



COURSE OUTLINE : ARCH 230
D Credit – Degree Applicable
COURSE ID 010085
Cyclical Review: September 2020

COURSE DISCIPLINE : ARCH
COURSE NUMBER : 230
COURSE TITLE (FULL) : Advanced 3D Visualization for Architecture and Interior Design
COURSE TITLE (SHORT) : Adv 3d Vis for Arch & Int Des

CATALOG DESCRIPTION

ARCH 230 teaches advanced features of 3D visualization, augmented realities (AR) and virtual realities (VR) in the architecture and interior design industries. Advanced topics will be explored, such as High Dynamic Range (HDR) scene lighting (lighting sampled from a real environment); global illumination; camera matching, camera tracking; augmented reality publishing. Students will create portfolio-quality visualization projects, including AR and VR immersive components, linking the printed page, the video screen, and the immersive world, into one seamless experience.

Total Lecture Units: 1.50

Total Laboratory Units: 1.50

Total Course Units: 3.00

Total Lecture Hours: 27.00

Total Laboratory Hours: 81.00

Total Laboratory Hours To Be Arranged: 0.00

Total Contact Hours: 108.00

Total Out-of-Class Hours: 54.00

Prerequisite: ARCH 229 or equivalent.



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ENTRY STANDARDS

	Subject	Number	Title	Description	Include
1	ARCH	229	Introduction to 3DS Max for Architecture and Engineering	Use the 3ds Max Interface to perform various architectural and engineering design visualization tasks;	Yes
2	ARCH	229	Introduction to 3DS Max for Architecture and Engineering	understand the concepts of rendering, texturing, lighting, and animation as it applies to the visualization and presentation of architectural and/or engineering designs;	Yes
3	ARCH	229	Introduction to 3DS Max for Architecture and Engineering	utilize the concepts of post production, managing media, and system resources using the 3ds Max software for architecture and engineering visualization projects.	Yes

EXIT STANDARDS

- 1 Use advanced features of the 3ds Max software to perform various architectural and interior design visualization tasks;
- 2 demonstrate advanced concepts of photo-realistic rendering, texturing, lighting, and animation
- 3 demonstrate techniques of importing drawing geometry for AutoCAD and other computer-aided -design software.

STUDENT LEARNING OUTCOMES

- 1 utilize advanced modeling techniques to create architectural features.
- 2 create interior and exterior lighting solutions to add realism to the student's model.
- 3 use advanced animation techniques.

COURSE CONTENT WITH INSTRUCTIONAL HOURS

	Description	Lecture	Lab	Total Hours
1	Preparing AutoCAD Files for Import into 3ds Max <ul style="list-style-type: none"> • Plines • UCS coordinates • Navigating 3D models in AutoCad • Aligning views and creating reference geometry • Layer management 	2	8	10
2	Importing Geometry <ul style="list-style-type: none"> • Setup work environment • Unit setup • Importing models • Naming and organizing geometry 	1	2	3



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3	Advanced Modeling Techniques • Terrains • Vegetation • Window, door and stair systems	2	8	10
4	Modeling Modifier • Edit poly • Hair and fur • Cloth and garment maker	3	10	13
5	Materials • Advanced materials • Creating advanced materials • Material library • Procedural materials • Glass, translucent and reflective surfaces	3	10	13
6	Mapping • Unwrap UVW modifier • Map channels and multi/sub-objects	2	8	10
7	Lighting Advanced • Advanced global illumination • Mental ray light types and uses • Advanced light parameters • Mental ray shadows	4	11	15
8	Exterior Lighting Advanced • Mental ray sun • Mental ray physical sky	2	8	10
9	Global Illumination • Advanced global illumination settings • Shaders • Radiosity • Caustics	1	2	3
10	Camera Advanced • Camera advanced parameters • Advanced Lenses • Depth of field and motion blur	1	2	3
11	Camera Animation Advanced • Advanced camera tracking • Re-scaling time • Keyframes • Advanced controllers • Advanced constraints • Curve editor and other tools to enhance realism	3	4	7
12	Rendering • Mental ray • Rendering settings • Network rendering • V-Ray, Brazil, Maxwell and other render engines	2	6	8



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13	Post Production	1	2	3
	<ul style="list-style-type: none"> • Advanced post production • Particle effects • Lens effects • Filters and post-production tools • Camera matching 			
				108

OUT OF CLASS ASSIGNMENTS

- 1 field trip (e.g. tour of architectural offices.)
- 2 final individual project (e.g. rendering of an architectural structure and/or interior design project).

METHODS OF EVALUATION

- 1 Midterm examinations.
- 2 Final examination.
- 3 portfolio review and critique. (e.g. this is typically a critique of all the work that the student has accomplished during the course. The work will be evaluated by the instructor.)

METHODS OF INSTRUCTION

- Lecture
- Laboratory
- Studio
- Discussion
- Multimedia
- Tutorial
- Independent Study
- Collaboratory Learning
- Demonstration
- Field Activities (Trips)
- Guest Speakers
- Presentations

TEXTBOOKS

Title	Type	Publisher	Edition	Medium	Author	ISBN	Date
Realistic Architectural Visualization with 3ds Max and Mental Ray	Required	Burlington: Focal Press		Print	Cusson, R.	978-0240809120	2009