



COURSE OUTLINE

2018/2019

COURSE NAME: Cleanroom Practices

COURSE CODE: NANO1100

COURSE DESCRIPTION

This course provides an introduction to Cleanroom structure and a detailed overview of Cleanroom safety, practices, operations, and classifications. During the course, students will be attending sessions that will train/prepare them for best practices in cleanrooms and nano/micro fabrication facility operations. The course will also highlight material and substrate handling and the standards/procedures used in commercial Nanofabrication Facilities.

Course Credits: 3.00

LEARNING OUTCOMES

OUTCOME	Upon successful completion of this course, you will be able to
1	<p>Describe cleanrooms including their classification, applications, design, and standard protocols.</p> <p>The following concepts, skills, and issues are used to support this Outcome:</p> <ul style="list-style-type: none">• Discuss the history of cleanrooms.• Identify key elements of cleanrooms/biosafety labs and their classifications.• List and explain the basic rules of working in a cleanroom.• Proper gowning protocols for working in the cleanroom.• Identify and describe cleanroom air supply components and various system designs.• Identify appropriate construction material and methods for cleanrooms and BSLs.• Describe best practices and cleanroom standards for the material and personnel entry and exit.• Identify common bad habits of users in a cleanroom.

2	<p>Explain operational best practices in cleanrooms.</p> <p>The following concepts, skills, and issues are used to support this Outcome:</p> <ul style="list-style-type: none"> ▪ Identify the basic principles of safety management. ▪ Identify industrial safety monitoring parameters as well as the chemical hazards in cleanrooms. ▪ Recognize and demonstrate skills based on Labeling and NFPA 704. ▪ Identify physical and electrical agents. ▪ Describe the WHMIS and MSDS systems and how they should be implemented in the workplace. ▪ Identify gas and cryogenic temperature safety measures. ▪ Identify the paths to critical errors and injury, and discuss working alone laws and the buddy system in cleanrooms. ▪ Cleanroom gowning and PPE. ▪ Fire hazards and fire safety. ▪ Different spills and respond to the spills.
3	<p>Identify cleanroom practices based on safety and industry standards.</p> <p>The following concepts, skills, and issues are used to support this Outcome:</p> <ul style="list-style-type: none"> ▪ Identify different types of waste in cleanrooms and the safe practices for waste handling/management. ▪ The basics of emergency planning. ▪ Cleanroom management tools and systems based on risk management. ▪ Procedures for cleaning a cleanroom, and preparing a cleaning program.
4	<p>Demonstrate and explain wafer/substrate handling and cleaning processes.</p> <p>The following concepts, skills, and issues are used to support this Outcome:</p> <ul style="list-style-type: none"> ▪ Wafer/product handling techniques, equipment, and labware. ▪ Cleaning techniques for wafers/substrates used in cleanrooms.

STUDENT EVALUATION

OUTCOME	ACTIVITY DESCRIPTION	MARK DISTRIBUTION
1, 2, 3 and 4	Exams/Quizzes	50%
1, 2, 3 and 4	Assignments	25%
1, 2, 3 and 4	Laboratory Assessments	25%
TOTAL		100%

COURSE COMPLETION REQUIREMENTS

Standard D or no less than 50%.

STUDENT EQUIPMENT AND SUPPLIES

Cleanroom suits and safety glasses.

DELIVERY METHOD

This course will be taught using a variety of delivery methods which may include face-to-face, online, or blended teaching platforms. Activities such as collaborative exercises/assignments, seminars, labs, discussion, audio/visual presentations, and case studies may be used to support learning.

STUDENT RESPONSIBILITY

Enrolment at NAIT assumes that the student will become a responsible citizen of the Institute. As such, each student will display a positive work ethic, assist in the preservation of Institute property, and assume responsibility for his/her education by researching academic requirements and policies; demonstrating courtesy and respect toward others; and respecting expectations concerning attendance, assignments, deadlines, and appointments.

EQUITY STATEMENT

NAIT is committed to providing an environment of equality and respect for all people within the learning community, and to educating faculty, staff, and students in developing inclusive teaching and learning contexts that are welcoming to all.

Changes to This Course Outline: Every effort has been made to ensure that information in this course outline is accurate at the time of publication. The Institute reserves the right to change courses if it becomes necessary so that course content remains relevant. In such cases, the instructor will give the students clear and timely notice of the changes.

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