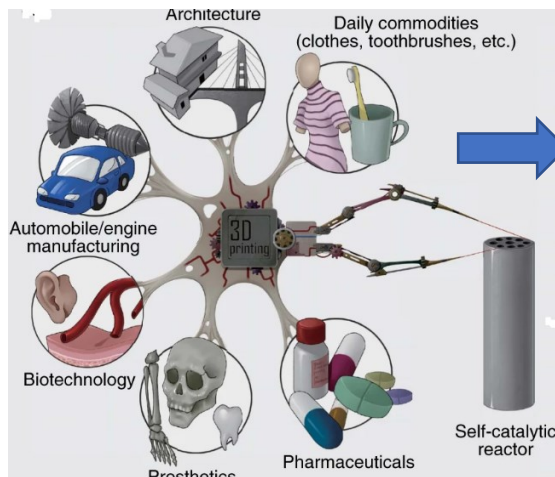


No. 643.092, Summer semester 2022, Semester hours: 2

3-D-Print

Dates: The course (preliminary meeting) starts on Friday, 4 March 2022, 10–11 AM.



Additive manufacturing: introduction, principles and development, 3D printing, inks/bioinks from polymers/composites/nanoparticles/cells, biological molecules, rheology of inks/bioinks, types and principles of 3D printing techniques: stereo-lithography, inkjet, laser-assisted, extrusion and electrospinning-based 3D printing/bioprinting. Application of printing and printed in catalysis, automobiles, domestic use, textiles, cultural heritage, environmental use, tissue engineering/regenerative medicines, education and research.

Core topics to be covered

- Additive manufacturing: 3D printing: definition, fundamentals, and types.
- Ink design and development, rheology, cross-linking chemistry, physicochemical characterization.
- Types of printing: Laser-based, stereo-lithography, extrusion-based, droplet-based printing, etc.
- Melt-electrowriting and melt-electrospinning:
- Scaffolds design and application: in catalysis, automobiles, domestic use, textiles, cultural heritage, environmental use, tissue engineering, etc.

Previous knowledge expected

Basic knowledge in macromolecular and physical chemistry, material science, and printing technology.

Objective of the course

After successful completion of this course, the students will gain vast knowledge on the cutting edge of various kinds of 3D printing/bio-printing and their use in different modern applications.

Language and teaching method

All lectures and notes will be provided in English and online

Contact and further details

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