Course Description
This course includes a series of problems and exercises utilizing additive and subtractive prototyping technologies and 3-D modeling applications to produce working prototypes.
4 Cr (2 lect./pres., 0 labs, 2 others)

Course Focus
Involve the student with product design using 3-Dimensional solid modeling and Rapid Prototyping techniques. Students will design a product, prepare it for rapid prototyping machine and produce it on a 3-D printer.

Text and References

Course Goals
The following list of course goals will be addressed in the course. These goals are directly related to the performance objectives. (*designates a CRUCIAL goal)

1. create understanding awareness
2. define rapid prototyping
3. examine technology description
4. understand shades of gray
5. use tool change
6. execute informed decision
7. examine rapid prototyping
8. understand rapid prototyping history
9. understand rapid prototype (RP) benefits
10. grasp RP application
11. understand RP system classification
12. explain rapid tooling
13. explain rapid manufacturing
14. examine RP future
15. determine RP process
16. examine process detail
17. demonstrate process strength
18. demonstrate process limitation
19. describe 3D printers
20. examine enterprise prototyping centers
21. evaluate direct digital manufacturing
22. understand system classification
23. understand specialize purposes
24. describe RP applications
25. demonstrate RP benefits
26. conclude RP profitability
27. compare RP vs. CNC machining
28. evaluate pragmatic decision
29. execute process comparison
30. summarize process differences
31. list available RP systems
32. examine process overview
33. evaluate process detail
34. compare RP properties
35. compare operational properties
36. compare RP applications
37. compare in house operation
38. examine service bureaus
39. establish economic justification
40. explore hidden cost
41. understand additional consideration
42. examine implementation challenges
43. define realistic needs
44. understand evaluating systems
45. specify implementation process
46. summarize evaluation implementation
47. define rapid tooling
48. define rapid manufacturing
49. explain limited use
50. evaluate rapid tooling
51. evaluate rapid manufacturing
52. examine growth barriers
53. explore future development
54. exhibit smoother pilot test
55. examine fast track snowshoe design
56. examine 3D printing finite element analysis
57. examine Greek statue reproduction
58. examine Boost aging product innovation
59. examine Chevy SSR
60. examine bimolecular models

Student Contributions
Each student will spend approximately 8 hours per week preparing for class and completing assignments to turn in weekly. This is a hybrid class with half of it being covered via online. Each week students will turn in assignments as specified on Blackboard. Students will also complete a final exam/project to demonstrate their knowledge of the material.

Student Attendance Policy: See student handbook within the TCL Catalog.

Course Evaluation:
The grading scale is as follows:
Assignments and class work = 70%, Midterm Exam = 15%, and Final Exam = 15%.
90 - 100 = A  80 - 89 = B  70 - 79 = C  60 - 69 = D  Below 60 = F
Course Schedule
The class meets for 2.5 lecture/presentation hours per week. Course content will be taught in the order that the content goals are presented in the syllabus.

Approved by:    Kenneth Flick
Developed/Revised:  6/2012
Ken Flick, Division Dean for Business/Industrial Division
ADA Statement
The Technical College of the Lowcountry provides access, equal opportunity and reasonable accommodation in its services, programs, activities, education and employment for individuals with disabilities. To request disability accommodation, contact the counselor for students with disabilities at (843) 525-8228 during the first ten business days of the academic term.

Academic Misconduct
There is no tolerance at TCL for academic dishonesty and misconduct. The College expects all students to conduct themselves with dignity and to maintain high standards of responsible citizenship. It is the student’s responsibility to address any questions regarding what might constitute academic misconduct to the course instructor for further clarification. The College adheres to the Student Code for the South Carolina Technical College System. Copies of the Student Code and Grievance Procedure are provided in the TCL Student Handbook, the Division Office, and the Learning Resources Center.

Attendance
The College’s statement of policy indicates that students must attend ninety percent of total class hours or they will be in violation of the attendance policy.

- Students not physically attending class during the first ten calendar days from the start of the semester must be dropped from the class for NOT ATTENDING. Reinstatement requires the signature of the division dean.
- Students taking an online/internet class must sign in and communicate with the instructor within the first ten calendar days from the start of the semester to indicate attendance in the class. Students not attending class during the first ten calendar days from the start of the semester must be dropped from the class for NOT ATTENDING. Reinstatement requires the signature of the division dean.
- In the event it becomes necessary for a student to withdraw from the course OR if a student stops attending class, it is the student’s responsibility to initiate and complete the necessary paperwork. Withdrawing from class may have consequences associated with financial aid and time to completion.
- When a student exceeds the allowed absences, the student is in violation of the attendance policy. The instructor MUST withdrawal the student with a grade of “W”, “WP”, or “WF” depending on the date the student exceeded the allowed absences and the student’s progress up to the last date of attendance
  - Under extenuating circumstances and at the discretion of the faculty member teaching the class, allow the student to continue in the class and make-up the work. This exception must be documented at the time the allowed absences are exceeded.
- Absences are counted from the first day of class. There are no "excused" absences. All absences are counted, regardless of the reason for the absence.
- A student must take the final exam or be excused from the final exam in order to earn a non-withdrawal grade.
- A copy of TCL’s STATEMENT OF POLICY NUMBER: 3-1-307 CLASS ATTENDANCE (WITHDRAWAL) is on file in the Division Office and in the Learning Resources Center.

Hazardous Weather
In case weather conditions are so severe that operation of the College may clearly pose a hardship on students and staff traveling to the College, notification of closing will be made through the following radio and television stations: WYKZ 98.7, WGCO 98.3, WGZO 103.1, WFXH 106.1, WWWV 106.9, WLWWW 107.9, WGZR 104.9, WFXH 1130 AM, WLWH 101.1, WSOJ 1230 AM, WAEV 97.3, WTOC TV, WTGS TV, WJWJ TV, and WSAV TV. Students, faculty and staff are highly encouraged to opt in to the Emergency Text Message Alert System. [www.tcl.edu/textalert.asp](http://www.tcl.edu/textalert.asp)

Emergency Text Message Alert
Students, faculty and staff are highly encouraged to opt in to the Emergency Text Message Alert System. Participants receive immediate notification of emergency events and weather cancelations via text messaging on their cell phones. Participants can also opt in to receive non-emergency news and announcements. Go to [www.tcl.edu](http://www.tcl.edu). On the homepage, click on “emergency Text Alert at TCL” and fill out the form or go to [www.tcl.edu/textalert.asp](http://www.tcl.edu/textalert.asp)