

COSC342 Course Outline

| Week | Lecture | Lab | Tutorial |
|------|--|------------------------------|---|
| 1 | 01: Introduction | | |
| | 02: Blender demonstration | None | Background Skills |
| 2 | 03: Hardware | Blender intro | Essential Mathematics: vectors and matrices |
| | 04: 2D techniques - fills, lines, shapes | | |
| 3 | 05: 2D transformations | Vector and Matrix code | Cos(a+b) expansion |
| | 06: 3D transformations | | Transformation Matrices |
| 4 | 07: Perspective | Blender: work on assignment | Perspective |
| | 08: Visible Surfaces | | |
| 5 | 09: Ray Tracing Intro | OpenGL: 2D -- dots and lines | Ray tracing: setting up the primary ray |
| | 10: Ray Tracing Basics | | |
| 6 | 11: Ray Tracing Triangles and Light | 2D: world vs screen views | Ray tracing: ray intersection with sphere |
| | 12: Ray Tracing Illumination Models | 3D: views; depth buffering | |
| 7 | 13: RT: Refraction; supersampling | 3D: cameras and objects | Ray tracing: point illumination |
| | 14: Ray Tracing: Efficient illumination | 3D: lights and materials | |
| 8 | 15: Ray Tracing Soft Shadows | Work on the assignment | Ray tracing: reflected rays |
| | 16: Ray Tracing Faster | | |

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|-------------|---|---|--|
| 9 | 17: Hierarchical Modelling 18: Modelling Techniques, CSG | Work on the assignment | Open Tutorial - help with the assignment |
| 10 | 19: Shading 20: Texture Mapping | Mirage | CSG operations, DAGs |
| 11 | 21: Antialiasing 22: OpenGL pipeline | Shading | Gouraud and Phong Shading |
| 12 | 23: Realtime Path Tracing 24: Colour Theory | Texturing | Chromatek glasses, visual 3D |
| 13 | 25: Computer Vision & Graphics at Otago 26: Review | Supersampling Distributed raytracing | None |