Advanced HOOPS® Programming Syllabus

Unit 1: Optimizing Scene-Graph Performance

1. Segment Organization
2. Geometry Organization
3. Display Lists – **R16/R17 Enhancements**
4. Optimized/Static Tree - **R16 Feature**
5. Level-of-Detail
6. Culling – **R16 Enhancements**
7. Transparency – **R16 Enhancements**

Unit 2: Overlaying objects

1. Depth range
2. Clip regions
3. Mask transforms
4. Face displacement

Unit 3: Advanced rendering

1. Anti-aliasing
2. Shadowmaps – **R16 Feature**
3. Gooch/hemispheric lighting – **R17 Feature**
4. Reflection planes - **R16 Feature**
5. Point Splatting – **R17 Feature**

Unit 4: Texture Mapping

1. Texturing Overview
2. Texture Map Generation
3. Multi-texturing
4. Environment Mapping
5. Bump Mapping – **R17 Feature**
6. Skyboxes – **R16 Feature**

Unit 5: Text

1. Regions – **R16 Enhancements**
2. Per Character Attributes – **R16 Feature**
3. Multibyte Encodings – **R16/R17 Enhancements**
4. Optimizing Performance

Unit 6: Constant framerate – R16/R17 Enhancements

1. Overview
2. Extent culling
3. Level-of-detail

Unit 7: Hardcopy / Image Export

1. Optimizing Performance
2. Two-pass Printing
3. Framebuffer grabbing

Unit 8: Object Interaction

1. Selection Operators
2. Selection Sets
3. Manipulators

Unit 9: Animation*

1. Overview
2. Defining Animations
3. AVI Export
4. XML Schema

Unit 10: HIO Modules*

1. Overview
2. DWG – **R16/R17 Enhancements**
3. DGN

Unit 11: HOOPS/Stream*

1. BaseSteam Usage
2. Overloading Opcode Handlers
3. Tagging Objects
4. Embedding User Data
5. Export Options

***** Denotes optional topics depending on audience