

LASER TECHNOLOGY (LASER)

LASER 098 Directed Study - Laser Technology 0.5-9 Units

Individual or small groups of students who would benefit from Independent Study under the direction of faculty members in specific or related disciplines may develop individualized learning contracts designed to enhance their individual instructional programs. The students and the faculty member in consultation with the Division Dean will determine appropriate learning objectives and activities as well as the number of units to be earned. Instructions and the Learning Contract forms are available in the Division office. Repeatable to a maximum of 9 units across all disciplines.

Lecture Hours: None Lab Hours: 2.07 Repeatable: Yes Grading: O
Prerequisite: Completion of the following course(s) and project approval is required by sponsoring faculty, division dean, and Vice President of Academic Affairs: LASER 102

Advisory Level: Read: 2 Write: 2 Math: None

Transfer Status: CSU Degree Applicable: AA/AS

CSU GE: None IGETC: None District GE: None

LASER 100 Laser Fundamentals and Performance Tests 4 Units

Students will study the principles of photonics and learn the techniques and skills typically performed by an entry-level laser/electro-optics technician. Topics covered include optics and laser principles, laser performance analysis, and Good Laser Lab and Manufacturing Practices (GLLMP). LASER 100 is the introductory course leading to certificates and an AS Degree in Laser Technology.

Lecture Hours: 3 Lab Hours: 3 Repeatable: No Grading: L

Advisory Level: Read: 3 Write: 3 Math: 3

Transfer Status: CSU Degree Applicable: AA/AS

CSU GE: None IGETC: None District GE: None

Credit by Exam: Yes

LASER 101 Rapid Laser Opto-Mechanics 3-D Prototyping 4 Units

Students will learn to prototype opto-mechanic parts using 3-D Computer-Aided Design (CAD) software and 3-D printers. Students study rapid 3-D prototyping, and print quality optimization of the parts. Course emphasis is on parts typically encountered on laser lab workbenches such as posts, rails, and mounts. This is the second course leading to certificates and an AS degree in Laser Technology.

Lecture Hours: 3 Lab Hours: 3 Repeatable: No Grading: L

Prerequisite: LASER 100 with C or better

Advisory Level: Read: 3 Write: 3 Math: 3

Transfer Status: CSU Degree Applicable: AA/AS

CSU GE: None IGETC: None District GE: None

LASER 102 Intermediate Laser Technology 4 Units

Students learn the fundamentals of solid state laser technology and introductory theory of pulsed laser systems. Students also learn nonlinear optics, harmonics generation, and principles for q-switching. This class is one of the required courses leading to certificates and an AS degree in Laser Technology.

Lecture Hours: 3 Lab Hours: 3 Repeatable: No Grading: L

Prerequisite: LASER 100 with C or better

Advisory Level: Read: 3 Write: 3 Math: 3

Transfer Status: CSU Degree Applicable: AA/AS

CSU GE: None IGETC: None District GE: None

LASER 103 Advanced Laser Technology 4 Units

Students study in-depth theory and treatment of pulsed and solid state lasers. Students will learn to assemble, troubleshoot, repair, and characterize a simple laser for optimal performance and determine laser and laser analyzer tolerances to establish their scopes and limitations.

Lecture Hours: 3 Lab Hours: 3 Repeatable: No Grading: L

Prerequisite: LASER 100 with C or better

Advisory Level: Read: 3 Write: 3 Math: 3

Transfer Status: CSU Degree Applicable: AA/AS

CSU GE: None IGETC: None District GE: None

LASER 104 Fiber Laser Technology 4 Units

Students build on knowledge of advanced laser theory to study fiber laser technology. Topics include fiber optics, cw (continuous wave) fiber lasers, Q-switched and Mode-locked fiber lasers, and MOPA's. Students will acquire skills to assemble, test, and troubleshoot fiber lasers and amplifiers.

Lecture Hours: 3 Lab Hours: 3 Repeatable: No Grading: L

Prerequisite: LASER 103 with C or better

Advisory Level: Read: 3 Write: 3 Math: 3

Transfer Status: CSU Degree Applicable: AA/AS

CSU GE: None IGETC: None District GE: None

LASER 138 Work Experience 1-8 Units

Work Experience is designed for students who work or volunteer in a field related to their career major. Students are required to provide evidence that they are enrolled in a career program (e.g., education plan or coursework in a career/technical subject area). Students can earn one unit of credit for each 60 hours of unpaid volunteer time or 75 hours of paid work during the semester. Students can repeat Career/Technical Work Experience, combined with General Work Experience, or alone, up to a maximum of 16 units. Internship/job placement is not guaranteed.

Lecture Hours: None Lab Hours: 2.07 Repeatable: Yes Grading: O

Corequisite: Be employed or a volunteer at an approved work-site for the minimum number of hours per unit as stipulated for paid and unpaid status.

Advisory Level: Read: 3 Write: 3 Math: None

Transfer Status: CSU Degree Applicable: AA/AS

CSU GE: None IGETC: None District GE: None

LASER 160 Introduction to Laser Material Processing 5 Units

Students are introduced to the basics of laser machine tools, safety, and applications such as cutting, drilling, ablating, welding, and marking. Students learn to write and run a G-code program to produce a part.

Lecture Hours: 3 Lab Hours: 6 Repeatable: No Grading: L

Advisory Level: Read: 3 Write: 3 Math: 2

Transfer Status: CSU Degree Applicable: AA/AS

CSU GE: None IGETC: None District GE: None

LASER 500 Introduction to Laser Technology 0 Units

Students will survey laser technology applications and careers in a variety of industries. Students will learn of various career preparation pathways and ways to connect with employers. Students will also be introduced to contextualized math as it applies to laser technology.

Lecture Hours: 1.5 Lab Hours: None Repeatable: Yes Grading: O

Transfer Status: None Degree Applicable: NC

CSU GE: None IGETC: None District GE: None