



## Course Number and Title: ELC 291 Biomedical Internship

**Campus Location:**

Dover

**Effective Date:**

2018-51

**Prerequisite:**

ELC 226, ELC 260

**Co-Requisites:**

none

**Course Credits and Hours:**

3.00 credits

0.00 lecture hours/week

10.00 lab hours/week

**Course Description:**

This course provides the student with experience working in a clinical engineering environment at a local hospital. The student applies learned knowledge and skills to technical situations while learning about professional growth, ethics, and maintenance philosophies.

**Required Text(s):**

Obtain current textbook information by viewing the [campus bookstore - https://www.dtcc.edu/bookstores](https://www.dtcc.edu/bookstores) online or visit a campus bookstore.

Check your course schedule for the course number and section.

**Additional Materials:**

None

**Schedule Type:**

Classroom Course

**Disclaimer:**

None

**Core Course Performance Objectives (CCPOs):**

1. Assist clinical engineering personnel to perform entry-level engineering technician duties at a job site. (CCC 1, 2, 3, 4, 5, 6; PGC 1, 2, 3, 4, 5, 6, 7)
2. Maintain, troubleshoot, and repair medical equipment as required by site supervisor. (CCC 1, 2, 3, 4, 5, 6; PGC 1, 2, 3, 4, 5, 6, 7)
3. Discuss career opportunities, professional growth requirements, certifications, and entry-level skills requirements with supervisor. (CCC 1, 4; PGC 6, 7)
4. Discuss maintenance philosophies with a supervisor. (CCC 1, 4; PGC 2, 3, 4, 5)

See Core Curriculum Competencies and Program Graduate Competencies at the end of the syllabus. CCPOs are linked to every competency they develop.

### Measurable Performance Objectives (MPOs):

Upon completion of this course, the student will:

1. Assist clinical engineering personnel to perform entry-level engineering technician duties at a job site.
  1. Display skills necessary to successfully complete an interview for an internship position.
  2. Write a goal statement outlining three specific objectives he/she will achieve during the internship.
  3. Display positive work habits in the areas of neatness, efficiency, organization, meeting deadlines, and punctuality.
  4. Display appropriate personal propriety in dress, personality, accepting criticism, willingness to learn, and in assuming responsibility.
  5. Demonstrate his/her technical skills in the areas of professional standards, technical knowledge, and use of equipment, technical language, and quality of work performed.
  6. Demonstrate oral and written communication skills in a particular work situation.
  7. Demonstrate a positive work attitude in the daily performance of his/her work.
  8. Demonstrate the above skills during site visit(s) and at periodic meetings with the internship instructor.
2. Maintain, troubleshoot, and repair medical equipment as required by site supervisor.
  1. Assess equipment operating conditions to determine if equipment meets normal operating parameters.
  2. Use general and special test equipment, under the supervision of qualified site personnel, to troubleshoot faulty medical equipment.
  3. Restore faulty medical equipment to normal operating parameters.
  4. Complete all required documentation of maintenance activities per site requirements.
3. Discuss career opportunities, professional growth requirements, certifications, and entry-level skills requirements with supervisor.
  1. Discuss career paths in clinical engineering with your site supervisor.
  2. Discuss equipment and skills certification associated with technical careers in the medical field.
  3. Discuss opportunities to attend original equipment manufacturer (OEM) schools for technicians who are employed at the internship site.
  4. Discuss ethical standards associated with clinical engineering in the medical field.
4. Discuss maintenance philosophies with a supervisor.
  1. Identify which maintenance philosophies listed below are used within the clinical engineering department:
    1. Breakdown maintenance
    2. Preventive maintenance (periodic or predictive)
    3. Condition-based maintenance
    4. Reliability-centered maintenance
  2. Discuss the pros and cons of contracted maintenance with a site supervisor.
  3. Discuss the pros and cons of in-house maintenance with a site supervisor.
  4. Identify which companies offer contracted maintenance to hospitals in the region (Delaware and Eastern Shore Maryland hospitals).

### Evaluation Criteria/Policies:

Students must demonstrate proficiency on all CCPOs at a minimal 75 percent level to successfully complete the course. The grade will be determined using the Delaware Tech grading system:

92	-	100	=	A
83	-	91	=	B
75	-	82	=	C
0	-	74	=	F

Students should refer to the [Student Handbook - https://www.dtcc.edu/handbook](https://www.dtcc.edu/handbook) for information on the Academic Standing Policy, the Academic Integrity Policy, Student Rights and Responsibilities, and other policies relevant to their academic progress.

### Core Curriculum Competencies (CCCs are the competencies every graduate will develop):

1. Apply clear and effective communication skills.
2. Use critical thinking to solve problems.
3. Collaborate to achieve a common goal.
4. Demonstrate professional and ethical conduct.
5. Use information literacy for effective vocational and/or academic research.
6. Apply quantitative reasoning and/or scientific inquiry to solve practical problems.

**Program Graduate Competencies (PGCs are the competencies every graduate will develop specific to his or her major):**

1. Perform the duties of an entry-level technician using the skills, modern tools, theory, and techniques of the electronics engineering technology.
2. Apply a knowledge of mathematics, science, engineering, and technology to electronics engineering technology problems that require limited application of principles but extensive practical knowledge.
3. Conduct, analyze, and interpret experiments using analysis tools and troubleshooting methods.
4. Apply critical thinking skills necessary to analyze, install and maintain biomedical electronic systems and equipment
5. Troubleshoot and repair malfunctioning electronic circuits, systems and networks found in a healthcare environment or associated industries
6. Explain the importance of engaging in self-directed continuing professional development.
7. Demonstrate basic management, organizational, and leadership skills which commit to quality, timeliness and continuous improvement.

**Disabilities Support Statement:**

The College is committed to providing reasonable accommodations for students with disabilities. Students are encouraged to schedule an appointment with the campus Disabilities Support Counselor to request an accommodation needed due to a disability. A listing of campus Disabilities Support Counselors and contact information can be found at the [disabilities services - https://www.dtcc.edu/disabilitysupport](https://www.dtcc.edu/disabilitysupport) web page or visit the campus Advising Center.