## Modeling and Animation (Elective)

Course # COMP 4072

Credits 6

**Prerequisites and/or Corequisites:** Calculus, Linear Algebra, Probability and Statistics, and Computer Graphics (concurrently)

## **Course Description**

The course focuses on two topics, creating computer animation using Blender, and generating photorealistic images using ray tracing. The first 7 weeks will cover geometric modelling, computer animation, shading, texturing, and lighting with the Blender computer animation package.

The last 7 weeks' lecture will cover distributed ray tracing, which can create special effects like recursive reflections in mirror surfaces, depth of field, motion blur, and "global illumination" which simulates multiple light bounces on the scene surfaces. Students will also work on their final animation projects in the last 7 weeks.

There will be a final animation team project, to demonstrate skills with Blender in a creative setting, due during the last class week of the semester.

## **Course Learning Outcomes**

Upon the completion of the course, students will be able to:

- Use surface-based geometric modelling tools for computer aided design.
- Build a character with a skin and skeleton, using Blender.
- Create an animation of a scene that changes in time, with lighting and camera motion.
- Understand the mathematics behind geometric modelling.
- Understand the algorithms behind ray tracing and distributed ray tracing.

## **Course Assessments and Grading**

Item	Weight
Attendance	10%
Homework	20%
In-class exercises	5%
Quizzes	5%
Exams	20%
Final Project	40%