



# Satuan Acara Pengajaran

MMM8110801 - Mekanika Material

Pengajar

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## Tujuan Perkuliahan

Mahasiswa mampu memahami teori dan aplikasi metoda mekanika material mulai dari perilaku bahan dikenai bebam/gaya dan analisisnya untuk disain teknik dalam mencegah terjadinya kegagalan material.

## Minggu 1

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**Materi**           Pendahuluan Penjelasan sistem, sasaran dan tujuan perkuliahan.  
Jenis Kegagalan Material,  
Disain dan seleksi material

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**Media**            LCD dan Papan Tulis

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**Referensi**  
1" Mechanical Behavior of Materials" ,3rd edition, Norman E. Dowling , Prentice-Hall upper Saddle, New Yersey,USA 07458,2006  
2 "Mechanics of Materials",E. J. Hearn,3 rd eddition,Butterworth-Heinemann, 1997

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**Aktivitas**        metode Mimbar dan diskusi

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## Minggu 2

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**Materi** Survey of Engineering Material :  
Ferrous dan Non Ferrous metalurgi  
Polymer  
Keramik dan Glas  
Komposit Material

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**Media** LCD dan Papan tulis

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**Referensi** 1 " Mechanical Behavior of Materials" ,3rd edition, Norman E. Dowling , Prentice-Hall  
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2 "Mechanics of Materials",E. J. Hearn,3 rd eddition,Butterworth-Heinemann, 1997

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**Aktivitas** metode Mimbar dan Diskusi

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### Minggu 3

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**Materi** Stuktur dan Deformasi dalam Material :  
Ikatan dan struktur material  
Deforamsi elastis dan Kekuatan teoritis  
Deformasi Plastis

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**Media** LCD dan Pa-pan Tulis

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upper Saddle, New Jersey,USA 07458,2006  
2 "Mechanics of Materials",E. J. Hearn,3 rd eddition,Butterworth-Heinemann, 1997

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**Aktivitas** Metode Mimbar dan Diskusi

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### Minggu 4

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**Materi** Review Mekanik Material :  
Prinsip Tegangan dan Regangan  
Bending  
Torsi

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**Media** LCD dan Papan Tulis

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2 "Mechanics of Materials",E. J. Hearn,3 rd edition,Butterworth-Heinemann, 1997

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**Aktivitas** Metode Mimbar dan Diskusi

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## Minggu 5

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**Materi** Pengujian-pengujian Mekanik:  
Pengujian Tarik, Tekan ,Impak , Bending dan torsi

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**Media** LCD dan Papan Tulis

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**Referensi** 1" Mechanical Behavior of Materials" ,3rd edition, Norman E. Dowling , Prentice-Hall upper Saddle, New Jersey, USA 07458, 2006  
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**Aktivitas** Metode mimbar dan diskusi

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## Minggu 6

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**Materi** Yielding dan Fracture dalam Kombinasi Tegangan

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**Media** LCD dan Papan Tulis

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**Referensi** 1" Mechanical Behavior of Materials" ,3rd edition, Norman E. Dowling , Prentice-Hall upper Saddle, New Jersey, USA 07458, 2006  
2 "Mechanics of Materials",E. J. Hearn, 3 rd edition, Butterworth-Heinemann, 1997

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**Aktivitas** Metode Mimbar dan Diskusi

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## Minggu 7

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**Materi** UJIAN TENGAH SEMESTER

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**Media**

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## Referensi

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## Aktivitas

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### Minggu 8

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**Materi** Fracture of cracked members  
Brittle and ductile fracture  
Mathematical concepts  
Fracture toughness testing

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**Media** LCD dan Papan Tulis

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**Aktivitas** metode Mimbar Dan Diskusi

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### Minggu 9

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**Materi** Factice Toughness  
Plastic zone dan Batas Platisitas pada LEFM  
Testing Fracture Toughness

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**Media** LCD dan Papan Tulis

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**Referensi** 1 " Mechanical Behavior of Materials" ,3rd edition, Norman E. Dowling , Prentice-Hall upper Saddle, New Yersey, USA 07458, 2006  
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**Aktivitas** Metode Mimbar dan Diskusi

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### Minggu 10

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**Materi** Fatigue Material Pendekatan dengan Tegangan:  
Test Fatigue  
Kurva Tegangan  
Tegangan Rata-rata  
Tegangan Multiaxial

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**Media** LCD dan Papan Tulis

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upper Saddle, New Jersey, USA 07458, 2006  
2 "Mechanics of Materials",E. J. Hearn, 3 rd eddition, Butterworth-Heinemann, 1997

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**Aktivitas** Metode Mimbar dan Diskusi

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## Minggu 11

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**Materi** Fatigue pada Notched Member  
Pertumbuhan Retak Fatigue  
Estimasi life for pembebanan amplitudo tetap/variable  
Pertimbangan Design

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**Media** LCD dan Papan Tulis

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**Referensi** 1 " Mechanical Behavior of Materials" ,3rd edition, Norman E. Dowling , Prentice-Hall  
upper Saddle, New Jersey, USA 07458, 2006  
2 "Mechanics of Materials",E. J. Hearn, 3 rd eddition, Butterworth-Heinemann, 1997

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**Aktivitas** Metode Mimbar dan Diskusi

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## Minggu 12

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**Materi** Fatigue mendekati dengan Regangan  
Kurva Regangan vs Life  
Pengaruh Tegangan Rata-rata  
Pengaruh Tegangan Multiaxial

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**Media** LCD dan Papan Tulis

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**Aktivitas** Metode Mimbar dan Diskusi

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### Minggu 13

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**Materi** Review Fracture Mechanic dan Fatigue  
Latihan-latihan Soal-soal.

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**Media** LCD dan Papan Tulis

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**Aktivitas** Metode Mimbar dan Diskusi

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### Minggu 14

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**Materi** UJIAN SEMESTER AKHIR

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**Media**

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**Referensi**

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**Aktivitas**

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