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Fall 9-1-2022

THTR 355.01: Computer Aided Drafting & Applications

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Recommended Citation

Post, Michael D., "THTR 355.01: Computer Aided Drafting & Applications" (2022). *University of Montana Course Syllabi, 2021-2025*. 376.

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THTR 355-01

Computer Aided Drafting & Appl, Fall, 2022 – 3 Credits

Monday, 12:00 – 1:50PM

Missoula Campus, McGill 213

Final Exam Period – Monday, November 23rd 8:00-10:00am

Prerequisites: THTR 255 or DRAM 231

The University of Montana, School of Theatre & Dance

Mike Post

PARTV 193 - (406) 243-4481

mike.post@umontana.edu

Office Hours: 12:30-1:50 Tuesday and Thursday (Zoom or in person)

Additional Zoom hours by appointment.

Please note that I am often around the department in a shop or a theatre. I'm not hard to find...

This class will teach the fundamentals of CAD using the Nemetschek Vectorworks platform. Emphasis will be on how to use CAD to create drawings for Theatre in 2 and 3 dimensions. The class is heavily exercise oriented and students are expected to use Vectorworks on a daily basis.

Textbook:

There is no textbook required for this class. However, the student may need access to an Architect's Scale (not Engineering, ask if you don't know the difference) and a tape measure at least 25 feet long. Basic note taking supplies are recommended for some project work (pencil and paper...).

Students will need to obtain a USB Flash drive or other device suitable for keeping backup copies of their work. While students are welcome to store their work on the lab computers, remember they are notorious for 'losing' information and the student is expect to account for this by making backups on their thumb drive. To that end, 'the computer ate my homework' is not an acceptable excuse.

Outcomes:

- Understanding of the tools and methods of Vectorworks
- Understand of the process for generating a drawing in CAD
- Becoming comfortable with using CAD for drawing
- Understanding of how to use Vectorworks to communicate technical information for production work
- Understanding of basic 3D drafting concepts

Grading and Assessment:

Students will be graded by their performance in completing the assigned exercises. All such will be submitted electronically. Assessment of the work will be based on the student's ability to follow instructions, attention to detail and precision. Incomplete work will result in a loss of 10% of the score off the top. Late work will be downgraded by an increasing scale based on the number of week days (not class periods) it is late e.g. 2% for the first day, 4% for the second, 8% for the third 16% for the forth and so on. The intent for the leniency earlier is the student has a chance to be more thorough with their work if they feel the need, but there is a point of diminishing returns that will quickly degrade their performance.

Exercises	4% each, maximum total 35%
Drawing Exercise 1	
Drawing Exercise 2	
Drawing Exercise 3	
Basic Drafting	
Fibonacci Spiral	
Ironwork	
Broadway flat	
3D Hollywood Flat	
Draw a Door	10%
Transcribing Drawings	10%
3D Set	10%
Draw a Chess Set	10%
Final Project	25%

Assignments

All assignments will be turned in through Moodle as Vectorworks files. Each must have a title block that includes:

- The name of the exercise
- Your name
- The date
- Scale

Drawing Exercises 1 & 2

A basic introduction to lines, rectangles, circles, poly lines, angles and constraints

Drawing Exercise 3

Making complex shapes from basic ones.

Basic Drafting

A more detailed example of using the tools. You should form your own strategies about how to accomplish this one.

Fibonacci Spiral

Learning a regular arc in a mathematical progression

Ironwork

Irregular curves using the Bezier and/or Spline tools.

Broadway Flat

Draw a classic soft covered flat frame with all parts detailed and properly placed.

3D Hollywood Flat

Draw a hard covered Hollywood flat with all parts detailed. Create a 3D version on a new layer.

Draw a Door

Research from the internet an image of a moderately intricate door. It must have the following features:

- Doorknob, latch or other closure

A “window” (light permeable area – could be a transom)
Inset panels (at least 2)
Molding with at least two layers (not simple)
Visible hinges

Import this into Vectorworks and resize the image so the height of the door is 7’-0”. On new layer(s) draft the door with all details. Correct for any odd discrepancies you find in the photo. In other words, things like one side of the door is slightly shorter than the other. Use your discretion and check with me. For instance, if your window is an irregular leaf shape, then you can’t make it symmetric. But if it’s a series of squares, then you have to. When you are finished, you should have a geometrically regular door an artisan could build without losing their mind.

Transcribing Drawings

With a PDF of a groundplan, redraw the set it details. Make sure you are accurate to all dimensions and are using line weights appropriately. You should correct for “lazy” drafting (lines not connected, incomplete objects...). Make sure you include the theatre as well. Recreate all labeling as appropriate as add if you feel you need to. Recreate the title block and add “Draft: (your name)” and the date you finish it.

3D Set

Use the groundplan you did earlier (corrected for feedback) to create a 3D version of that set. Walls will be at 14’-0” max unless otherwise specified. And other heights can be discussed with me.

Draw a Chess Set

With given pieces from a chess set, recreate them in 3 dimensions. Once you have the complete set, draw a chessboard they will fit on and duplicate your pieces as necessary to place them on the board for the start of the game.

Final Project

Draw a castle. It will have certain common features for castles, but you should research something that appeals to you. Be creative! It must have:

15’-0” to 20’-0” walls that are at least 3’-0” wide to walk on.

A Wall or Crenelations on the outside of the walkway to hide behind

A minimum of 4 crenelated turrets which taper from the base up at
least 3’-0” taller than the walls

A bailey of at least 9,000 square feet

A Portico

A gate on the inside of the Portico opening to the Bailey

A portcullis on the moat side of the portico

A moat

A drawbridge

A barracks

A ceiling trap in the barracks to get on the top of it.

In addition to the design layers, create 3 views on one or more sheet layers as follows:

Gull’s eye view – View from left or right of front from up high. Should see the moat, portico, drawbridge, portcullis, 1 or more turrets, and part of the barracks

Sneak Attack – View from behind of the castle left or right of center standing on the ground showing the moat, walls, one or more turrets.

The Guard – View from inside of the castle as if standing on a wall looking into the bailey.
Need to see part of the barracks,

Course Schedule:

Please note this is subject to change as the course progresses.

Date	Topic/Exercise	Notes
Monday, Aug 30	Intro to class, What is CAD. Vectorworks Basics and Tools: Line, Text, Rectangle Using Constraints – Getting precise, Angled objects, Fills, Changing the View, Layering Objects Front and Back	Draw Your Name Drawing Exercise, Basic Drafting. 1 DUE BY Sept 11 th .
Monday, Sep 5	LABOR DAY: No Class	
Monday, Sep 12	Non Rectangles – Regular Polygons and Circles. Changing Other Tools. More about Attributes. Line weights, types and Arrowheads, alternate fills.	Mike Out - Via Zoom Drawing Exercise 2 DUE BY Sept 18 th .
Monday, Sep 19	Irregular Polygons, and curved things. Dimensioning. Duplicating, Groups and Scale.	Mike Out - Via Zoom Broadway Flat, Fibonacci Spiral DUE BY Sep 25 th .
Monday, Sep 26	Building your own thing – composite pieces, add, clip... The workspace. Coordinates, Layers, Classes	Drawing Exercise 3 DUE BY Oct 2 nd
Monday, Oct 3	Ironwork Exercise	Ironwork DUE BY Oct 9 th
Monday, Oct 10	Importing and Sizing the unknown, Start on Transcriptions	Doors DUE BY Oct 16 th Transcriptions DUE BY Oct 23 rd
Monday, Oct 17	Moving to the 3rd Dimension, Extrusions, Moving and viewing pieces in 3D	3d Hollywood Flat DUE BY Oct 23 rd
Monday, Oct 24	In class work on 3D Set	3d Set DUE November 21 st
Monday, Oct 31	Sweeps – Profile and spin	
Monday, Nov 7	Chess Set	Chess Set DUE Nov 21 st
Monday, Nov 14	More about the workspace. Viewports and Sheet Layers Symbols, Printing/Plotting	
Monday, Nov 21	In class Catch up – Work on	Final Castle idea in place.
Monday, Nov 28	In class work – Final Project	
Monday, Dec 5	In class work – Final Project	DUE: Chess Set
Tuesday, Dec 13 8:00-10:00am	Final Presentation	Scheduled Final Exam

Attendance

From UM President Seth Bodnar:

The wide availability of safe, effective vaccines to combat COVID-19 means that we are able to continue full in-person learning again this semester. The Office of the President urges every member

of the UM Family to get vaccinated (and receive a booster shot) if you haven't done so already. Vaccination provides the best means of protecting yourself – and others in our UM Family – from the risk of COVID-19.

Please visit <https://www.umt.edu/curry-health-center/corona-virus.php> for the latest health/safety information, as well as campus communications and plans about the global health pandemic.

Working with CAD often requires some coaching and I will be in the room to give you help as you need it. To that end, attendance in the class is mandatory. Absences must have a proper excuse such as a note from the Curry Center or other documentation. Otherwise, they will count off 2% of your grade per absence. Students who are absent, excused or not, will be responsible for making up missed material using the documentation posted in Moodle.

Exceptions will be made to the above policy for students who are in isolation due to Covid 19 or Monkeypox.

University and School Policies

Academic Misconduct and the Student Conduct Code

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The Code is available for review online at www.umt.edu/student-affairs/community-standards/default.php.

School of Theatre and Dance Policies

All Theatre & Dance students must have an in-depth knowledge of the practices and procedures outlined in the School of Theatre & Dance Student Handbook. The Handbook is available online at <https://www.umt.edu/theatre-dance/handbook.php>.

There is inherent risk involved in many Theatre & Dance classes as they are very physical in nature. Please proceed through class, shop time, or rehearsal with caution. Always be mindful of your personal safety and the safety of others. Students participating in class/shop/rehearsal/performance do so at their own risk.

Due to safety considerations, at no point during a student's time spent in class or serving on a production (in any capacity) should non-enrolled persons be guests of that student without my consent. Presence of such unauthorized persons in a class, shop, or any backstage/off-stage area will negatively affect a student's grade.

From the EO/AA Office

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and the Office for Disability Equality (ODE). If you think you may have a disability affecting your academic performance, and you have not already registered with ODE, please visit them in Aber Hall. I will work with you and ODE to provide an appropriate modification.