



Satuan Acara Pengajaran

ENMT800014 - Material Mutakhir

Pengajar

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Minggu 1

Materi General introduction to Advanced Materials
- Class information
- Course content
- Grading
- References

Media LCD and projector

Referensi 1. J.R. Davis, "Heat-Resistant Materials," ASM Specialty Handbook, 1997.
2. J.R. Davis, "Aluminum and Aluminum Alloys," ASM Specialty Handbook, 1993.
3. M.F. Ashby, et al., "Metal Foams: A Design Guide," Butterworth-Heinemann, 2000.
4. J.A. Brydson, "Plastic Materials," Butterworth-Heinemann, 1999.
5. A. J. Moulson and J. M. Herbert, "Electroceramics, Materials, Properties, Applications," John Wiley & Sons, 2003.
6. J.D. Buckley and D.D. Edie, "Carbon-Carbon Materials and Composites," Noyes Publications, 1993.

Aktivitas

Minggu 2

Materi Proeprty, characterization, and applications of:
- Superalloys
- ODS alloys
- Other heat ressitant alloys

Media LCD Projector

Referensi J.R. Davis, "Heat-Resistant Materials," ASM Specialty Handbook,
1997.

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Minggu 3

Materi Metal alloys for aircraft applications:
- Aluminium/aluminium alloys
- Titanium/titanium alloys

Media LCD Projector

Referensi 1. G.E. Totten and D.S. MacKenzie (Eds), "Handbook of Aluminum,
Physical Metallurgy and Process," Vol. 1, Marcel Dekker, Inc., New
York, 2003.
2. G.E. Totten and D.S. MacKenzie (Eds), "Handbook of Aluminum,
Alloy Production and Materials Manufacturing", Vol. 2, Marcel Dekker
Inc., New York, 2003.
3. A. K. Vasudevan and R.D. Doherty (Eds), Aluminum Alloys, Contemporary
Research and Applications, Vol. 31, Academic Press, Inc., San Diego (1989)

Aktivitas

Minggu 4

Materi Nanocomposites:
a. Pengantar
b. Manufacture
c. Karakterisasi
d. Applications
e. Recent development

Media LCD Projector

- Referensi**
1. J.D. Buckley and D.D. Edie, "Carbon-Carbon Materials and Composites," Noyes Publications, 1993.
 2. T. Sands, "Designing Nanocomposite Thermoelectric Materials: 21st Century Materials for 20th Century Devices based on 19th Century Phenomena," School of Materials Engineering, Purdue University (2008).
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Minggu 5

- Materi**
- Metal foams:
- a. Pengantar
 - b. Manufacture
 - c. Karakterisasi
 - d. Aplikasi
 - e. Studi kasus
-

Media LCD Projector

Referensi M.F. Ashby, et al., "Metal Foams: A Design Guide," Butterworth-Heinemann, 2000.

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Minggu 6

- Materi**
- Metal foams:
- General introduction
 - Manufacture
 - Characterization
 - Applications
-

Media LCD Projectors

Referensi M.F. Ashby, et al.: Metal Foams: A Design Guide, Butterworth-Heinemann, 2000.

Aktivitas

Minggu 7

Materi Material Magnet:
- General Introduction
- Model and properties
- Preparation
- Applications

Media LCD Projectors

Referensi J. Stöhr and H.C. Siegmann: Magnetism From Fundamentals to Nanoscale Dynamics, Springer-Verlag, Heidelberg, 2006.

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Minggu 8

Materi Midterm

Media

Referensi

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Minggu 9

Materi Shape memory alloys:
- General Introduction
- Manufacture
- Characterization
- Applications

Media LCD Projector

Referensi D.C. Lagoudas (Ed): Shape Memory Alloys Modeling and Engineering Applications, Springer Science, New York, 2008.

Aktivitas

Minggu 10

Materi Liquid Crystal Polymer:
- General Introduction
- Manufacture
- Applications

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Referensi

- D. Coates: Liquid Crystal Polymers, Synthesis, Properties and Applications, Vol. 10, Rapra Technology, UK, 2000
- W.D. Callister: Fundamentals of Materials Science and Engineering, John Wiley & Sons, Inc., 2001.
- G. W. Gray: Proc. Royal Soc. London. Series A, Math. Phys. Sci., Vol. 402, No. 1822 (1985) 1-36

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Minggu 11

Materi

- Advanced Ceramics
- General Introduction
- Manufacture
- Applications

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Referensi

- W.D. Callister: Fundamentals of Materials Science and Engineering, John Wiley & Sons, Inc., 2001.
- M.W. Barsoum, Fundamental of Ceramics, Institute of Physics Publishing, Philadelphia, 2003.
- W.D. Kingery, H.K. Bowen, D.R. Uhlmann, Introduction to Ceramics, 2nd ed., John Wiley & Sons, New York, 1976.

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Minggu 12

Materi

- Metallic Glass:
- General Introduction
- Manufacture
- Applications
- Today advancement

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Referensi

- Nicholas DeCristofaro: Materials Research Society, MRS Bulletin, Volume 23, Number 5 (1998), p. 50 ? 56.
- M. Miller and P. Liaw (Eds): Bulk Metallic Glass, Springer, New York, 2008.

Aktivitas

Minggu 13

Materi Biomaterial
 - General Introduction
 - Material and process
 - Applications
 - Today advancement

Media LCD Projector

Referensi - R. E. Smallman and R. J. Bishop: Modern Physical Metallurgy and Materials Engineering, Science, process, applications 6th. Ed. Butterworth-Heinemann, Oxford, 1999.
 - J. Black and G. Hastings: Handbook of Biomaterials Properties, Chapman and Hall, New York, 1998.

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Minggu 16

Materi Final examination

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Referensi

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