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**CCTC Course: IMT 131 (Hydraulics and Pneumatics)**

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**SECTION I (For the student)**

**Please read this form completely, including Section III (Policies and Disclosure Information). Please note that a grade of 70% or higher is required for successful completion of the proficiency test.**

Please complete this section of the form and give it to your teacher.

Your Name (*PLEASE PRINT*): \_\_\_\_\_ SSN: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Primary Phone Number: \_\_\_\_\_ Check One:    Landline    Mobile

High School: \_\_\_\_\_ Career Center: \_\_\_\_\_

Date of (or anticipated) Graduation from High School: \_\_\_\_\_

**SECTION II (For the teacher)**

I verify that this student has mastered the major competencies listed below, and therefore, I recommend this student take the IMT 131 proficiency test. (**Please initial each competency.**)

- \_\_\_\_\_ 1. Calculate force and work.
- \_\_\_\_\_ 2. Describe the operation of two-position, direct acting valves & explain one major advantage of using a four-way valve.
- \_\_\_\_\_ 3. Describe construction of two basic types of pressure-relief valves; contrast a pressure regulator with a pressure-relief valve.
- \_\_\_\_\_ 4. Tell the difference between pneumatic and hydraulic cylinders.
- \_\_\_\_\_ 5. Describe the construction and operation of a single-acting cylinder.
- \_\_\_\_\_ 6. State the purpose of an exhaust flow control metering valve.
- \_\_\_\_\_ 7. Explain the size relationship between a cylinder port and a valve port.
- \_\_\_\_\_ 8. Explain the proper maintenance of pneumatic tools
- \_\_\_\_\_ 9. Describe how manually operated valves work.
- \_\_\_\_\_ 10. Explain the difference between direct-acting and pilot-operated valves.
- \_\_\_\_\_ 11. Explain the functions of a pressure-control valve, a pressure-relief valve, and a pressure reducing valve.
- \_\_\_\_\_ 12. Explain the difference between normally closed and normally open valves.
- \_\_\_\_\_ 13. List typical symptoms of common hydraulic system problems.
- \_\_\_\_\_ 14. Explain how to determine the cause of and provide a solution to a problem.
- \_\_\_\_\_ 15. Name five common valve problems and explain the sequence of steps followed in troubleshooting each.
- \_\_\_\_\_ 16. Describe the proper procedures for valve: disassembly, cleaning, inspection reassembling, reinstalling and testing.
- \_\_\_\_\_ 17. Explain how to determine whether to repair or replace a malfunctioning valve.
- \_\_\_\_\_ 18. List the reasons for electrical and mechanical failures of solenoid valves.

Teacher (or high school official) Name (*PLEASE PRINT*): \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name of high school/career center course(s) in which this student gained the required competencies for possible exemption credit: \_\_\_\_\_

Date of course completion, or expected completion: \_\_\_\_\_

Comments (if applicable):  
\_\_\_\_\_  
\_\_\_\_\_

Please contact Keith Brigman, Mechatronics Department Chair, to schedule the IMT 131 proficiency test and for questions regarding articulation for IMT 131. Phone: (803) 774-6704; Email: [brigmankg@cctech.edu](mailto:brigmankg@cctech.edu)

**SECTION III****Secondary School Articulation Exemption Credit Procedures & Disclosure Information**

1. Students must contact their guidance counselor or teacher at the high school or career center or the Registrar at Central Carolina Technical College to determine whether specific secondary course work is eligible for articulation and to obtain information on requirements and procedures for requesting exemption credit.
2. Students requesting exemption credit must complete *Section 1* of the Secondary School Articulation Form for each course in which s/he is interested in receiving exemption credit.
3. The high school or career center teacher will determine if the student has mastered the major course competencies and is eligible to take the proficiency test. If so, the teacher should complete *Section 2* of the Secondary School Articulation Form for each course the student is requesting exemption credit.
4. The high school teacher/official must contact the CCTC program manager (at the email/phone number listed on the Secondary School Articulation Form) to schedule the proficiency test and should submit completed forms to the CCTC program manager/instructor administering the test.
5. The CCTC department chair/program manager/instructor must administer the proficiency test and complete a Proficiency Test Form for each student taking the test, indicating whether the student passed or failed the test.
6. The CCTC department chair/program manager/instructor must submit the completed Secondary School Articulation Forms, Proficiency Test Forms, and graded proficiency tests to the CCTC Registrar.
7. The CCTC Registrar will provide students with results of the proficiency test and instructions for obtaining exemption credit.
8. Students must meet all admissions requirements at CCTC and should inform the admissions counselor of pending exemption credit when being admitted to the college.
9. After the student is admitted to the College, Student Records will post the exemption credit as a grade of "E" on the student's official CCTC transcript. ("E" grades do not count in a student's grade point average.)
10. Exemption credit may apply to a required course in the articulated program or an elective course depending on whether or not the course is listed as required for a specific curriculum in the College catalog. If a student enters a program at CCTC for which the course is not required, the student may use the course as elective credit if permission is granted by the program department chair/program manager.
11. Students will have no more than two years following high school graduation to complete the secondary articulation procedures and request exemption credit.
12. A high school student who takes a proficiency test will have his/her Secondary School Articulation Form and Proficiency Test Form (indicating if the student passed) kept on file in the Student Records Office for two years following high school graduation. The graded proficiency test will remain on file in the appropriate department office or Student Records Office for two years following the test date.
13. Exemption credit earned at CCTC does not imply or guarantee that such credit will be honored by other institutions of higher education.
14. All proficiency exams will be developed, administered, and scored by Central Carolina Technical College faculty and/or staff.