



 CERTIFICATE OF ADVANCED STUDIES (CAS) / ONLINE COURSE

Statistics and the Evaluation of Forensic Evidence

TARGET AUDIENCE

Practitioners from any forensic discipline – e.g. reporting officers, chief scientists, lawyers – with a University degree (at least BSc) or an equivalent degree of a higher education programme

The course is given in English. For exercises, discussions and one-to-one tutorials, French is available as further language.

ORGANISATION

Faculty of Law, Criminal Justice and Public Administration, University of Lausanne, Switzerland

INTRODUCTION

This online Certificate of Advanced Studies (CAS) is designed to train practitioners in the most up-to-date approaches to the evaluation and interpretation of scientific evidence. It will provide sound theoretical and practical background in probabilistic and statistical reasoning. A probabilistic framework will be established and its use will be illustrated by an extensive set of realistic case studies.

The course addresses practical issues of interpretation that forensic scientists encounter in their daily activities : interpretation of raw data, sampling issues, communication of findings in both written and oral statements.

OBJECTIVES

- To gain specialized and up-to-date knowledge in the field of forensic interpretation and evaluation of evidence
- To master probabilistic reasoning, Bayesian networks and statistical methods using appropriate tools and software
- To manage issues of interpretation at a high level from case reception to court
- To acquire skills in oral and written communication of uncertainty
- To develop independence and self-confidence in solving practical inferential problems
- To gain a harmonised view with regard to interpretation across forensic disciplines and laboratories, including the establishment of Standard Operating Procedures



PROGRAMME

13 months
(4 hours/week)

Core modules

MODULE 1 : UNCERTAINTY IN FORENSIC SCIENCE

Principles of interpretation / Statistics and the nature of probability / Hierarchy of propositions / Statement writing and fallacies / Bayesian networks

MODULE 2 : ASSESSING EVIDENCE GIVEN SOURCE LEVEL PROPOSITIONS

Assigning a likelihood ratio (LR) / The two trace problem / Statement writing / Standard Operating Procedures / Bayesian networks

MODULE 3 : ASSESSING EVIDENCE GIVEN ACTIVITY LEVEL PROPOSITIONS

Estimation of a proportion / Additional factors (transfer, persistence, background) / LR development / Bayesian networks

MODULE 4 : ASSESSING EVIDENCE GIVEN OFFENCE LEVEL PROPOSITIONS

Relevance / Multiple offenders / LR development / Bayesian networks

MODULE 5 : PRE-ASSESSMENT AND MANAGEMENT OF CASES

Case and evidence pre-assessment / Case strategy / Bayesian networks

Specialised modules

MODULE 6a : DNA EVIDENCE

Population genetics / Paternity / Missing persons / Mixtures analysis / MtDNA, STR-Y, further case studies on evaluation of DNA given activity level propositions

MODULE 6b : FROM GLASS TO FINGERPRINTS

Fingerprints and face recognition / Footwear marks and tool marks / Handwriting / Sample size determination / Multivariate data analysis / Glass, fibres, drugs, GSR/FDR

Core module

MODULE 7 : EVIDENTIAL MATTERS

Combination of evidence / Database selection / Cross transfer / Courtroom presentation / Laboratory error

8 months
(4 hours/week)

CURSUS

The *Certificate of Advanced Studies* (CAS) in *Statistics and the Evaluation of Forensic Evidence* represents 597 hours of course (340 hours of asynchronous online teaching + 7 hours of synchronous online teaching + 250 hours of personal work):

- 6 core modules
- 2 specialised modules
- Regular online evaluation on all modules

Participants will take all core modules and choose one of the two specialised modules.

Core modules cover interdisciplinary interpretation issues that cross forensic disciplines. Specific evidential topics such as DNA, micro-traces, marks and impressions or handwriting will be covered in specialised modules.

CERTIFICATION

Participants who successfully completed the course will receive a *Certificate of Advanced Studies* (CAS) in *Statistics and the Evaluation of Forensic Evidence*, delivered by the **University of Lausanne**, which is granted **20 ECTS credits**.



The course is conducted once a year. Dates of the next session are available on the website.



Online course



The course lasts 21 months with a workload per week of :

- 4 hours on the online platform
- 3 to 4 hours of personal work

Course breaks and holidays are included to allow flexibility.



Certificate of Advanced Studies (CAS) in Statistics and the Evaluation of Forensic Evidence (20 ECTS credits)



12,000 Swiss Francs



Online registration
Number of participants is limited

LEARN MORE



ACADEMIC DIRECTORS

- **Dr. Sc. Tacha Hicks**, *Faculty of Law, Criminal Justice and Public Administration (UNIL)* – Trace evidence (including DNA)
- **Prof. Alex Biedermann**, *Faculty of Law, Criminal Justice and Public Administration (UNIL)* – Graphical models
- **Prof. Christophe Champod**, *Faculty of Law, Criminal Justice and Public Administration (UNIL)* – Identification evidence
- **Prof. Franco Taroni**, *Faculty of Law, Criminal Justice and Public Administration (UNIL)* – Forensic statistics

Professor Colin Aitken (University of Edinburgh, Scotland) and **Dr. Sc. Ian Evett** (Principal Forensic Services Ltd., England) will act as consultants and take an active part in the course.

All of them have extensive theoretical and practical experience with evaluation and interpretation from laboratory to courtroom. They have published over the years numerous scholarly papers and textbooks on the subjects of evaluation and statistics in forensic science.

METHODOLOGICAL APPROACH

- Online training will allow the latest knowledge and expertise to be brought directly to your workplace without consideration of distances, travel expenses or time schedules.
- Specialists from well-established forensic institutions and participants will study and discuss case scenarios involving scientific evidence.
- Theoretical online material will be reinforced by formative and evaluative casework exercises.
- Specialised computer programs for evaluation and interpretation will be used (e.g. R, Hugin) and a registered forum will allow the sharing of hypothetical cases.
- Videoconferences will be organised to support specific learning tasks.
- Participants will also have an opportunity to put together a personal portfolio.

REGISTRATION

Fill in the online registration form and upload your CV and copies of your diplomas.

Preference will be given to forensic scientists with casework and reporting experience.

CONTACT

For academic questions:
sefe@unil.ch

«There is a critical need in most fields of forensic science to raise the standards for reporting and testifying about the results of investigations.»

National Research Council, Strengthening Forensic Science in the United States : A Path Forward. Committee on Identifying the Needs of the Forensic Sciences Community, Committee on Applied and Theoretical Statistics (2009) p. 6-3