MME 510: Engineering Materials Selection and Economics

The basic principles necessary for the selection and design of engineering materials, allowing the most suitable materials for a given application to be identified from the full range of materials and section shapes available. Cnaracterizatlon of engineering materials. A professional approach to stress .the metallurgical view point of composition, microstructure,_heat-treatment, influences of impurities, mechanical and environmental considerations involved in the following commercial methods and alloys and their application: Metals and alloys for heavy, medium and light castings; light structural alloys of aluminium, magnesium, and titanium; structural steels (plain carbon, alloy steels, and ultra high strength steels), tool steels (carbon, low alloy and high speed tool steels); bearing materials(white metals,aluminium- and copper- base materials); materials for electrical conductors, contacts and resistance (heating elements e.t.c); magnetic materials, corrosion- and heat resistant alloys; alloys for low and high temperature application; alloys for forming operations.