COSC 355 Computer Graphics-CrsRvs-2016-03-04

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Form Information

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First Step

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(K) Dual Listed Courses Only: **List Current Learning Outcomes for the Higher-Level Course**		**Dual Listed Courses Only:** **List Proposed Learning Outcomes for the Higher-Level Course**	
(L) Brief Course Outline *(It is acceptable to copy from old syllabus)*	*As outlined by the federal definition of a "credit hour", the following should be a consideration* *regarding student work - For every one hour of classroom or direct faculty instruction,* *there should be a minimum of two hours of out of class student work.* **A. Introduction** **3 hours** a. Where computer generated picture are used b. Primitives c. Input and output devices d. Graphics architectures **B. Drawing figures** **4 hours** a. Device independent programming b. Window based programming c. Graphics primitives d. Line drawing e. Interaction with input devices **C. Drawing tools** **3 hours** a. Viewports b. Figures based on regular polygons c. Drawing circles and arcs d. Parametric curves **D. Vector tools for graphics** **3 hours** a. vectors b. Dot product c. Cross product d. Representation of geometric objects	**Brief Course Outline** *(Give sufficient detail to communicate the content to faculty across campus. It is not necessary to include specific readings, calendar or assignments)*	*As outlined by the federal definition of a "credit hour", the following should be a consideration* *regarding student work - For every one hour of classroom or direct faculty instruction,* *there should be a minimum of two hours of out of class student work.* 1. Graphics Architectures a. Pixels and framebuffers b. CPU and GPU c. Pipelines 2. Graphics Programming a. Primitives b. 3D graphics API 3. Transformations a. Vectors and matrices b. Affine spaces c. Dot and cross products d. Coordinate systems e. Transformations in homogeneous coordinates f. Quaternions 4. Viewing a. Projection b. Perspective c. Meshes d. Shadows 5. Lighting and Shading a. Light sources b. Phong reflection c. Polygonal shading d. Lighting models e. Gouroud and Phong shading 6. Discrete Techniques a. Texture mapping b. Environment mapping c. Reflection mapping 7. Rendering a. Clipping b. Hidden surface removal c. Antialiasing d. Color models e. Ray tracing f. Radiosity 8. Modeling complex images a. Hierarchical models b. CSG and BSP trees c. Quadtrees d. Particle systems 9. Curves and Surfaces a. Polynomial curves b. Bezier curves and surfaces c. Cubic B-Splines d. NURBS

e. Tweening

f. Clipping

E. Transformation of objects **5 hours**

a. Introduction to transformation

b. 2-D , 3-D and inverse affine transformation

c. Changing coordinate systems

d. Drawing 3-D objects

e. Translation, scaling and rotation

f. Tiling

F. Modeling shapes with polygonal meshes **4 hours**

a. Polygonal meshes

b. Finding normal vectors

c. Properties of meshes

d. Polyhedra and Prism

e. Extruded shapes

f. Smooth objects

G. Three dimensional viewing **4 hours**

a. Positioning and pointing camera

b. Projection of 3-D objects point, line

c. Graphics pipeline

d. Taxonomy of projections

H. Rendering **5 hours**

a. Shading models

b. Flat and smooth shading

c. Texture

d. Shadows

I. Approaches to Infinity **3 hours**

a. Fractals, random fractals and self-similarity

b. String production

c. Peano curves

d. Creating images by iterated functions systems

e. Mandelbrot and Julia sets

J. Raster Display, curves and surface **3 hours**

a. Pixmaps

b. Aliasing

c. Polynomials

d. Bernstein polynomial

e. B-splines

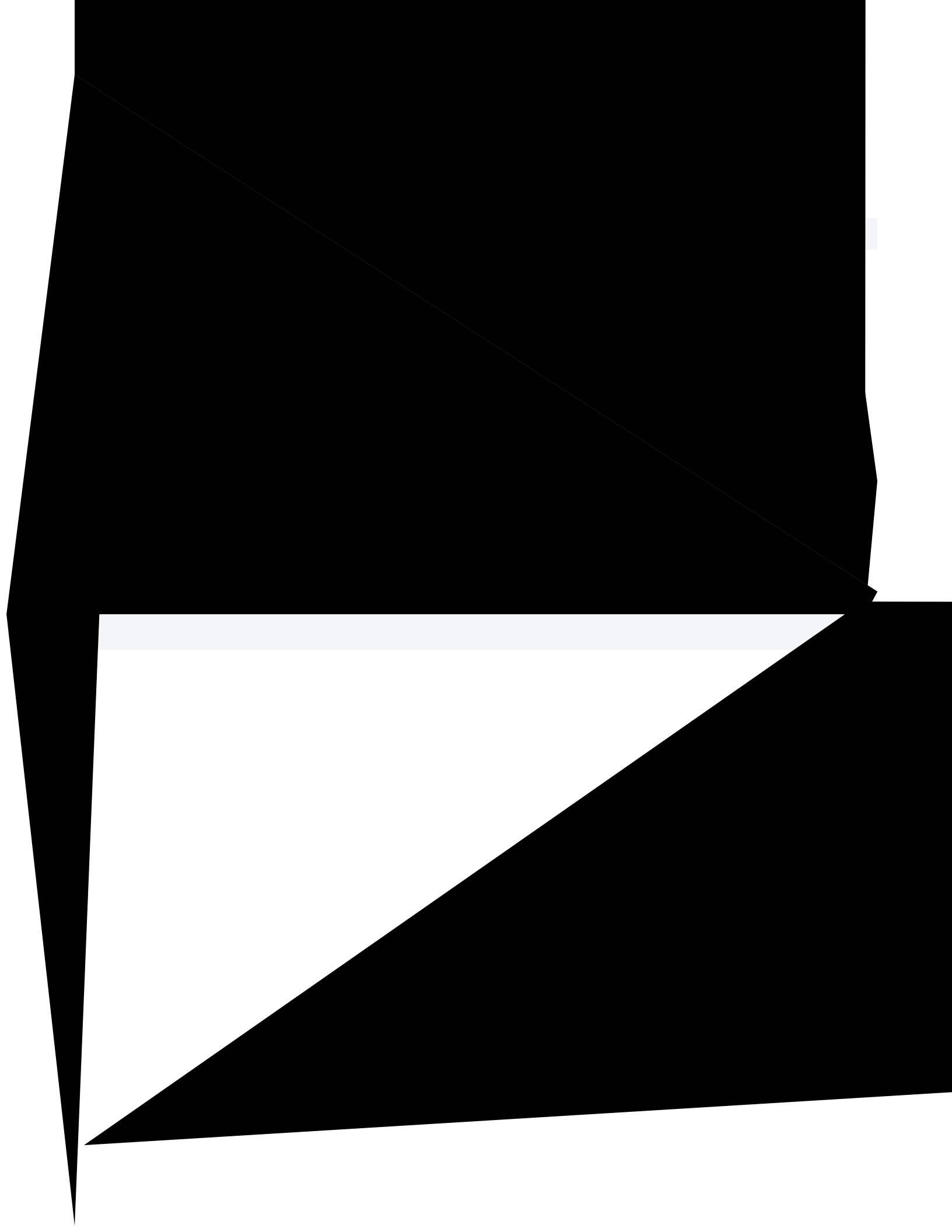
f. Color theory

	K. Hidden surface removal and ray tracing **3 hours** a. Hidden surface removal methods b. Hidden line removal methods c. Overview of Ray-tracing process		

Distance Education Section

- Complete this section only if adding Distance Education to a New or Existing Course

If Completing this Section, **Check the Box to the Right:**	
Course Prefix/Number	
Course Title	
Type of Proposal	*See CBA, Art. 42.D.1 for Definition*
Brief Course Outline	*Give an outline of sufficient detail to communicate the course content to faculty across campus. It is not necessary to include specific readings, calendar or assignments* *As outlined by the federal definition of a "credit hour", the following should be a consideration regarding student work - For every one hour of classroom or* *direct faculty instruction, there should be a minimum of two hours of out of class student work.*
Rationale for Proposal (Required Questions from CBA)	
How is/are the instructor(s) qualified **in the Distance Education delivery** **method as well as the discipline?**	
For each outcome in the course, describe **how the outcome will be achieved using** **Distance Education technologies.**	
How will the instructor-student and **student-student interaction take place?** **(if applicable)**	
How will student achievement be evaluated?	
How will academic honesty for tests **and assignments be addressed?**	



Liberal Studies courses require the reading and use by students of at least one non-textbook work of fiction or non-fiction or a collection of related articles. Please describe how your course will meet this criterion.	

Teacher Education Section

- Complete this section only for a new Teacher Education course or Teacher Education course revision

If Completing this Section, Check the Box to the Right:	
Course Designations:	
Key Assessments	
	For both new and revised courses, please attach (see the program education coordinator): • The Overall Program Assessment Matrix • The Key Assessment Guidelines • The Key Assessment Rubric **File** **Modified** No files shared here yet. • Drag and drop to upload or browse for files
Narrative Description of the Required Content	*How the proposal relates to the Education Major*

For Deans Review
Are Resources Available/Sufficient for this Course? Is the Proposal Congruent with the College Mission? Has the Proposer Attempted to Resolve Potential Conflicts with Other Academic Units? Comments:

Please scroll to the top and click the Page Status if you are ready to take action on the workflow.
Please submit an ihelp if you have any questions http://ihelp.iup.edu