



**TENTATIVE—SUBJECT TO CHANGE
ELTR 1525 Photovoltaic Systems
HYBRID COURSE SYLLABUS
Spring Semester 2022 (202214)**

COURSE INFORMATION

Credit Hours/Minutes: 5/5250
Campus/Class Location: Vidalia Campus/ Building-A Lab 429
Class Meets: **30% Hybrid / 70% F2F**, Tuesday 8:00AM-12:25PM
Course Reference Number (CRN): 40107
Preferred Method of Contact: Email

INSTRUCTOR CONTACT INFORMATION

Instructor Name: Tony Criswell
Email Address: Tony Criswell (tcriswell@southeasterntech.edu)
Campus/Office Location:
Swainsboro: Building 6 Lab 6102
Vidalia: Main- Lab 429
Office Hours:
Swainsboro Campus: Wednesday 1:30PM- 3:45PM
Vidalia Campus: Monday, Tuesday, and Thursday 1:30PM- 3:45PM
Phone: 478-289-2235
Fax Number: 478-289-2276
Tutoring Hours: Available upon request

This course is taught in a hybrid format. Hybrid classes require students to complete a portion of the required contact hours traditionally by attending classes on campus while completing the remaining portion online at the student's convenience with respect to the instructor's requirements.

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 \(https://catalog.southeasterntech.edu/college-catalog/downloads/current.pdf\)](https://catalog.southeasterntech.edu/college-catalog/downloads/current.pdf).

REQUIRED TEXT

Photovoltaic Systems, 3rd Edition; Published by American Technical Publishers; ISBN: 978-1-935941-05-7

REQUIRED SUPPLIES & SOFTWARE

Access to a computer and Web Browser
Basic Hand Tools

Students should not share login credentials with others and should change passwords periodically to maintain security.

COURSE DESCRIPTION

This class introduces techniques and method on how to install residential and commercial photovoltaic systems

MAJOR COURSE COMPETENCIES

Site Location, Estimating Energy Output, Systems Selection, Installation and Location Design, Wiring Procedures, Batteries and Charge Systems, Grid Connections, and Systems Inspections and Repair.

PREREQUISITE(S)

None

COURSE OUTLINE

1. Site Location
2. Estimating Energy Output
3. Systems Selection
4. Installation and Location Design
5. Wiring Procedures
6. Batteries and Charge Systems
7. Grid Connections
8. Systems Inspections and Repair.

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

Class attendance is a very important aspect of a student's success in this course. Responsibility for class attendance rests with the student. Regular and punctual attendance at all scheduled classes is expected. Students are expected to complete all work required by the instructor. Unannounced quizzes/assignments may be given. Students that miss an unannounced quiz or assignment will receive a grade of 0. Students are expected to complete all work shown on the attached assignment sheet. Students are also expected to complete all tests and comprehensive problems on the dates specified on the attached calendar. Students are responsible for policies and procedures included in the *STC Catalog*. **Electrical program students must earn a minimum grade of C in all courses to graduate.**

COVID-19 MASK REQUIREMENT

Regardless of vaccination status, students are highly encouraged to wear masks or face coverings while in a classroom or lab at Southeastern Technical College. Masking may be implemented in some program areas (i.e. Health Sciences and Cosmetology) where students, faculty, and clients are in close proximity and social distancing cannot be maintained. This measure is being implemented to reduce COVID-19 related health risks for everyone engaged in the educational process. Masks or face coverings must be worn over the nose and mouth, in accordance with the Centers for Disease Control and Prevention (CDC).

COVID-19 SIGNS AND SYMPTOMS

We encourage individuals to monitor for the signs and symptoms of COVID-19 prior to coming on campus.

If you have experienced the symptoms listed below or have a body temperature 100.4°F or higher, we encourage you to self-quarantine at home and contact a primary care physician's office, local urgent care facility, or health department for further direction. Please notify your instructor(s) by email and do not come on campus for any reason.

COVID-19 Key Symptoms
Fever or felt feverish
Chills
Shortness of breath or difficulty breathing (not attributed to any other health condition)
Cough: new or worsening, not attributed to another health condition
Fatigue
Muscle or body aches
Headache
New loss of taste or smell
Sore throat (not attributed to any other health condition)
Congestion or runny nose (not attributed to any other health condition)
Nausea or vomiting
Diarrhea
In the past 14 days, if you:
Have had close contact with or are caring for an individual diagnosed with COVID-19 at home (not in healthcare setting), please do not come on campus and contact your instructor (s).

COVID-19 SELF-REPORTING REQUIREMENT

Students, regardless of vaccination status, who test positive for COVID-19 or who have been exposed to a COVID-19 positive person, are required to self-report using <https://www.southeasterntech.edu/covid-19/>. Report all positive cases of COVID-19 to your instructor and [Stephannie Waters](mailto:swaters@southeasterntech.edu), Exposure Control Coordinator, swaters@southeasterntech.edu, 912-538-3195.

HYBRID ATTENDANCE

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.

STUDENTS WITH DISABILITIES

Students with disabilities who believe that they may need accommodations in this class based on the impact of a disability are encouraged to contact the appropriate campus coordinator to request services.

Swainsboro Campus: [Daphne Scott dscott@southeasterntech.edu](mailto:dscott@southeasterntech.edu), 478-289-2274, Building 1, Room 1210.

Vidalia Campus: [Helen Thomas \(hthomas@southeasterntech.edu\)](mailto:hthomas@southeasterntech.edu), 912-538-3126, Building A, Room 165.

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 make arrangements with the appropriate campus coordinator.

Swainsboro Campus: [Daphne Scott dscott@southeasterntech.edu](mailto:dscott@southeasterntech.edu), 478-289-2274, Building 1, Room 1210.

Vidalia Campus: [Helen Thomas \(hthomas@southeasterntech.edu\)](mailto:hthomas@southeasterntech.edu), 912-538-3126, Building A, Room 165.

It is strongly encouraged that requests for consideration be made **PRIOR** to delivery and early enough in the pregnancy to ensure that all the required documentation is secured before the absence occurs. Requests made after delivery MAY NOT be accommodated. The coordinator will contact your instructor to discuss accommodations when all required documentation has been received. The instructor will then discuss a plan with you to make up missed assignments.

WITHDRAWAL PROCEDURE

Students wishing to officially withdraw from a course(s) or all courses after the drop/add period and prior to the 65% point of the term in which student is enrolled (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 for the course(s) when the student completes the withdrawal form.

Important – Student-initiated withdrawals are not allowed after the 65% point. After the 65% point of the term in which the student is enrolled, the student has earned the right to a letter grade and will receive a grade for the course. Please note: Abandoning a course(s) instead of following official withdrawal procedures may result in a grade of "F" (Failing 0-59) being assigned.

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

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. A grade of "W" will count in attempted hour calculations for the purpose of Financial Aid.

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

Extenuating circumstances are determined at the instructor's discretion. Unless otherwise scheduled with the instructor, it is expected that the test will be taken the next day, scheduled outside of regular class time. Failure to follow this procedure will result in a grade of zero.

Assignment due dates are listed on the attached lesson schedule. Students are expected to have the assignment completed at the beginning of class on the date that it is due. It is within the instructor's discretion to accept or reject late assignments. Any late assignments accepted will be subject to a ten-point penalty each day the assignment is late. After three class meetings, no late assignments will be accepted; a zero will be recorded.

Unannounced quizzes are subject to be given on any day. A grade of zero will be assigned for any quizzes missed. There will be no makeup of quizzes. Any zeros recorded will be included in the final score calculation.

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

As set forth in the student catalog, Southeastern Technical College does not discriminate on the basis of race, color, creed, national or ethnic origin, sex, religion, disability, age, political affiliation or belief, genetic information, veteran status, or citizenship status (except in those special circumstances permitted or mandated by law).

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

American With Disabilities Act (ADA)/Section 504 - Equity- Title IX (Students) – Office of Civil Rights (OCR) Compliance Officer	Title VI - Title IX (Employees) – Equal Employment Opportunity Commission (EEOC) Officer
Helen Thomas, Special Needs Specialist Vidalia Campus 3001 East 1 st Street, Vidalia Office 165 Phone: 912-538-3126 Email: Helen Thomas hthomas@southeasterntech.edu	Lanie Jonas, Director of Human Resources Vidalia Campus 3001 East 1 st Street, Vidalia Office 138B Phone: 912-538-3230 Email: Lanie Jonas ljonas@southeasterntech.edu

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
Labs	60%
Test	40%
Total	100%

GRADING SCALE

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

ELTR 1525 Photovoltaic Systems Spring Semester 2022 Lesson Plan

Date/Week	Content	Assignments & Tests Due Dates	Competency Area
January 10		<ul style="list-style-type: none"> • Spring Semester Begins 	
		<ul style="list-style-type: none"> • Instructor will go over syllabus, lesson plan, lab rules, how to access the hybrid portion of the class • Getting Started – Start Here Items: <ul style="list-style-type: none"> • Read all items • Complete STC Pledge Acknowledgement • Complete COVID Training in Course 	
January 10-24	Module 1- Intro to Photovoltaic Systems	<ul style="list-style-type: none"> • Instructor will discuss Introduction to PV Systems • Read Chapter 1- Introduction to Photovoltaic Systems • Complete the even number review questions on page 27 and submit your answers in Blackboard • Complete Module 1- Intro to Photovoltaic Systems Exam in Blackboard 	
January 24- February 7	Module 2- Solar Radiation Fundamentals and Sun Path Characteristics; Site Surveys and Preplanning	<ul style="list-style-type: none"> • Instructor will discuss Solar Radiation Fundamentals and Sun Path Characteristics and Site Surveys and Preplanning • Read Chapter 2- Solar Radiation Fundamentals • Complete the even number review questions on page 59 and submit your answers in Blackboard • Read Chapter 3- Site Surveys and Preplanning • Complete the even number review questions on page 94 and submit your answers in Blackboard • Complete Hands-on Skills 1-4 in Amatrol Solar Radiation Fundamentals • Complete Hands-on Skills 1-4 in Amatrol Sun Path Characteristics • Complete Hands-on Skills 1-3 in Amatrol Solar Concepts Solar Panel Orientation • Complete Hands-on Skills 1-6 in Amatrol Solar Site Analysis Site Planning • Complete Module 2- Solar Radiation Fundamentals and Sun Path Characteristics; Site Surveys and Preplanning Exam in Blackboard 	

Date/Week	Content	Assignments & Tests Due Dates	Competency Area
February 7-21	Module 3- Systems Components and Configurations; Cells, Modules, and Arrays	<ul style="list-style-type: none"> • Instructor will discuss Systems Components and Configurations; Cells, Modules, and Arrays • Read Chapter 4- Systems Components and Configurations • Complete the even number review questions on page 121 and submit your answers in Blackboard • Read Chapter 5- Cells, Modules, and Arrays • Complete the even number review questions on page 156 and submit your answers in Blackboard • Complete Hands-on Skills 1-4 in Amatrol Alternative Energy PV Module Operation • Complete Hands-on Skills 1-2 in Amatrol PV module Performance • Complete Hands-on Skills 1-4 in Amatrol Alternative Energy Photovoltaic Arrays • Complete Module 4- Systems Components and Configurations; Cells, Modules, and Arrays Exam in Blackboard 	
February 21- March 7	Module 4- Batteries; Charge Controllers	<ul style="list-style-type: none"> • Instructor will discuss Batteries; Charge Controllers • Read Chapter 6- Batteries • Complete the even number review questions on page 184 and submit your answers in Blackboard • Read Chapter 7- Charge Controllers • Complete the even number review questions on page 214 and submit your answers in Blackboard • Complete Hands-on Skill 1 in Amatrol Alternative Energy Solar Batteries • Complete Hands-on Skills 1-2 in Amatrol Alternative Energy Solar Battery Charging • Complete Module 5- Batteries; Charge Controllers Exam in Blackboard 	
March 7	Mid-Term	<ul style="list-style-type: none"> • There is no Mid-Term exam. This is letting you know that the semester is half over 	
March 7-21	Module 5- Inverters and System Sizing	<ul style="list-style-type: none"> • Instructor will discuss Inverters and System Sizing • Read Chapter 8- Inverters • Complete the even number review questions on page 245 and submit your answers in Blackboard • Read Chapter 9- System Sizing • Complete the even number review questions on page 272 and submit your answers in Blackboard • Complete Hands-on Skills 1-2 in Amatrol Alternative Energy Solar PV Systems • Complete Module 6- Inverters and System Sizing Exam in Blackboard 	
March 21	65% Point	<ul style="list-style-type: none"> • Last day for students to formally withdraw from classes without academic penalty 	

Date/Week	Content	Assignments & Tests Due Dates	Competency Area
March 21- April 4	Module 6- Mechanical and Electrical Integration	<ul style="list-style-type: none"> • Instructor will discuss Mechanical and Electrical Integration • Read Chapter 10- Mechanical Integration • Complete the even number review questions on page 304 and submit your answers in Blackboard • Read Chapter 11- Electrical Integration • Complete the even number review questions on page 349 and submit your answers in Blackboard • Complete Module 6- Mechanical and Electrical Integration Exam in Blackboard 	
April 4-18	Module 7- Utility Interconnection and Permitting and Inspection	<ul style="list-style-type: none"> • Instructor will discuss Utility Interconnection and Permitting and Inspection • Read Chapter 12- Utility Interconnection • Complete the even number review questions on page 373 and submit your answers in Blackboard • Read Chapter 13- Permitting and Inspection • Complete the even number review questions on page 395 and submit your answers in Blackboard • Complete Hands-on Skill 1 in Amatrol Solar Grid-Tie, Grid-Tie Systems Description • Complete Hands-on Skills 1-2 in Amatrol Solar Grid-Tie, Grid-Tie Systems Operation • Complete Module 7- Utility Interconnection and Permitting and Inspection Exam in Blackboard 	
April 18- May 3	Module 8- Commissioning, Maintenance and Troubleshooting;	<ul style="list-style-type: none"> • Instructor will discuss Commissioning, Maintenance and Troubleshooting • Read Chapter 14- Commissioning, Maintenance and Troubleshooting • Complete the even number review questions on page 423 and submit your answers in Blackboard • Complete Module 8- Commissioning, Maintenance and Troubleshooting Exam in Blackboard 	
May 3		<ul style="list-style-type: none"> • Spring Semester Ends 	

COMPETENCY AREAS:

1. Site Location
2. Estimating Energy Output
3. Systems Selection
4. Installation and Location Design
5. Wiring Procedures
6. Batteries and Charge Systems
7. Grid Connections
8. Systems Inspections and Repair

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