<table>
<thead>
<tr>
<th>Academic Year</th>
<th>2009-2010</th>
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<tbody>
<tr>
<td>Module Code</td>
<td>CS7033</td>
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<tr>
<td>Module Title</td>
<td>Real-time Animation</td>
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<tr>
<td>Pre-requisites</td>
<td>C++, OpenGL or equivalent 3D graphics library.</td>
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<td>ECTS</td>
<td>5</td>
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<tr>
<td>Chief Examiner</td>
<td>Veronica Sundstedt</td>
</tr>
<tr>
<td>Teaching Staff</td>
<td>Veronica Sundstedt</td>
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<tr>
<td>Delivery</td>
<td>3 lecture hours per week</td>
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**Aims**
The aim of this course is to provide students with a deep understanding of the theory and techniques behind real time animation. We will explore computer animation and advanced issues such as behavioural animation and motion capture and also look at specific fundamental concepts such as interpolation.

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

- Demonstrate a fundamental understanding of real-time animation algorithms and techniques that would be employed in a typical game.
- Develop and explain code that performs different methods of rotation interpolations.
- Implement and compare various path planning algorithms, such as A* and Dijkstra.
- Develop and explain plug-ins for behavioural animation routines using Boids steering.
- Demonstrate, both orally and in written form, the ability to gather, analyse, and propose a project based on relevant literature in real-time animation and physics.

**Syllabus**
Specific topics addressed in this module include:

- Splines and curves
- Key-frame techniques
- Quaternions for rotations / orientations
- Blending and interpolation
- Motion editing
- Motion graphs and character control
- Animation data representations
- Animation compression techniques
- Behavioural Animation
- Motion quality metrics
## School of Computer Science and Statistics  
**ECTS Module Descriptor**

| Perception in animation  
| Motion capture systems |

### Assessment

Students will undertake three smaller individual programming coursework assignments as well as one larger final project involving the development of a project proposal in real-time animation and physics. Students will be marked on the proposal and their oral presentation.

### Bibliography

- *Advanced Animation and Rendering Techniques*, Watt and Watt.

### Website