<table>
<thead>
<tr>
<th>Module Code</th>
<th>CS7019</th>
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<tbody>
<tr>
<td>Module Name</td>
<td>Bioinformatics</td>
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<tr>
<td>Module Short Title</td>
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<tr>
<td>ECTS weighting</td>
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<tr>
<td>Semester/term taught</td>
<td>Semester 2</td>
</tr>
<tr>
<td>Contact Hours</td>
<td>16 hours. Lecture and computer lab based</td>
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### Module Personnel
Fergus Ryan (DIT, Kevin St.), Patrick Buckley (Beaumont Hospital), Cathal O’Brien (St. James’ Hospital)

### Learning Outcomes
When students have successfully completed this module they should be able to:

- Recognise the structure of DNA
- Describe the structure of human genome
- Discuss the structure of a eukaryotic gene
- Discuss the pathological consequences of genetic mutations
- Access and retrieve the DNA and protein sequences of human genes
- Critically evaluate the use of bioinformatics in DNA and RNA based microarrays

### Module Learning Aims
This module aims to introduce the students to the principles of web based and local biological information retrieval. The student will be able to describe the use of bioinformatics in the analysis of genetic diseases. The student will be competent in the acquisition of DNA sequences from web based databases. The student will be able to discuss the use of microarray technology in the detection of genetic diseases.

### Module Content
Specific topics addressed in this module include:

- Basic Structure of DNA
- Structure of the Human genome and of eukaryotic genes
- Aims and principles of the Human Genome Project
- A review of selected genetic disorders
- A review of web based bio-informatics sites
- Practical aspects of DNA sequence retrieval
- High throughput local database queries
- Principles of microarray screening
- Application of microarray screening and next generation sequencing to the diagnosis of disease

### Recommended Reading List
- Genes XI, Lewin, Jones and Bartlett, 2014
- Genetics and Genomics in Medicine, Tom Strachan, Garland Science, 2015
- Practical Bioinformatics, Michael Agostino, Garland Science, 2013
- Bioinformatics, sequence and genome analysis 2nd Ed, Mount, CSHL Press, 2004

### Module Pre Requisite

### Module Co Requisite

### Assessment Details
Assessment is based on an individual report of between 1,500 and 2,000 words

### Module
N/a
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<td>Academic Start Year</td>
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