AUTO 584 SPECIAL TOPICS (MATERIALS FOR AUTOMOBILE BODIES)

Course data:
- Time: St / 456
- Place: Roof # 7
- Course Web Page: http://web1.boun.edu.tr/ercanbalikci/courses.htm

Instructor: Ercan BALIKÇI
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Office hour: T/12:00 – 13:00

Prerequisites: ME 212 and ME 318

Course Objectives:
This course aims at presenting detailed up-to-date information on material technologies for the automobile industry, embracing steels, aluminum, plastics, magnesium, hydro-forming and composite body panels. Course also covers materials processing, formability, welding and joining, anti-corrosion technologies, and a comprehensive consideration of the implications of materials selection on these processes.

COURSE SCHEDULE

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<th>Week</th>
<th>Topic</th>
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| 1    | Introduction  
  Body architecture and terminology |
| 2    | Design and material utilization  
  Historical perspective, evolving material technology, dent resistance, fatigue, integration of materials into design |
| 3,4  | Materials for consideration and use in automotive body structures  
  Aluminum, magnesium, polymers, composites |
| 5    | The role of demonstration, concept and competition cars  
  Energy conservation vehicle, aluminum structured vehicle technology, concept cars, competition cars |
| 6,7  | Component manufacture  
  Steel formability, aluminum formability, magnesium component manufacture, polymer parts manufacture |
| 8,9  | Component assembly  
  Welding, adhesive bonding, mechanical fastening |
| 10   | Corrosion and protection of the automotive structure  
  Corrosion processes, preventive design principles, materials used to prevent body corrosion |
| 11   | Environmental considerations  
  Effect of body mass and emission control, life cycle analysis, recycling, hygiene, safety |
| 12   | Future trends in automotive body materials  
  Factors influencing material change in the future, combined effect of several factors |
| 13,14 | Seminar  
  Each student will present his/her term paper topic. |


Grading:
- Midterm 1: 25 % (After 5th wk.)
- Midterm 2: 25 % (After 10th wk.)
- TP&Seminar: 20 % (Weeks 13 and 14)
- Final: 30 % (will include all topics covered in class)