:

1. Tests, which require essay answers, may be modified to short answers.
2. Short answer questions may be changed to multiple choice or the question may be simplified so the answer will reflect a basic understanding.
3. Tests, which use fill in the blank format, may be modified to include a few choices for each question, or a list of choices for all questions. This will allow the student to match or use visual clues.
4. Tests in the T/F or multiple choice format may be modified by rewording or clarifying statements into layman's or simplified terms. Multiple choice questions may have a reduced number of choices.

C. Tests will be written in CICE office with assistance from a Learning Specialist.

The Learning Specialist may:

1. Read the test question to the student.
2. Paraphrase the test question without revealing any key words or definitions.
3. Transcribe the student's verbal answer.
4. Test length may be reduced and time allowed to complete test may be increased.

D. Assignments may be modified in the following ways:

1. Assignments may be modified by reducing the amount of information required while maintaining general concepts.
2. Some assignments may be eliminated depending on the number of assignments required in the particular course.

The Learning Specialist may:

1. Use a question/answer format instead of essay/research format
2. Propose a reduction in the number of references required for an assignment
3. Assist with groups to ensure that student comprehends his/her role within the group
4. Require an extension on due dates due to the fact that some students may require additional time to process information
5. Formally summarize articles and assigned readings to isolate main points for the student
6. Use questioning techniques and paraphrasing to assist in student comprehension of an assignment

E. Evaluation:

Is reflective of modified learning outcomes.



NOTE: Due to the possibility of documented medical issues, CICE students may require alternate methods of evaluation to be able to acquire and demonstrate the modified learning outcomes

Date: December 19, 2019

Addendum: Please refer to the course outline addendum on the Learning Management System for further information.