Emerging Technology (4616443)

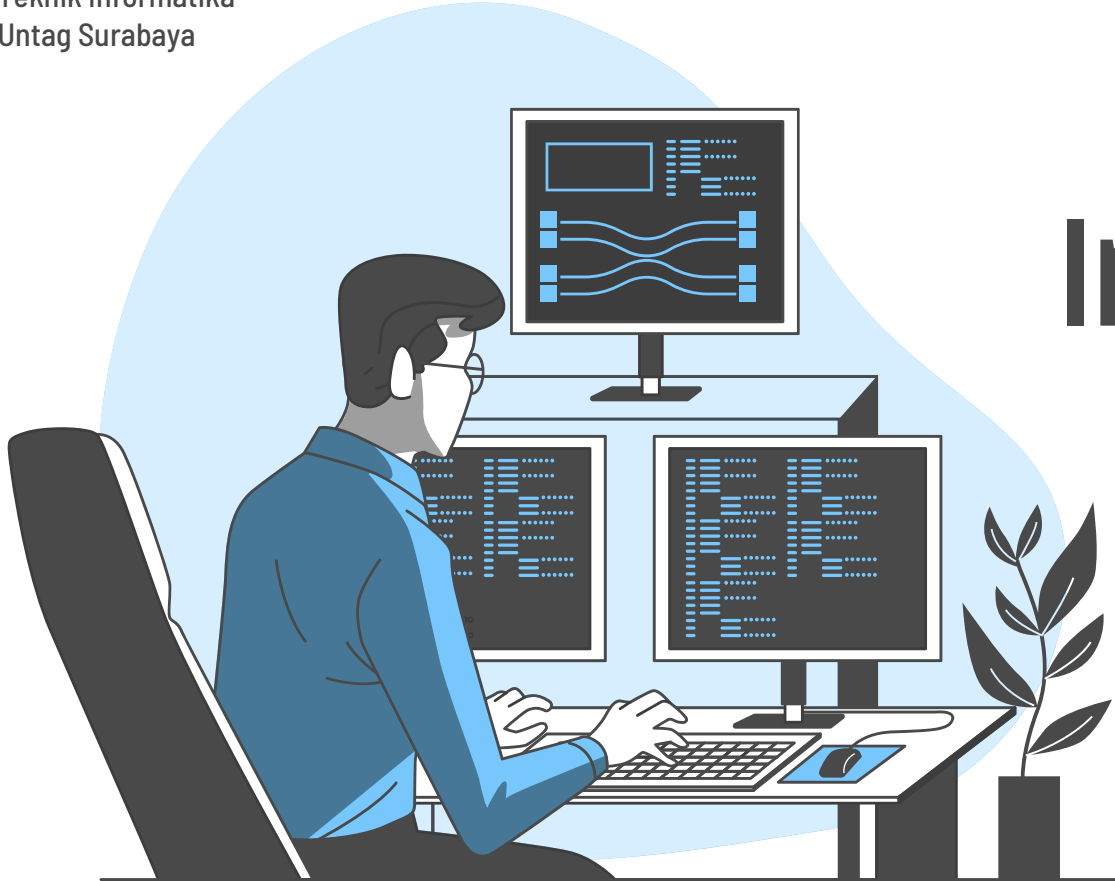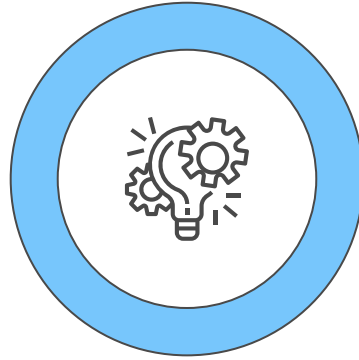**Intan Dzikria S.Kom., M.IM., Ph.D.**
Teknik Informatika
Untag Surabaya

Introduction & Course Plan

Chapter 1

Learning Outcomes

Memahami konsep teknologi berkembang dan rencana pembelajaran semester

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📞 081232625294

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💬 Class WhatsApp Group (Link in Elitag)

Student Hours : Monday – Friday at 08.00 – 16.00

Outlines

01 **What is Emerging Technology?**
Introduction

. . .

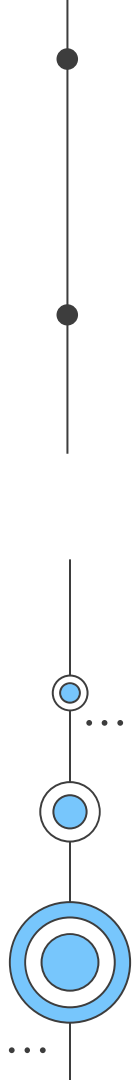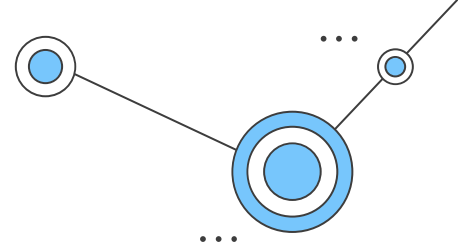**02** **Course Plan**
Schedule and Homeworks

. . .

01
Introduction

What is Emerging Technology ?
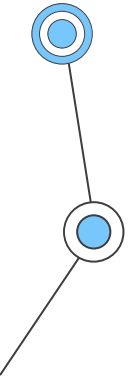
What is Emerging ?

Cambridge Dictionary
"**Growing and Developing**"
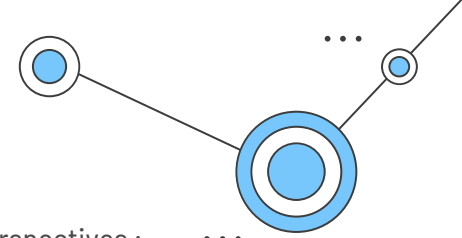
MacMillan Dictionary
"**to come out of something, or our from behind something, to become known**"

Merriem-Webster's Collegiate Disctionary
"**to become manifest: become known**"

Definition of Emerging Technology

Rotolo et.al. (2015) described definitions of emerging technology in their research paper from many perspectives :

Martin (1995)	"A 'generic emerging technology' is defined [. . .] as a technology the exploitation of which will yield benefits for a wide range of sectors of the economy and/or society" (p. 165)
Day & Schoemaker (2000)	"[. . .] emerging technologies as science-based innovation that have the potential to create a new industry or transform an existing ones. They include discontinuous innovations derived from radical innovations [. . .] as well as more evolutionary technologies formed by the convergence of previously separate research streams" (p. 30)
Hung and Chu (2006)	"Emerging technologies are the core technologies, which have not yet demonstrated potential for changing the basis of competition" (p. 104)
Boon and Moors (2008)	"Emerging technologies are technologies in an early phase of development. This implies that several aspects, such as the characteristics of the technology and its context of use or the configuration of the actor network and their related roles are still uncertain and non-specific" (p. 1915)
Halaweh (2013)	Characteristics of (IT) emerging technologies "are uncertainty, network effect, unseen social and ethical concerns, cost, limitation to particular countries, and a lack of investigation and research." (p. 108)
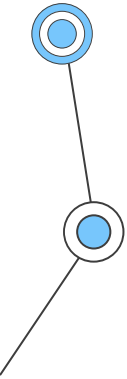
5 Key Definitions of Emerging Technology

Radical Novelty
novelty or newness

Novelty is not only a characteristic of technologies deriving from technical revolutions, (e.g. DNA sequencing technologies, molecular biology, nano-materials), but it may also be generated by putting an existing technology to a new use

Clock-speed Nature
fast growth

Growth may be observed across a number of dimensions such as the number of actors involved (e.g. scientists, universities, firms, users), public and private funding, knowledge outputs produced (e.g. publications, patents), prototypes, products and services, etc.

Coherence
that persists over time

Coherence refers to internal characteristics of a group such as 'sticking together', 'being united', 'logical interconnection' and 'congruity'. The status of external relations is also important. The emerging technology must detach itself from its technological 'parents' to some degree to merit a separate identity.

Prominent Impact
benefits for a wide range of sectors

In this usage the concept of emerging technologies becomes very close to that of 'general purpose technologies' and so excludes technologies prominent within a specific domain.
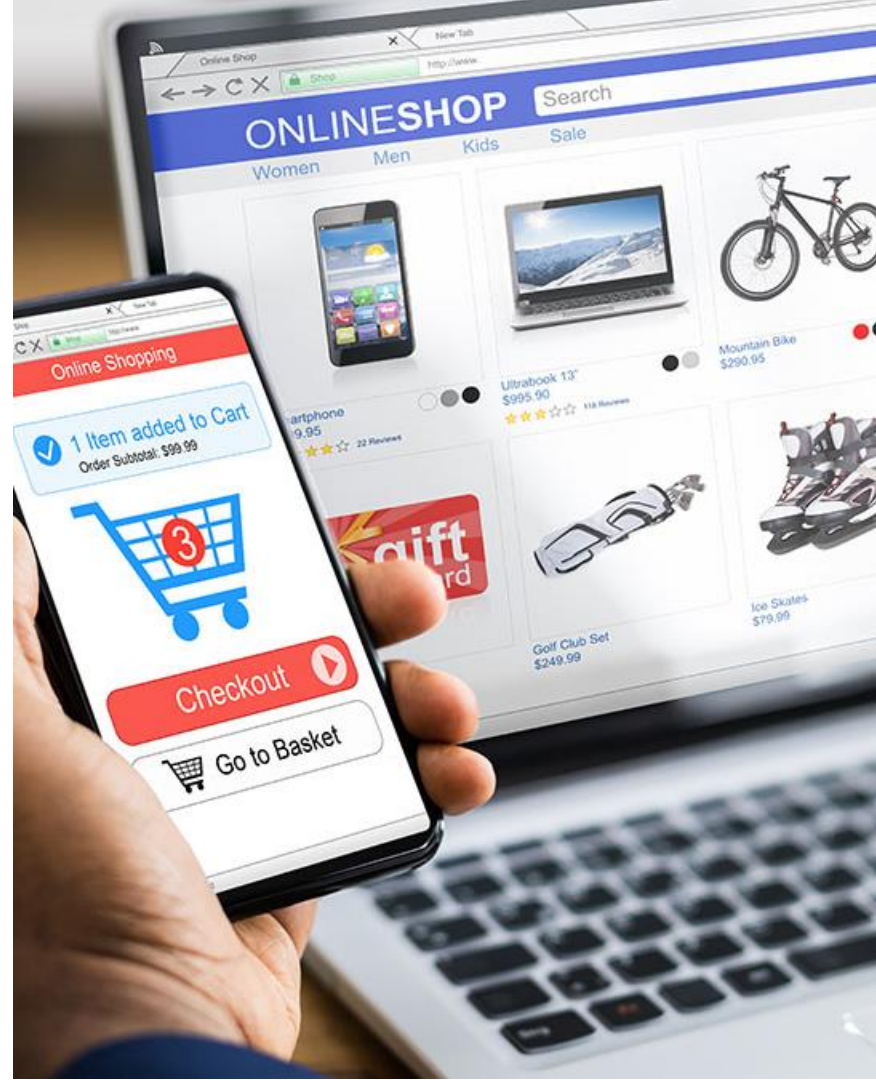
Uncertainty
not finished

Knowledge of the probabilities associated with each possible outcome (e.g. potential applications of the technology, financial support for its development, standards, production costs) may be particularly problematic
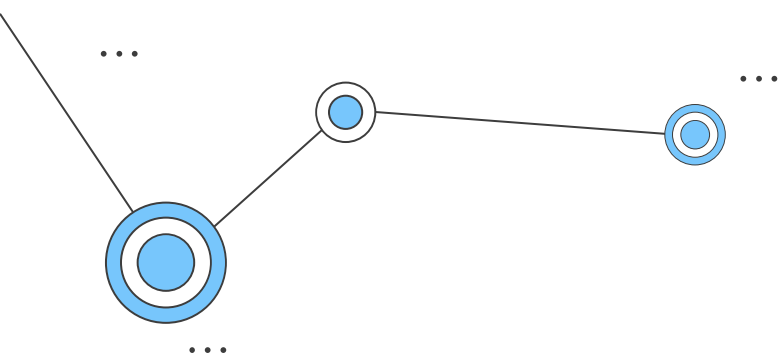
Rotolo et.al. (2015)

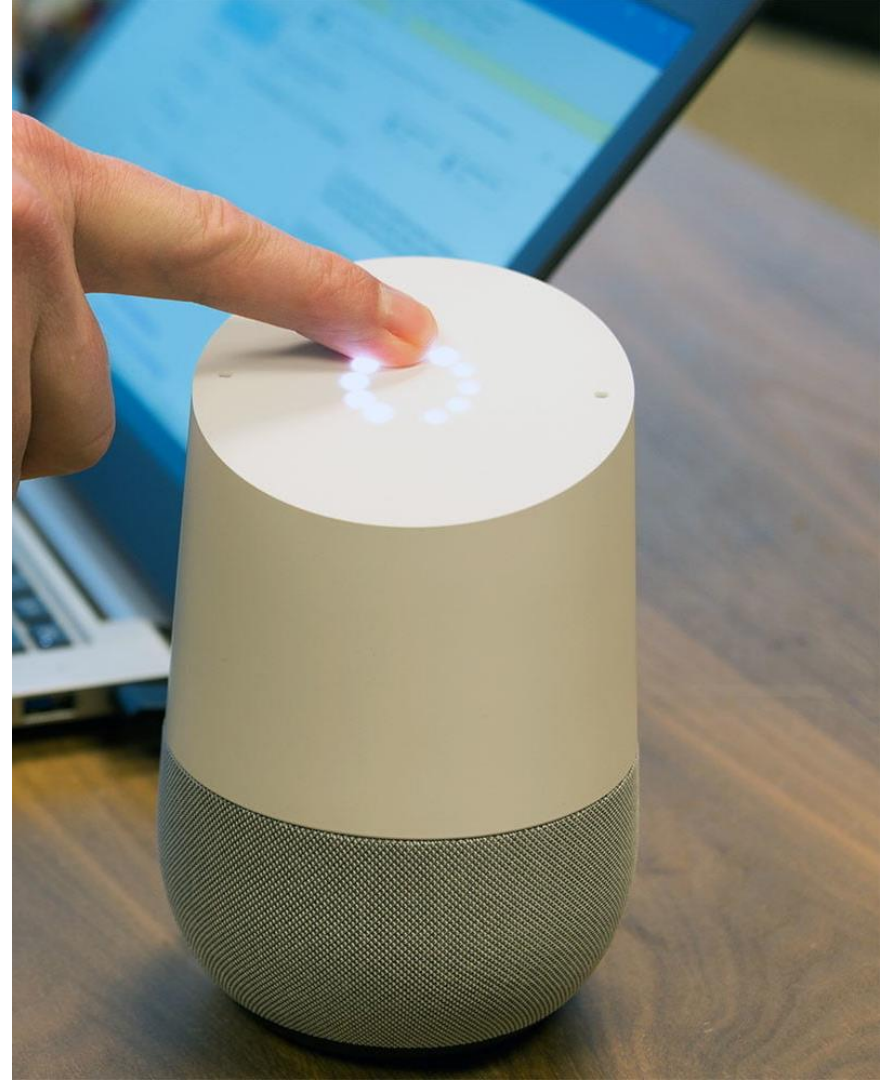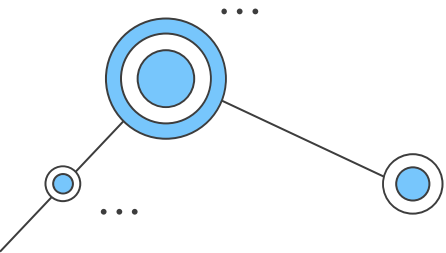# ET can change the way we do business

--- Independence University, Utah, USA

ET making our world smarter

--- Independence University, Utah, USA

ET is more efficient and safer

--- Independence University, Utah, USA

ET that we are going to Learn in this Course

Artificial Intelligence

How technology can think and help human to make decisions

Cloud Computing

How technology can save your space and compute everything in the cloud

AR/VR

How technology can create a virtual world

Ambient Computing

How the combination of technologies becoming the idea of using internet-enabled device without necessarily consciously using it

Big Data

How data can be analyzed and help solve the world's biggest problems

Internet of Things

How technology can connect hardware around our life

Blockchain

How technology can decentralized processing and create a safer and more efficient space for everyone

02

Course Plan

Schedule and Homeworks

Course Design

Lecture

Teacher Lecture about topics

...

Case Study

Case Study Presentation and Discussion

...

Group Idea

Creating a new innovation using emerging technology

...

Group Study & Collaborations

3 – 4 persons

Case Study Group

Presentation about a technology
using case study
in a specific class meeting

...

Final Project Group

Mid-Term and Final Term
Open Data Analysis and
Technology for a Business Solution

...

Course Plan

01

Lecture

- Introduction
- Course Plan

Assignment

- Case Study Group and Project Group Creation

02

Lecture

- Technologies that will Reshape Our Future
- Emerging Markets
- R&D, Innovation and technologies in Emerging Markets

Assignment

- Case Study Group Explanation

03

Lecture

- Health Technologies for All
- Financial Services Technologies for the Under-Banked
- Education Technologies for the Masses

Assignment

- Final Project Group Explanation

Course Plan

04

Case Study Group Presentation
Artificial Intelligence

Lecture
- Artificial Intelligence
- Intelligent Agents
- Can Machine Really Think?
- AI Tools

Assignment
- Individual Essay "Can Machine Take Over The World?"

05

Lecture
- Technology Ethics
- Sustainable Technology

06

Lecture
- Open Data
- Analysis Platform
- Studi Kasus Penggunaan Open Data
- Dampak Open Data pada berbagai sektor industri

Assignment
- Open Data Analysis Platform Installation

Course Plan

07

Lecture

- Open Data
- Analyzing Open Data
- Case Study

Assignment

- Open Data Analysis for Midterm

08

MidTerm

- Presentation of Open Data Analysis Results

09

Lecture

- Organizational Behavior
- The Impact of IT on Productivity & Quality of Life

Course Plan

10

Case Study Group Presentation
Cloud Computing

Lecture

- Cloud Computing
- Understanding Cloud Models (IaaS, SaaS, PaaS)
- Business Optimization with Cloud Computing
- Multicloud World
- Cloud Tools

11

Case Study Group Presentation
Internet of Things

Lecture

- Internet of Things
- Smart Objects
- Securing IoT
- IoT in Industry
- IoT Tools

12

Case Study Group Presentation
Big Data

Lecture

- Big Data
- Business Intelligence and Analytics
- Big Data Revolution
- Big Data Tools

Course Plan

13

Case Study Group Presentation
Augmented Reality

Lecture
- AR/VR
- Augmented Reality
- Virtual Reality
- Mixed Reality
- Game Changers
- Business Changers
- Spatial Computing
- AR/VR Tools

14

Case Study Group Presentation
Blockchain

Lecture
- Blockchain
- Powerful Blockchain Platforms
- Industry Impacts
- Blockchain Tools

15

Case Study Group Presentation
Ambient Computing

Lecture
- Ambient Computing
- Ambient Assisted Living with Smart Robot
- Ambient Stupidity
- Security Implementation in Smart Sensor Networks

Course Plan

16

Final Term

Presentasi solusi integrasi teknologi atas permasalahan bisnis dengan menggunakan decision making frameworks di berbagai bidang

Elitag

LINK GROUP WHATSAPP, ONLINE CLASS, DAN ABSENSI

WhatsApp Group Emerging (IN) Class

For students who have been registered in Emerging (IN) Class, please join our WhatsApp Group via a link below:

https://chat.whatsapp.com/FwK7VCxjoPb3uC7u3HnCYY

Absensi

1 Link Absen untuk 1 semester ⬅

Absensi dilakukan dalam 30 menit pertama kelas. Jika Anda terlambat melakukan absensi, maka Anda akan dianggap tidak mengikuti kelas. Jika Anda berhalangan hadir, harap menghubungi dosen untuk izin.

Link Online Class Emerging (IN) - ZOOM

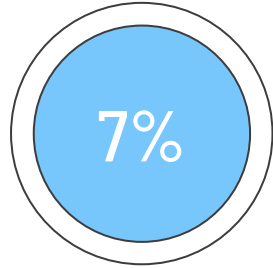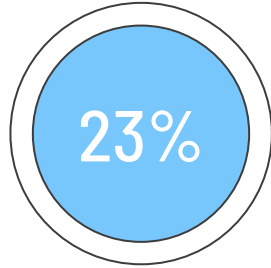**PADA PERKULIAHAN NORMAL, KELAS AKAN MENGGUNAKAN ZOOM**

1 Link ZOOM KELAS untuk 1 semester (JIKA DIBUTUHKAN) ⬅

Link : https://zoom.us/j/99230005361?pwd=SWIuQVNVQzNVNmtJNk5BUVJDbWR6QT09

Passcode : 389502

Grading
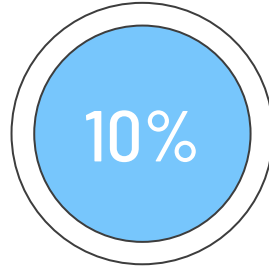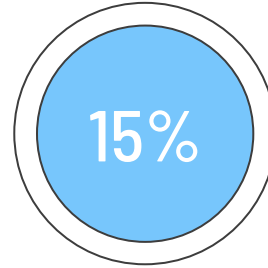
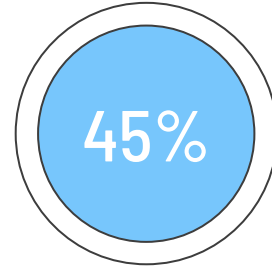| M1	M2	M3	M4	M5
7%	23%	10%	15%	45%

Grading

No	Capaian Pembelajaran	Pertemuan / KAD	Jenis Tugas	Bobot Penilaian
1.	M1	L1, L2	Pembentukan kelompok dan studi kasus (Keaktifan)	2 %
		L3	Analisis klasifikasi kebutuhan bisnis dan solusinya dengan teknologi	5%
2.	M2	L4	Opini Machine Taking Over The World	8%
		L4, L10, L11, L12, L13, L14, L15	Presentasi studi kasus teknologi oleh kelompok	14%
		L6	Instalasi platform analisis open data (Keaktifan)	1%
3.	M3	L5	Studi kasus penerapan teknologi berdasar pada etika dan keberlanjutan	10%
4.	M4	L8	Presentasi hasil open data (ETS)	10%
		L9	Review video perilaku organisasi terhadap teknologi	5%
5.	M5	L7	Laporan hasil analisis open data	15 %
		L16	Mengidentifikasi permasalahan bisnis dan solusi dengan menggunakan teknologi (EAS)	30%
Total Persentase Bobot Nilai				**100%**

Original Thinking

When someone submits assignments that are their own work, composed of original ideas built on attributed sources.

Student Collusion

Working with other students on an assignment meant for individual assessment.

Word-for-Word Plagiarism

Copying and pasting content without proper attribution.

Self Plagiarism

Reusing one's previously published or submitted work without proper attribution.

Mosaic Plagiarism

Weaving phrases and text from several sources into one's own work. Adjusting sentences without quotation marks or attribution.

Software-based Text Modification

Taking content written by another and running it through a software tool (text spinner, translation engine) to evade plagiarism detection.

Contract Cheating

Engaging a third party (for free, for pay, or in-kind) to complete an assignment and representing that as one's own work.

Inadvertent Plagiarism

Forgetting to properly cite or quote a source or unintentional paraphrasing.

Paraphrase Plagiarism

Rephrasing a source's ideas without proper attribution.

Computer Code Plagiarism

Copying or adapting source code without permission from and attribution to the original creator.

Source-based Plagiarism

Providing inaccurate or incomplete information about sources such that they cannot be found.
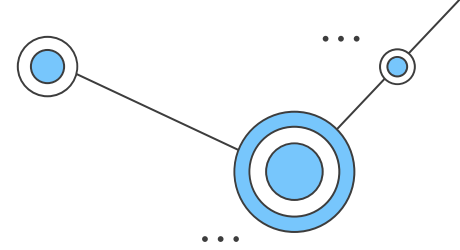
Manual Text Modification

Manipulating text with the intention of misleading plagiarism detection software.

Data Plagiarism

Falsifying or fabricating data or improperly appropriating someone else's work, putting a researcher, institution, or publisher's reputation in jeopardy.
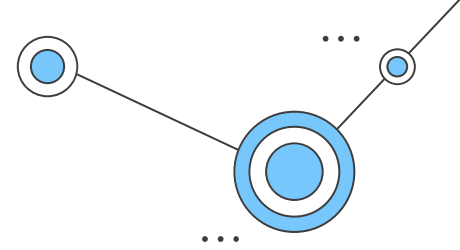
Cara Menghindari Plagiarisme

1. Kerjakan tugasnya sendiri atau bersama kelompok yang telah ditentukan
2. Diskusi boleh, tetapi tulisan tetap orisinil.
3. Jika menggunakan sumber dari buku, artikel, website, dsb. Gunakan aturan cara pengutipan yang benar.
4. Pengutipan gunakan standard IEEE atau APA 6th ed.

Contoh Pengutipan IEEE

"…. Sesuai dengan data yang diambil pada akhir penelitian [13]."

"… teori yang dipublikasikan pada tahun 1999 [1]."

"… scohltz [2] berpendapat …"

" …Beberapa penelitian sebelumnya [3, 4, 5,16] telah menyarankan …"

" … untuk contoh, lihat [7]."

Daftar Pustaka

[1] T. Jordan and P. A. Taylor, *Hacktivism and Cyberwars: Rebels with a cause?* London: Routledge, 2004.

[2] G. W. Juette and L. E. Zeffanella, "Radio noise currents on short sections on bundle conductors," presented at the IEEE Summer Power Meeting, Dallas, TX, June 22-27, 1990, Paper 90 SM 690-0 PWRS.

[3] C. Sherman, "Teoma vs. Google, round two," April 2, 2002, Available: http://searchenginewatch.com/searchday/02/sd0402-teoma.html.
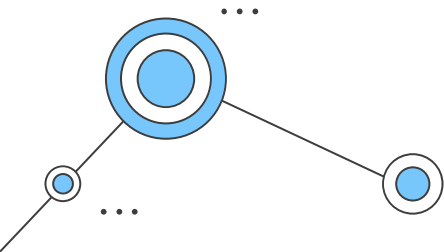
(Isbandi, 2011)

Main Reference

- Vong, J., and Song, I. (2015). Emerging Technologies for Emerging Markets. Springer

- Mulder, K.F., Lente, H.V., and Frrer-Balas, D. (2012). What is Sustainable Technology? Perceptions, Paradoxes, and Possibilities. Greenleaf Publishing Inc
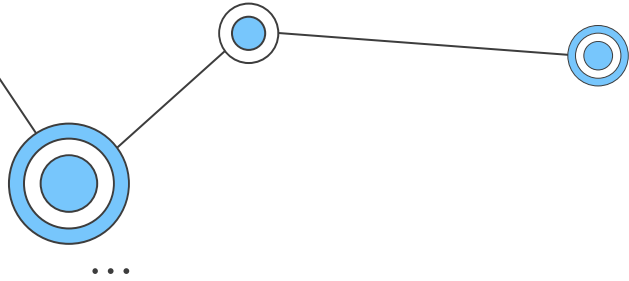
If you confuse or forget...
open "COURSE PLAN"
in ELITAG before asking.
Maybe the answer is there.

PEMBENTUKAN KELOMPOK

Membuat kelompok case study dan final project
(jika diputuskan bahwa pembuatan kelompok ditentukan sendiri)

2-4 persons / group

Input your group members into GForm available on Elitag.

Deadline :
Tuesday 7 March 2022 at 16.00

Jika anggota kelompok tidak penuh, masukkan saja ke Elitag pada tanggal deadline.
Untuk yang tidak memiliki kelompok, Akan di-assign oleh Bu Intan pada Pertemuan ke-2