



BERITA ACARA PERKULIAHAN
(Presentasi Kehadiran Dosen)
SEMESTER GANJIL TA 2020/2021

Program Studi : Teknik Mesin (S-1), FTI-ISTN

Mata Kuliah : Komposit Material

Dosen : Prof. Dr. Ir. D. N. Adnyana

No	Tanggal	Materi Kuliah	Jumlah MHS Hadir	Tanda Tangan Dosen
1	23/09/2020	Pendahuluan tentang Material Komposit dan Penyampaian Softfile Materi Kuliah	5	<i>D. N. Adnyana</i>
2	02/10/2020	Pembagian Engineering Materials (Material Teknik)	5	<i>D. N. Adnyana</i>
3	07/10/2020	Tinjauan Ulang Material Logam & Paduan (Besi & Baja)	5	<i>D. N. Adnyana</i>
4	14/10/2020	Tinjauan Ulang Material Logam & Paduan (Non Baja)	5	<i>D. N. Adnyana</i>
5	23/10/2020	Tinjauan Ulang Material Keramik	4	<i>D. N. Adnyana</i>
6	05/11/2020	UJIAN TENGAH SEMESTER	5	<i>D. N. Adnyana</i>
7	13/11/2020	Tinjauan Ulang Material Polimer & Pembagian Material Komposit	5	<i>D. N. Adnyana</i>
8	20/11/2020	Proses Pembuatan Material Komposit	4	<i>D. N. Adnyana</i>
9	27/11/2020	Karakterisasi Material Komposit	-	<i>D. N. Adnyana</i>
10	03/12/2020	Perhitungan Kekuatan Material Komposit	5	<i>D. N. Adnyana</i>
11	11/12/2020	Kegagalan/Kerusakan Material Komposit	5	<i>D. N. Adnyana</i>
12	12/12/2020	Aplikasi Material Komposit	5	<i>D. N. Adnyana</i>
13	18 - 30 Januari 2021	Rencana UJIAN AKHIR SEMESTER	Rencana 5	<i>D. N. Adnyana</i>

Mengetahui,

Ka. Prodi Teknik Mesin (S-1)
FTI, ISTN

Dosen Pengajar,



Prof. Dr. Ir. D. N. Adnyana

Absensi Mata Kuliah

Komposit

Hari / Tanggal : Rabu, 23 September 2020

No.	Nama	NIM	Hadir / Tidak Hadir
1.	Syarul Ridho Fauzi	16210021	Hadir
2.	Oktario leonardy	17210001	Hadir
3.	Muhammad Febryan Syawali	17210004	Hadir
4.	Muhammad Iqbal Fauzi	17210005	Hadir
5.	Abby Abandika	152100	Hadir

Engineering Materials

- Engineering Materials
 - Metals
 - Ferrous
 - Steels
 - Stainless steels
 - Tool and die steels
 - Cast irons
 - Nonferrous
 - Aluminum
 - Copper
 - Titanium
 - Tungsten
 - Others
 - Amorphous
 - Plastics
 - Thermoplastics
 - Acrylics
 - ABS
 - Nylons
 - Polyethylenes
 - PVC
 - Others
 - Thermosets
 - Epoxies
 - Phenolics
 - Polyimides
 - Others
 - Elastomers
 - Rubbers
 - Silicones
 - Polyurethanes
 - Ceramics and others
 - Oxides
 - Nitrides
 - Carbides
 - Glasses
 - Glass ceramics
 - Graphite
 - Diamond
 - Composites
 - Reinforced plastics
 - Metal-matrix
 - Ceramic-matrix
 - Laminates
 - Others

Zoom Meeting interface showing participants: Syarul Ridho Fauzi (Me), DN ADNYANA (Host), Abby Abandika, Muhammad Febryan Syawali, Muhammad Iqbal Fauzi, and Rio Leonardi. System tray shows 15:24 on 23/09/2020.

Absensi Mata Kuliah

Komposit

Hari / Tanggal : Jum`at, 2 Oktober 2020

No.	Nama	NIM	Hadir / Tidak Hadir
1.	Syarul Ridho Fauzi	16210021	Hadir
2.	Oktario leonardy	17210001	Hadir
3.	Muhammad Febryan Syawali	17210004	Hadir
4.	Muhammad Iqbal Fauzi	17210005	Hadir
5.	Abby Abandika	15210037	Hadir

Zoom Meeting

Muhammad Iqb... Rio Leonardi

Engineering Materials

```
graph TD; EM[Engineering Materials] --> Metals; EM --> Plastics; EM --> Ceramics["Ceramics and others"]; EM --> Composites; Metals --> Ferrous; Metals --> Nonferrous; Ferrous --> Amorphous; Ferrous --> Crystalline; Amorphous --> Steels; Amorphous --> Stainless steels; Amorphous --> Tool and die steels; Amorphous --> Cast irons; Crystalline --> Aluminium; Crystalline --> Copper; Crystalline --> Titanium; Crystalline --> Tungsten; Crystalline --> Others; Nonferrous --> Aluminium; Nonferrous --> Copper; Nonferrous --> Titanium; Nonferrous --> Tungsten; Nonferrous --> Others; Plastics --> Thermoplastics; Plastics --> Thermosets; Plastics --> Elastomers; Thermoplastics --> Acrylics; Thermoplastics --> ABS; Thermoplastics --> Nylons; Thermoplastics --> Polyethylenes; Thermoplastics --> PVC; Thermoplastics --> Others; Thermosets --> Epoxies; Thermosets --> Phenolics; Thermosets --> Polyimides; Thermosets --> Others; Elastomers --> Rubbers; Elastomers --> Silicones; Elastomers --> Polyurethanes; Ceramics["Ceramics and others"] --> Oxides; Ceramics["Ceramics and others"] --> Nitrides; Ceramics["Ceramics and others"] --> Carbides; Ceramics["Ceramics and others"] --> Glasses; Ceramics["Ceramics and others"] --> Glass ceramics; Ceramics["Ceramics and others"] --> Graphite; Ceramics["Ceramics and others"] --> Diamond; Composites --> Reinforced plastics; Composites --> Metal-matrix; Composites --> Ceramic-matrix; Composites --> Laminates; Composites --> Others;
```

Activate Windows
Go to PC settings to activate Windows.

Participants (6)

- Syarul Ridho Fauzi (Me)
- DN ADNYANA (Host)
- Abby Abandika
- Muhammad Febryan Syawali
- Muhammad Iqbal Fauzi
- Rio Leonardi

10:06
02/10/2020

Absensi Mata Kuliah

Komposit

Hari / Tanggal : Rabu, 07 Oktober 2020

No.	Nama	NIM	Hadir / Tidak Hadir
1.	Syarul Ridho Fauzi	16210021	Hadir
2.	Oktario leonardy	17210001	Hadir
3.	Muhammad Febryan Syawali	17210004	Hadir
4.	Muhammad Iqbal Fauzi	17210005	Hadir
5.	Abby Abandika	15210037	Hadir

The screenshot shows a Zoom meeting interface. At the top, there are video thumbnails for participants: Rio Leonardi and Muhammad Iqb... The meeting title is 'Zoom Meeting'. A banner at the top indicates 'Remaining Meeting Time: 09:10 | Upgrade to Pro'. The main content is a presentation slide with the title 'Basic Types of Tool and Die Steels'. The slide contains a table:

Type	AISI
High speed	M (molybdenum base) T (tungsten base)
Hot work	H1 to H19 (chromium base) H20 to H39 (tungsten base) H40 to H59 (molybdenum base)
Cold work	D (high carbon, high chromium) A (medium alloy, air hardening)
Shock resisting	O (oil hardening) S
Mold steels	P1 to P19 (low carbon) P20 to P39 (others)
Special purpose	L (low alloy) F (carbon-tungsten)
Water hardening	W

At the bottom of the slide, there is a watermark: 'Activate Windows Go to PC settings to activate Windows.' The Zoom interface also shows a list of participants on the right side, including Syarul Ridho Fauzi (Me), DN ADNYANA (Host), Abby Abandika, Muhammad Febryan Syawali, Muhammad Iqbal Fauzi, and Rio Leonardi. The Windows taskbar at the bottom shows the time as 15:36 on 07/10/2020.

Absensi Mata Kuliah

Komposit

Hari / Tanggal : Rabu, 14 Oktober 2020

No.	Nama	NIM	Hadir / Tidak Hadir
1.	Syarul Ridho Fauzi	16210021	Hadir
2.	Oktario leonardy	17210001	Hadir
3.	Muhammad Febryan Syawali	17210004	Hadir
4.	Muhammad Iqbal Fauzi	17210005	Hadir
5.	Abby Abandika	152100	Hadir

Copper and copper alloys

- Copper alloys have electrical and mechanical properties, corrosion resistance, thermal conductivity and wear resistance.
- Applications are electronic components, springs and heat exchangers.
- **Brass** is an alloy of copper and zinc.
- **Bronze** is an alloy of copper and tin.

Activate Windows
Go to PC settings to activate

DN ADNYANA's screen

15:25 75%

Close Participants (6)

- Syarul Ridho Fauzi (me)
- DN ADNYANA (Host)
- Abby Abandika F
- Muhammad Febryan Syawali
- Muhammad Iqbal Fauzi
- Rio Leonardi

Absensi Mata Kuliah

Komposit

Hari / Tanggal : Jum`at, 23 Oktober 2020

No.	Nama	NIM	Hadir / Tidak Hadir
1.	Syarul Ridho Fauzi	16210021	Hadir
2.	Abby Abandika	15210037	Hadir
3.	Muhammad Febryan Syawali	17210004	Hadir
4.	Muhammad Iqbal Fauzi	17210005	Hadir
5.	Oktario leonardy	17210001	Tidak Hadir

The screenshot shows a Zoom meeting interface. At the top, it says "Zoom Meeting 40-Minutes" and "You are viewing Dewa Adnyana's screen". The meeting title is "Ceramics". The participants list on the right includes Syarul Ridho Fauzi (Me), Dewa Adnyana (Host), Abby Abandika, Muhammad Febryan Syawali, and Muhammad Iqbal Fauzi. The main content is a presentation slide with the following text:

Ceramics

- Traditional ceramics
 - clays: kaolinite
 - silica: quartz, sandstone
 - alumina
 - silicon carbide
- New ceramics
 - oxide ceramics : alumina
 - carbides : silicon carbide, titanium carbide, etc.
 - nitrides : silicon nitride, boron nitride, etc.

The Windows taskbar at the bottom shows the time as 14:23 on 23/10/2020.

Absensi Mata Kuliah

Komposit

Hari / Tanggal : Jum`at, 13 November 2020

No.	Nama	NIM	Hadir / Tidak Hadir
1.	Syarul Ridho Fauzi	16210021	Hadir
2.	Abby Abandika	15210037	Hadir
3.	Muhammad Febryan Syawali	17210004	Hadir
4.	Muhammad Iqbal Fauzi	17210005	Hadir
5.	Oktario leonardy	17210001	Hadir

The screenshot shows a Zoom meeting interface. At the top, there are three video thumbnails for participants: Muhammad Feb..., Abby Abandika, and Muhammad Iqb... The main content is a presentation slide titled "Composite Materials" with the following bullet points:

- **Metal Matrix Composites (MMC)**
Mixture of ceramics and metals reinforced by strong, high-stiffness fibers
- **Ceramic Matrix Composites (CMC)**
Ceramics such as aluminum oxide and silicon carbide embedded with fibers for improved properties, especially high temperature applications.
- **Polymer Matrix Composites (PMC)**
Thermosets or thermoplastics mixed with fiber reinforcement or powder.

On the right side, there is a "Participants (6)" list:

- Syarul Ridho Fauzi (Me)
- Dewa Adnyana (Host)
- Abby Abandika
- Muhammad Febryan Syawali
- Muhammad Iqbal Fauzi
- Rio Leonardi

At the bottom, the Windows taskbar is visible with the date and time: 14:18, 13/11/2020.

Absensi Mata Kuliah

Komposit

Hari / Tanggal : Kamis, 03 Desember 2020

No.	Nama	NIM	Hadir / Tidak Hadir
1.	Syarul Ridho Fauzi	16210021	Hadir
2.	Muhammad Iqbal Fauzi	17210005	Hadir
3.	Muhammad Febryan Syawali	17210004	Hadir
4.	Abby Abandika	15210037	Hadir
5.	Oktario leonardy	17210001	Hadir

The image shows a screenshot of a Zoom meeting interface. The top part of the screen displays the time (15:20) and battery level (82%). The main content area shows a presentation slide titled "Particle-reinforced" with three examples:

- Spheroidite steel:** matrix: ferrite (ductile), particles: cementite (Fe₃C) (brittle). Adapted from Fig. 15.10, Callister & Fig. 15.10 is copyright United States Steel Corporation, 1971.
- WC/Co cemented carbide:** matrix: cobalt (ductile), V_{WC}: 10-15vol%, particles: WC (brittle, hard). Adapted from Fig. 18.4, Callister & Fig. 18.4 is copyright Cengage Learning, 2009, Cengage Learning, 2009.
- Automobile tires:** matrix: rubber (compliant), particles: C (stiffer). Adapted from Fig. 18.5, Callister & Fig. 18.5 is copyright Cengage Learning, 2009, Cengage Learning, 2009.

The bottom part of the screen shows the Zoom control bar with icons for Unmute, Start Video, Share, Participants, and More. On the right side, there is a "Participants (6)" list:

- Syarul Ridho Fauzi (me)
- Dewa Adnyana (Host)
- Abby Abandika
- Muhammad Febryan Syawali
- Muhammad Iqbal Fauzi
- Rio Leonardi

Each participant entry includes a profile picture, name, and icons for video and audio status.

Absensi Mata Kuliah

Komposit

Hari / Tanggal : Jum'at, 11 Desember 2020

No.	Nama	NIM	Hadir / Tidak Hadir
1.	Syarul Ridho Fauzi	16210021	Hadir
2.	Oktario leonardy	17210001	Hadir
3.	Muhammad Febryan Syawali	17210004	Hadir
4.	Muhammad Iqbal Fauzi	17210005	Hadir
5.	Abby Abandika	15210037	Hadir

PROBLEM AREAS IN COMPOSITES

- Bonded and bolted joints
- Holes in laminates
- Fracture mechanics
- Optimization
- Interlaminar stresses
- Nonlinear material behavior
- Inspection techniques

Participants (4)

- Syarul Ridho Fauzi (Me)
- Dewa Adnyana (Host)
- Muhammad Iqbal Fauzi
- Rio Leonardi

PROBLEM AREAS IN COMPOSITES

- Bonded and bolted joints
- Holes in laminates
- Fracture mechanics
- Optimization
- Interlaminar stresses
- Nonlinear material behavior
- Inspection techniques

Participants (5)

- Syarul Ridho Fauzi (Me)
- Dewa Adnyana (Host)
- Abby Abandika
- Muhammad Febryan Syawali
- Muhammad Iqbal Fauzi

Absensi Mata Kuliah

Komposit

Hari / Tanggal : Rabu, 23 Desember 2020

No.	Nama	NIM	Hadir / Tidak Hadir
1.	Abby Abandika	15210037	Hadir
2.	Syarul Ridho Fauzi	16210021	Hadir
3.	Oktario leonardy	17210001	Hadir
4.	Muhammad Febryan Syawali	17210004	Hadir
5.	Muhammad Iqbal Fauzi	17210005	Hadir

The screenshot shows a Zoom meeting interface. The main content is a presentation slide titled "V. PROSES PEMBUATAN" (Manufacturing Processes). The slide lists the following:

- Macam-macam proses pembuatan:
 - I. Proses Dingin:
 - Tidak perlu pemanasan matrik, matrik telah dalam bentuk cair, cukup menuangkan bahan matrik ke dalam cetakan yang telah berisi filler (filler berbentuk serat atau lembaran) lalu dikeringkan hingga padat. Padatan itu adalah komposit.
 - Bila filler berbentuk butiran perlu pengadukan antara filler dengan matrik hingga tercampur merata. Setelah itu tuangkan campuran tersebut ke dalam cetakan, lalu dipadatkan. Padatan ini adalah komposit.
 - Mempercepat pengeringan dengan cara pemberian bahan katalis atau hardener. Hardener dimasukkan ke dalam matrik hingga tercampur homogen.

The Zoom interface includes a top bar with "Zoom Meeting 40-Minutes", "You are viewing Dewa Adnyana's screen", and "View Options". The top left shows video thumbnails for Syarul Ridho Fauzi, Dewa Adnyana, Rio Leonardi, and Muhammad Iqb... The right sidebar shows a list of participants: Syarul Ridho Fauzi (Me), Dewa Adnyana (Host), Abby Abandika, Muhammad Febryan Syawali, Muhammad Iqbal Fauzi, and Rio Leonardi. The bottom bar contains controls for Unmute, Start Video, Participants, Chat, Share Screen, Record, Reactions, and Leave. The system tray at the bottom right shows the time 10:52 on 23/12/2020.

ABSENSI

UJIAN AKHIR SEMESTER GANJIL TA 2020/2021

Program Studi : Teknik Mesin S-1 Reguler, FTI - ISTN
Mata Kuliah : Material Komposit
Hari/Tanggal : Rabu, 20 Januari 2021
Jam : 15.30 - 17.30 wib
Ruang : A-6
Sifat Ujian : Virtual (Online)
Dosen : Prof. Dr. Ir. D. N. Adnyana

No.	Nama	NIM	Hadir / Tidak Hadir
1.	Abby Abandika	15210037	Hadir
2.	Syarul Ridho Fauzi	16210021	Hadir
3.	Oktario leonardy	17210001	Hadir
4.	Muhammad Febryan Syawali	17210004	Hadir
5.	Muhammad Iqbal Fauzi	17210005	Hadir

ABSENSI

UJIAN AKHIR SEMESTER GANJIL TA 2020/2021

Program Studi : Teknik Mesin S-1 Reguler, FTI - ISTN
Mata Kuliah : Material Komposit
Hari/Tanggal : Rabu, 20 Januari 2021
Jam : 15.30 - 17.30 wib
Ruang : A-6
Sifat Ujian : Virtual (Online)
Dosen : Prof. Dr. Ir. D. N. Adnyana

No.	Nama	NIM	Hadir / Tidak Hadir
1.	Abby Abandika	15210037	Hadir
2.	Syarul Ridho Fauzi	16210021	Hadir
3.	Oktario leonardy	17210001	Hadir
4.	Muhammad Febryan Syawali	17210004	Hadir
5.	Muhammad Iqbal Fauzi	17210005	Hadir

UJIAN TENGAH SEMESTER GANJIL (TA 2020/2021)

Mata Kuliah	: Komposit Material
Jurusan/Prodi	: Teknik Mesin, FTI – ISTN
Hari/Tanggal	: Kamis, 05 November 2020
Waktu	: Jam 15.00 - 17.00 wib
Sifat Ujian	: Virtual
Dosen	: Prof. Dr. Ir. D. N. Adnyana

Soal

Setiap mahasiswa dengan NIM berikut ini diminta untuk menyampaikan jawaban dan penjelasan tentang **matrik pembentukan material komposit** yang disebutkan dibagian belakang setiap NIM untuk hal-hal yang berkaitan dengan :

- Struktur mikro dan sifat (sifat mekanis, sifat fisik dan sifat kimia)
- Manfaat dan tujuan pemilihan penggunaan material tersebut
- Contoh aplikasinya

NIM	Nama Material
16210021	Paduan Aluminium Cor
17210001	Paduan Nikel Cor
17210004	Polyvinyl Chloride (PVC)
17210005	Polyethylene (PE)
15210037	Epoxy
-	Oxide Ceramic

*** **Selamat Bekerja** ***

UJIAN AKHIR SEMESTER GANJIL TA 2020/2021

Program Studi	: Teknik Mesin S-1 Reguler, FTI - ISTN
Mata Kuliah	: Material Komposit
Hari/Tanggal	: Rabu, 20 Januari 2021
Jam	: 15.30 - 17.30 wib
Ruang	: A-6
Sifat Ujian	: Virtual (Online)
Dosen	: Prof. Dr. Ir. D. N. Adnyana

SOAL

- 1). Jelaskan secara singkat hal-hal berikut ini yang terjadi pada material komposit:
 - a). Prinsip dasar kekuatan material komposit (NIM: 15210037)
 - b). Prinsip dasar kekakuan material komposit (NIM: 16210021)
 - c). Fenomena kegagalan/kerusakan material komposit (NIM: 17210001)
 - d). Strength to weight ratio material komposit (NIM: 17210004)
 - e). Kelebihan dan kekurangan material komposit (NIM: 17210005)

- 2). Sebutkan jenis material komposit yang umum digunakan untuk peralatan berikut ini dan jelaskan secara singkat alasannya:
 - a). Peralatan olahraga seperti: raket badminton/tenis, stick golf, dll (NIM: 17210005)
 - b). Bahan bangunan (NIM: 17210004)
 - c). Ban mobil (NIM: 17210001)
 - d). Pahat potong untuk proses machining (NIM: 16210021)
 - e). Komponen pesawat terbang/helicopter (NIM: 15210037)

- 3). Sebutkan jenis pemakaian material komposit berikut ini dan jelaskan secara singkat alasannya menggunakan material komposit tersebut:
 - a). Glass fiber reinforced plastic (NIM: 16210021)
 - b). Carbon/graphite fiber reinforced plastic (NIM: 15210037)
 - c). Metal matrix composite (NIM: 17210005)
 - d). Ceramic matrix composite (NIM: 17210001)
 - e). Kevlar fiber reinforced plastic (NIM: 17210004)

***** Selamat Bekerja *****

DAFTAR NILAI

SEMESTER GANJIL REGULER TAHUN 2020/2021

Program Studi : Teknik Mesin S1

Matakuliah : Komposit (P)

Kelas / Peserta : A

Perkuliahan : Kampus ISTN Bumi Srengseng Indah

Dosen : DN. Adnyana, Prof. DR. Ir. APU

Hal. 1/1

No	NIM	N A M A	ABSEN	TUGAS	UTS	UAS	MODEL	PRESENTASI	NA	HURUF
			0%	0%	40%	60%	0%	0%		
1	15210037	Abby Abandika Fadhilla	100	0	77	68	0	0	71.6	B
2	16210021	Syarul Ridho Fauzi	100	0	78	75	0	0	76.2	A-
3	17210001	Oktario Leonardy	100	0	70	70	0	0	70	B
4	17210004	Muhammad Febryan Syawali	100	0	75	70	0	0	72	B+
5	17210005	Muhammad Iqbal Fauzi	100	0	78	72	0	0	74.4	B+

Rekapitulasi Nilai							
A	0	B+	2	C+	0	D+	0
A-	1	B	2	C	0	D	0
		B-	0	C-	0	E	0

Jakarta, 5 February 2021

Dosen Pengajar

DN. Adnyana, Prof. DR. Ir. APU