Advanced material processes and die design
DSL 732

Topic 10
Computer controlled machining

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14th October 2019

Announcements

- Mid-semester Feedback
- Rescheduling class on 15th October?
- Project presentations on 17th October Guidelines
- Please return the electronics that you are not using.
- Practicals for CNC router (small), molding and casting, CNC router (big), composite making. Demo.
- Only those allowed to do Practicals who attend the trainings. Instructor should be convinced for your and machine's safety.
- 3D printing training logging in CRF.

Venue and Instructors

Practical	Venue	Instructor
CNC router (small)	Makerspace	Priyanka
Molding and casting	Prototyping Studio (WS-209)	Vijeyata
Composite	Prototyping Studio (WS-209)	Ganesh
CNC router (big)	Makerspace	Prankur

Groups for four practicals

Group Ganesh	Group Prankur	Group Priyanka	Group Vijeyata
Mohit	Amit	Ayush	Amalkrishna
Shruti	Siddharth	Fenil	Medha
Girish	Vaibhav	Jinal	Subhayan
Sukanya	Tejas	Nipun	Sachin
Gulshan	Himanshu	Ishnishan	Atul
Paritosh	Rahul	George	Sonsy
Venkat			
Vinay			
Gouri			

Groups as per project mentors

Dates for Practicals for students

Dates/Practical	CNC router (small)	Molding and casting	Composites	CNC router (big)
21-22 Oct	Group Ganesh	Group Prankur + Group Priyanka		Group Vijeyata
24 Oct	Group Vijeyata			Group Priyanka
31 Oct	Group Priyanka	Group Vijeyata + Group Ganesh		Group Prankur
4-5 Nov	Group Prankur			Group Ganesh

Last week of classes 7-14 Nov free for project development
We (I + TAs) available for your questions on project development
Need to finalize dates for Project presentations, Exhibition (14th Nov or later)

Assignments

- Submit assignments for one of the two combinations:

  - CNC router (small) + molding and casting

  OR

  - CNC router (big) + composite making.

- Assignments in groups of two.
- Major Test (10 marks – written test instead of viva) + Final Project presentation + exhibition (20 marks).

Assignments (things to remember)

- Molding and casting assignment – mold size less than 70 mm (width) X 70 mm (height) X 15 mm (height)
- Composite assignment – composite size – less than 150 mm X 150 mm.
- This is due to limited supply of silicone and epoxy.

Mechanisms

- Fab Academy Video
- Linkages, four bar, crank rocker, parallel linkage
- Slider crank mechanism, inversions
- Pulleys + timing belts
- Lead screws
- Cam and follower
- Springs
- Demo – Medical device development, xy plotter
- Illustrated source book of mechanical components – Robert O. Parmley

Computer controlled machining

- Fab Academy Video
- CNC router (small) – Roland MDX-540 SOP
- SRP Player, Vpanel Modela Pro II (Setting origin)
- stl file as input to SRP player
- Caution: Flute length, Tighten bit before using the machine
- Molds on thingiverse, for your projects

CNC router (big)

- Example Chair
- Vectric Aspire software to convert dxf to g-code (.tap file)
- Press-fit Comb
- Pockets, Engraving, Tabs for profiling
- User Manual
- Finding the z-depth (sacrificial layer)