



Course Syllabus
Tactical and Ethical Aspects of Autonomous Systems

Taktiska och etiska aspekter på autonoma system

Course Code	2FS026	Main Field of Study	Systems Science for Defence and Security
Valid from Semester	Spring 2022	Department	Department of Systems Science for Defence and Security
Education Cycle	Advanced level	Subject	Systems Science for Defence and Security
Scope	7.5	Language of Instruction	The teaching is conducted in English.
Progression	A1N	Decided by	The Research and Education Board's Course Syllabus Committee at the Swedish Defence University
Grading Scale	Fail, Pass, Pass with Distinction	Decision date	2022-01-01
Revision	1.0		

Entry Requirements

Admitted to the Master's Programme in Defence and Security Systems Development.

For freestanding courses: A bachelor's degree with a minimum of 180 credits, including a minimum of 90 credits in the field of defence, crisis management and security. Alternatively, a bachelor's degree in Engineering or equivalent.

Course Content and Structure

The purpose of the course is to deepen the understanding of ethical and tactical aspects on the use and design of autonomous systems in the context of defence and security. The course will involve:

- (1) Autonomous systems in the defence context: systems in use today, ethical and tactical issues connected to these and future systems, including the debate on autonomous systems in the UN
- (2) Definitions of tactics and autonomy
- (3) Autonomous systems and responsibility: the human in the decision loop, meaningful human control
- (4) Autonomous systems and tactics
- (5) Tactical competence, autonomous systems and practical wisdom: how Aristotle's idea in virtues and practical wisdom can contribute to the understanding of tactical competence.

Intended Learning Outcomes

After completing the course, the student is expected to be able to:

Knowledge and understanding:

Describe and categorize ethical and tactical aspects on autonomous systems

Ability:

Analyze and discuss different points in the course theme

Ability to value:

Analyze and value arguments in the course theme debate

Type of Instruction

The course is conducted through lectures and seminars. The course is structured in a manner that provides the student with considerable opportunities to plan their studies individually.



Assessment

Examination

Scope: 7.5

Grading Scale: Fail, Pass, Pass with Distinction

The course is examined through a written unsupervised assignment.

The examiner may decide that supplementary work is required in order for a pass grade to be achieved. Examination papers submitted late will not be graded, unless there are special reasons, which have been approved by the examiner. Supplementary assignments are to be submitted no later than five working days after the notification of results and the supplementary assignment for the examination in question, unless there are special reasons, which have been approved by the examiner.

If the student has a decision from the Swedish Defence University stating the need for extra pedagogical support because of a functional disability, the examiner may decide on alternative examination forms for the student.

Grading

Grades are set according to a three-grade scale: Pass with merit (VG), Pass (G) and Fail (U).

A pass (G) requires a pass (G) for the written unsupervised assignment.

A pass with merit (VG) requires a pass with merit (VG) for the written unsupervised assignment.

Restrictions in Number of Examinations

There is no limit on the total number of examination opportunities. The total number is restricted to one ordinary examination and two retakes in any two-term period, unless special circumstances exist that are acceptable to the examiner.

Restrictions Concerning Degree

The course cannot be included in a degree with another course whose content fully or partially corresponds to the content of this course.

Transitional Provisions

When a course is no longer provided or when the content of a course has been significantly altered, the student/participant retains the right to be examined in accordance with this course syllabus once per term during a three-term period.

Miscellaneous

The course is an elective course in the Master's Programme in Defence and Security Systems Development.

The course can also be read as a freestanding course.

On the completion of the course, an evaluation will be conducted under the auspices of the course director, which will form the basis for any changes to the course.

The course will be held in English. If no international students are admitted, parts of the course may be held in Swedish.

Reading List

Tactical and Ethical Aspects of Autonomous Systems

Taktiska och etiska aspekter på autonoma system

Course Code	2FS026
Revision	1.0
Reading List Valid from Date	2020-01-22
Reading List Decided Date	2020-01-22

Tactical and Ethical Aspects of Autonomous Systems

(A selection from these books and articles will be made)

Altmann, J. & Sauer, F. (2017) Autonomous Weapon Systems and Strategic Stability, *Survival*, 59:5, 117-142,

Amoroso, D. and Tamburrini, G. (forthcoming). What makes “meaningful” the human control over weapons systems? in Giacomello, Moro and Valigi (eds.), *Technology and International Relations: The New Frontier in Global Power*, Edward Elgar

Van Creveld, Martin. (2010) *Technology and war: from 2000 B.C. to the present*. New York: The Free Press. P. 1.

Finkel, M. (2011). *On Flexibility: Recovery from Technological and Doctrinal Surprise on the Battlefield*. Stanford University Press.

Hew, P.C. (2016), ‘Preserving a combat commander’s moral agency: The Vincennes Incident as a Chinese Room’, *Ethics and Information Technology*, 18, pp. 227-235

Johansson, L. (2011). Is it morally right to use UAVs in war? *Philosophy and Technology*, vol. 11, issue 3, 279-291.

Kraut, Richard, "Aristotle's Ethics", *The Stanford Encyclopedia of Philosophy* (Summer 2018 Edition), Edward N. Zalta (ed.), URL = <<https://plato.stanford.edu/archives/sum2018/entries/aristotle-ethics/>>.

Margulies, P. (2017), ‘Making autonomous weapons accountable: command responsibility for computerguided lethal force in armed conflicts’, in J.D. Ohlin (ed), *Research Handbook on Remote Warfare*, Cheltenham UK and Northampton, MA, USA: Edward Elgar, pp. 405-442

Olsthoorn, P. (2011). *Military Ethics and Virtues. An interdisciplinary approach for the 21st century*. Cass Military Studies, New York.

Santoni de Sio, F., van den Hoven, J. (2018). Meaningful Human Control over Autonomos Systems: A Philosophical Account. *Frontiers in Robotics and AI*. Vol 5, art. 15.

Saxon, D. (2016). “Autonomous drones and individual criminal responsibility,” in *Drones and Responsibility: Legal, Philosophical, and Socio-Technical Perspectives on the Use of Remotely Controlled Weapons*, eds E. Di Nucci and F. Santoni de Sio (Routledge), 17–46.

Scharre, P. (2018) *Army of None – Autonomous Weapons and the Future of War*. Norton, New York.

Sparrow, R., Lucas, G. (2016). When Robots rule the waves? *Naval War College Review*. Vol 69, No. 4.

Sörenson, K. and Widén, J. (2014). Irregular Warfare and Tactical Changes: The Case of Somali Piracy. *Terrorism and Political Violence*, 26:399–418, p. 402.