

## Liverpool John Moores University

Title: MOLECULAR FORENSICS  
Status: Definitive  
Code: **5104FSBMOL** (122133)  
Version Start Date: 01-08-2021

Owning School/Faculty: Pharmacy & Biomolecular Sciences  
Teaching School/Faculty: Pharmacy & Biomolecular Sciences

Team	Leader
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**Academic Level:** FHEQ5  
**Credit Value:** 20  
**Total Delivered Hours:** 60  
**Total Learning Hours:** 200  
**Private Study:** 140

### Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	26
Practical	12
Workshop	20

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	ASS1	Exam	50	2
Report	ASS2	Report	50	

### Aims

*The module's credit rating is 20 credits at level 5. The module is core for the forensic science programme. The content of the module focusses on the genetic basis for forensic identification, commonly used molecular techniques used by DNA analysts and the analyses of forensic data.*

## Learning Outcomes

After completing the module the student should be able to:

- 1 Compare commonly used forensic genetic methods and markers and apply them to forensic casework examples.
- 2 Analyse molecular data relevant to forensic identity testing
- 3 Debate the limitations of commonly used forensic genetic techniques

## Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Exam	1	2	3
Report	2	3	

## Outline Syllabus

*The following topics will be covered:*

- *Genetic polymorphism, mutation, population genetics.*
- *Principles of molecular marker selection, dominance, co-dominance, inheritance, neutral vs selected markers, lineage markers.*
- *Development of forensic genetic identity testing, key concepts and issues relating to implementation.*
- *Applied forensic laboratory techniques e.g. RFLP, PCR, PCR-RFLP, RAPD, DNA Extraction, qPCR (DNA quantification), RT-PCR, DNA sequencing, genotyping, RNA typing.*
- *Forensic analysis techniques, band interpretation, STR analyses, DNA mixture analysis, DNA sequence analyses, phylogenetic reconstruction, impact of population genetic theory on analysis.*
- *Quality assurance and quality control issues relating to use of forensic genetic techniques.*
- *Bioinformatic techniques relating to marker selection and analyses.*

## Learning Activities

Lectures, practicals, workshops

## Notes

The module focuses primarily on DNA techniques and their impact on forensic science. Skills developed during this module include: analysing and solving problems, teamwork, initiative, creativity, written and oral communication, numerical reasoning, personal planning and organisation, information and communication

technology, as well as subject-specific skills.