Master Forensic Science
Information Session, 15 February 2024,
Yorike Hartman, August de Heij,
Anne-Celeste de Kruijff
Programme Team

Yorike Hartman
- Programme coordinator

August de Heij
- Study adviser

Anne-Celeste de Kruijff
- Second year student
- Background Molecular Life Sciences
Take home messages

• Research not investigation
• Theoretical not practical (first year)
• Full-time master
• Selective
• International
• In-depth Interpretation of Evidence (first year)
• Disciplinary specialisation (second year)
Overview scientific background 23-24

- Biology
- Biomedical Sciences
- Psycho-biology
- Biochemistry/biotechnology
- Chemistry
- Pharmaceutical Sciences
- Physics
- Mathematics
- Computer Science, AI
- Engineering
- Forensisch research
- Other

28% international students
A truly international programme with alumni and students from 36 countries
A truly international programme with alumni and students from 36 countries

492 alumni and 74 students
What has happened here?
What is forensic science?

Forensic Science is the application of a broad spectrum of sciences to answer questions of interest to a legal system.
Seeing the big picture & Sharp eye for detail
First year: Seeing the big picture

- Overview forensic process and areas of expertise
- Focus on forensic reasoning
- Professional skills: teamwork and communication
- Many guest lectures from the forensic field

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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<tbody>
<tr>
<td>Criminalistics Applied to Forensic Chemistry (6 EC)</td>
<td>Research and Innovation in Forensic Biophysics (6 EC)</td>
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<td>Statistics for Forensic Science (5 EC)</td>
<td>Logic and the Human Factor in Forensic Reasoning (5 EC)</td>
<td>Forensic Statistics and DNA evidence (6 EC)</td>
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<td>Chain of Evidence (6 EC)</td>
<td>Cybercrime, Digital Traces and Forensic Data Analysis (6 EC)</td>
<td>Criminal Law and Expert Evidence (6 EC)</td>
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<td>Policy, Ethics and Media (6 EC)</td>
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<td>Professional Development (2 EC in 2 years)</td>
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## Second year: Sharp eye for detail

### Specialisation in your own expertise
- Advanced Forensic Course
- Disciplinary master courses
- Literature Thesis
- Research project

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Specialisation course**</th>
<th>Forensic Elective* Observer Based Techniques or Physical and Forensic Anthropology (6EC) or Specialisation course**</th>
<th>Research project (36 EC)</th>
</tr>
</thead>
</table>
|        | Advanced Forensic Biology (6 EC) (4 Weeks) | * Students need a total of 18 EC for Elective and Specialisation Courses combined or Specialisation Courses only. Therefore:  
  * Elective Courses should add up to 6 EC or no Elective Course is followed  
  ** Specialisation Courses should add up to 12 or 18 EC | |
<p>|        | Specialisation course** (Block 1 or 2) | * | |
|        | Literature Thesis (5 EC) | | |
|        | Professional Development (2 EC in 2 years) | | |</p>
<table>
<thead>
<tr>
<th>Monday, November 4</th>
<th>Tuesday, November 5</th>
<th>Wednesday, November 6</th>
<th>Thursday, November 7</th>
<th>Friday, November 8</th>
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</table>
| Logic and the Human Factor in Forensic Reasoning  
Hoorcollege, SP D1.116 | Logic and the Human Factor in Forensic Reasoning  
Workcollege, SP A1.28 | Research and Innovation in Forensic Biophysics  
Practicum, SP G2.23 | Logic and the Human Factor in Forensic Reasoning  
Hoorcollege, SP G2.10 | Logic and the Human Factor in Forensic Reasoning  
Hoorcollege, SP F2.04 |
| Research and Innovation in Forensic Biophysics  
Hoorcollege, SP F2.04 | | | | |
| Professional Development  
Workcollege (A,B), SP G0.05, SP A1.34 | | | | |
# A week in the curriculum

<table>
<thead>
<tr>
<th>Monday, October 3</th>
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<td>Statistics for Forensic Science&lt;br&gt;Hoorncollege</td>
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<td>Professional Development&lt;br&gt;Werkcollege</td>
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<td>Criminalistics and Analytical Chemistry&lt;br&gt;Hoorncollege</td>
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<td></td>
<td></td>
<td>Statistics for Forensic Science&lt;br&gt;Vrijeuur</td>
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Criminalistics and Analytical Chemistry
### Table 4. Summary of expected values and likelihood ratios for the glass traces from suspect van Dam.

| Scenario                                                                 | Expected $(E|H)$ | $P$  | Expected $P(E|H)$ | Expected LR |
|--------------------------------------------------------------------------|------------------|------|-------------------|-------------|
| No glass fragments are recovered                                         | 0.1              | 0.3  | 0.33              |             |
| Few (0-4) glass fragments are recovered, matching the glass found at the crime scene | 0.32             | 0.005| 64                |             |
| Few (0-4) glass fragments are recovered, not matching the glass found at the crime scene | 0.08             | 0.445| 0.18              |             |
| Many (>4) glass fragments are recovered matching the glass found at the crime scene | 0.4              | 0.002| 200               |             |
| Many (>4) glass fragments are recovered not matching the glass found at the crime scene | 0.1              | 0.198| 0.5               |             |
Moot court
Literature thesis
Gunshot- and explosive residue sampling in forensic science

• Which sampling methods are specifically designed for forensic purposes?

• If the method is not developed for forensic science, what is it?
Forensic Research Center
http://www.clhc.nl
Forensic Statistics

Digital Forensics

Student: Marianna Redeli
Research carried out at: NFI
Supervisor: Prof. Dr. Ing. Zeno Geradts
Title thesis: Clothing identification via deep learning: forensic applications

Abstract: Usually, people can be described based on their clothing, which can be considered a visual cue to facilitate the process of identifying individuals. The research project aims to identify people based on the visual information that can be drawn from the attire they wear. Deep learning has been applied in this project in order to train the computer in classifying images with clothing content. Initially, the research involves clothing type classification in a large scale dataset. Unfortunately, the model performs poorly on the large scale dataset. In addition to that, the second part of the research applies clothing attribute classification in a dataset containing popular logos and famous brands images. The results show that the model

Student: Yara van Schaik
Research carried out at: Dutch Forensic Institute (NFI)
Supervisor: Dr Peter Vergeer
Title thesis: Measuring calibration of likelihood ratio systems

Abstract: When forensic evidence is examined, the conclusions are summarized by a weight of evidence, most commonly the likelihood ratio. There are several methods to calculate these ratios and good performance of such models is essential. Calibration is a performance characteristic and this property can be measured. Different methods to measure the calibration of an LR system are available, and four of them are
Overview of our students’ projects

Students finish the programme by carrying out a research project to expand their scientific professional skills. This research can be done in the Netherlands or abroad, within or outside our institute, a police department or with other organizations in which forensics play a role. It can be on topics ranging from epigenetics to fire investigation to cybercrime and more.

Research Project Guide MFS UvA 2019-2020
Research Project Guide MFS UvA 2017-2018
Article

Osteonal Damage Patterns from Ballistic and Blunt Force Trauma in Human Long Bones

Keira Sexton, Nathalie Schwab, Ignasi Galtés, Anna Casas, Nuria Armentano, Pedro Brillas, Xavier Garrido and Xavier Jordana

sensors

Article

Rapid and On-Scene Chemical Identification of Intact Explosives with Portable Near-Infrared Spectroscopy and Multivariate Data Analysis

Irene M. van Damme, Pol Mestres-Fitó, Henk-Jan Ramaker, Annemieke W. C. Hulsbergen, Antoine E. D. M. van der Heijden, Ruben F. Kranenburg and Arian C. van Asten
Events:
Frontiers of Forensic Science & Annual Symposium

Symposium
How can advanced technologies boost criminal investigations?

Wildlife Forensic Academy

Recent Advances in Forensic (Epi)Genetics

Career examples
Career examples

Forensic advisor

Consultant Forensic Technology

PhD student: “Using drones and remote sensing to locate clandestine graves.”

PhD student: “From identification to a chemical fingerprint for explosives in forensic research”
Forensic Expert: DNA Analyst

Nederlands Forensisch Instituut
Ministerie van Justitie en Veiligheid

Forensic Weapons expert

Forensic Expert: Data scientist – Team High Tech Crime

State Criminal Police Office Berlin, Forensic Science Institute

Forensic Scientist - Crime Scene Unit at Forensic Science Institute, State Criminal Police Office Berlin

Career examples

Consultant Forensic Technology

PhD student: “Using drones and remote sensing to locate clandestine graves.”

Universiteit van Amsterdam

PhD student: “From identification to a chemical fingerprint for explosives in forensic research.”
Application

• Procedure see: uva.nl/mfs
• Reference letter from an academic staff member
• Motivation letter
• Deadlines:
  • Dutch/EU: April 30th, 2024
  • Non-EU: January 31st, 2024

Admission

• By assessment committee
• Assessment interview
More information

http://www.uva.nl/mfs
http://www.clhc.nl

August de Heij:
studieadviseur-iis@uva.nl
Programme:
fs-iis-science@uva.nl
More information

http://www.uva.nl/mfs
Chat via Unibuddy

Meet the Master
Want to know if Forensic Science suits you?
Accompany a Master’s student in their daily study routine and find out!

Yes, sign me up! →
# Curriculum

## Curriculum MSC Forensic Science 2024-2025

### Semester I

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### Professional Development (2 ECTS in 2 years)

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