New River Community College  
Dublin, VA  

COURSE PLAN

Course Number and Title: MEC 122 - Desktop Manufacturing Technology

Prepared by: CAD Faculty Member  
        (Instructor)  
        Fall, 2014  

Approved by:  
        (Dean)  
        Fall, 2014  

I. Course Description

This course contains information about rapid technologies in Additive Manufacturing that are high productivity tools that cut lead times, reduce time to market, increase the quality of the product and improves collaboration within the organization. 
2 hours lecture, lab 3 hours, total 5 hours per week. (3 credits)

II. Introduction

This class is designed to help students learn what the technologies are, how they work and how they can improve manufacturing across many different spectrums.

III. Student Learning Objectives

Upon successful completion of this course, the student will be able to:

✓ Discuss with a high level of competence and confidence the benefits of additive manufacturing and how those technologies work.

✓ Perform some levels of reverse engineering using 3D scanners. (turning things into data)

✓ Create computerized 3d solid models from the initial concept with cutting edge industry software.

✓ Create full and scaled down 3D printed models based off of the 3D models in the software. (creating things from data)

✓ Manage a large database of technical information and digital files in an efficient industry style of file management.

IV. Instructional Methods

✓ Hands on Practical Lab
✓ Lecture
✓ Digital Content (Videos & Tutorials)
✓ Online Content
✓ Textbook Reading Assignments
✓ Outlines

V. Instructional Materials – (OPTIONAL/Supplimental TEXT)

Author: Gibson
Publisher: Springer

Materials to be used by the instructor: Videos, digital presentations Power Points, CDs, DVDs Smart Board Technologies, Computer and a variety of other multimedia and hands on equipment.

✓ Materials, equipment and things to be provided by the student:

a. Portable USB Hard Drive
b. Sketch Pad
c. Note Book
d. Engineering Grid Paper – 5 grids per inch (Staples or Office Max)
f. WORK & Willingness to learn

VI. Course Content
• Different Types of Additive Manufacturing (equipment and processes)
• Understanding the DESIGN concept
• “What is Reverse Engineering and data capture”?
• Create files (from data capture to STL)
• How to manipulate and clean up STLs
• Understanding how parts are ordered effectively from multiple sources
• Selecting which technology to use
• Selecting which materials to use for which process based off of customers need
• Types and strengths of different materials
• Appreciate the impact of build settings and parameters
• Finish the part to achieve the "look" of the final piece
• Understanding how to purchase equipment, materials and services
VII. **Evaluation**

The numerical range for grades will be:

- **A** = 91 - 100
- **B** = 81 - 90
- **C** = 71 - 80
- **D** = 61 - 70
- **F** = 60 or below

VIII. **Attendance**

Regular attendance at classes is **required**. When absence from a class becomes necessary, it is the **responsibility** of the student to both inform the instructor prior to the absence and schedule makeup time after the absence. Frequent unexplained absences may result in a dismissal from the course. Student’s absence from the first two weeks of class is automatically withdrawn. The student is responsible for making up all work missed during an absence.

IX. **Cheating Policy**

Students in the CAD/Architecture & Game Technology program will be held to the highest and strictest level of ethical educational conduct. Suspicion of Cheating &/or Plagiarism will result in an Incomplete “I” grade for that project, test or homework assignment. Upon review if it is determined that the student was in violation of the schools cheating policy, he or she will receive the Grade of “F” which will be calculated as a ZERO “0” averaged in with other grades for the project automatically, may receive an “F” for the course and will have to repeat the course in order to graduate. If the severity of the offense is enough as to warrant it, the student may be kicked out of the CAD program all together.

Cheating / Plagiarism may be defined as but not limited to the following for this curriculum.

- Turning in anything you did not do 100% yourself if it is an “individual” non-team project.
- Copying ANY part of someone else’s work
- Making the effort to copy or steal someone else’s work
- Taking someone else’s CAD electronic file and manipulating it to give the appearance that it is your own work.
X. **Withdrawal Policy**

**Student Initiated Withdrawal Policy**

A student may drop or withdraw from a class without academic penalty during the first sixty percent (60%) of a session. For purposes of enrollment reporting, the following procedures apply:

a. If a student withdraws from a class prior to the termination of the add/drop period for the session, the student will be removed from the class roll and no grade will be awarded.

b. After the add/drop period, but prior to completion of sixty percent (60%) of a session, a student who withdraws or is withdrawn from a course will be assigned a grade of "W." A grade of “W” implies that the student was making satisfactory progress in the class at the time of withdrawal, that the withdrawal was officially made before the deadline published in the college calendar, or that the student was administratively transferred to a different program.

c. After that time, if a student withdraws from a class, a grade of "F" will be assigned. Exceptions to this policy may be made under documented mitigating circumstances if the student was passing the course at the last date of attendance.

A retroactive grade of “W” may be awarded only if the student would have been eligible under the previously stated policy to receive a “W” on the last date of class attendance. The last date of attendance for a distance education course will be the last date that work was submitted.

Late withdrawal appeals will be revised and a decision made by the Coordinator of Student Services.

**Instructor Initiated Withdrawal Policy**

A student who adds a class or registers after the first day of class is counted absent from all class meetings missed. Each instructor is responsible for keeping a record of student attendance in each class.

Students who have not attended class by the last day to drop class and receive refund must be deleted by the instructor during the following week. No refund will be applicable.

When a student's absences equal twice the number of weekly meetings of a class (equivalent amount of time for summer session), the student may be dropped for unsatisfactory attendance in the class by the instructor.

When an instructor determines that absences constitute unsatisfactory attendance, a Faculty Withdrawal Form should be completed and submitted to the Admissions and Records Office within five days of when the student met the withdrawal criteria. The last date of attendance must be documented. A grade of "W" will be recorded during the first sixty percent (60%) period of a course. Students withdrawn after the sixty percent (60%) period will receive a grade of "F" except under mitigating circumstances when a letter of appeal has been submitted by the student. A copy of this documentation must be placed in the student's academic file.
The student will be notified of the withdrawal by the Admissions and Records Office. An appeal for reinstatement into the class may be approved only by the instructor.

Since attendance is not a valid measurement for Independent and Distance Learning (IDL) courses, students may be withdrawn due to nonperformance. Students should refer to his/her IDL course plan for the instructor’s policy.

**NOTE:** Instructor reserves the right to change any of the above to reach course objectives.