1. **COURSE TITLE\*: Introduction to Vacuum Systems Technology**
2. **CATALOG – PREFIX/COURSE NUMBER/COURSE SECTION\*: ADMF 1103**
3. **PREREQUISITE(S)\*: COREQUISITE(S)\*:**
4. **COURSE TIME/LOCATION/MODALITY: (*Course Syllabus – Individual Instructor Specific*)**
5. **CREDIT HOURS\*: 3 LECTURE HOURS\*: 2**

**LABORATORY HOURS\*: 2 (contact hours) OBSERVATION HOURS\*:**

1. **FACULTY CONTACT INFORMATION: *(Course Syllabus – Individual Instructor Specific)***
2. **COURSE DESCRIPTION\*:**

In this course, students will be introduced to the operational mechanisms

and process use of vacuum pumps used in the semiconductor industry.

Students will explain the operational methodology and process use of

equipment that requires vacuum pumps used in the semiconductor

industry. Students will demonstrate problem-solving, critical thinking and

communication skills while learning how to perform maintenance on a

vacuum system

1. **LEARNING OUTCOMES\*:**

Upon completion of this course, students can:

1. Explain the operational mechanisms and process use of vacuum pumps used in the

semiconductor industry.

1. Explain the operational methodology and process use of equipment that require

vacuum pumps used in the semiconductor industry.

1. Demonstrate the ability to safely test, troubleshoot, and fix a vacuum pump system with a leak using tools while gowned up in a cleanroom environment.
2. **ADOPTED TEXT(S)\*:***No text required for purchase; material provided in the course.*

**9a: SUPPLEMENTAL TEXTS APPROVED BY FULL TIME DEPARTMENTAL FACULTY (INSTRUCTOR MUST NOTIFY THE BOOKSTORE BEFORE THE TEXTBOOK ORDERING DEADLINE DATE PRIOR TO ADOPTION) \*\*\*.**

1. **OTHER REQUIRED MATERIALS: (SEE APPENDIX C FOR TECHNOLOGY REQUEST FORM.)\*\***

Computer and Internet access with most recent release of Firefox or Chrome

Adobe Reader or other PDF reader for PDF documents

Microsoft Word (free to SSCC students)

HTML 5-compliant browser/tablet for video playback

1. **GRADING SCALE\*\*\*:**

Grading will follow the policy in the catalog. The scale is as follows:

% Points

A: 90 – 100 (900-1000)

B: 80 – 89 (800-899)

C: 70 – 79 (700-799)

D: 60 – 69 (600-699)

F: 0 – 59 (0-599)

**Note: The OACC Semiconductor Certificate requires a grade of “C” or better ≥70% (700 points) to receive credit towards the certificate.**

1. **GRADING PROCEDURES OR ASSESSMENTS: (*Course Syllabus – Individual Instructor Specific)***

|  |  |  |
| --- | --- | --- |
| *Category* | ***EXAMPLE ONLY***  *Total Points* | *% of Grade* |
| Quizzes (Weekly) | 230 | 23% |
| Discussion Board | 180 | 18% |
| Assignments/Labs | 460 | 46% |
| Final Retrospective | 130 | 13% |
| Total | 1000 | 100% |

1. **COURSE METHODOLOGY: *(Course Syllabus – Individual Instructor Specific)***

May include but not limited to lecture and problem solving, independent and group projects, in-class and home assignments, quizzes, and tests. Problem solving will use both graphical and mathematical methods.

**14. COURSE OUTLINE: *(Course Syllabus – Individual Instructor Specific)***

***(Insert sample course outline with learning outcomes tied to assignments / topics.)***

|  |  |  |
| --- | --- | --- |
| Week # | Topic Covered | Learning Outcomes |
| 1 | Introduction to Cleanrooms and Vacuum Systems | 1, 2, 3 |
| 2 | Mean Free Path and Applications | 1, 2, 3 |
| 3 | Vacuum System Components- Gauges, Valves, Parts Part A | 1, 2, 3 |
| 4 | Vacuum System Components- Gauges, Valves, Parts Part B | 1, 2, 3 |
| 5 | Vacuum System Components- Gauges, Valves, Parts Part C | 1, 2, 3 |
| 6 | Vacuum Measurement- Quantitative Part A | 2, 3 |
| 7 | Vacuum Measurement- Quantitative Part B | 2, 3 |
| 8 | Roughing Pump and Maintenance Part A | 2, 3 |
| 9 | Roughing Pump and Maintenance Part B | 2, 3 |
| 10 | Vacuum Systems with Multiple Roughing Pumps | 2, 3 |
| 11 | High Vacuum System- Crossover Pressure | 2, 3 |
| 12 | Turbomolecular Drag Pump and other High Vacuum Pumps Part A | 2, 3 |
| 13 | Turbomolecular Drag Pump and other High Vacuum Pumps Part B | 2, 3 |
| 14 | Leak Checking and Preventative Maintenance- High Vacuum Systems Part A | 2, 3 |
| 15 | Leak Checking and Preventative Maintenance- High Vacuum Systems Part B | 2, 3 |
| 16 | Final Presentations | 1, 2, 3 |

1. **SPECIFIC MANAGEMENT REQUIREMENTS\*\*\*:**
   * All assignments, quizzes, and tests must be turned in on time.
     + Late work in not acceptable and will not be graded.
   * APA format will be used in this and all Engineering classes.
   * All written responses (except Math problems) must be in a Microsoft Word document.
     + Handwritten documents will not be accepted.
   * Name must be in the top right corner of every page to be graded.
     + Make the header in Word your friend.
   * Students may work on their own time to complete the assignments.
   * Some group work is encouraged on exercises and assignments.
   * The group projects are not optional; make sure you are a team player.
   * Examinations will include written and graphical components.

**16. FERPA: \***

Students need to understand that their work may be seen by others. Others may see students’ work when being distributed, during group project work, or if it is chosen for demonstration purposes. Students also need to know that there is a strong possibility that their work may be submitted to other entities for the purpose of plagiarism checks.

**17. ACCOMMODATIONS: \***

Students requesting accommodations may contact Ryan Hall, Accessibility Coordinator at rhall21@sscc.edu or 937-393-3431, X 2604.

Students seeking a religious accommodation for absences permitted under Ohio’s Testing Your Faith Act must provide the instructor and the Academic Affairs office with written notice of the specific dates for which the student requires an accommodation and must do so no later than fourteen (14) days after the first day of instruction or fourteen (14) days before the dates of absence, whichever comes first. For more information about Religious Accommodations, contact Ryan Hall, Accessibility Coordinator at [rhall21@sscc.edu](mailto:rhall21@sscc.edu) or 937-393-3431 X 2604.

**18. OTHER INFORMATION\*\*\*:**

You have access to many great free resources at SSCC. For example, open computer labs in the 300 hallway, several printing locations when you need to print, library services (they can help with many things and often have equipment available for you to use when you forget or break yours), tutoring, career counseling and much more. Just ask if you need help or assistance, we want you to be successful and are here to help if we can.

**SYLLABUS TEMPLATE KEY**

**\*** Item cannot be altered from that which is included in the master syllabus approved by the Curriculum Committee.

**\*\*** Any alteration or addition must be approved by the Curriculum Committee

**\*\*\*** Item should begin with language as approved in the master syllabus but may be added to at the discretion of the faculty member.