



POLITIHØGSKOLEN

CURRICULUM

POSTGRADUATE EDUCATION

In

**NORDIC COMPUTER FORENSIC
INVESTIGATORS**

MODULE 3F: MEMORY INVESTIGATION

7.5 credits

**Approved by the Police University College Board 5th December
2018. Changes approved by the head of department
30th November 2023**

1. Introduction and purpose

Traditionally most of the investigation on personal computers have been focused on data stored on disk. A personal computer also has a large amount of data stored in main memory (RAM). This data is temporary and is available while the machine is running. The importance of this temporary storage has been known to reveal traces of evidential value or other information for further use in investigation. Memory contains information about the most recent activities from the user, possible passwords and encryption keys. The content of memory is not as well organized as a file system on disk and collecting from this storage requires more knowledge and skill for the investigator. In a time when more personal computers have encrypted disk content, it is now more important to have alternate sources of evidence or information.

It is now essential that more police officers are trained in memory investigation in order to improve the effectiveness of investigation.

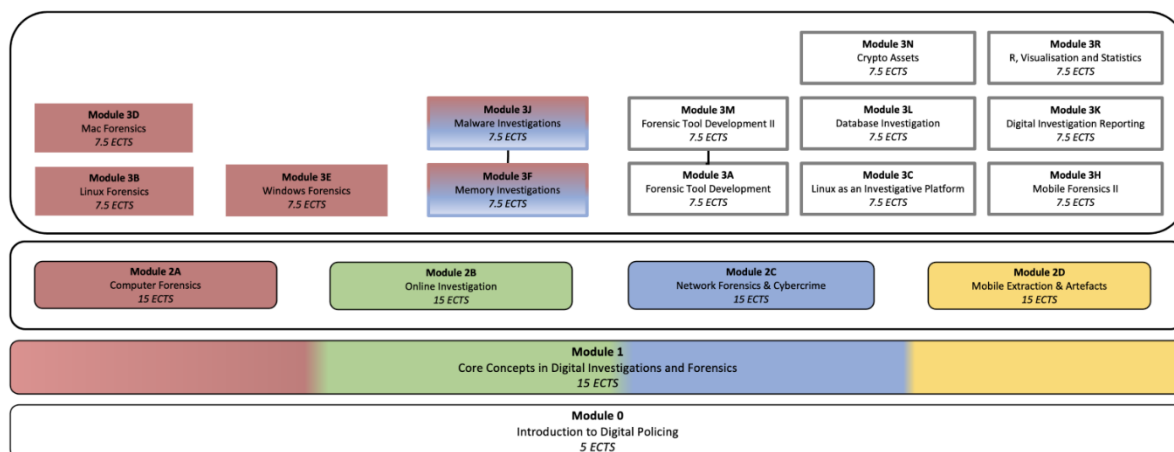
The postgraduate study programme shall contribute to police practitioners being better able to perform investigative and analysis tasks involving digital devices, and thus contribute to the quality and development of digital investigation and forensics.

2. When applicable: Educational pathways and formal approval

2.1. Education

The education gives 7.5 credits and is included as a course in an educational portfolio (the 'NCFI Portfolio') according to the following model depicted below.

Admission requirements, content and organisation of the individual courses are described in more detail in the study plan for each course.



3. Target group and admission requirements

3.1. Target group

The primary target group for this education is police staff in the Nordic countries whose main task is, or will be, handling and investigating digital evidence.

Employees in other international police services or governmental agencies who currently work, or will work, with digital evidence are also eligible to apply.

Applicants must be recommended by the employer.

3.2. Admission Requirements

Applicants must document the following requirements:

Education:

- Bachelor's degree
- have passed M2A Computer Forensics of 15 ECTS **or** M2C Network Forensics and Cybercrime of 15 ECTS.¹

Applicants who do not satisfy the requirement for a bachelor's degree must document the following:

- Passed and completed 2-year education at a higher level than upper secondary school, and in addition either:
 - o Minimum 60 ECTS

¹ The former NCFI Module 2 (25 ECTS) is also accepted.

- (of which NCFI Core Concepts of 15 ECTS and any NCFI M2X of 15 ECTS each. The former NCFI Module 1 (5 ECTS) and former NCFI Module 2 (25 ECTS) are also accepted.), or
- 1680 hours of continuing education courses, or
- 5 years of practice

Employment, work experience and additional requirements:

- Current employment in a government agency (e.g., law enforcement agency or other cooperating governmental agencies/organisations)

4. Learning outcomes

4.1. General Competence

After completing the module, students can:

- perform professional and research tasks in digital policing
- see the role of digital policing in a broader perspective during an investigation

4.2. Knowledge

After completing the module, students have knowledge of:

- the potential of computer memory in investigation
- how information is stored in computer memory and the potential traces that can be found
- the challenges of memory acquisition and analysis

4.3. Skills

After completing the module, students will be able to:

- acquire computer memory
- interpret information stored in memory using forensic tools
- compare various memory acquisition techniques
- evaluate the relevance of memory artefacts to an investigation

5. Organisation of teaching and learning activities

The education is organised as an online part-time programme and must be completed within 5 months. The scope of further education is estimated to be approx. 210 hours of study.

Teaching and learning activities shall contribute to providing students with good learning outcomes, and emphasis is placed on flexible and diverse working methods with a high degree of student activity. Furthermore, the study is organised around key issues and challenges in the investigation of electronic traces, which are illuminated with relevant theory.

The teaching and learning activities include lectures, presentations, individual and group work, practical exercises, cases, quizzes, assignments, and literature study. Student support will be delivered via electronic means such as: email, discussion fora, chat, and virtual classrooms. The teaching and learning activities also include optional live online lectures throughout the semester (totalling no more than 8 hours).

An online learning platform is used in the administration and pedagogical implementation of the programme.

Coursework requirements

The following requirements must be approved before the students can take the exam:

- Successful completion of up to 10 automatically graded online quizzes. (Students may have multiple attempts at these tests, if necessary.)
- Two assignments

Guidance will be given related to the coursework requirements.

6. Assessment

Students are assessed along the way through coursework requirements and receive feedback on these according to specified criteria based on the descriptions of learning outcomes.

The module is concluded with an individual take-home exam over 4 hours.

The exam **must** be passed in order to successfully complete the module.

Letter grades are used on a scale from A to F, where A is the highest passing grade, E is the lowest passing grade and F is a failing grade.

7. Literature

7.1. Syllabus

Students will be expected to read several web resources, lessons, reports, and academic research papers. These will form part of the mandatory reading requirements and thus be examinable.

Due to the rapid changes in the fields of digital forensics and cybercrime investigation, such resources must be provided to students during the study. This will ensure that the reference materials are up to date and based on current trends.

The mandatory reading shall not exceed 450 pages.

7.2. Assumed Knowledge

Literature from The Norwegian Police University College's NCFI M1 Core concepts in Digital Investigation and Forensics of 15 ECTS, **and** M2A Computer Forensics of 15 ECTS **or** M2C Network Forensics and Cybercrime of 15 ECTS (or similar education).