Kentucky CTE

Computer Science: Advanced 3D Game Development 113603 (2026–2027)

Compare and contrast modeling methodologies (for example, polygons, NURBS, splines). 1	1 Compare and contrast modeling methodologies (for example, polygons, NURBS, splines). 1
Explain the applications of low polygon and high polygon construction. 2	2 Explain the applications of low polygon and high polygon construction. 2
Construct and manipulate polygonal objects. 3	3 Construct and manipulate polygonal objects. 3
Applying texturing/surfacing/shading to models and normal mapping. 4	4 Applying texturing/surfacing/shading to models and normal mapping. 4
Identify UVW mapping coordinates. 5	5 Identify UVW mapping coordinates. 5
Explain how lighting and shading effect form and surface. 6	6 Explain how lighting and shading effect form and surface. 6
Implement basic lighting concepts for ambient and artificial light. 7	7 Implement basic lighting concepts for ambient and artificial light. 7
De be inv	)escribe the difference between forward and inverse kinematics. 8

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Examine the process of particle creation and its application to game design. 9	9 Examine the process of particle creation and its application to game design. 9
Create a parent/child hierarchy. 10	10 Create a parent/child hierarchy. 10
Create a joint/bone chain. 11	11 Create a joint/bone chain. 11
Apply and adjust weight maps. 12	12 Apply and adjust weight maps. 12
Create atmospheric effects. 13	13 Create atmospheric effects. 13
Demonstrate the use of constraints to animate objects. 14	14 Demonstrate the use of constraints to animate objects. 14
Apply various animation techniques (for example, pose-to-pose, straight ahead). 15	15 Apply various animation techniques (for example, pose-to-pose, straight ahead). 15
Adjust the dynamic properties (for example, gravity and wind speed). 16	16 Adjust the dynamic properties (for example, gravity and wind speed). 16
Simulate rigid body dynamics (shattering wall, breaking glass). 17	17 Simulate rigid body dynamics (shattering wall, breaking glass). 17
Utilize cinematography in animation. 18	18 Utilize cinematography in animation. 18
Describe the process of motion capture for animation. 19	19 Describe the process of motion capture for animation. 19