

# Impact of Documentary and Measurement Standards and Standardization on Product Development

Chittaranjan Sahay  
[sahay@hartford.edu](mailto:sahay@hartford.edu)

Suhash Ghosh  
[ghosh@hartford.edu](mailto:ghosh@hartford.edu)

# Courses Served

- Design
  - ME 370 – Elements of Machine Design  
Fatigue, Creep, Fracture Test Standards
  - ME 470 – Machine Design  
AGMA, ABMA, API, ASME AND ISO-Limits and Fits
- Manufacturing
  - ME 480: Modern Manufacturing Processes  
Limits and Fits, GD&T ASME Y 14.5, Surface Roughness ASME B46.1
- Materials
  - ME 213 – Mechanical Engineering and Materials Lab  
ASTM for Tension, Torsion, Hardness (Rockwell) and Impact testing  
(IZOD & Charpy)
- Culminating Experience
  - ME 472/ME 473 – Senior Capstone Design Project, As needed, example  
ASME boiler codes, ASME thick plate design with holes in nuclear reactor

# Courses Served

- Metrology
  - ME 512 – Precision Engineering  
ASME B 89
  - ME 513 - Advanced Geometrical Dimensioning and Tolerancing  
ASME Y 14.5 2009 and ISO 1101 2017 standards
  - ME 514: Principles of Dimensional Metrology  
ISO 286, ASME B 89
  - ME 515: Gage Quantification  
AIAG (Automotive Industry Action Group) MSA Study (Measurement System Analysis)
  - ME 516: Metrology Project – Culminating Experience

# Association with ASME

- Both Drs Sahay and Ghosh worked on ASME Education Committee for “Infusion of Codes and Standards in Undergraduate ME Curriculum” Design track since 2017, 2 modules on GD&T are being pilot tested at several different schools. Outreach to more schools is currently in progress.

# Association with Industries

- Development of Center for Manufacturing and Metrology
  - 30 Pratt & Whitney cohorts trained in “Fundamentals of Metrology”, since October 2016, more than 350 supplier Quality, Design and Manufacturing engineers, 12 cohorts planned for 2020.
  - First cohort of 12 engineers from Collins Aerospace will be trained December 2 – 6, 2019
  - Pratt & Whitney training on “Fundamentals of Airfoils” for 50 quality engineers completed, more sessions planned for 2020.
  - Industry Advisory Group for the Center consists of Nikon Metrology, Zygo (Ametek Group), Taylor Hobson (Ametek Group), Mahr Metrology, Faro, CCAT, NIST, Pratt & Whitney, Sensofar, LS Starrett, and Hexagon Metrology.