

MME 502: Foundry Technology II

Casting Properties of Metals and Alloys: Fluidity- characteristics of metals and alloys of good fluidity, factors affecting fluidity of metals and alloys; Shrinkage-linear shrinkage volume shrinkage, casting shrinkage (free and impeded) factors affecting shrinkage of metals and alloys.linear shrinkage curve of a given alloy; Segregation-Minor segregation, major segregation, inverse segregation, mechanism of their formation and implications. Melting Practice: Furnace charges and their calculations- trial and error method, analytical method and graphical method. Gating System: Gating elements and their significance, gating methods, design of gating system, determination of cross-section of gating elements. Riser: Risers and their Significance, risers designs, riser curve, placement of risers,requirements of effective riser, dimensioning of risers. Casting Design: Solidification and design- solidification and section geometry, solidification and cross sectional area, solidification and mechanical properties, solidification and heavy isolated areas, part-line placement, tolerances, section thickness, draft, machining allowances, shrinkage allowances; Economic considerations- multiple cavity casting, fabrication, cored holes, subsequent operations. Casting Defects: stresses and hot cracks during the freezing and cooling of casting; Determination of stress values during freezing. Quality Control: Quality of moulding sand and metals. Non-destructive methods and other methods.