

TDR 170 - Introduction to Design for 3D Printing - TDR170

Proposal Type: New Course
Requester(s): Stephen H Simmons
College: North
Status: Curriculum Committee Review

BASIC INFORMATION

Requester(s): Stephen H Simmons
College: North Seattle College
Division/Dept: Business, Engineering & IT
Dean: Laura H Hopkins
Peer Reviewer(s):

COURSE INFORMATION

Proposed Course Number:

Prefix: **TDR** Number: **170**

- Request a new Prefix
 This will be a common course

Full Title: TDR 170 - Introduction to Design for 3D Printing

Abbreviated Title: Intro. Des. 3D Printing

Catalog Course Description:

Introduces basic design programs such as Rhino, Sketchup and MasterCAM. Focus will be on the familiarization with the 3D design environment for eventual use in actual 3D Printing. Emphasis will be on developing skills related to Advanced Design in Manufacturing.

Course Length: 11 Weeks Request an Exception

Topical Outline:

- I. INTRODUCTION TO 3D PRINTING IN THE CLASSROOM
 - a. LESSON 1: INTRODUCTION TO 3D PRINTING
 - i. MakerBot Stories: Education
 - ii. MakerBot Stories: Medical
 - iii. MakerBot Stories: Business
 - iv. MakerBot Stories: Post-Processing
 - v. MakerBot Stories: Design
 - b. LESSON 2: USING A 3D PRINTER
 - c. LESSON 3: PREPARING FILES FOR PRINTING
 - i. THREE WAYS TO MAKE
 - ii. WAYS TO DOWNLOAD
 - iii. WAYS TO SCAN
 - iv. WAYS TO DESIGN
- II. PROJECTS AND DESIGN SOFTWARE
- III. PROJECT: PRIMITIVE MODELING WITH TINKERCAD
 - a. Make Your Own Country
 - b. Explore: Modeling with Tinkercad
 - c. Investigate: Geography and Climates
 - d. Create: Design a Water Tile
 - e. Create: Design a Forest Tile
 - f. Create: Design a Mountain Tile
 - g. Create: Design a Land Tile
 - h. Further Activities: Explore Your New World

IV. PROJECT: PARAMETRIC MODELING WITH OPENSCA

- a. Make Your Own Country
- b. Explore: Modeling with Tinkercad
- c. Investigate: Geography and Climates
- d. Create: Design a Water Tile
- e. Create: Design a Forest Tile

COURSE CODING

Funding Source: 1.....State
Institutional Intent: 21.....Vocational Preparatory

This Course is a requirement for the following program(s):
 (No Programs Selected)

My Course Proposal is a requirement for a program not on this list
 Program Title/Description/Notes:
 Advanced Design in Manufacturing Cert.

Will this course transfer to a 4-year university? **No**
Is this course designed for Limited English Proficiency? **No**
Is this course designed for Academic Disadvantaged? **No**
Does this course have a Workplace Training component? **No**

CIP Code: 15.1304 Request Specific CIP Code
EPC Code: 798 Request Specific EPC Code

Credits:
Will this course be offered as Variable Credit? **No**

List Course Contact Hours	
Lecture (11 Contact Hours : 1 Credit)	55
Lab (22 Contact Hours : 1 Credit)	0
Clinical Work (33 Contact Hours : 1 Credit)	0
Other (55 Contact Hours : 1 Credit)	0
 Total Contact Hours	 55
Total Credits	5

COLLEGE SUPPLEMENTAL

Proposed Quarter of Implementation: NA Request Provisional Exception
 Winter of 2017

Class Capacity: 24

Note: *The following questions are being asked in order to fulfill Seattle Colleges District VI and AFT Seattle, Local 1789 Agreement language:*

Have you discussed the class cap for the course with your unit administrator and with other unit faculty that will be teaching the course?
 Yes, discussion has been held.

Is the class cap number that you have indicated mutually agreed upon by unit faculty and unit administrators?
 Yes, agreement has been reached.

Modes of Delivery: (Check all that apply)

Note: For a course to be designated as **Fully Online** or **Hybrid**, please make sure that you have consulted with the NSC eLearning Office: 206.934.3738 or north.elearning@seattlecolleges.edu. Materials in addition to the Master Course Outline are required by the eLearning subcommittee of CAS before final approval.

- Fully On Campus
 Fully Online
 Hybrid
 Correspondence
 Credit by Exam
 Seminar
 Visual Media
 Other
 Explanation:

Class Schedule Description:

This course will introduce students in the Advanced Design for Manufacturing pathway to basic design practices using programs such as Sketchup, Rhino, Inventor, etc. This course will also familiarize the student with the processes and use of 3D printers.

Course Prerequisite(s):

None

Course Corequisite(s):

None

AA Degree Outcomes: (If Applicable)

Essential Learning Outcomes:

Intellectual & Practical Skills, including

Critical thinking and problem solving

Quantitative reasoning

Technological proficiency

Discipline/Program Outcomes:

- **Demonstrate the ability to identify, formulate and solve engineering problems**
- **Complete a comprehensive design project using advanced engineering design programs as required by industry standards.**
- **Describe the role and purpose of codes and standards as they pertain to the life, health, and safety of the public.**
- **Perform the necessary steps to transform an idea or need into a completed project.**
- **Perform and support design and estimating functions, including costs, labor requirements, equipment and scheduling functions.**

Course Outcomes:

Course Outcome	Topical Outline	Program Outcome	ELO
know how to choose and buy the right 3D software for your purposes	III & IV	3	Quantitative Reasoning
Know how to problem solve and fix printing errors and misprints.	I, c: Lesson 3: Preparing Files for Printing	1	Critical Thinking & Problem Solving
know how to produce environmentally thoughtful products with minimal waste using a 3D printer	I, b: Lesson 2 Using a 3D printer	2	Technological Proficiency

Assessment:

Evaluation may include but is not limited to:

1. In-Class Quizzes and Exams**2. Class Assignments****3. Help Desk Posts****4. Final Project****Explain why this course is being created:**

This course is being created to take the place of Catia. Catia classes have not shown an interest and will be kept as stand-alone classes. We are trying to increase enrollments with relevant curriculum that has ties to MakerSpaces and 3D printing. This class has uses across disciplines, i.e., Art and Jewelry design.

Sample Syllabus *(Optional):*

Notations: List any additional course fees or any additional notes (e.g. Permission required)