



# Satuan Acara Pengajaran

MMS8110802 - Kinetik & Transformasi Fasa

Pengajar

*Dr. Ir. Sotya Astutiningsih M.Eng*

## Minggu 1

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**Materi** Penjelasan SAP; Tata tertib perkuliahan, penilaian dsb  
Introduction to materials thermodynamics  
Reading assignment: Thermodynamics & Phase diagrams, Chapter 1,  
Porter & Easterling

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**Media** Lcd

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**Referensi** Porter, D.A., Easterling, K.E., Phase Transformation in Metals & Alloys,  
2nd ed., Chapman & Hall, 1992  
Lecture notes in Materials Thermodynamics: Prof. P.K. Gupta, Dept. of Mat Sci  
& Engrg, The Ohio State University

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**Aktivitas** kuliah

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## Minggu 2

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**Materi** Thermodynamics & Phase diagrams.

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**Media**

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**Referensi** Porter, D.A., Easterling, K.E., Phase Transformation in Metals & Alloys,  
2nd ed., Chapman & Hall, 1992. p1-56

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**Aktivitas** discussion  
exercise

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## Minggu 3

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**Materi** Diffusion:  
Atomic mechanism; interstitial & substitutional diffusion

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**Media** lcd

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**Referensi** Porter, D.A., Easterling, K.E., Phase Transformation in Metals & Alloys,  
2nd ed., Chapman & Hall, 1992, p60-91

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**Aktivitas** kuliah  
Reading assignment: Chapter 2, Porter & Easterling

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#### Minggu 4

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**Materi** Diffusion

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**Media**

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**Referensi** Porter, D.A., Easterling, K.E., Phase Transformation in Metals & Alloys,  
2nd ed., Chapman & Hall, 1992

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**Aktivitas** discussion  
exercise

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#### Minggu 5

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**Materi** Crystal Interfaces and Microstructure: interfacial free energy, boundaries in  
single phase solids

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**Media** lcd

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**Referensi** Porter, D.A., Easterling, K.E., Phase Transformation in Metals & Alloys,  
2nd ed., Chapman & Hall, 1992, p.110-161

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**Aktivitas** kuliah  
Reading assignment: Chapter 3 Porter & Easterling

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#### Minggu 6

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**Materi** Crystal interfaces

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**Media**

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**Referensi** Porter, D.A., Easterling, K.E., Phase Transformation in Metals & Alloys,  
2nd ed., Chapman & Hall, 1992

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**Aktivitas** discussion & exercise

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## Minggu 7

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**Materi** Review

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**Media** lcd

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**Referensi** Porter, D.A., Easterling, K.E., Phase Transformation in Metals & Alloys, 2nd ed., Chapman & Hall, 1992

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**Aktivitas** kuliah dan diskusi

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## Minggu 8

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**Materi** Ujian Tengah Semester

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**Media**

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**Referensi**

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**Aktivitas** ujian tertulis, tutup buku

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## Minggu 9

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**Materi** Solidification: nucleation, growth & alloy solidification  
Reading assignment: Chapter 4 Porter & Easterling

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**Media** lcd

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**Referensi** Porter, D.A., Easterling, K.E., Phase Transformation in Metals & Alloys, 2nd ed., Chapman & Hall, 1992

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**Aktivitas** kuliah

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## Minggu 10

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**Materi** solidification  
Case studies

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**Media** lcd

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**Referensi** Porter, D.A., Easterling, K.E., Phase Transformation in Metals & Alloys, 2nd ed., Chapman & Hall, 1992

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**Aktivitas** diskusi

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## Minggu 11

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**Materi** Diffusional transformation: homogeneous nucleation; heterogeneous nucleation; precipitate growth

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**Media** lcd

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**Referensi** Porter, D.A., Easterling, K.E., Phase Transformation in Metals & Alloys, 2nd ed., Chapman & Hall, 1992

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**Aktivitas** kuliah

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## Minggu 12

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**Materi** Diffusional transformation: transformation kinetics; recipitation & age hardening; spinoidal decomposition; particle coarsening; bainite transformation

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**Media** lcd

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**Referensi** Porter, D.A., Easterling, K.E., Phase Transformation in Metals & Alloys, 2nd ed., Chapman & Hall, 1992

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**Aktivitas** kuliah

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## Minggu 13

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**Materi** Difusionless transformation: martensite crystallography; martensite nucleation, growth & tempering

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**Media** lcd

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**Referensi** Porter, D.A., Easterling, K.E., Phase Transformation in Metals & Alloys, 2nd ed., Chapman & Hall, 1992

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**Aktivitas** kuliah

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## Minggu 14

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**Materi** Case studies: diffusional & diffusionless transformation

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**Media** lcd

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**Referensi** Porter, D.A., Easterling, K.E., Phase Transformation in Metals & Alloys, 2nd ed., Chapman & Hall, 1992

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**Aktivitas** diskusi

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## Minggu 15

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**Materi** Ujian Akhir Semester

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**Media**

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**Referensi**

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**Aktivitas** Tertulis, tutup buku

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