

**1. Course Title:**

**Senior Project II**  
**MET 495B – 3 Credits**

MET Core Program Requirement

Prerequisite: MET 495B is MET 495A. MET 495A,B,C Courses must be taken in sequence.

This is a Technical content course under ABET Criterion 5

**2. Faculty Member Information:**

Instructor: Dr. Craig Johnson (Also Roger Beardsley, Charles Pringle)  
 Office: Hogue 304  
 Phone: 509- 963-1118  
 E-mail: cjohnson@cwu.edu

**3. Course Description:**

The senior project is a capstone course that integrates all the major elements of the MET curriculum in a project related activity. The topic is chosen by the student in concurrence with the instructor and must include elements of planning, design and analysis (Phase I), construction (Phase II) and test and evaluation (Phase III). Collaboration with representatives of industry, government agencies or community institutions is encouraged. As an alternative, it will be possible to select a design study for the senior project for all three quarters, providing it is sufficiently comprehensive and approved by the MET advisor.

**4. Textbook and other required materials for the course:**

‘Engineering Senior Projects’ by Craig Johnson. Also use any of your MET-related texts, materials and resources

**5. Specific Learner and Expressive Outcomes and Assessment Strategies:**

ABET Outcome Criteria #	Learner Outcomes The student will show their ability to:	Assessment Students will be assessed through
3a,b,d,f, g,h,i,j 9c,d,e,f,g,n	apply mechanical engineering skills through optimized design, construction, and evaluation of their project.	Project progress reports, documentation, and presentations
3g	communicate their progress and achievements through meetings, reports, and presentations.	meetings, reports, and presentations
3e,g	apply organizational skills to promote progress, via documentation	Project progress reports and documentation

## 6. Course Topics and Schedule:

- Week 1** Continuation of the MET capstone course: Senior Design II.  
DUE WK2: HAND IN YOUR 'RFP'
- Week 2** Review your project: Problem, Constraints, Success (RFP), Solution, \$, Schedule  
Project Management, Expand schedules to reflect your project tasks and milestones.  
DUE WK3: HAND IN YOUR SCHEDULE
- Week 3** *Update* your parts inventory list for your design project. Include parts *suppliers* .*Create a list* of part acquisition and/or *manufacturing alternatives* (include our school equipment, independent shops, other sources). Refer to individual parts, IDs, sources & costs.  
DUE WK4: PARTS INVENTORY LIST with SPECIFICATIONS, SUPPLIERS, & COSTS
- Week 4** Part & assembly drawings, Drawing Trees, Standards, Parts vs. schematics or processes.  
Methods to track revisions and modifications of drawings of parts and assemblies.  
DUE WK5: EXAMPLE OF YOUR ASSEMBLY DRAWING
- Week 5** CDR (Critical Design Review) content and examples.  
Example CDR oral presentation and example CDR questions.  
DUE WK6: CDR DOCUMENTATION (FOUR-SQUARE SLIDE)
- Week 6** IN-CLASS CDRs Reality check! Close drawings. Commit to a design and approach.  
CDRs continue, (*Drawings may subsequently be REVISED via 'change orders'*)
- Week 7** Tools for project documentation, analysis, access (PDM). 'Project Status' Documentation.  
e.g. Memos and Status Reports (time and money)  
Ancillary Analyses: Ergonomics, Kinematics, Operational Limits, other?  
DUE WK8: PROJECT STATUS REPORT + EXAMPLE ANALYSIS  
(e.g. system, kinematic, ergonomic or other)
- Week 8** Manufacturing, your project requirements, and CWU resources (vs. external)  
Risk Analysis and examples  
DUE WK9: PROJECT STATUS REPORT; MANUFACTURING PROCESS AND BACK-UP PLAN
- Week 9** Support documents for the final report (pictures, procedures, figures, tables).  
Examples of written vs. verbal, vs. visual communication.
- Week 10** CDR and MDR (Manufacturing Design Review) reviews (20 minutes 1:1)  
CDR and MDR reviews continued.
- FINAL: MDR oral presentations in front of the whole class.

<b>7. Grading:</b>	Homework (10 points)	40%
	Performance Reviews (100 points)	40%
	Professionalism/Ethics (20 pts)	20%

A(92-100), A-(90-92), B+(88-90), B(82-88), B-(80-82), C+(78-80), C(72-78), C-(70-72), D+(68-70), D(62-68), D-(60-62), F(<60)

## 8. ADA Statement:

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

Prepared by Roger Beardsley June 25, 2009