

Creative Engineering Design

Phase II: Creative process

CED timeline (UPDATED 2020-Apr-05)

Unit	Stage	1 st block	2 nd block	Assignments
1	Video lectures	General introduction	Creative problem solving	Video 1.1; 1.2
2		Technical design		Video 2.1
3		3D modeling	Practice at home	Video 2.2
4	Creative process (individual projects)	Idea generation	Idea matrix	Video CED_4.5.6.7.8
5		Idea evaluation	3 sketches	
6		Design process	Technical drawings	
7		Creative portfolio	Portfolio preparations	
8		Submit portfolio	-	
9	Design / implementation	(TBA)	(TBA)	(TBA)
10		(TBA)	(TBA)	(TBA)
11		(TBA)	(TBA)	(TBA)
12		(TBA)	(TBA)	(TBA)
13		(TBA)	(TBA)	(TBA)
14		(TBA)	(TBA)	(TBA)
15	Feedback	Feedback sessions	Feedback sessions	



generation

Project topic: Robot for indoor applications

Creative Problem Solving

Idea generation – creative thinking techniques:

Brainstorming, Mind mapping, Idea matrix



skills	graphic design	3D visuals	cartoons/ illustration	animation	video course creation
Tong Soo Do (Korean Karate)					
Dogs/dog walking					
Blogging					
Doodling Ideas					
Podcasts					

skills	graphic design	3D visuals	cartoons/ illustration	animation	video course creation
Tong Soo Do (Korean Karate)	graphic design for martial arts club personalized martial arts products design gift ideas for martial arts club	create 3D models of different martial arts uniforms design exhibition stands for martial arts club	create and sell martial arts cartoon products create cartoon book create cartoon book create cartoon book	create cartoon videos for martial arts club or people create cartoon book create cartoon book	help martial arts experts create online course create cartoon book create cartoon book
Dogs/dog walking	target dog breed businesses for graphic design design dog products	help pet businesses visualize their pet products ideas create pet product ideas create pet product ideas	create cartoon of people and their dogs create cartoon of people and their dogs	create cartoon videos for pet businesses create cartoon book create cartoon book	help dog trainers and groomers create online course create cartoon book create cartoon book
Blogging	create a blog about graphic arts and design	create a blog which teaches 3D models and design create 3D models and design create 3D models and design	offer people cartoon for their design - create cartoon in cartoon create a platform where people can create cartoon for their design	create and sell cartoon book create cartoon book create cartoon book	create cartoon videos on blogging create cartoon book create cartoon book
Doodling Ideas	offer a doodling service at the events to help kids create ideas	-	-	create cartoon for people doodling their ideas create cartoon book create cartoon book	create a cartoon on using doodles to get ideas help people create their doodle ideas create cartoon book
Podcasts	create graphic design podcast to encourage business and give ideas to potential clients	start a podcast on new design 3D and cartoon	create illustrations for podcast content images	create cartoon for podcast content audio or video create cartoon book create cartoon book	help podcast creators create a course create cartoon book create cartoon book

ideamedic.com/generate-ideas-idea-matrix/

Tool: IDEA MATRIX

Applications	Buildings	Healthcare	Services	Industrial	Farming
Looks	:	:	:	:	:
“Machine”					
“Object”	“a hydrant-shaped robot that detects fire”	<div>Brainstorm ideas > Fill in the matrix fields!</div>			
“Animal”					“a rabbit-shaped robot that picks carrots”
“Cartoon”					
“Humanoid”			“Terminator”		

YOUR TASK (unit 4):

Brainstorm ideas and **FILL IN THE ENTIRE MATRIX** (25 fields)

You can start on paper but in the end you need this as a matrix in PPT.

Remember: Indoor robots are best for **SIMPLE, REPETITIVE, MOBILE** tasks.

problems skills	graphic design	3D visuals	cartoons/ illustration	animation	video course creation
Tang Soo Do (Korean Karate)					
Dogs/dog walking					
Blogging					
Doodling Ideas					
Podcasts					

problems skills	graphic design	3D visuals	cartoons/ illustration	animation	video course creation
Tang Soo Do (Korean Karate)	graphic design for martial arts club Recreate martial arts products Design gifts ideas for martial arts club	Create 3D models of martial arts products Design additional assets for martial arts club	Create and sell digital art Cartoon or product Create cartoon book Funny side martial arts	Create additional ideas for martial arts club or people with equipment	Help martial arts experts create online courses Create martial arts books to share a course
Dogs/dog walking	Target dog breed business for graphic design Design dog products	Help pet owners to create their pet products online Create dog pet product ideas	Create illustrations of people and their dogs Create cartoon dog meme and sell it dog items Create fictional dog breeds with cartoon	Create cartoon content for dog business	Help dog owners and groomers create video courses
Blogging	Create a blog about graphic design with a focus target	Create a blog which teaches all about the design process and why that course	Offer people cartoons for their design - can create a cartoon Create cartoon of people and sell it dog items Create fictional dog breeds with cartoon	Create and sell digital art Cartoon or product Create cartoon book Funny side martial arts	Help people create on blogging, design and design Offer additional content to bloggers who don't have content
Doodling Ideas	Offer a doodling service at the store, to create key points of note	-	-	Create animations for people showing how their idea developed into a product	Create a course on using doodles to get ideas Help people show their creative and creative ideas
Podcasts	Create graphic design product to encourage business and give ideas to potential clients	Start a podcast on any design or art process	Create illustrations for podcast content images	Create animations to turn on video podcast etc or other	Help podcast creators create a course

ideamedia.com/generate-ideas-idea-matrix/

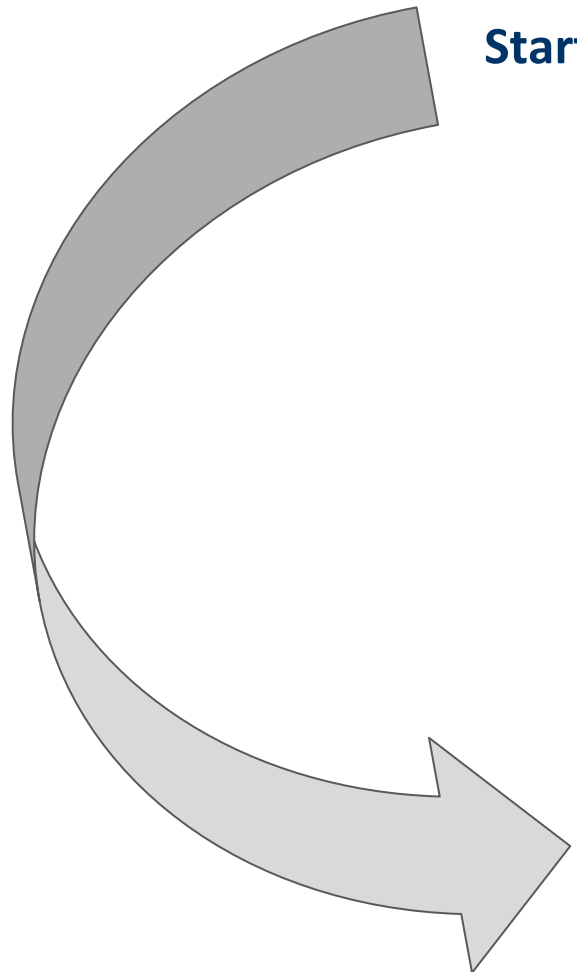


evaluation

Technique 1: Filter out the top 3.

FILTER:

- Simple task
- Repetitive task
- Requires mobility
- Unexpected/original idea



Starting point:

	graphic design	3D visuals	cartoons/ illustration	animation	video course creation
Young Soe De (Korean Karate)	graphic design for events like 50th anniversary design only products design gifts ideas for wedding gifts	create 3D models of products new products design additional models for market and sales	create and sell cartoon and cartoons on products create and sell create a cartoon book create and sell	create additional videos for market and sales or people selling equipment	help market and experts create video course teach market and how to create course
page/blog walking	target top best businesses for graphic design design gifts products	help get invention creative and get products ideas create for the top product ideas	create illustrations of people and their dogs create a business 3D models and sell on 3D prints create humorous dog breeds with cartoons	create cartoon characters for dog business	help dog breeders and groomers create video courses
Blogging	create a blog about graphic with a local target	create a blog which teaches 3D prints to business experts and sells their courses	offer people cartoons for their dogs - you make a business create a guide to create people cartoon characters for 3D prints	create and sell funny and amusement using 3D prints from a dog print	create video course on teaching business and dog training offer other course related to doggers who don't have courses
Gooding ideas	offer a coaching service at the events to cover the graphic design	-	-	create a cartoon for people showing how their dogs developed into a product	create a course on using 3D prints to get ideas dog products and their course with cartoon and 3D prints
Podcasts	create graphic design podcast to encourage business and give ideas to potential clients	create a podcast on 3D prints 3D and cartoon	create a podcast for product market research	create a podcast to sell on radio product and a video	help podcast creation create a course

Idea (2)

Idea (1)

Idea (3)

Technique 2: Ask the “Five Ws”.

Collect information to build an image...

Who? (... is the user)

What? (... is it good for)

When? (... is it going to be used)

Where? (... is it going to be used)

Why? (... is it useful)

AND...

Name it! (nickname)

1. (name)

Who?

What?

When?

Where?

Why?

3. (name)

Who?

What?

When?

Where?

Why?

2. (name)

Who?

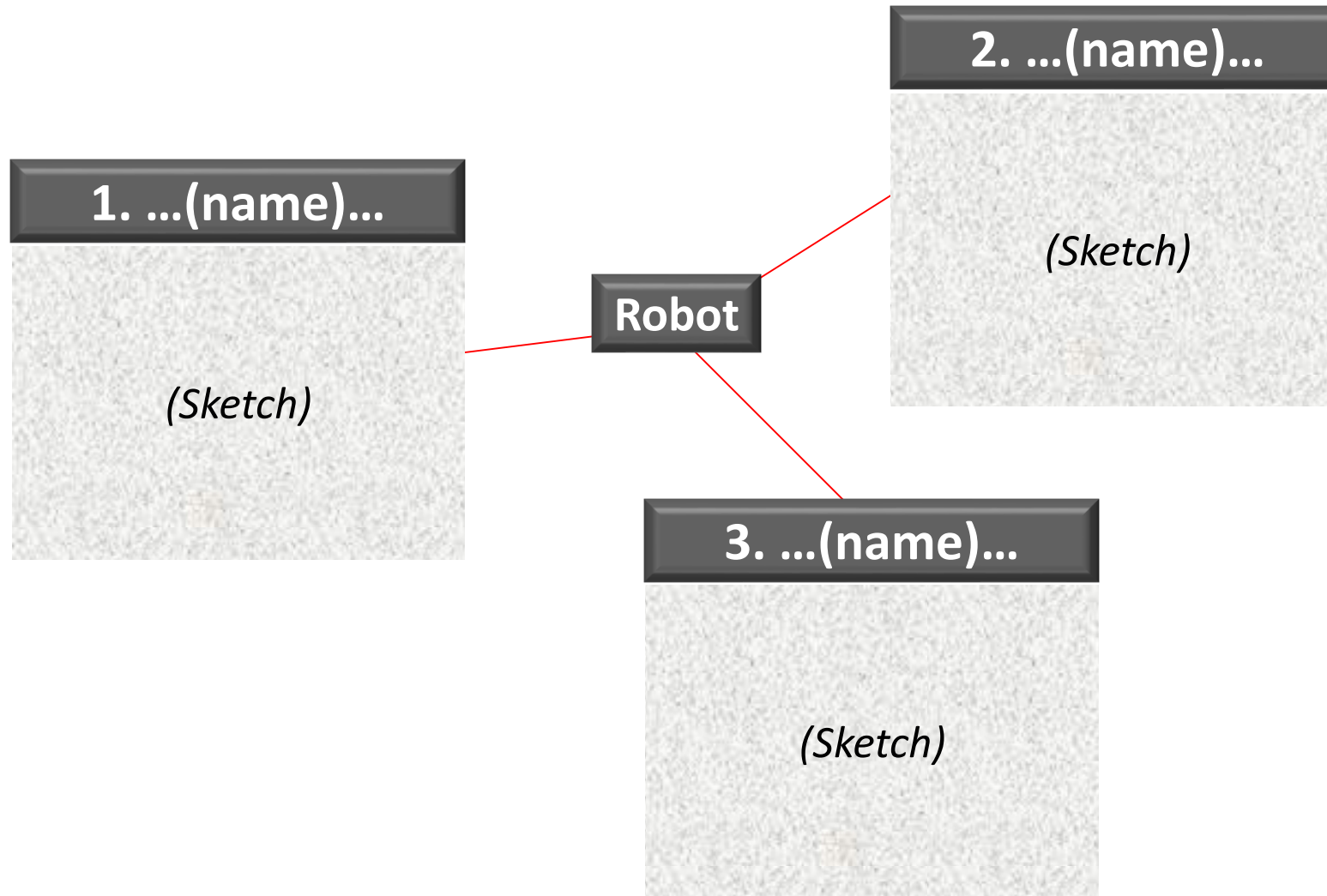
What?

When?

Where?

Why?

Technique 3: Sketch it.



YOUR TASKS (unit 5):

1_ Select your TOP 3 IDEAS

2_ For each of the top 3, ANSWER THE 5 Ws

3_ Visualize your top 3 ideas (3 SKETCHES → digital version)

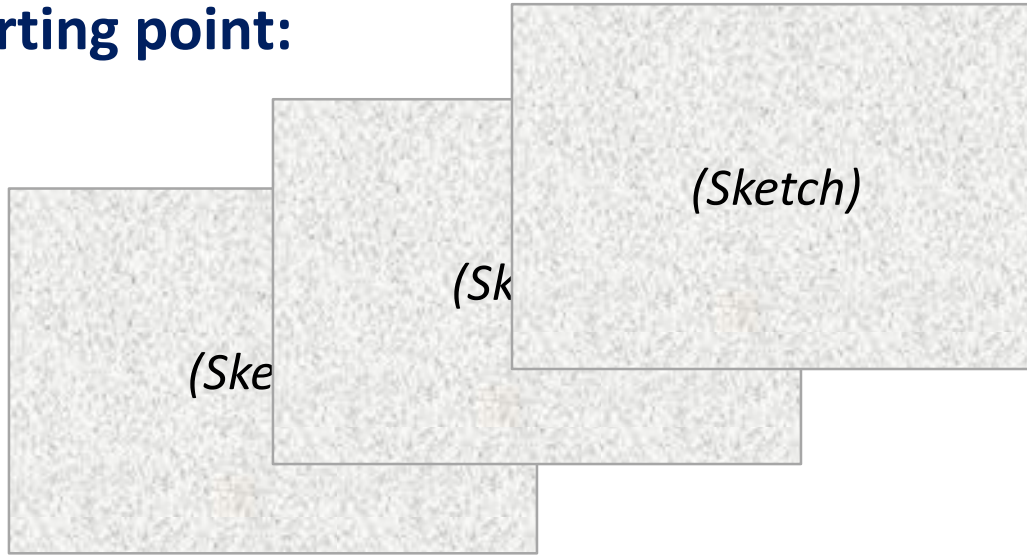


judgment

& design kick-off

Idea judgment

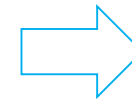
Starting point:



But which one... is the best?



**What is your gut feeling?
The most creative?
Still feasible (3D model)?**



Winner !!!

Part dimensions

Motor body: 24 mm diameter, 24 mm long

Motor shaft: 3 mm diameter, 12 mm long

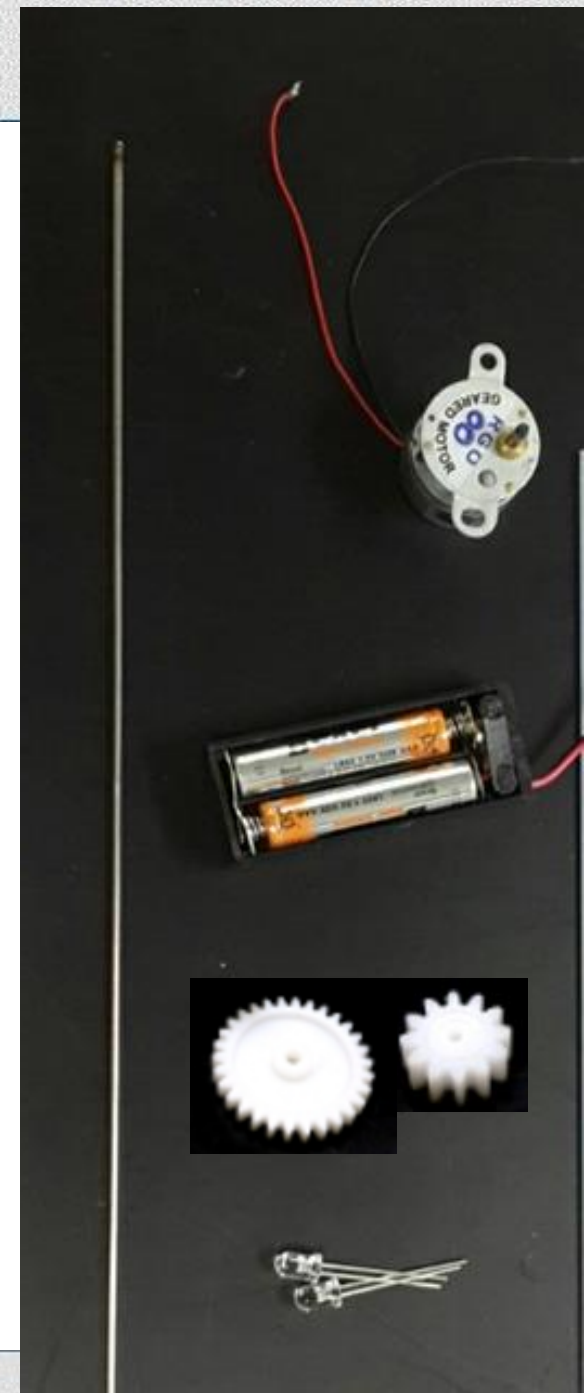
Battery case: 63 mm (L) x 26 mm (W) x 16 mm (H)

Axle: 2 mm diameter, any length

Gear (1): 32 mm diameter, 4 mm thick

Gear (2): 9 mm diameter, 6 mm thick

LED tip: 5 mm diameter, 9 mm high



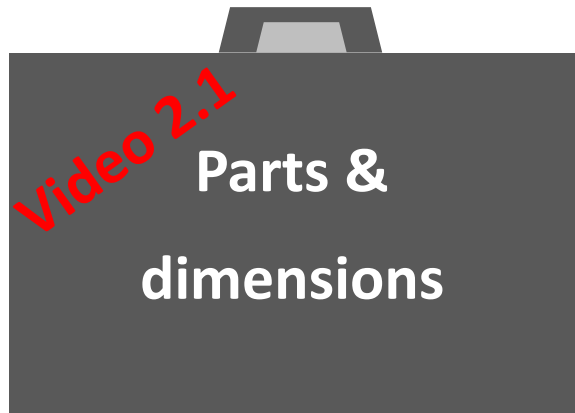


(Winner concept)

2D technical drawings (preliminary layout):

Overall shape & dimensions
Location of components
Draw in real size

Base module drawing (top view)
Cover module drawing (side view)



YOUR TASKS (unit 6):

1_ Select your WINNER CONCEPT

2_ DRAWING #1: Base module, top view, 1:1

3_ DRAWING #2: Cover module, side view, 1:1

Briefing on your midterm assignment





Your midterm assignment:

MS Power Point file (.PPT),

EXACTLY 6 slides

EVERYTHING in English

What to include

Slide	Contents	Points
#1	Your class number & time slot Your name & student ID	
#2	Your idea matrix	Max 25 pts.
#3 to #5	3 idea sketches* (scans or photos) * include name & 5W answers	Max 15 pts.
#6	2 drawings** (base module + cover module) ** winner concept only	Max 10 pts.

P.S.: You do not need a 3D model yet at this stage (this is for the 2nd half).



Submit your file...

How to submit:

Submit your PPT file by e-mail to r.bail@dankook.ac.kr



When to submit:

Class number	Time slot	Submission slot
412990-8	Tue 15,16,17,18	May 11 (Mon), 7 AM ~ May 12 (Tue), 10 PM
412990-7	Thu 1,2,3,4	May 13 (Wed), 7 AM ~ May 14 (Thu), 10 PM
412990-2	Thu 5,6,7,8	May 13 (Wed), 7 AM ~ May 14 (Thu), 10 PM
412990-16	Thu 11,12,13,14	May 13 (Wed), 7 AM ~ May 14 (Thu), 10 PM
412990-15	Fri 15,16,17,18	May 07 (Mon), 7 AM ~ May 08 (Tue), 10 PM



You can earn a maximum of **50 points on your midterm** assignment, but penalty points apply in case of late submission.

The midterm presentation is worth **50% of your total grade**. I said 40% before... this does not apply anymore.

The evaluation system for design courses has changed to **ABSOLUTE EVALUATION (실험·실습·실기 교과 절대평가 시행)**. This means that there're grades (A-B-C-D-F) but the evaluation is 100% at your instructor's discretion.

You need **at least 70% in the midterm** assignment to get your **attendance confirmed** for the first 8 weeks in Creative Engineering Design.

Units 4 to 8:

- Idea generation > evaluation > judgment (individual project)
- What to include / how to submit your midterm assignment

Units 9 to 15

- Continued individual project (online) vs. team project (offline)
- Depending on the Corona situation in Seoul/Gyeonggi/Incheon by then...
- To be announced after Children's Day (early May)