INTRODUCTION

Sheet metal has traditionally been used in a number of sectors of the industry. Often, sheet metal forming is regarded by many, more as an art than any kind of science. Typical methods of manufacture involved the use of a die and a punch to shape the sheet into desired product shapes.

Rule of thumb could be used to design the tools and expectations on the dimensional accuracy and dimensional tolerances were very limited (were not very high). Modern day manufacturing with sheet metal involves plenty of science. This was necessitated by the need for light weighting of sheet metal components, development of new materials, development of new processes, means to handle the spring back for which sheet metal parts are so notorious, development of new shaping and joining techniques, both at room temperature and at high temperature, and above all, a number of FEM softwares which are capable of predicting the outcome of a forming process with a high degree of accuracy. These softwares are based on the theory of plasticity, and it is important to understand not only the process but also the theory to be able to use the softwares effectively.

Measurements of parameters, process control also improved over the times so that the final outcome (the product) can be expected to be closed to the designed geometry, properties and performance.

The proposed course attempts to bring to the participants the science involved in the development of several sheet metal technologies that we use.

BROAD OBJECTIVES

1. To develop an understanding of the theory underlying the various sheet metal forming processes
2. Develop an understanding of the most commonly used sheet forming processes, and the manufacturing parameters relevant to each
3. Keep abreast of developments in sheet forming processes
4. Understand the science involved in a number of sheet metal forming processes discussed
5. Exposure to FEM simulation softwares to simulate various processing conditions
6. Have brain storming on live problems brought to the table by the participants

COURSE CONTENTS

Lectures, visits to labs, demonstration of processes on a lab scale, brainstorming sessions on live problems will be the core of the programme. A tentative plan is given below :

MAY 7TH
Sheet metal forming : Yielding, Plasticity and failure
Applications of plasticity in simulations
Case study presentation on the use of simulation in Design

MAY 8TH
Material aspects in sheet metal forming : Textures
Forming Limits : Analytical and Experimental
Multistage drawing and Process design
Industrial Case study Presentation and Brainstorming

MAY 9TH
Sheet metal product design
Bending and Springback
Product Design Assignment
Light weighting concepts, methods and technologies
Industrial Case study Presentation and Brainstorming

MAY 10TH
Hot Stamping of ferrous & Non-ferrous metals
Conventional and Hot hydroforming
Slide forming and roll forming
Incremental forming and flow forming

MAY 11TH
Welding and joining of sheet metal
Inspection of sheet metal components
Assembly of sheet metal products
Transmission of variation in assembly

WHO MAY BENEFIT

College teachers from the Engineering colleges, Technological Universities; Professionals in industries making sheet metal products.
VENUE FOR LECTURES
Course will be held at the Victor Menezes Convention Centre, IIT Bombay.

LECTURE NOTES
Lectures, case studies, software simulations (demonstrations / hands ons), tutorials and laboratory sessions will be conducted during the five day

FACULTY
The teaching faculty constitutes experts from Mechanical Engineering, and MEMS Departments of IIT Bombay.

ACCOMMODATION
Accommodation on twin sharing basis is available in the Institute Guest house for a limited number of participants on payment basis and with an advance request.

IMPORTANT DATES
Last date for Online registration: May 06, 2018
Course dates: May 07 – 11, 2018

REGISTRATION
Per participant
- ₹20000 plus 18% GST Tax
The participants should register for the course and pay the respective course fees online at the following URL on

https://portal.iitb.ac.in/ceqipapp/

Only online registration is accepted for this course
No income tax is to be deducted at source from the course fee, as IIT Bombay is exempt from the same. The course fee includes course material, lunch and coffee/tea.

A Certificate of Participation will be awarded to all the participants of the course.