



## Korea University International Winter Campus (KU IWC) 2021-2022

*Join our winter, cherish your winter*

December 27, 2021 ~ January 14, 2022

### IWC419 – Introduction to Artistic Smart-Manufacturing

#### I . Instructor

Professor	:	Dr. Namsoo Peter Kim
E-mail	:	Nsking21@gmail.com
Home Institution	:	The University of Texas at El Paso
Class Time	:	13:10 -15:50
Office	:	TBD
Office Hours	:	TBD

#### II. Textbook

Required Textbook	:	Print-outs prepared by Dr. Namsoo Peter Kim
Recommended Additional Readings	:	L.E. Murr, "Handbook of Materials Structures, Properties, Processing and Performance," Springer, 2015 (Print-outs are available in PDF format.) Journal Papers (Print-outs are available in PDF format.)

#### III. Course Description and Objectives

**Course Description:** The course deals with various aspects of artistic application in conjunction with 3D printing processes to form layered materials for 3D printed food, ceramics, nail arts and tattoos. In this class, anyone who does not have engineering background can easily learn smart manufacturing using 3D printing process technology and materials with artistic inspiration in your mind. It covers various aspects so that you can understand, vizo-design ([www.vizovizo.com](http://www.vizovizo.com)) and build the final product yourself. Understand the concept of smart manufacturing and understand the minimum scientific engineering rules to effectively apply the engineering concept to real life, and apply it to PTE equipment.

**Objectives:** In this class, students can easily understand the concept of PTE equipment control to which IoT Tele-manufacturing is applied for the first time with the real machine, Upon completion of the final class, all students will 3D-design their own recipes with materials (food or clay), aiming to be able to smartly manufacture ceramics or food 3D structures remotely through data transmission.

## IV. Grading

Midterm Exam	: 20%	
Final Exam	: 30%	
Assignments	: 40%	Final 3D Printed Product
Participation	: 10%	

## V. Class Outline

Date	Topic	Chapter	Remarks
Dec 27 (Mon)	Introduction : 3D Printing and Additive Manufacturing		Cannon
Dec 28 (Tue)	Introduction of Rapid Prototyping Tech. (Solid Freeform Fabrication), Laser and Electron Beam Melting Tech. Powder and Wire Extrusion and 3D printing, 3D printed electronics: Digital Fabrication with Embedded Electronics, Bio-printing and Bio-fabrication		
Dec 29 (Wed)	What we could create in this class? 3D Printed food, ceramics, Tattoo and Nail-arts		<a href="http://www.cafeboxd.com">www.cafeboxd.com</a>
Dec 30 (Thu)	Printable Materials (Hagen Poiseuille Eq.) and material preparation		<a href="http://www.bm3dp.com">www.bm3dp.com</a>
Dec 31 (Fri)	IoT PTE Equipment (Midterm Exam)		<a href="http://www.ontactplatform.com">www.ontactplatform.com</a>
Jan 3 (Mon)	PTE description and related basic concepts 1		
Jan 4 (Tue)	PTE description and related basic concepts 2		
Jan 5 (Wed)	PTE control method		
Jan 6 (Thu)	IOT and Smart Manufacturing (simple concept)		
Jan 7 (Fri)	VIZO Design concept		<a href="http://www.vizovizo.com">www.vizovizo.com</a>
Jan 10 (Mon)	VIZO Design and practice (Final Exam)		(Print-outs are available in PDF format.)
Jan 11 (Tue)	Printing (Group of 5)		
Jan 12 (Wed)	Personal Design for Smart Manufacturing and preparing for Video (show-case)		
Jan 13 (Thu)	Final 3D Printed Product online presentation (3 minute)		Assignment
Jan 14 (Fri)	/ Graduation Day		

### GENERAL POLICIES:

- **Exams:** Make-ups will be given only under extreme circumstances determined at the discretion of the instructor. It is expected that the student will contact the instructor sufficiently in advance of an exam.

