



WELD 1040 Flat Shielded Metal Arc Welding

COURSE SYLLABUS

Spring Semester 2018

COURSE INFORMATION

Credit Hours/Minutes: 4/4500

Class Location: Room 6107

Class Meets: Monday through Thursday 1:00 – 2:15 pm

Course Reference Number (CRN): 40181

INSTRUCTOR CONTACT INFORMATION

Instructor Name: Mr. Chris Cumbee

Office Location: Room 6106

Office Hours: Monday through Thursday 7:00 – 8:00 am

Email Address: [Chris Cumbee, \(ccumbee@southeasterntech.edu\)](mailto:ccumbee@southeasterntech.edu)

Phone: 478-289-2325

Tutoring Hours (if applicable): N/A

SOUTHEASTERN TECHNICAL COLLEGE'S (STC) CATALOG AND HANDBOOK

Students are responsible for all policies and procedures and all other information included in Southeastern Technical College's [Catalog and Handbook \(http://www.southeasterntech.edu/student-affairs/catalog-handbook.php\)](http://www.southeasterntech.edu/student-affairs/catalog-handbook.php).

REQUIRED TEXT

None

REQUIRED SUPPLIES & SOFTWARE

Long sleeve shirt or welding jacket, welding helmet, clear safety glasses, welding gloves, ear plugs, chipping hammer, half round file with tang, wire brush, Vice grips, combination square, torpedo level, ball peen hammer, 12" Crescent Wrench, 12' tape measure and a 4 ½" angle grinder. You will not be permitted to borrow from the Instructor or your fellow classmates. You are required to have ALL required supplies the first day of class.

COURSE DESCRIPTION

This course introduces the major theory, safety practices, and techniques for Shielded Metal Arc Welding (SMAW) in the Flat position. Topics include: Flat SMAW safety and health practices, selection and applications of electrodes for Flat SMAW, Flat SMAW joints, Flat SMAW specification and 1G Open Root Pipe.

MAJOR COURSE COMPETENCIES

1. Flat SMAW Safety Practices and Health Practices
2. Selection and Applications of Electrodes for Flat SMAW
3. Flat SMAW Joints

4. Flat SMAW to Specification
5. 1G Open Root Pipe (6010-Root, 7018 – Fillers)

PREREQUISITE(S)

WELD 1000 Introduction to welding technology

COURSE OUTLINE

This course outlines: Flat SMAW Safety and Health practices, Selection and Applications of Electrodes for Flat SMAW, Flat SMAW Joints, Flat SMAW Specification and 1G Open Root Pipe.

GENERAL EDUCATION CORE COMPETENCIES

Southeastern Technical College has identified the following general education core competencies that graduates will attain:

1. The ability to utilize standard written English.
2. The ability to solve practical mathematical problems.
3. The ability to read, analyze, and interpret information.

STUDENT REQUIREMENTS

Tests and assignments must be completed on the specified date. Students are also responsible for policies and procedures in the Southeastern Technical College (STC) Catalog and Handbook

ATTENDANCE GUIDELINES

Class attendance is a very important aspect of a student's success. Being absent from class prevents students from receiving the full benefit of a course and interrupts the learning process. Southeastern Technical College considers both tardiness and leaving early as types of absenteeism. Responsibility for class attendance rests with the student. Regular and punctual attendance at all scheduled classes is required for student success. Students will be expected to complete all work required by the instructor as described in the individual course syllabus.

Instructors have the right to give unannounced quizzes/assignments. Students who miss an unannounced quiz or assignment will receive a grade of 0. Students who stop attending class, but do not formally withdraw, may receive a grade of "F" (Failing 0-59) and face financial aid repercussions in upcoming semesters.

Instructors are responsible for determining whether missed work may be made up and the content and dates for makeup work is at the discretion of the instructor.

Students will not be withdrawn by an instructor for attendance; however, all instructors will keep records of graded assignments and student participation in course activities. The completion dates of these activities will be used to determine a student's last date of attendance in the event a student withdraws, stops attending, or receives an "F" in a course.

SPECIAL NEEDS

Students with disabilities who believe that they may need accommodations in this class based on the impact of a disability are encouraged to contact [Helen Thomas](mailto:hthomas@southeasterntech.edu) (hthomas@southeasterntech.edu), 912-538-3126, to coordinate reasonable accommodations.

SPECIFIC ABSENCES

Provisions for Instructional Time missed because of documented absences due to jury duty, military duty,

court duty, or required job training will be made at the discretion of the instructor.

PREGNANCY

Southeastern Technical College does not discriminate on the basis of pregnancy. However, we can offer accommodations to students who are pregnant that need special consideration to successfully complete the course. If you think you will need accommodations due to pregnancy, please advise me and make appropriate arrangements with [Helen Thomas \(hthomas@southeasterntech.edu\)](mailto:hthomas@southeasterntech.edu), 912-538-3126.

WITHDRAWAL PROCEDURE

Students wishing to officially withdraw from a course(s) or all courses after the drop/add period and prior to the 65% portion of the semester (date will be posted on the school calendar) must speak with a Career Counselor in Student Affairs and complete a Student Withdrawal Form. A grade of "W" (Withdrawn) is assigned when the student completes the withdrawal form from the course.

Students who are dropped from courses due to attendance (see your course syllabus for attendance policy) after drop/add until the 65% point of the semester will receive a "W" for the course. Abandoning a course(s) instead of following official withdrawal procedures may result in a grade of 'F' being assigned.

After the 65% portion of the semester, the student will receive a grade for the course. (Please note: A zero will be given for all missed assignments.)

There is no refund for partial reduction of hours. Withdrawals may affect students' eligibility for financial aid for the current semester and in the future, so a student must also speak with a representative of the Financial Aid Office to determine any financial penalties that may be assessed due to the withdrawal. All grades, including grades of 'W', will count in attempted hour calculations for the purpose of Financial Aid.

Remember - Informing your instructor that you will not return to his/her course does not satisfy the approved withdrawal procedure outlined above.

MAKEUP GUIDELINES (TESTS, QUIZZES, HOMEWORK, PROJECTS, ETC...)

Makeup test will be given on the following class meeting date with an acceptable excuse approved by the instructor; any test not made up will result in the student receiving a zero.

ACADEMIC DISHONESTY POLICY

The Southeastern Technical College Academic Dishonesty Policy states that all forms of academic dishonesty, including but not limited to cheating on tests, plagiarism, collusion, and falsification of information, will call for discipline. The policy can also be found in the Southeastern Technical College Catalog and Handbook.

PROCEDURE FOR ACADEMIC MISCONDUCT

The procedure for dealing with academic misconduct and dishonesty is as follows:

1. First Offense

Student will be assigned a grade of "0" for the test or assignment. Instructor keeps a record in course/program files and notes as first offense. The instructor will notify the student's program advisor, academic dean, and the Registrar at the student's home campus. The Registrar will input the incident into Banner for tracking purposes.

2. Second Offense

Student is given a grade of "WF" (Withdrawn Failing) for the course in which offense occurs. The instructor will notify the student's program advisor, academic dean, and the Registrar at the student's

home campus indicating a "WF" has been issued as a result of second offense. The Registrar will input the incident into Banner for tracking purposes.

3. Third Offense

Student is given a grade of "WF" for the course in which the offense occurs. The instructor will notify the student's program advisor, academic dean, and the Registrar at the student's home campus indicating a "WF" has been issued as a result of third offense. The Vice President for Student Affairs, or designee, will notify the student of suspension from college for a specified period of time. The Registrar will input the incident into Banner for tracking purposes.

STATEMENT OF NON-DISCRIMINATION

The Technical College System of Georgia and its constituent Technical Colleges do not discriminate on the basis of race, color, creed, national or ethnic origin, sex, religion, disability, age, political affiliation or belief, genetic information, disabled veteran, veteran of the Vietnam Era, spouse of military member or citizenship status (except in those special circumstances permitted or mandated by law). This school is in compliance with Title VI of the Civil Rights Act of 1964, which prohibits discrimination on the basis of race, color, or national origin; with the provisions of Title IX of the Educational Amendments of 1972, which prohibits discrimination on the basis of gender; with the provisions of Section 504 of the Rehabilitation Act of 1973, which prohibits discrimination on the basis of handicap; and with the American with Disabilities Act (ADA).

The following individuals have been designated to handle inquiries regarding the nondiscrimination policies:

<p>American With Disabilities Act (ADA)/Section 504 - Equity- Title IX (Students) – Office of Civil Rights (OCR) Compliance Officer</p>	<p>Title VI - Title IX (Employees) – Equal Employment Opportunity Commission (EEOC) Officer</p>
<p>Helen Thomas, Special Needs Specialist Vidalia Campus 3001 East 1st Street, Vidalia Office 108 Phone: 912-538-3126 Email: Helen Thomas htomas@southeasterntech.edu</p>	<p>Blythe Wilcox, Director of Human Resources Vidalia Campus 3001 East 1st Street, Vidalia Office 138B Phone: 912-538-3147 Email: Blythe Wilcox bwilcox@southeasterntech.edu</p>

ACCESSIBILITY STATEMENT

Southeastern Technical College is committed to making course content accessible to individuals to comply with the requirements of Section 508 of the Rehabilitation Act of Americans with Disabilities Act (ADA). If you find a problem that prevents access, please contact the course instructor.

GRIEVANCE PROCEDURES

Grievance procedures can be found in the Catalog and Handbook located on Southeastern Technical College’s website.

ACCESS TO TECHNOLOGY

Students can now access Blackboard, Remote Lab Access, Student Email, Library Databases (Galileo), and BannerWeb via the mySTC portal or by clicking the Current Students link on the [Southeastern Technical College \(STC\) Website \(www.southeasterntech.edu\)](http://www.southeasterntech.edu).

TECHNICAL COLLEGE SYSTEM OF GEORGIA (TCSG) GUARANTEE/WARRANTY STATEMENT

The Technical College System of Georgia guarantees employers that graduates of State Technical Colleges shall

possess skills and knowledge as prescribed by State Curriculum Standards. Should any graduate employee within two years of graduation be deemed lacking in said skills, that student shall be retrained in any State Technical College at no charge for instructional costs to either the student or the employer.

GRADING POLICY

Assessment/Assignment	Percentage
Hands On Assignments	100%

GRADING SCALE

Letter Grade	Range
A	90-100
B	80-89
C	70-79
D	60-69
F	0-59

WELD 1040 Flat Shielded Metal Arc Welding

Spring Semester 2018 Lesson Plan

Date	Chapter	Content	Assignments & Tests Due Dates	Competency Area
1/8/2018	SMAW Set Up and Electrode Selection	First day of class/Class Introduction—Syllabi, Outline, Rules, Regulations Coverage, Library Resources and tour. SMAW Set Up and Electrode Selection	Refreshing of proper SMAW Set Up and Electrode Selection by instructor. SMAW Equipment and Filler Metals	1,2,3,4,5,A,B,C
1/9/2018	1F Padded Plate 7018 Electrodes	1F Padded Plate 7018 Electrodes	Instructor demonstrates welding a padded plate using 7018 electrodes. Students practicing padded plate.	1,2,3,4,5,A,B,C
1/10/2018	1F Padded Plate 7018 Electrodes	1F Padded Plate 7018 Electrodes	1F Padded Plate 7018 Electrodes	1,2,3,4,5,A,B,C
1/11/2018	1F Padded Plate 7018 Electrodes	1F Padded Plate 7018 Electrodes	1F Padded Plate 7018 Electrodes	1,2,3,4,5,A,B,C
1/15/2018	Holiday	Holiday	Holiday	Holiday
1/16/2018	1F Padded Plate 6010 Electrodes	1F Padded Plate 6010 Electrodes	1F Padded Plate 6010 Electrodes	1,2,3,4,5,A,B,C
1/17/2018	1F Padded Plate 6010 Electrodes	1F Padded Plate 6010 Electrodes	1F Padded Plate 6010 Electrodes. Padded plates due for grade.	1,2,3,4,5,A,B,C
1/18/2018	Butt Joints - 1F Fillet Welds 7018 Electrodes	Butt Joints - 1F Fillet Welds 7018 Electrodes	Instructor demonstrates welding Butt Joint using 7018 Electrodes. Students practicing Butt Joints.	1,2,3,4,5,A,B,C
1/22/2018	Butt Joints - 1F Fillet Welds 7018 Electrodes	Butt Joints - 1F Fillet Welds 7018 Electrodes	Students practicing Butt Joints. Butt Joint due for grade.	1,2,3,4,5,A,B,C
1/23/2018	Lap Joints - 1F Fillet Welds 7018 Electrodes	Lap Joints -1F Fillet Welds 7018 Electrodes	Instructor demonstrates welding Lap Joint using 7018 Electrodes. Students practicing Lap Joints.	1,2,3,4,5,A,B,C
1/24/2018	Lap Joints - 1F Fillet Welds 7018 Electrodes	Lap Joints -1F Fillet Welds 7018 Electrodes	Students practicing Lap Joints.	1,2,3,4,5,A,B,C

Date	Chapter	Content	Assignments & Tests Due Dates	Competency Area
1/25/2018	Lap Joints - 1F Fillet Welds 7018 Electrodes	Lap Joints -1F Fillet Welds 7018 Electrodes	Students practicing Lap Joints.	1,2,3,4,5,A,B, C
1/29/2018	Lap Joints - 1F Fillet Welds 7018 Electrodes	Lap Joints -1F Fillet Welds 7018 Electrodes	Students practicing Lap Joints.	1,2,3,4,5,A,B, C
1/30/2018	Lap Joints - 1F Fillet Welds 7018 Electrodes	Lap Joints -1F Fillet Welds 7018 Electrodes	Students practicing Lap Joints.	1,2,3,4,5,A,B, C
1/31/2018	Lap Joints - 1F Fillet Welds 7018 Electrodes	Lap Joints -1F Fillet Welds 7018 Electrodes	Students practicing Lap Joints.	1,2,3,4,5,A,B, C
2/1/2018	Lap Joints - 1F Fillet Welds 7018 Electrodes	Lap Joints -1F Fillet Welds 7018 Electrodes	Students practicing Lap Joints.	1,2,3,4,5,A,B, C
2/5/2018	Lap Joints - 1F Fillet Welds 7018 Electrodes	Lap Joints -1F Fillet Welds 7018 Electrodes	Students practicing Lap Joints.	1,2,3,4,5,A,B, C
2/6/2018	Lap Joints - 1F Fillet Welds 7018 Electrodes	Lap Joints -1F Fillet Welds 7018 Electrodes	Students practicing Lap Joints.	1,2,3,4,5,A,B, C
2/7/2018	Lap Joints - 1F Fillet Welds 7018 Electrodes	Lap Joints -1F Fillet Welds 7018 Electrodes	Students practicing Lap Joints.	1,2,3,4,5,A,B, C
2/8/2018	Lap Joints - 1F Fillet Welds 7018 Electrodes	Lap Joints -1F Fillet Welds 7018 Electrodes	Students practicing Lap Joints. Lap joint due for grade.	1,2,3,4,5,A,B, C
2/12/2018	T-Joints – 1F Fillet Welds 7018 Electrodes	T-Joints – 1F Fillet Welds7018 Electrodes	Instructor demonstrates welding T-Joints using 7018 Electrodes. Students practicing T-Joints.	1,2,3,4,5,A,B, C
2/13/2018	T-Joints – 1F Fillet Welds 7018 Electrodes	T-Joints – 1F Fillet Welds7018 Electrodes	Students practicing T-Joints.	1,2,3,4,5,A,B, C
2/14/2018	T-Joints – 1F Fillet Welds 7018	T-Joints – 1F Fillet Welds7018 Electrodes	Students practicing T-Joints.	1,2,3,4,5,A,B, C

Date	Chapter	Content	Assignments & Tests Due Dates	Competency Area
	Electrodes			
2/15/2018	T-Joints – 1F Fillet Welds 7018 Electrodes	T-Joints – 1F Fillet Welds 7018 Electrodes	Students practicing T-Joints.	1,2,3,4,5,A,B,C
2/19/2018	T-Joints – 1F Fillet Welds 7018 Electrodes	T-Joints – 1F Fillet Welds 7018 Electrodes	Students practicing T-Joints.	1,2,3,4,5,A,B,C
2/20/2018	T-Joints – 1F Fillet Welds 7018 Electrodes	T-Joints – 1F Fillet Welds 7018 Electrodes	Students practicing T-Joints.	1,2,3,4,5,A,B,C
2/21/2018	T-Joints – 1F Fillet Welds 7018 Electrodes	T-Joints – 1F Fillet Welds 7018 Electrodes	Students practicing T-Joints.	1,2,3,4,5,A,B,C
2/22/2018	T-Joints – 1F Fillet Welds 7018 Electrodes	T-Joints – 1F Fillet Welds 7018 Electrodes	Students practicing T-Joints.	1,2,3,4,5,A,B,C
2/26/2018	T-Joints – 1F Fillet Welds 7018 Electrodes	T-Joints – 1F Fillet Welds 7018 Electrodes	Students practicing T-Joints.	1,2,3,4,5,A,B,C
2/27/2018	T-Joints – 1F Fillet Welds 7018 Electrodes	T-Joints – 1F Fillet Welds 7018 Electrodes	Students practicing T-Joints.	1,2,3,4,5,A,B,C
2/28/2018	T-Joints – 1F Fillet Welds 7018 Electrodes	T-Joints – 1F Fillet Welds 7018 Electrodes	Students practicing T-Joints.	1,2,3,4,5,A,B,C
3/1/2018	T-Joints – 1F Fillet Welds 7018 Electrodes	T-Joints – 1F Fillet Welds 7018 Electrodes	Students practicing T-Joints. T-Joint due for grade.	1,2,3,4,5,A,B,C
3/5/2018	Corner Joints – 1F Fillet Welds 7018 Electrodes	Corner Joints – 1F Fillet Welds 7018 Electrodes	Instructor demonstrates welding Corner Joint using 7018 Electrodes. Students practicing Corner Joints.	1,2,3,4,5,A,B,C
3/6/2018	Corner Joints – 1F Fillet Welds 7018	Corner Joints – 1F Fillet Welds 7018 Electrodes	Students practicing Corner Joints.	1,2,3,4,5,A,B,C

Date	Chapter	Content	Assignments & Tests Due Dates	Competency Area
	Electrodes			
3/7/2018	Corner Joints – 1F Fillet Welds 7018 Electrodes	Corner Joints – 1F Fillet Welds 7018 Electrodes	Students practicing Corner Joints.	1,2,3,4,5,A,B,C
3/8/2018	Corner Joints – 1F Fillet Welds 7018 Electrodes	Corner Joints – 1F Fillet Welds 7018 Electrodes	Students practicing Corner Joints.	1,2,3,4,5,A,B,C
3/12/2018	Corner Joints – 1F Fillet Welds 7018 Electrodes	Corner Joints – 1F Fillet Welds 7018 Electrodes	Students practicing Corner Joints.	1,2,3,4,5,A,B,C
3/13/2018	Corner Joints – 1F Fillet Welds 7018 Electrodes	Corner Joints – 1F Fillet Welds 7018 Electrodes	Students practicing Corner Joints.	1,2,3,4,5,A,B,C
3/14/2018	Corner Joints – 1F Fillet Welds 7018 Electrodes	Corner Joints – 1F Fillet Welds 7018 Electrodes	Students practicing Corner Joints.	1,2,3,4,5,A,B,C
3/15/2018	Corner Joints – 1F Fillet Welds 7018 Electrodes	Corner Joints – 1F Fillet Welds 7018 Electrodes	Students practicing Corner Joints. Corner joint due for grade.	1,2,3,4,5,A,B,C
3/19/2018	Edge Joints – 1F Fillet Welds 7018 Electrodes	Edge Joints – 1F Fillet Welds 7018 Electrodes	Instructor demonstrates welding Edge Joint using 7018 Electrodes. Students practicing Edge Joints.	1,2,3,4,5,A,B,C
3/20/2018	Edge Joints – 1F Fillet Welds 7018 Electrodes	Edge Joints – 1F Fillet Welds 7018 Electrodes	Students practicing Edge Joints.	1,2,3,4,5,A,B,C
3/21/2018	Edge Joints – 1F Fillet Welds 7018 Electrodes	Edge Joints – 1F Fillet Welds 7018 Electrodes	Students practicing Edge Joints.	1,2,3,4,5,A,B,C
3/22/2018	Edge Joints – 1F Fillet Welds 7018 Electrodes	Edge Joints – 1F Fillet Welds 7018 Electrodes	Students practicing Edge Joints.	1,2,3,4,5,A,B,C
3/26/2018	Edge Joints – 1F Fillet Welds 7018	Edge Joints – 1F Fillet Welds 7018 Electrodes	Students practicing Edge Joints.	1,2,3,4,5,A,B,C

Date	Chapter	Content	Assignments & Tests Due Dates	Competency Area
	Electrodes			
3/27/2018	Edge Joints – 1F Fillet Welds 7018 Electrodes	Edge Joints – 1F Fillet Welds 7018 Electrodes	Students practicing Edge Joints.	1,2,3,4,5,A,B, C
3/28/2018	Edge Joints – 1F Fillet Welds 7018 Electrodes	Edge Joints – 1F Fillet Welds 7018 Electrodes	Students practicing Edge Joints.	1,2,3,4,5,A,B, C
3/29/2018	Edge Joints – 1F Fillet Welds 7018 Electrodes	Edge Joints – 1F Fillet Welds 7018 Electrodes	Students practicing Edge Joints. Edge joint due for grade.	1,2,3,4,5,A,B, C
4/2/2018	Spring Break	Spring Break	Spring Break	Spring Break
4/3/2018	Spring Break	Spring Break	Spring Break	Spring Break
4/4/2018	Spring Break	Spring Break	Spring Break	Spring Break
4/5/2018	Spring Break	Spring Break	Spring Break	Spring Break
4/9/2018	Staggered Fillet Welds 7018 Electrodes	Staggered Fillet Welds 7018 Electrodes	Instructor demonstrates how to lay- out and weld Staggered Fillet Welds using 7018 Electrodes. Students practicing welding and laying out staggered fillet welds.	1,2,3,4,5,A,B, C
4/10/2018	Staggered Fillet Welds 7018 Electrodes	Staggered Fillet Welds 7018 Electrodes	Students practicing welding and laying out staggered fillet welds.	1,2,3,4,5,A,B, C
4/11/2018	Staggered Fillet Welds 7018 Electrodes	Staggered Fillet Welds 7018 Electrodes	Students practicing welding and laying out staggered fillet welds.	1,2,3,4,5,A,B, C
4/12/2018	Staggered Fillet Welds 7018 Electrodes	Staggered Fillet Welds 7018 Electrodes	Students practicing welding and laying out staggered fillet welds. Staggered fillet weld due for grade.	1,2,3,4,5,A,B, C
4/16/2018	1G Open Root Pipe	1G Open Root Pipe	Instructor demonstrates welding 1G Open Root Pipe, students practicing welding 1G Open Root Pipe	1,2,3,4,5,A,B, C
4/17/2018	1G Open Root Pipe	1G Open Root Pipe	Students practicing welding 1G Open Root Pipe.	1,2,3,4,5,A,B, C
4/18/2018	1G Open Root Pipe	1G Open Root Pipe	Students practicing welding 1G Open Root Pipe.	1,2,3,4,5,A,B, C
4/19/2018	1G Open	1G Open Root Pipe	Students practicing welding 1G	1,2,3,4,5,A,B,

Date	Chapter	Content	Assignments & Tests Due Dates	Competency Area
	Root Pipe		Open Root Pipe.	C
4/23/2018	1G Open Root Pipe	1G Open Root Pipe	Students practicing welding 1G Open Root Pipe.	1,2,3,4,5,A,B,C
4/24/2018	1G Open Root Pipe	1G Open Root Pipe	Students practicing welding 1G Open Root Pipe.	1,2,3,4,5,A,B,C
4/25/2018	1G Open Root Pipe	1G Open Root Pipe	Students practicing welding 1G Open Root Pipe.	1,2,3,4,5,A,B,C
4/26/2018	1G Open Root Pipe	1G Open Root Pipe	Students practicing welding 1G Open Root Pipe.	1,2,3,4,5,A,B,C
4/30/2018	1G Open Root Pipe	1G Open Root Pipe	Students practicing welding 1G Open Root Pipe.	1,2,3,4,5,A,B,C
5/1/2018	1G Open Root Pipe	1G Open Root Pipe	Students practicing welding 1G Open Root Pipe. 1G pipe weld due for grade.	1,2,3,4,5,A,B,C

COMPETENCY AREAS:

1. Flat SMAW Safety Practices and Health Practices
2. Selection and Applications of Electrodes for Flat SMAW
3. Flat SMAW Joints
4. Flat SMAW to Specification
5. 1G Open Root Pipe (6010-Root, 7018 – Fillers)

GENERAL CORE EDUCATIONAL COMPETENCIES

- a) The ability to utilize standard written English.
- b) The ability to solve practical mathematical problems.
- c) The ability to read, analyze, and interpret information.