CENTRAL WASHINGTON UNIVERSITY
INDUSTRIAL AND ENGINEERING TECHNOLOGY

IET 260: NURBS Modeling: Rhinoceros, 4 credits

Faculty Information:
Instructors: Scott Calahan & Bill Cattin
Office Hours: by appointment
Telephone: 509-963-3218 (Calahan) 509-963-1191 (Cattin)
E-mail: calahans@cwu.edu or cattinw@cwu.edu

Course Prerequisites: IET 160 or equivalent, or permission of the instructor

Course Description: Hands on training in the production of 3-D models using Rhinoceros' NURBS (non-uniform rational B-splines) geometry.

Course Purpose: To provide an on-line CAD based method for creating free-form shapes with surfaces and/or solids using a personal computer for students who are site bound or desire to expand CAD proficiency.

Textbook and Other Required Materials:

1. Rhinoceros software version 4.0 & Level I Training Manual, Robert McNeel & Associates, 2008 (manual is included with software)

System Requirements:

- Pentium 3 or above
- Min. 5 MB of RAM (recommend 1GB)
- Windows 2000; XP, Home or Pro; Vista; Windows 7
- Not available for MAC

2. AutoCAD 2013 software available for free download from Autodesk at: http://students.autodesk.com/?nd=download_center

System Requirements:

- Microsoft Windows 7 Enterprise, Ultimate, Professional, or Home Premium; Microsoft Windows Vista Enterprise, Business Ultimate, or Home Premium (SP1 or later); or Microsoft Windows XP; or Home edition (SP2 or later)
- For Windows Vista or Windows 7: Intel Pentium 4 or AMD Athlon dual-core processor, 1.6 GHz or higher with SSE2 technology
- 2 GB RAM
- 1.8 GB free disk space for installation
- 1,024 x 768 display resolution with true color
- Microsoft Internet Explorer 7.0 or later

3. One storage "device" (jump drive preferred)

Learner Outcomes:

Outcomes	Assessment
The student will be able to create NURBS based graphic objects.	Student will be assessed through weekly drawing assignments and exams.
The student will be able to create models with precision using coordinate input, and object snaps.	Student will be assessed through weekly specific drawing assignments and exams.
The student will be able to modify curves and surfaces with edit commands.	Student will be assessed through weekly drawing assignments and exams.
The student will be able to export and import models to and from different native file formats.	Student will be required to export, modify, and evaluate models in alternate file formats.
The student will be able render a model.	Student will be assessed through weekly drawing assignments and exams.
The student will be able to display any portion of a model and plot with a simple layout view.	As assigned, drawings will be displayed on screen and/or be printed by student.
The student will be able to accurately and efficiently solve problems using NURBS based modeling.	Students will assessed on the timely completion and accuracy of assigned problems.

Course Topics and Content Outline:
See course schedule with topics on separate sheet.

Instructional Methods:
1. Web-based tutorials
2. Instructor-led demonstrations and/or handouts
3. Individual and peer evaluations
4. Group discussion using Elluminate

Student Resource Support:
1. Course Management Tutorial (BlackBoard): http://www.cwu.edu/~media/cwuonline/getstarted.html
2. Elluminate Tutorial: http://www.elluminate.com/Training/Documentation/Detail/88/?id=227
3. Rhino online tutorial links: Embedded in course schedule

Student Expectations and Minimum Skills Required:
1. Proficiency in AutoCAD/AutoCAD LT 2005 or later, or its equivalent
2. Working knowledge of Windows applications
3. Self-directed course engagement that allows for contiguous work at a minimum level of 10 hours per week for six-weeks.
4. Students will complete tutorials, as assigned, and submit timely work as required.
5. Course work will be submitted by electronic means through the University online course management software.

Instructor Responsibilities:

1. Student inquiries will be responded to in a timely manner and every effort will be made to keep response time under 24 hours Monday through Friday.
2. Schedule or assignment changes will be made in a timely manner with notification through University online course management software.

Assessment/Grading:

1. Each drawing will be properly labeled including full name, drawing name, and date.
2. All assignments must be turned in by the due date to receive full credit.
3. Assignments will be accepted late with a 25% deduction for each 24 hour period. Late work beyond 48 hours will not be accepted for credit.
4. Directions for all assignments will be given. If specific directions are not provided by the instructor, the training manual or tutorial directions will be followed.
5. All assignments and practice problems should be kept electronically as future problems may incorporate them.
6. Exams must be taken on the date assigned unless provisions are made in advance.

Advice:

Daily drawings are meant to build skills. A large percentage of what you learn will come from actual practice not the lectures or tutorials. Be sure to learn and use shortcuts and commands through daily drawings and tutorial problems. This will save time and better prepare you for not only exams, but also using the software professionally.

The following grade scale will be used for all exams and assignments:

Drawings, problems, assignments, etc, (formative)	70% of total grade
Exams (summative)	25% of total grade
Quizzes (cognitive; vocabulary, software commands,…)	5% of total grade

Final Grades will be based on the following:

A = 94%-100%, **B+** = 87-89%, **C+** = 77-79%, **D+** = 67-69%, **F** = below 60%
A- = 90%-93%, **B** = 83-86%, **C** = 73-76%, **D** = 63-66%,
B- = 80-82%, **C-** = 70-72%, **D-** = 60-62%

ADA STATEMENT:

Students who have special needs or disabilities that may affect their ability to access information and or materials presented in this course are encouraged to contact the instructor and ADA Compliance Officer, ADA Affairs and Students Assistance on campus at 963-2171 for additional disability related education accommodations.
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