



INTRODUCTION TO DIRECTED ENERGY
A UNM Global and National Security Policy Institute Online Course
GLNS 511/ECE 595 Section 011/ECE 495 Section 011
August 17 – October 09, 2026

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Additional Syllabus Information – Please see the important information beginning on page 6 of this Syllabus.

Logistics – How to Register for the Course

If you are a University of New Mexico student, then registration is just as you would sign up for any other course. For Non-University of New Mexico prospective students, you first need to apply for admission as a non-degree student. Once you have completed this then you can register for the course. Go to <http://www.unm.edu/apply/>.

I - Course Description

Directed energy lasers and microwaves are a technology that offers the ability to deliver energy to a target at the speed-of-light with a very deep magazine. Advances in pulsed power technology, batteries, capacitors, and electronics have all contributed towards making directed energy a reality.

As directed energy technology transitions from the laboratory to the field, there will be an increasing number of personnel who will be active in the acquisitions process yet have little knowledge about directed energy or related policy issues. This course aims to fill that gap by providing an introduction to directed energy technology for the novice. The target audience includes personnel in acquisitions, those who serve in the military, policymakers, and anyone else interested in learning about the subject.

II - Course Objectives and Methodology

The primary goal of this course is to introduce the student to directed energy technology and related policy issues. This course will encourage students to develop critical thinking in the assessment of directed energy and its broad national security implications and objectives from a technology perspective.

III – Learning Objectives

1. Develop an understanding of the basics of directed energy lasers and microwaves.
2. Become knowledgeable of related policy issues.
3. Become knowledgeable of the global perspective on directed energy.
4. Forecast future global technological challenges in light of recent developments and security threats.



IV – Course Delivery

This course will be delivered on-line (distance learning) giving the students flexibility and ability to complete their academic work solely online. Course materials, such as reading assignments, power point presentations, video links, etc. will be available online. There is one required text for the course. Students are required to read the materials and to discuss with other students and the instructor the materials, including research that the students have undertaken as part of the requirements. There will be a 2-day workshop on October 08-09, 2026 **to be held jointly** with GLNS 510 – *Cybersecurity and National Security* (Prof. Chris Lamb). This workshop will be held virtually using Zoom (information to be provided week of October 05, 2026).

V – Evaluation Procedures

- a) **Assignments/Discussions/Deliverables:** Students will be asked to engage in a discussion weekly (using the Discussion Tool in CANVAS) with other students and the faculty on a number of questions based on the reading assignment and the link between the materials and security. Some of the questions posed for discussion may require the students to engage on additional research beyond their course's reading assignment. These discussions are part of the overall grade of the course and will account for 50% of students' overall grade. The Discussions will be graded based on the depth of the arguments presented by the discussion.
- b) **Research Project:** Students will be required to work on a 15-20-page research project, on a topic previously approved by your instructor. In the interest of providing more benefits to every student (from their work but also from attending presentations by other students), the instructors will approve on a first-come first-serve basis a different technology area for each student. This way, a student will work on one technology area but listen to final presentations and engage in discussions in multiple areas. This research project will account for the remaining 50% of the student's final grade. The paper is due on the last week of class and will be presented by the student at the end of the course on October 08-09, 2026.
Project Description: A critical success factor continues to be the ability to write clearly, concisely, and creatively. The goal of this research project is to examine the impact of some aspect, in a broad sense, of directed energy. Each student will work on a technology area of their choice that is of importance to national security, or some other aspect, and examine it in the global context. We are competing and collaborating with many other countries/regions in the world on many fronts. Your project should also consider likely global scenario changes in the next 20-25 years.
- c) **Research Paper Guidelines:** Times New Roman style 12 – point font, double-spaced, references should follow the Chicago Style guidelines:
http://www.chicagomanualofstyle.org/tools_citationguide.html
- d) **Grading Procedure:** Grading procedure will be based on the following criteria: a) Does the weekly discussion and the research upon which it is based have a clear, and creative core argument? b) Is that core argument well-supported? c) Is it well-written? And d) Can we draw policy implications from it?
- e) **Grading Scale:** Your final grade will be a combination of the points assigned to the Discussions (50 points) and your research paper project (50 points).

The scale used is as follows: 95-100 = A+/A, 90-95= A/A-, 85-90 = A-/B+, 80-85 = B+/B, 75-80 = B/B-, 70-75 = B-/C+, 65-70 = C+/C, <65 = F

Honor Code: UNM formally recognizes the responsibility of our students and professors to behave in an ethical manner.



Netiquette

- *"In following with the UNM Student Handbook, all students will show respect to their fellow students and instructor when interacting in this course. Take Netiquette suggestions seriously. Flaming is considered a serious violation and will be dealt with promptly. Postings that do not reflect respect will be taken down immediately."* (Rebecca Adams, OLIT 535)
- *"This course encourages different perspectives related to such factors as gender, race, nationality, ethnicity, sexual orientation, religion, and other relevant cultural identities. The course seeks to foster understanding and inclusiveness related to such diverse perspectives and ways of communicating."*
- Link to Netiquette document: <https://canvasinfo.unm.edu/students/intro-to-canvas/netiquette.html>

Copyright Issues

All materials in this course fall under copyright laws and should not be downloaded, distributed, or used by students for any purpose outside this course.

Accessibility

The American with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodations of their disabilities. If you have a disability requiring accommodation, please contact the UNM Accessibility Resource Center in 2022 Mesa Vista Hall at 277-3506 or <http://as2.unm.edu/index.html>. Information about your disability is confidential.

Academic Misconduct

You should be familiar with UNM's [Policy on Academic Dishonesty](http://pathfinder.unm.edu/campus-policies/other-campus-policies.html) and the [Student Code of Conduct](http://pathfinder.unm.edu/campus-policies/other-campus-policies.html) (<http://pathfinder.unm.edu/campus-policies/other-campus-policies.html>) which outline academic misconduct defined as plagiarism, cheating, fabrication, or facilitating any such act.

Example Drop Policy:

This section states your departmental policy for dropping students.

UNM Policies: This course falls under all UNM policies for last day to drop courses, etc. Please see <http://www.unm.edu/studentinfo.html> or the UNM Course Catalog for information on UNM services and policies. Please see the UNM academic calendar for course dates, the last day to drop courses without penalty, and for financial disenrollment dates.

VI - Technical Skills

In order to participate and succeed in this class, you will need to be able to perform the following basic technical tasks:

- Use UNM's CANVAS platform (www.canvas.unm.edu).
- Use email – including attaching files, opening files, downloading attachments
- Copy and paste within applications including Microsoft Office
- Open a hyperlink (click on a hyperlink to get to a website or online resource)
- Use Microsoft Office applications



- Create, download, update, save and upload MS Word documents
- Create, download, update, save and upload MS PowerPoint presentations
- Create, download, update, save and upload MS Excel spreadsheets
- Download, annotate, save and upload PDF files

Technical Requirements

Computer

- A high-speed Internet connection is highly recommended.
- Supported browsers include: Internet Explorer, Firefox, Chrome, and Safari. Detailed Supported Browsers and Operating Systems: <https://canvasinfo.unm.edu/support/index.html>
- Any computer capable of running a recently updated web browser should be sufficient to access your online course. However, bear in mind that processor speed, amount of RAM and Internet connection speed can **greatly** affect performance. Many locations offer free high-speed Internet access including [UNM's Computer Pods](#).
- Microsoft Office products are available free for all UNM students (more information on the UNM IT Software Distribution and Downloads page: <http://it.unm.edu/software/index.html>).

For UNM Canvas Technical Support: <https://canvasinfo.unm.edu/support/index.html>

VII - Reading List Content: Readings for this course come from a variety of sources.

Required Textbook: P.E. Nielsen, *Effects of Directed Energy Weapons* (CreateSpace Independent Publishing Platform, an Amazon Company, Seattle, WA, 2012) available at the UNM Bookstore or from Amazon.com (https://www.amazon.com/Effects-Directed-Energy-Weapons-Nielsen/dp/1478268573/ref=sr_1_1?s=books&ie=UTF8&qid=1484425668&sr=1-1&keywords=effects+of+directed+energy+weapons). Additional readings will be provided in the on-line folders.

VIII – 2-Day Workshop

Our meetings on October 08-09, 2026, will explore all areas that we have developed in class. In these days, we will conduct the instructor feedback as well as the wrap-up for the course and presentations of the final projects for each student. This will be held jointly with GLNS 510 – *Cybersecurity and National Security* (Prof. Chris Lamb).

SYLLABUS¹

Week 1 – August 17, 2026

Nielsen Chapter 1 – Basic Principles – supplemented by readings in the Week 1 Folder; participate in the weekly discussion.

Week 2 – August 24, 2026

Nielsen Chapter 3 – Laser Fundamentals (pp. 81-141) – supplemented by readings in the Week 2 Folder; participate in the weekly discussion.

Week 3 – August 31, 2026

¹ Subject to updates and based on enrollment



Nielsen Chapter 3 – Laser Fundamentals (pp. 142-205) – supplemented by readings in the Week 3 Folder; participate in the weekly discussion.

Week 4 – September 07, 2026

Nielsen Chapter 4 – Microwaves – supplemented by readings in the Week 4 Folder; participate in the weekly discussion; submit proposal for final project.

Week 5 – September 14, 2026

Directed energy laser efficacy, countermeasures, applications, ethics and policy issues – readings in the Week 5 Folder; participate in the weekly discussion; review feedback on proposal for final project.

Week 6 – September 21, 2026

Directed energy microwave efficacy, countermeasures, applications, ethics and policy issues – readings in the Week 6 Folder; participate in the weekly discussion; work on final project.

Week 7 – September 28, 2026

Global and geopolitical perspective on directed energy – readings in the Week 7 Folder; participate in the weekly discussion; work on final project.

Week 8 – October 05, 2026

What are the barriers to the deployment of directed energy? – readings in the Week 8 Folder; participate in the weekly discussion; complete final project paper and prepare presentation [additional instructions on this will be conveyed to the students in the second week of the course]; **October 08-09, 2026** – joint workshop with GLNS 510 – *Cybersecurity and National Security* (Prof. Chris Lamb) via Zoom.

Final papers due by 5 PM Monday October 12, 2026



FALL 2026 ADDITIONAL SYLLABUS INFORMATION

Accommodations: UNM is committed to providing equitable access to learning opportunities for students with documented disabilities. As your instructor, it is my objective to facilitate an inclusive classroom setting, in which students have full access and opportunity to participate. To engage in a confidential conversation about the process for requesting reasonable accommodations for this class and/or program, please contact [Accessibility Resource Center](mailto:arcsrvs@unm.edu) at arcsrvs@unm.edu or 505-277-3506.

UAP 2720 and 2740. Our classroom and university should foster mutual respect, kindness, and support. If you have concerns about discrimination, harassment, or violence, please seek [support](#) and [report](#) incidents. Find confidential services at [LoboRESPECT Advocacy Center](#), [the Women's Resource Center](#), and the [Arcoiris Center](#). UNM prohibits discrimination on the basis of sex (including gender, sex stereotyping, gender expression, and gender identity). All instructors are "responsible employees" who must [communicate reports](#) of sexual harassment, sexual misconduct and sexual violence to [Compliance, Ethics and Equal Opportunity](#). For more information, please see [UAP 2720](#) and [UAP 2740](#).

Credit-hour statement: This is a three credit-hour course. This is an 8-week online course during the Fall 2026 semester with no meetings except for the Workshop at the end. Please plan for a *minimum* of six hours of out-of-class work (or homework, study, assignment completion, and class preparation) each week.

Selective Generative AI Use. You may use AI to perform research for your final report. You cannot have AI write your final report for you. If you use AI to perform research you need to disclose: 1) which sections of your report were based on AI generated content, 2) what AI tool you used, and 3) how did AI enhance your report.