



INSTRUCTIONAL PACKAGE

EET 145

Digital Circuits

Effective Term
Fall 2018

INSTRUCTIONAL PACKAGE

PART I: COURSE INFORMATION

Effective Term: 2018.10

COURSE PREFIX: EET 145

COURSE TITLE: Digital Circuits

CONTACT HOURS: 6.0

CREDIT HOURS: 4.0

RATIONALE FOR THE COURSE:

Provide students a strong foundation in the core fundamentals of Digital Technology.

COURSE DESCRIPTION:

This course is a study of number systems, basic logic gates, Boolean algebra, logic optimization, flip-flops, counters and registers. Circuits are modeled, constructed, and tested.

PREREQUISITES/CO-REQUISITES:

(Credit level [MAT 101](#) Minimum Grade of C or Credit level [MAT 101](#) Minimum Grade of TC or Credit level [MAT 102](#) Minimum Grade of C or Credit level [MAT 102](#) Minimum Grade of TC or Credit level [MAT 110](#) Minimum Grade of C or Credit level [MAT 110](#) Minimum Grade of TC) or COMPASS Algebra 46 or SAT Mathematics 460 or New SAT Mathematics 500 or ACT Math 19 or ACCUPLACER Elementary Algebra 075 or New ACCUPLACER Adv Algebra 230 or COMPANION Elementary Algebra 075 or (Multiple Measures Math 1)

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:

Scientific or Engineering Calculator, USB flash drive

TECHNICAL REQUIREMENTS:

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

STUDENT IDENTIFICATION VERIFICATION

Students enrolled in online courses will be required to participate in a minimum of one (1) proctored assignment and/or one (1) virtual event to support student identification verification. Please refer to your Instructor Information Sheet for information regarding this requirement.

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*:

Learning Outcomes:

Module 1

Materials Covered: Digital and analog quantities, basic logic, binary and hexadecimal number systems.

1. Describe the basic differences between digital and analog quantities.
2. Discuss how voltage levels are used to represent digital quantities.
3. Describe basic logic operations of NOT, AND, and OR
4. Describe and convert between the binary, hexadecimal, and decimal number systems
5. Convert quantities between decimal and binary
6. Apply arithmetic operations to binary and hexadecimal numbers

Module 2

Materials Covered: Logical gates, timing diagrams, and Boolean algebra.

1. Describe the operation of the inverter, the AND gate, and the OR gate
2. Describe the operation of the NAND gate and the NOR gate
3. Express the operation of NOT, AND, OR, NAND, and NOR gates with Boolean algebra
4. Describe the operation of the exclusive-OR and exclusive-NOR gates
5. Construct timing diagrams showing the proper time relationships of inputs and outputs for the various logic gates
6. Define propagation delay time, power dissipation, speed-power product, and fan-out in relation to logic gates
7. Apply the basic laws and rules of Boolean algebra, evaluate Boolean expressions

Module 3

Materials Covered: Operation of digital circuits, Karnaugh maps, circuit simplification, combinational logic.

1. Apply DeMorgan's theorems to Boolean expressions
2. Convert any Boolean expression into a sum-of-products (SOP) and product of sums (POS) forms
3. Use a Karnaugh map to simplify Boolean expressions
4. Analyze combination logic
5. Define the universality of NAND and NOR gates.

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

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*

Exams	30%
Labs	20%
Homework Assignments	20%
Class Participation	5%
Final Exam	<u>25%</u>
	100%

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

GRADING SYSTEM:

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.

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.

Part V: Student Resources

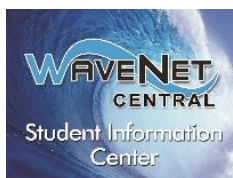


The Student Success and Tutoring Center (SSTC)

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 Jocelyn Williams, 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, gender, national or ethnic origin, age, religion, disability, marital status, veteran status, sexual orientation, gender identity, or pregnancy in educational programs and/or activities.

Title IX Requirements

Horry Georgetown Technical College prohibits the offenses of domestic violence, dating violence, sexual assault, and stalking. Any student who believe he or she has experienced or witnessed discrimination including sexual harassment, domestic violence, dating violence, sexual assault or stalking is encouraged to report such incidents to one of the College's Title IX Coordinators.

*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).

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