



# INSTRUCTIONAL PACKAGE

ELW 231

Electrical Power Systems

Effective Term  
Spring 2020

## INSTRUCTIONAL PACKAGE

### PART I: COURSE INFORMATION

Effective Term: 2019.10

COURSE PREFIX: ELW 231

COURSE TITLE: Electrical Power Systems

CONTACT HOURS: 5.0

CREDIT HOURS: 3.0

### RATIONALE FOR THE COURSE:

This course covers utility operations and utility network topology.

### COURSE DESCRIPTION:

This course examines the basic principles of electrical power systems, including transmission lines, generator and transformer characteristics, fault detection and correction, interpretation of line diagrams and performance of per-unit calculations for circuit performance analysis.

### PREREQUISITES/CO-REQUISITES:

**COMPASS** Reading 65 (Same as for ENG 100) Writing 31 (Same as for ENG 100) Pre-Algebra 40 (Same as for MAT 155) Algebra 26.

**SAT** Reading 380 Math 400 (MAT 101 placement or use COMPASS Math placement)

**ACT** Reading 14 English 12 Math 16 (MAT 101 placement or use COMPASS Math placement)

**ASSET** Reading 37 Writing 37 Pre- Algebra 37

**Accuplacer** Reading 56 Writing 48 Arithmetic 43 Algebra 50

**Companion** Reading 56 Writing 48 Arithmetic 43 Algebra 50

### REQUIRED MATERIALS:

Please visit the Bookstore online site for most current textbook information. Use the direct link below to find textbooks.

[BOOKSTORE](#).

Enter the semester, course prefix, number and section when prompted and you will be linked to the correct textbook.

### ADDITIONAL REQUIREMENTS:

None

### TECHNICAL REQUIREMENTS:

Access to Desire2Learn (D2L), HGTC's student portal for course materials.

WaveNet and D2L email access.

## **CLASSROOM ETIQUETTE:**

As a matter of courtesy to other students and your professor, please turn off cell phones and other communication/entertainment devices before class begins. If you are monitoring for an emergency, please notify your professor prior to class and switch cell phone ringers to vibrate.

**NETIQUETTE:** is the term commonly used to refer to conventions adopted by Internet users on the web, mailing lists, public forums, and in live chat focused on online communications etiquette. For more information regarding Netiquette expectations for distance learning courses, please visit: [Online Netiquette](#).

## **Part II: Student Learning Outcomes**

### **COURSE LEARNING OUTCOMES and ASSESSMENTS\*:**

- Demonstrate the ability to test and identify circuit voltage and phasing (de-energized).
- Effectively describe power delivery from generation to meter.
- Properly identify system protection devices and their purpose.
- Effectively read and diagnose fault detection equipment.
- Employ the use of network maps.
- Demonstrate the ability to resolve alternative feeds from looped conductors.

### **General Education Outcomes**

This course fulfills the following General Education Outcomes through transformer trouble shooting.

Upon completion of this course, students will be able to:

- Communicate effectively;
- Think critically;
- Self and professional development.

***\*Students – please refer to the Instructor’s Course Information sheet for specific information on assessments and due dates.***

### **Effective Professional and Interpersonal Communication (EPIC)**

This course fulfills HGTC’s Quality Enhancement Plan for Effective Professional and Interpersonal Communication. Upon completion of this course, students will be able to:

(Check all that apply.)

- Utilize appropriate communication formats when conveying professional and interpersonal thoughts and ideas.
- Apply appropriate language when speaking and writing for their chosen field of study or Industry.
- Demonstrate appropriate communication techniques when engaging audiences.

***\*Students – please refer to the Instructor’s Course Information sheet for specific***

***information on assessments and due dates.***

***The following is a specific breakdown of competencies and skills developed in this course.***

**Unit 1**

**ESSENTIALS FOR LINEMEN**

Safe work practices  
Installing personal protective grounding  
Identifying and managing risks  
Emergency procedures

**Unit 2**

**ELECTRIC UTILITY SYSTEMS**

Electrical Energy  
Generation  
Transmission  
Distribution

**Unit 3**

**ELECTRICAL UNITS**

Potential  
Voltage  
Current  
Power

**Unit 4**

**ALTERNATING CURRENT**

Characteristics of AC  
AC Power  
AC Transmission

**Unit 5**

**V PHASE AND THREE PHASE CIRCUITS**

Delta and Wye Circuits  
Three phase power

**Unit 6**

**CONSTRUCTION OF POWER LINES**

Pole setting  
Material identification and preparation  
Installation of equipment  
Conductor stringing and sagging

**Unit 7**

**CIRCUIT AND LINE PROTECTION**

Substation equipment including breakers  
Reclosing devices

Fusing  
Current  
Power  
Surge arresting

### **Unit 8**

#### **TRANSFORMER CONNECTIONS**

Single phase  
Three phase Delta and Wye  
Transformer impedance  
Transformer currents  
Voltage conversion  
Troubleshooting

### **Unit 9**

#### **AERIAL DEVICES AND DIGGER DERRICKS**

Fleet inspections  
Fleet stabilization  
Electrical protection for insulated and non-insulated booms  
Aerial device and digger derrick operation

### **Unit 10**

#### **RIGGING**

Ropes and knot tying  
Sling types and lifting methods  
Tensioning and sagging conductors

### **Unit 11**

#### **ENERGIZED WORK PRACTICES**

Safety in energized environments  
Rubber glove work  
Rubber protective equipment  
Stick work

## **Part III: Grading and Assessment**

### **EVALUATION OF REQUIRED COURSE MEASURES/ARTIFACTS\***

Students' performance will be assessed and the weight associated with the various measures/artifacts are listed below.

### **EVALUATION\***

Tests	30%
Exam	30%
<u>Assignments</u>	40%
	100%

***\*Students, for the specific number and type of evaluations, please refer to the Instructor’s Course Information Sheet.***

### **GRADING SYSTEM:**

State the College’s or departmental grading system as delineated in the Catalog. Please note the College adheres to a 10 point grading scale A = 100 – 90, B = 89- 80, C = 79 – 70, D = 69 – 60, F = 59 and below. You must have your Dean’s approval if changes in the scale are made.

Grades earned in courses impact academic progression and financial aid status. Before withdrawing from a course, be sure to talk with your instructor and financial aid counselor about the implications of that course of action. Ds, Fs, Ws, WFs and Is also negatively impact academic progression and financial aid status.

The Add/Drop Period is the first 5 days of the semester for **full term** classes. Add/Drop periods are shorter for accelerated format courses. Please refer to the academic calendar for deadlines for add/drop ([ACADEMIC CALENDAR](#)). You must attend at least one meeting of all of your classes during that period. If you do not, you will be dropped from the course(s) and your Financial Aid will be reduced accordingly.

### **Part IV: Attendance**

Horry-Georgetown Technical College maintains a general attendance policy requiring students to be present for a minimum of eighty percent (80%) of his or her classes in order to be eligible to receive credit for any course. However, due to the varied nature of courses taught at the College, a more rigid attendance policy may be required by individual instructors. At a minimum, a student may be withdrawn from a course(s) after he or she has been absent in excess of ten percent (10%) of the total contact hours for a course. **Instructors define absentee limits for their class at the beginning of each term; please refer to the Instructor Course Information Sheet.**

**For online and hybrid courses**, check your Instructor’s Course Information Sheet for any required on-site meeting times. Please note, instructors may require tests to be taken at approved testing sites, if you use a testing center other than those provided by HGTC, the center may charge a fee for its services.

### **Effective Professional and Interpersonal Communication (EPIC)**

This course fulfills HGTC’s Quality Enhancement Plan for Effective Professional and Interpersonal Communication. Upon completion of this course, students will be able to:  
(Check all that apply.)

Utilize appropriate communication formats when conveying professional and interpersonal thoughts and ideas.

Apply appropriate language when speaking and writing for their chosen field of study or industry.

Demonstrate appropriate communication techniques when engaging audiences.

## Part V: Student Resources

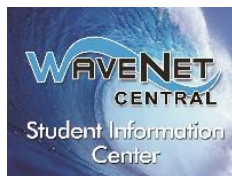


### The Student Success and Tutoring Center (SSTC)

The SSTC offers to all students the following **free** resources:

1. **Academic coaches** for most subject areas, **Writing Center Support**, and **college success skills**.
2. **On-line student success and academic support resources**.

Visit the SSTC website: [Student Success & Tutoring Center](#) and visit the student services tab in your WaveNet account to schedule appointments using TutorTrac. For more information, call: SSTC Conway, 349-7872; SSTC Grand Strand, 477-2113; and SSTC Georgetown, 520-1455. Room locations and Live Chat is available on the SSTC website.



### Student Information Center: WaveNet Central (WNC)

WNC offers to all students the following **free** resources:

1. **Getting around HGTC:** General information and guidance for enrollment!
2. Use the [Online Resource Center \(ORC\)](#) for COMPASS support, technology education, and online tools.
3. **Drop-in technology support or scheduled training** in the Center or in class.
4. **In-person workshops, online tutorials and more services** are available.

Visit the WNC website: [Wavenet Central](#). Live Chat and Center locations are posted on the website. Or please call one of the following locations: WNC Conway, 349-5182; WNC Grand Strand, 477-2076; and WNC Georgetown, 520-1473.

**Student Testing:** (If course is offered in multiple format include this section, delete if only F2F sections are offered.)

Testing in an **online/hybrid** course may be accomplished in a variety of ways:

- Test administered within D2L

- Test administered in writing on paper
- Test administered through Publisher Platforms

Further more tests may have time limits and/or require a proctor.

Proctoring can be accomplished either face-to-face at an approved site or online through RPNOW, our online proctoring service. To find out more about proctoring services, please visit the [Online Testing](#) section of the HGTC's Testing Center webpage.

The **Instructor Information Sheet** will have more details on test requirements for your course.

### **Disability Services:**

HGTC is committed to providing an accessible environment for students with disabilities. Inquiries may be directed to Beth Havens, Director of Student Development on the Conway Campus Jaime Davis, Counselor/Advisor on the Georgetown Campus or Kristin Griffin, Counselor on the Grand Strand Campus. These individuals will review documentation of the student's disability and, in a confidential setting with the student, develop an educational accommodation plan.

Note: It is the student's responsibility to self-identify as needing accommodations and to provide acceptable documentation. After a student has self-identified and submitted documentation of a disability, accommodations may be determined, accepted, and provided.

### **Statement of Equal Opportunity/Non-Discrimination Statement**

Horry-Georgetown Technical College prohibits discrimination and harassment, including sexual harassment and abuse, on the basis of race, color, sex, national or ethnic origin, age, religion, disability, marital or family status, veteran status, political ideas, sexual orientation, gender identity, or pregnancy, childbirth, or related medical conditions, including, but not limited to, lactation in educational programs and/or activities.

Inquiries regarding the non-discrimination policies: Students and prospective student inquiries concerning Section 504, Title II, and Title IX and their application to the College or any student decision may be directed to the Vice President for Student Affairs, Dr. Melissa Batten, VP Student Affairs, Title IX Coordinator, Building 1100, Room 107A, Conway Campus, PO Box 261966, Conway, SC 29528-6066, 843-349-5228, [Melissa.Batten@hgtc.edu](mailto:Melissa.Batten@hgtc.edu). Employee and applicant inquiries concerning Section 504, Title II, and Title IX and their application to the College may be directed to the Vice President for Human Resources, Jacquelyne Snyder, VP Human Resources, Section 504, Title II, and Title IX Coordinator, Building 200, Room 212A, Conway Campus, PO Box 261966, Conway, SC 29528-6066, 843-349-5212, [Jacquelyne.Snyder@hgtc.edu](mailto:Jacquelyne.Snyder@hgtc.edu).

### **Title IX Requirements**

All students (as well as other persons) at Horry-Georgetown Technical College are protected by Title IX—regardless of their sex, sexual orientation, gender identity, part- or full-time status, disability, race, or national origin—in all aspects of educational programs and activities. Any student, or other member of the college community, who believes that he/she is or has been a victim of sexual harassment or sexual violence may file a report with the college's Chief Student Services Officer, campus law enforcement, or with the college's Title IX Coordinator, or designee.



\*Faculty and Staff are required to report incidents to the Title IX Coordinators when involving students. The only HGTC employees exempt from mandatory reporting are licensed mental health professionals (only as part of their job description such as counseling services).

<p><b>Inquiries regarding the non-discrimination policies:</b></p>	
<p>Student and prospective student inquiries concerning Section 504, Title II, and Title IX and their application to the College or any student decision may be directed to the Vice President for Student Affairs.</p>	<p>Employee and applicant inquiries concerning Section 504, Title II, and Title IX and their application to the College may be directed to the Vice President for Human Resources.</p>
<p><b>Dr. Melissa Batten, VP Student Affairs</b>  <i>Title IX Coordinator</i></p> <p>Building 1100, Room 107A, Conway Campus          PO Box 261966, Conway, SC 29528-6066          843-349-5228  <a href="mailto:Melissa.Batten@hgtc.edu">Melissa.Batten@hgtc.edu</a></p>	<p><b>Jacquelyne Snyder, VP Human Resources</b>  <i>Section 504, Title II, and Title IX Coordinator</i></p> <p>Building 200, Room 212A, Conway Campus          PO Box 261966, Conway, SC 29528-6066          843-349-5212  <a href="mailto:Jacquelyne.Snyder@hgtc.edu">Jacquelyne.Snyder@hgtc.edu</a></p>