



## COURSE OUTLINE

<b>Course Number</b> ARC 104	<b>Course Title</b> COMPUTERS IN ARCHITECTURE	<b>Credits</b> 3
<b>Hours:</b> lecture/Lab/Other 3/5	<b>Co- or Pre-requisite</b> NONE	<b>Implementation</b> sem/year 2017

### Catalog Description (2016-2017 Catalog):

**Course description:** Introduction to the use of computers in architecture as three dimensional design/drawing tool. Students build 3-D models using parametric modeling software and manipulate 3D forms, scenes, colors textures, lighting and camera to design effective compositions. Applicable to windows based software. 3 credits

### Required texts/other materials:

No Text

**Revision date:** 2017

**Course coordinator:** Garry Perryman, 609-570-3357,  
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### Information resources:

#### Course materials:

- USB thumb drive or external drive to backup and transport files, minimum 8 GB
- Recommended: a 3 ring binder to keep tutorials and content organized for future reference.

### Other learning resources:

Online tutorials on specific software

## Course Description

The course builds upon content learned in graphics communication course, some construction course content, environmental challenges and complements the studio design course and processes.

The course is integrated within design studio by providing the option of incorporating the design of the present studio project as this courses final project.

## Course goals:

The course explores several computer software programs; Rhinoceros, Autodesk Revit, Microsoft power point and Adobe Photoshop CC to effectively communicate, explore and articulate the student's ideas, forms and space visually in a two-dimensional composition.

At the end of the course the student should be able to perform the following tasks:

- Understand, explore and digitally represent basic 3D design and graphics used in architecture.
- Use manual drawing/sketches and physical models as a reference to digitally express an idea using the computer software as a medium of expression.
- Use the tools and commands of computer aided design software effectively
- Apply the skills of 3D modeling, texture mapping, lighting and rendering.
- Demonstrate an understanding of basic design principles by completing a variety of design elements as they relate to computer 3D design and graphics used in architecture.
- Use major tools and commands in Photoshop to manipulate images.
- Able to use Photoshop in conjunction with other programs and various file types.
- Understand the practical and creative applications of Photoshop and PowerPoint and Revit for graphics used in architecture.
- Know various type of output and how to prepare computer files to obtain graphic, print or digital presentations and produce portfolios that include artwork from graphics course and studio design work.
- To be able to communicate a buildings form and defined space thorough the presentation of its visuals images created and manipulated in various computer software programs.

## **II. Course-Specific General Education Knowledge Goals and Core Skills.**

**General Education Knowledge Goals Goal 4. Technology.** Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals. **Goal 9. Ethical Reasoning and Action.** Students will understand ethical issues and situations. **MCCC Core Skills Goal B. Critical Thinking and Problem-solving.** Students will use critical thinking and problem solving skills in analyzing information. **Goal C. Ethical Decision-Making.** Students will recognize, analyze and assess ethical issues and situations. **Goal E. Computer Literacy.** Students will use computers to access, analyze or present information, solve problems, and communicate with others. **Goal F. Collaboration and Cooperation.** Students will develop the interpersonal skills required for effective performance in group situations.

## **Course-specific General Education goals and objectives**

### **UNIT 1            Three Dimensional Design**

*Student will be able to:*

Work with computer software program and tutorials – **Rhinoceros** to:

- Interface and basic functions
- Reference lines and planes
- Extruding planes and solids
- Subtracting, adding and editing planes and solids
- Creating 3D views for exploded axonometric
- View setup for final presentation, complementing studio coursework

## **UNIT 2 Building information Modeling**

*Student will be able to:*

Work with computer software program – **Autodesk Revit Software** to:

- Understand the importance of BIM (building information modeling)
- Interface and Basic tools, Creating, editing and modifying various walls, floors, ceilings and roofs
- Add and edit doors, windows, components, Stairs and ramps
- Custom modeling: structural systems and shading devices
- Site components: topography, parking, surfaces, landscape features , Sun analysis
- Annotation basics and Calculations: gross, net square footage Area
- Materials application imported and given in Revit and Rendering basics (quick) and advanced and Artificial Lighting
- Preparation for Presentation:
  - Floor plans, elevations, sections, axonometric and 3D phot realistic rendering with proper graphics used in architecture.
  - Create successful drawings and renderings for final presentations and portfolio.
  - Composition basics for images and final presentation.
- Import and exporting images for final studio presentations and portfolio.

## **UNIT 3 Power Point**

*Student will be able to:*

Work with computer software program – **Microsoft Power Point** to:

- Use vector graphics to create shapes, lines and textures and use various editing tools to create single and complex custom shapes to enhance diagramming and layout basics.
- Use image editing tools for quick and simple presentations.
- Able to use PowerPoint in conjunction with other programs to create various interchangeable file formats.
- Learn various digital graphic representation skills and basic composition tips for individual images, to create successful drawings and renderings for final studio presentations and cohesive portfolios.

## **UNIT 4 Adobe Photoshop**

*Student will be able to:*

Work with computer software program: **Adobe Photoshop CC** to:

- Use pixel based graphics to create and editing images for final presentations using various tools.
- Learn to add, subtract and manipulate 3D modeling information images through background, foreground, context, scale, depth, 'life', materials, and manipulation of shadows.
- Learn basic photo editing to correct or enhance images, color correction, custom cropping, texture mapping techniques to create photorealistic renderings to create successful drawings and renderings for final presentations and portfolios.

## **UNIT 5 Portfolio**

*Student will be able to:*

Prepare digital portfolios for transferring to the Architecture School of choice:

- Learn what a digital portfolio is and understand the importance of having a digital portfolio and who the audience is.
- Learn how to create, organize digital portfolio and identify the content needed to create a digital portfolio.
- Learn basic, cohesive graphic layouts using power point and Photoshop.
- Should represent work created in architecture and art courses.

- The digital portfolio should reflect the student’s character and should be able to express the students developed graphic style.
- A final digital portfolio will be created in a cohesive presentation format so that future projects may be added and subtracted.

**INSTRUCTIONAL MODES:**

A lecture, and studio course, with demonstrations by the instructor.

Assignments with specific goals and objectives with discussions and critiques of student work. The student is responsible for regular attendance, participation in classroom discussions and critiques of other student work. Evaluation of grades are determined based upon the following:

Attendance, participation, and estimate of quality of class work and homework assignments (by instructor).

Class: There will be one lecture hour per week. The remainder of the time will be spent doing exercises. There will be graded outside assignments. There will be critiques in which we will review class work and outside assignments.

Final Portfolios: Usually consists of 8 to 10 drawings done in class. Make sure you save your drawings!

Final Assignment: This drawing project is assigned to showcase the drawing skills presented. These drawings are done in class and will be reviewed in a special critique where students will receive feedback from classmates and the instructor and invited guests.

**OTHER CLASS PROCEDURES**

Students should be prepared with a full set of drawing materials for each class. Students appearing in class without the proper materials (including sufficient paper) will be counted absent.

Students should plan on spending a minimum of 2 hours per week on drawing journal.

Behavior that disrupts class is not tolerated. Headphones are permitted.

**EVAULATION**

Attendance -	10%
Exercises -	30%
Portfolio 1 – Mid Term	15%
Portfolio 2 – Final	20%
Quiz -	10%
2 digital final presentations –	15%

**Academic Integrity Statement:**

Students are expected to comply with the college-wide requirements for academic integrity. Mercer County Community College is committed to Academic Integrity—the honest, fair, and continuing pursuit of knowledge, free from fraud or deception. This implies that students are expected to be responsible for their own work. Presenting another individual’s work as one’s own and receiving excessive help from another individual will qualify as a violation of Academic Integrity. The entire policy on Academic Integrity is located in the Student handbook and is found on the college website ([http://www.mccc.edu/admissions\\_policies\\_integrity.shtml](http://www.mccc.edu/admissions_policies_integrity.shtml)).

**VI. Special Needs Students Statement**

Mercer County Community College is committed to ensuring the full participation of all students in all activities, programs and services. If you have a documented differing ability or think that you may have a differing ability that is protected under the ADA and Section 504 of the Rehabilitation Act, please contact Arlene Stinson in LB 216 [stinsona@mccc.edu](mailto:stinsona@mccc.edu) for information regarding support services. If you do not have a documented differing ability, remember that other resources are available to all students on campus including academic support through our Academic Learning Center located in LB 214.