UNSW Course Outline

ZINT8301 Lethality and Survivability - 2024

Published on the 11 Feb 2024

General Course Information

Course Code : ZINT8301
Year : 2024
Term : Semester 1
Teaching Period : Z1
Is a multi-term course? : No
Faculty : UNSW Canberra
Academic Unit : School of Engineering and Technology
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : UNSW Canberra at ADFA
Campus : UNSW Canberra
Study Level : Postgraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

This 6UOC course provides an overview of the technical factors that affect the military use of explosives and propellants, armour materials, guns, guided weapons and light weapons. Topics include military ballistics, gun design, gun fire control, warhead design (including guided

weapons), terminal effects and the penetration of armour. **This course is restricted to CTMC members and guests.**

Course Learning Outcomes

Course Learning Outcomes
CLO1 : On successful completion of this course, the student will be able to explain the properties and effects of explosives when used as propellants, in warheads and demolitions
CLO2 : On successful completion of this course, the student will be able to describe the qualities, properties, characteristics and manufacture of materials used in the construction of armour, guns and ammunition
CLO3 : On successful completion of this course, the student will be able to recognise weapon and ammunition design principles, and their implications for weapons systems design, selection and performance
CLO4 : On successful completion of this course, the student will be able to appraise the influence of interior, intermediate, exterior and terminal ballistics on ammunition and weapon systems design
CLO5 : On successful completion of this course, the student will be able to describe gun design principles and their implications for equipment selection

Course Learning Outcomes	Assessment Item
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Learning and Teaching Technologies

Moodle - Learning Management System

Learning and Teaching in this course

Teaching Strategies

The course is structured around a series of lecture-style presentations and discussions on specialist topics. Some content will be available online including pre-recorded content. The course notes, which form the basis of the presentations, are supplemented by commercial and technical resource materials which will be available on the MOODLE site for the course.

Reference to these resources is recommended in preparation for the examination(s). Your ability to utilize and integrate a range of technical resources in the assessment tasks will be a major criterion for superior performance in the course. Reference to these supplementary resources will greatly enhance your understanding of the various topics and develop an appreciation of the many types and formats of reference material which you may expect to be exposed to, and make use of, in your professional life.

Your active participation in the presentations is highly valued and will contribute significantly to the overall benefit and outcomes of the course.

Assessment Requirements

All marks obtained for assessment items during the session are provisional. The final mark as published by the university following the assessment review group meeting is the only official mark.

The Learning Management System

Moodle is the Learning Management System used at UNSW Canberra. All courses have a Moodle site which will become available to students at least one week before the start of semester. Please find all help and documentation (including Blackboard Collaborate) at the Moodle Support page.

UNSW Moodle supports the following web browsers:

» Google Chrome 50+
» Safari 10+
** Internet Explorer is not recommended

** Addons and Toolbars can affect any browser's performance.

Operating systems recommended are:

Windows 7, 10, Mac OSX Sierra, iPad IOS10

For further details about system requirements click here.

Log in to Moodle here.

If you need further assistance with Moodle:

For enrolment and login issues please contact:
IT Service Centre
Email: itservicecentre@unsw.edu.au
Phone: (02) 9385-1333
International: +61 2 9385 1333

For all other Moodle issues please contact:
External TELT Support
Email: externalteltsupport@unsw.edu.au
Phone: (02) 9385-3331
International: +61 2 938 53331

Opening hours:
Monday – Friday 7:30am – 9:30 pm
Saturday & Sunday 8:30 am – 4:30pm

Additional Course Information

Referencing

In this course, students are required to reference following the APA 7 / Chicago NB referencing style. Information about referencing styles is available at: https://guides.lib.unsw.adfa.edu.au/c.php?g=472948&p=3246720

Study at UNSW Canberra

https://www.unsw.adfa.edu.au/study

Study at UNSW Canberra has lots of useful information regarding:

- Where to get help
- Administrative matters
- Getting your passwords set up
- How to log on to Moodle
- Accessing the Library and other areas.

Additional Information as required

CRICOS Provider no. 00098G

The University of New South Wales Canberra.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Quiz 1 Assessment Format: Individual	20%	Start Date: 11/03/2024 12:00 AM Due Date: 17/03/2024 11:59 PM
Quiz 2 Assessment Format: Individual	20%	Start Date: 22/04/2024 12:00 AM Due Date: 28/04/2024 11:59 PM
Quiz 3 Assessment Format: Individual	20%	Start Date: 20/05/2024 12:00 AM Due Date: 26/05/2024 11:59 PM
Capstone Assignment Assessment Format: Group	40%	Start Date: Not Applicable Due Date: 07/06/2024 12:00 AM

Assessment Details

Quiz 1

Assessment Overview

n/a

Quiz 2

Assessment Overview

n/a

Quiz 3

Assessment Overview

n/a

Capstone Assignment

Assessment Overview

n/a

Detailed Assessment Description

ZINT8301 Capstone Assignment (40%) Due 14 Jun 2355 h Include an executive summary (one page limit) Word limit 5500 words, excluding technical appendices (unlimited)

The use of generative AI such as Chat GPT is expressly prohibited.

This is an academic paper, so take care to use appropriate references.

Guided by the assignment rubric, evaluate and compare two weapons systems of your choice.

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Oquiz 1 is due 17 Mar, feedback and grades will be given to students by the census date (24th of March).

Late Submission of Assessment

Unless prior arrangement is made with the lecturer or a formal application for special consideration is submitted, a penalty of 5% of the total available mark for the assessment will apply for each day that an assessment item is late up to a maximum of 5 days (120 hours) after which an assessment can no longer be submitted and a grade of 0 will be applied.

Use of Generative AI in Assessments

NO ASSISTANCE

It is prohibited to use any software or service to search for or generate information or answers. If its use is detected, it will be regarded as serious academic misconduct and subject to the standard penalties, which may include 00FL, suspension and exclusion.

Grading Basis

Standard

Requirements to pass course

A 50% overall mark with submission of all pieces of assessment is required to pass the course.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 26 February - 1 March	Lecture	Introduction to Explosives The Explosion Process
Week 2 : 4 March - 8 March	Lecture	High Explosives I High Explosives II
Week 3 : 11 March - 15 March	Lecture	Propellants Insensitive Munitions
	Assessment	Quiz 1 (20%)
Week 4 : 18 March - 22 March	Tutorial	Explosives and Munitions Tutorial
Week 5 : 25 March - 29 March	Lecture	Introduction to Materials
Week 6 : 1 April - 5 April	Lecture	Mechanical Behaviour Engineering of Materials
Week 7 : 22 April - 26 April	Lecture	KE Attack Mines
	Assessment	Quiz 2 (20%)
Week 8 : 29 April - 3 May	Tutorial	Materials Tutorial
Week 9 : 6 May - 10 May	Lecture	Interior and Intermediate Ballistics Exterior Ballistics
Week 10 : 13 May - 17 May	Lecture	Wound Ballistics HEAT and EFP 1
Week 11 : 20 May - 24 May	Lecture	HEAT and EFP 2
	Assessment	Quiz 3 (20%)
Week 12 : 27 May - 31 May	Lecture	Ceramics and Composites ERA and ADS
Week 13 : 3 June - 7 June	Lecture	Air and Maritime Weapons Survivability Techniques
	Assessment	Capstone Assignment (40%)

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

Course Resources

Prescribed Resources

Hazell, PJ: Armour: Materials, Theory, and Design, CRC Press (2022), 2nd ed., ISBN: 978-0367419714.

Recommended Resources

Akhavan, J: The Chemistry of Explosives, 3rd Ed, RSC Publishing (2011), ISBN: 978-1-84973-330-4.

Hazell, PJ: The Story of the Gun: History, Science, and Impact on Society, Springer (2021), ISBN: 978-3-030-73652-1.

Callister, W. D. & Rethwisch, D. G: Materials Science and Engineering: An Introduction, 10th Ed, Wiley (2018), ISBN-13: 9781119321590.

Doig, A: Military Metallurgy, Maney Publishing, Institute of Materials (2002), ISBN: 1-86125-061-4.

Carlucci, D.E., Jacobson, S. S., Ballistics: Theory and Design of Guns and Ammunition, CRC Press (2007), ISBN: 9 781420066 197.

Meyers, MA: Dynamic behaviour of materials, Wiley (1994), ISBN: 9 780471582 625.

Rosenberg, Z and Dekel, E: Terminal ballistics, Springer (2012), ISBN: 3 642253 040.

Course Evaluation and Development

One of the key priorities in the 2025 Strategy for UNSW is a drive for academic excellence in education. One of the ways of determining how well UNSW is progressing towards this goal is by listening to our own students. Students will be asked to complete the myExperience survey towards the end of this course.

Students can also provide feedback during the semester via: direct contact with the lecturer, the “On-going Student Feedback” link in Moodle, Student-Staff Liaison Committee meetings in schools, informal feedback conducted by staff, and focus groups. Student opinions really do make a difference. Refer to the Moodle site for this course to see how the feedback from previous students has contributed to the course development.

Important note: Students are reminded that any feedback provided should be constructive and professional and that they are bound by the Student Code of Conduct Policy

https://www.gs.unsw.edu.au/policy/documents/studentcodepolicy.pdf

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Dr Nicholas Kanizaj			+61251145375	By appointment	No	Yes

Other Useful Information

Academic Information

Course Evaluation and Development

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Important note: Students are reminded that any feedback provided should be constructive and professional and that they are bound by the Student Code of Conduct.

https://www.gs.unsw.edu.au/policy/documents/studentcodepolicy.pdf

Equitable Learning Services (ELS)

Students living with neurodivergent, physical and/or mental health conditions or caring for someone with these conditions may be eligible for support through the Equitible Learning Services team. Equitable Learning Services is a free and confidential service that provides practical support to ensure your mental or physical health conditions do not adversely affect your studies.

Our team of dedicated **Equitable Learning Facilitators** (ELFs) are here to assist you through this

process. We offer a number of services to make your education at UNSW easier and more equitable.

Further information about ELS for currently enrolled students can be found at: https://www.student.unsw.edu.au/equitable-learning

Academic Honesty and Plagarism

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW staff and students have a responsibility to adhere to this principle of academic integrity. All students are expected to adhere to UNSW's Student Code of Conduct. Find relevant information at: Student Code of Conduct (unsw.edu.au)

Plagiarism undermines academic integrity and is not tolerated at UNSW. It is defined as using the words or ideas of others and passing them off as your own, and can take many forms, from deliberate cheating to accidental copying from a source without acknowledgement.

For more information, please refer to the following:

https://student.unsw.edu.au/plagiarism

Submission of Assessment Tasks

Special Consideration

Special Consideration is the process for assessing and addressing the impact on students of short-term events, that are beyond the control of the student, and that affect performance in a specific assessment task or tasks.

Applications for Special Consideration will be accepted in the following circumstances only:

- Where academic work has been hampered to a substantial degree by illness or other cause;
- The circumstances are unexpected and beyond the student's control;
- The circumstances could not have reasonably been anticipated, avoided or guarded against by the student; and either:

(i) they occurred during a critical study period and was 3 consecutive days or more duration, or a total of 5 days within the critical study period; or

(ii) they prevented the ability to complete, attend or submit an assessment task for a

specific date (e.g. final exam, in class test/quiz, in class presentation)

Applications for Special Consideration must be made as soon as practicable after the problem occurs and at the latest within three working days of the assessment or the period covered by the supporting documentation.

By sitting or submitting the assessment task the student is declaring that they are fit to do so and cannot later apply for Special Consideration (UNSW 'fit to sit or submit' requirement).

Sitting, accessing or submitting an assessment task on the scheduled assessment date, after applying for special consideration, renders the special consideration application void.

Find more information about special consideration at: https://www.student.unsw.edu.au/special/consideration/guide

Or apply for special consideration through your MyUNSW portal.

Late Submission of assessment tasks (other than examinations)

UNSW has a standard late submission penalty of:

- 5% per day,
- capped at five days (120 hours) from the assessment deadline, after which a student cannot submit an assessment, and
- no permitted variation.

Students are expected to manage their time to meet deadlines and to request extensions as early as possible before the deadline.

Electronic submission of assessment

Except where the nature of an assessment task precludes its electronic submission, all assessments must be submitted to an electronic repository, approved by UNSW or the Faculty, for archiving and subsequent marking and analysis.

Release of final mark

All marks obtained for assessment items during the session are provisional. The final mark as published by the university following the assessment review group meeting is the only official mark.