







**NANO
OPEN HOUSE
2020**

FOR SUB-MAJOR SELECTION

TODAY'S TOPICS

- ❖ Numbers of students in each sub-major 
- ❖ Requirement for each sub-major 
- ❖ Comparison of courses from 5th to 8th semester 
 - Overview of Curriculum
 - Comparison Tables
 - List of Compulsory Nano Courses
 - List of Compulsory Major Courses
 - List of Approved Elective Courses
- ❖ List of Internship Destinations 
- ❖ Sub-major Selection Process 
- ❖ Sub-major Selection: Example of Request form 

NUMBERS OF STUDENTS IN EACH SUB-MAJOR





REQUIREMENTS

**FOR BIOENGINEERING &
ADVANCED MATERIAL ENGINEERING**

REQUIREMENTS FOR **BIOENGINEERING**

- Requirement for Bioengineering

In the second year (Year 2 / Sem 2) NANO students who wish to select **Bioengineering** as their sub-major must complete the course

2302207 Basic Inorganic Chemistry (2 Credits)



REQUIREMENTS FOR **ADVANCED MATERIAL ENGINEERING**

- Requirement for Advanced Material Engineering
No additional requirement





COMPARISON OF COURSES

FROM 5TH TO 8TH SEMESTER

OVERVIEW OF CURRICULUM FOR ALL NANOENGINEERING STUDENTS

- Total number of credits requirement throughout 4 years 147 credits
 - ❑ General Education 30 credits
 - ❑ Core Courses 111 credits
 - ✓ Basic Sciences 22 credits
 - ✓ Basic Engineering 20 credits
 - ✓ **Compulsory NANO Engineering** **33 credits** ➡
 - ✓ Compulsory Major
 - **Bioengineering** **18 credits** ➡
 - **Advanced Material Engineering** **21 credits** ➡
 - ✓ Approved Electives ➡
 - **Bioengineering** 18 credits
 - **Advanced Material Engineering** 15 credits
 - ❑ Free Electives 6 credits

You can also find this information on the ISE website (NANO Bulletin 2017) [Click!](#)

FIFTH SEMESTER (YEAR 3 SEM 1)

BIOENGINEERING

Course ID	Course Title (Instructor)	Credits
2189341	Materials Characterization (Aj. Charusluk Viphavakit, Ph.D.)	3
2182312 *	<u>Signal processing and instrumentation</u> (Aj. Porpin Pungetmongkol, Ph.D.)	3
2141355	Introduction to Bioengineering (Asst. Prof. Sorada Kanokpanont, Ph.D.)	3
2185373 *	<u>Reaction Engineering</u> (Aj. Chee Keong Ngaw (CK), Ph.D.)	3
2310380	Biochemistry for Bioengineers (Staff from Biochem)	3
2310381	Biochemistry Lab for Bioengineers (Staff from Biochem)	1
xxxxxxx	General Education	3
	Total credits	19

ADVANCED MATERIAL ENGINEERING

Course ID	Course Title (Instructor)	Credits
2189341	Materials Characterization (Aj. Charusluk Viphavakit, Ph.D.)	3
2182312 *	<u>Signal processing and instrumentation</u> (Aj. Porpin Pungetmongkol, Ph.D.)	3
2141305	Nanostructures and Crystalline Defects (Aj. Aniwat Tандаеchanurat, Ph.D.)	3
2185302 *	<u>Thermodynamics in Materials Eng</u> (Assoc. Prof. Tachai & Aj. CK)	3
2185379	Polymer Engineering (Aj. Porpin & Assoc. Prof. Sarawut)	3
xxxxxxx	General Education	3
	Total credits	18

* - This course has prerequisite or corequisite,
click on the title to see details

SIXTH SEMESTER (YEAR 3 SEM 2)

BIOENGINEERING

Course ID	Course Title (Instructor)	Credits
2184303	Engineering Management (Aj. Oran Kittithirapornchai, Ph.D.)	3
2141302	Nanofabrication Technology (Assoc. Prof. Varong & Aj. Porpin)	3
2185333	Transport Phenomena (Aj. CK, Ph.D.)	3
2141357	Cells Biology and Human Body (Aj. Peerapat Thongnuek, Ph.D.)	3
2189356 *	<u>Material for Biomedical Applications</u> (Aj. Charusluk Viphavakit, Ph.D.)	3
xxxxxxx	General Education	3
	Total credits	18

ADVANCED MATERIAL ENGINEERING

Course ID	Course Title (Instructor)	Credits
2184303	Engineering Management (Aj. Oran Kittithirapornchai, Ph.D.)	3
2141302	Nanofabrication Technology (Assoc. Prof. Varong & Aj. Porpin)	3
2185333	Transport Phenomena (Aj. CK, Ph.D.)	3
2189322 *	<u>Phase Transformations and Kinetics</u> (Aj. Chedtha Puncreobutr, Ph.D.)	3
2189370 *	<u>Physical Metallurgy</u> (Assoc. Prof. Tachai Luangvaranun, Ph.D.)	3
xxxxxxx	General Education	3
	Total credits	18

* - This course has prerequisite or corequisite,
click on the title to see details

SEVENTH SEMESTER (YEAR 4 SEM 1)

BIOENGINEERING

Course ID	Course Title (Instructor)	Credits
2141498	Nano – Engineering Pre-Project	1
xxxxxxx	Approved Electives	3
xxxxxxx	Approved Electives	3
xxxxxxx	Approved Electives	3
xxxxxxx	Approved Electives	3
xxxxxxx	Free Elective	3
	Total credits	16

* - This course has prerequisite or corequisite, click on the title to see details

ADVANCED MATERIAL ENGINEERING

Course ID	Course Title (Instructor)	Credits
2141498	Nano – Engineering Pre-Project	1
2189411 *	<u>Mechanical Behavior of Materials</u>	3
xxxxxxx	Approved Electives	3
xxxxxxx	Approved Electives	3
xxxxxxx	Approved Electives	3
xxxxxxx	Approved Electives	3
xxxxxxx	Approved Electives	3
xxxxxxx	Free Elective	3
	Total credits	19

EIGHTH SEMESTER (YEAR 4 SEM 2)

BIOENGINEERING

Course ID	Course Title (Instructor)	Credits
2141490	Nano Seminar (Aj. Charusluk & Aj. Porpin)	1
2141499	Nano Engineering Project	3
xxxxxxx	Approved Electives	3
xxxxxxx	Approved Electives	3
xxxxxxx	Free Elective	3
xxxxxxx	General Education	3
	Total credits	16

ADVANCED MATERIAL ENGINEERING

Course ID	Course Title (Instructor)	Credits
2141490	Nano Seminar (Aj. Charusluk & Aj. Porpin)	1
2141499	Nano Engineering Project	3
2189450	Materials Design and Selection	3
xxxxxxx	Approved Electives	3
xxxxxxx	Free Elective	3
xxxxxxx	General Education	3
	Total credits	16

PREREQUISITES FOR **BIOENGINEERING**

2302105 CHEM ENGS



2185373 REACT ENG

2303111 BIO ENG



2189356 MAT BIOMED

2304154
PHY ELEC ENG



2182210
ELEC CIRC



2182312
SIG PRO INSTR

PREREQUISITES FOR ADVANCED MATERIAL ENGINEERING

2304154 PHY ELEC ENG



2182210 ELEC CIRC



2182312 SIG PRO INSTR

2183211 ENG MECH



2189411 MECH BEHAV MAT

2189202 FUND MAT SCI ENG



2189370 PHY MET


2185222 PHY CHEM NANO



2185302 THERMO MAT ENG



2189322 PHA TRAN KINETIC



LIST OF COMPULSORY COURSES

**COMPULSORY NANOENGINEERING &
COMPULSORY MAJOR**

COMPULSORY COURSE FOR NANOENGINEERING (YEAR 3-4)

- **Compulsory Nanoengineering courses** 17 credits
 - 2189341 Material Characterization 3 credits
 - 2182312 Signal Processing and Instrumentation 3 credits
 - 2141302 Nanofabrication Technology 3 credits
 - 2185333 Transport Phenomena 3 credits
 - 2141490 Nano Seminar 1 credits
 - 2141498 Nano-Engineering Pre-Project 1 credits
 - 2141499 Nano-Engineering Project 3 credits

COMPULSORY MAJOR FOR BIOENGINEERING

- **Compulsory Major courses**

18 credits

2141355 Introduction to Bioengineering

3 credits

2141357 Cells Biology and Human Body

3 credits

2189356 Materials for Biomedical Applications

3 credits

2302207 Basic Inorganic Chemistry

2 credits

2185373 Reaction Engineering

3 credits

2310380 Biochemistry for Bioengineers

3 credits

2310381 Biochemistry Laboratory for Bioengineers 1 credits

COMPULSORY MAJOR FOR **ADVANCED MATERIAL ENGINEERING**

- **Compulsory Major courses** 21 credits
 - 2141305 Nanostructures and Crystalline Defects 3 credits
 - 2185302 Thermodynamics in Materials Engineering 3 credits
 - 2185379 Polymer Engineering 3 credits
 - 2189322 Phase Transformations and Kinetics 3 credits
 - 2189370 Physical Metallurgy 3 credits
 - 2189411 Mechanical Behavior of Materials 3 credits
 - 2189450 Materials Design and Selection 3 credits



LIST OF APPROVED ELECTIVES

**IN EACH SEMESTER
FOR BOTH SUB-MAJOR**

LIST OF APPROVED ELECTIVES

Required credits for graduation

- For **Bioengineering** 18 credits
- For **Advanced Material Engineering** 15 credits

Students are allowed to arrange their course track freely as long as the required credits can be achieved in order to graduate and the sufficient courses are offered in the semester.

Example:

Bioengineering students can register 4 approved electives in Sem 1 and another 2 in Sem 2 (or 3+3 or 2+4) => total credits = 18

Advanced Material students can register 4 approved electives in Sem 1 and another 1 in Sem 2 (or 3+2 or 2+3 or 1+4) => total credits = 15

LIST OF APPROVED ELECTIVES

- Please note that the following tables only present all approved electives courses that can be offered in each semester for each sub-major, according to the curriculum guidebook.
However, the opening of each course in the semester depends on
 - (1) The availability of the course coordinators/instructors
 - (2) Number of students registering to the course/section
- The official list of approved electives offered each semester for the academic year 2020 will be announced soon.

LIST OF APPROVED ELECTIVES

BIOENGINEERING 18 CREDITS

Course ID	Course Title (Instructor)	Credits
2141347	Introduction to Pharmaceutical Nanotechnology (Aj. Sorada)	3
2141459	Biointerface Engineering (Aj. Juthamas, Aj. Sorada, Aj. Supansa)	3
2141556	Applied Genetic Engineering (Aj. Porpin & Aj. Peerapt)	3
2185379	Polymer Engineering (Aj. Porpin & Aj. Peerapat)	3
2190456	Introduction to Bioinformatics (Aj. Duangdao)	3
2141407	Nanomaterial Toxicology (Aj. Porpin & Aj. Amornpun)	3
2182450	Biomedical Instrumentation (Aj. Charusluk)	3

ADVANCED MATERIAL ENGINEERING 15 CREDITS

Course ID	Course Title (Instructor)	Credits
2141459	Biointerface Engineering (Aj. Juthamas, Aj. Sorada, Aj. Supansa)	3
2185373	Reaction Engineering (Aj. CK)	3
2189570	Electronic Materials (Aj. Aniwat)	3
2141405	Surfaces and Thin films (Aj. Pattama)	3
2189581	High Performance Metals and Alloys (Instructor TBA)	3
2190401	Computation, Modelling and Problem Solving (Instructor TBA)	3
2189417	Composite Materials (Instructor TBA)	3

*These lists are not all courses available in the semester.

**The offering of each course depends on the availability of the instructors and the number of registered students in each course/section.

LIST OF APPROVED ELECTIVES (CONT.)

BIOENGINEERING 18 CREDITS

Course ID	Course Title (Instructor)	Credits
2141457	Introduction to Biomedical Imaging (Aj. Charnchai)	3
2141557	Engineering Systems for Regenerative Medicine (Aj. Sorada)	3
2183412	Micro and Nano-Electro Mechanical Systems (MEMS/NEMS) (Aj. Porpin & Aj. Alongkorn)	3
2185452	Biosystem and Biotransport (Aj. Kasidit)	3
2185455	Bioreactor (Aj. Kasidit & Aj. Sorada)	3
2183452	Biomechanics (Instructor TBA)	3
2141458	Introduction to Assistive and Rehabilitation Technology (Instructor TBA)	3

ADVANCED MATERIAL ENGINEERING 15 CREDITS

Course ID	Course Title (Instructor)	Credits
2183412	Micro and Nano-Electro Mechanical Systems (MEMS/NEMS) (Aj. Porpin & Aj. Alongkorn)	3
2189356	Materials for Biomedical Applications (Aj. Charusluk)	3
2189405	Ceramics and Glasses (Aj. Tachai)	3
2189415	Materials for Energy (Aj. Aniwat)	3
2302389	Intermediate Inorganic Chemistry (Staff from Faculty of Sciences)	3

*These lists are not all courses available in the semester.

**The offering of each course depends on the availability of the instructors and the number of registered students in each course/section.



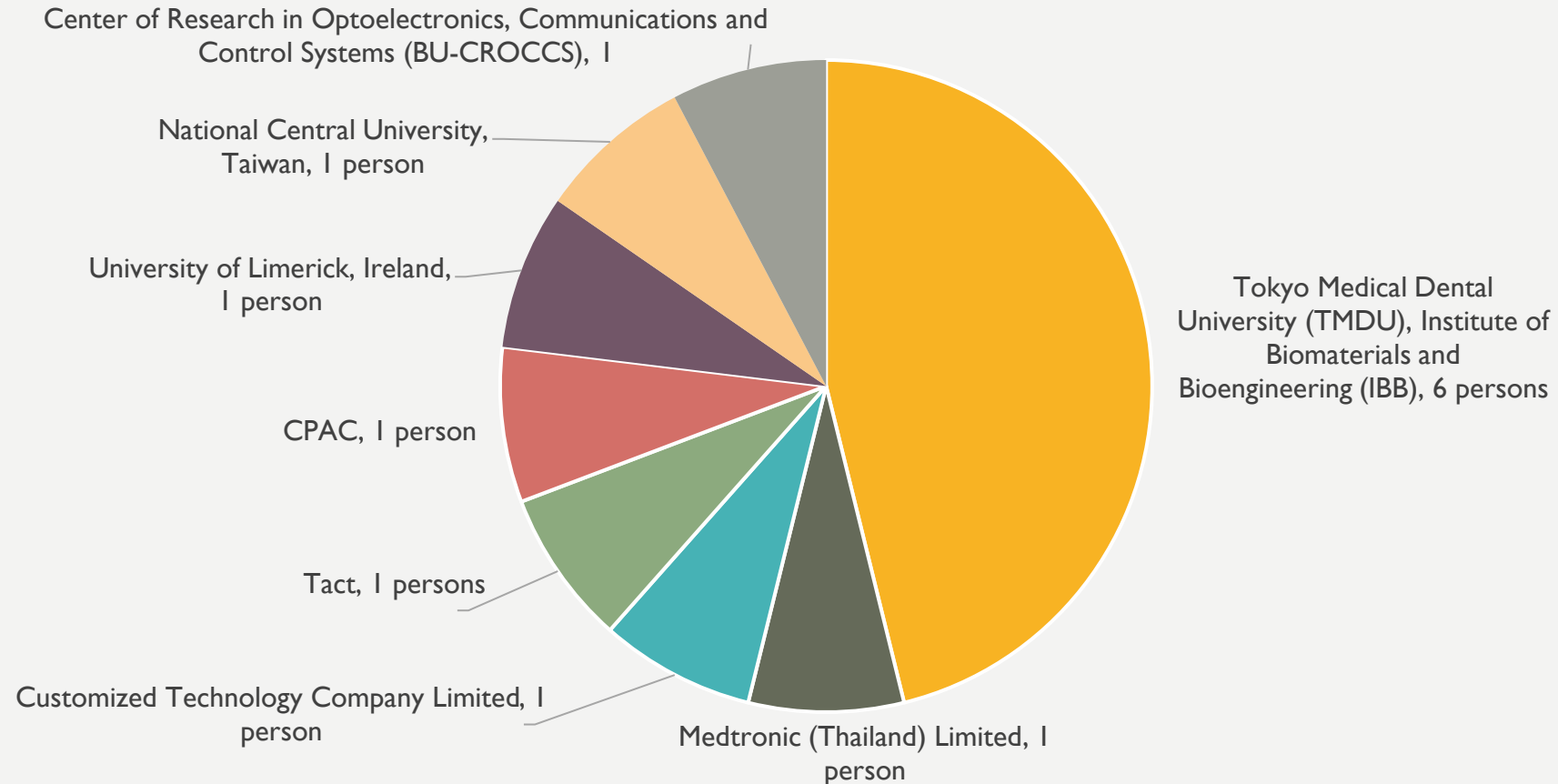
INTERNSHIP DESTINATIONS

DATA FROM NANO STUDENTS ID 60

LIST OF INTERNSHIP DESTINATIONS

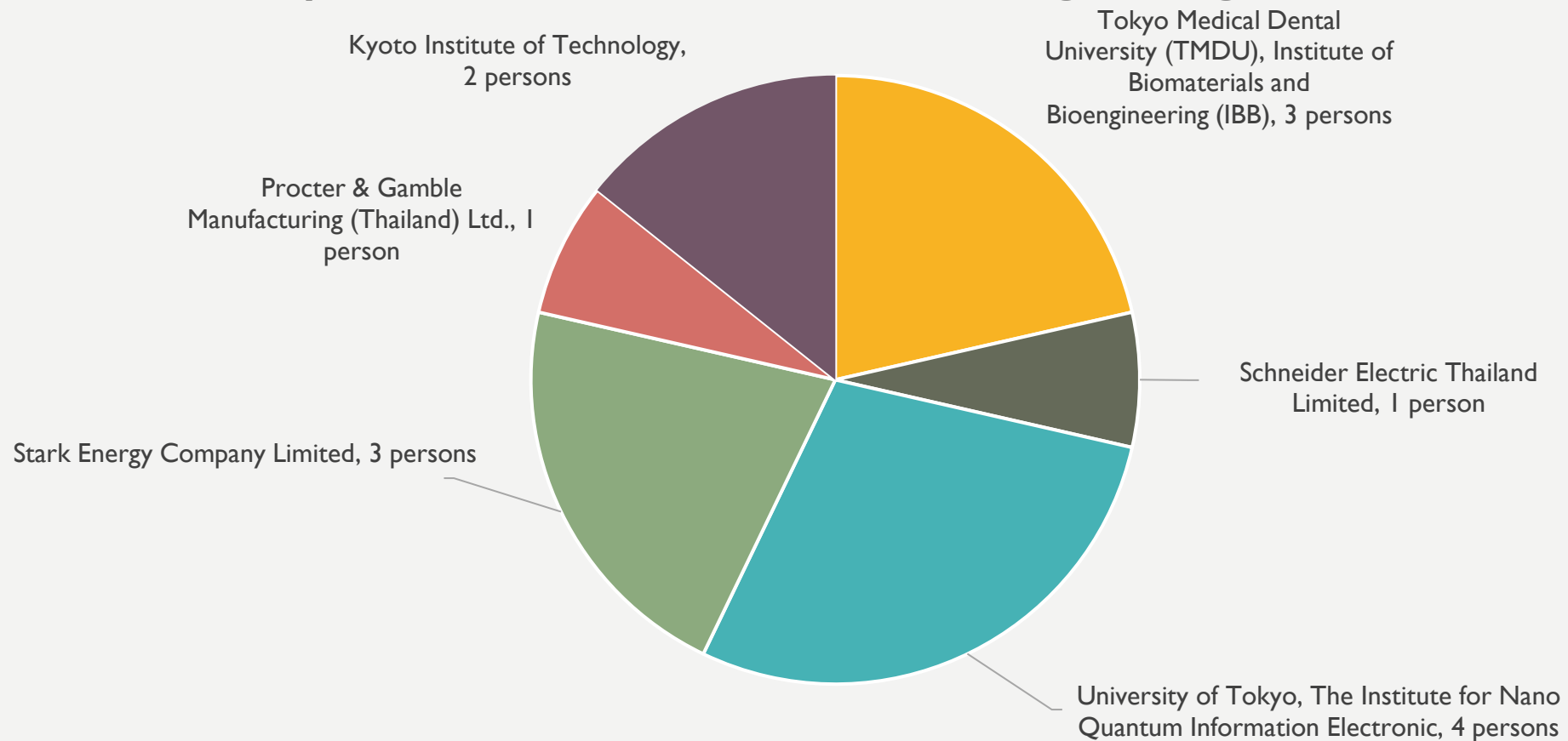
BIOENGINEERING


Internship Destinations of Bioengineering Students ID 60



LIST OF INTERNSHIP DESTINATIONS ADVANCED MATERIAL ENGINEERING

Internship Destinations of Advance Material Engineering Students ID 60





SUB-MAJOR SELECTION PROCESS

**WHEN, HOW, CRITERIA, AND EXAMPLE
OF REQUEST FORM**

SUB-MAJOR SELECTION PROCESS

❖ When?

At the end of the second academic year (after final examination of year 2 semester 2, approx. mid of May – beginning of June)

❖ How?

- Complete a request form for sub-major selection/switch, indicating selected sub-major and reasons
- Get your advisor's comment and signature (Online sign is acceptable)
- Submit the scanned form to ise@chula.ac.th before the deadline
- Take an interview from the NANO Committee (for sub-major switch only)

SUB-MAJOR SELECTION PROCESS

❖ Consideration Criteria

The final decision from the NANO Committee is based on

- ✓ Number of students in each sub-major
- ✓ Student's GPAX
- ✓ Interview result (for sub-major switch only)

SUB-MAJOR SELECTION: EXAMPLE OF REQUEST FORM

CHULA INTERNATIONAL SCHOOL OF ENGINEERING
The Igniters of CHULA INGENIERING

Request Form for Sub-Major Selection

Name (Mr./Ms./Mrs.) _____ Student ID _____
Telephone _____ Email _____
Cumulative Grade Point Average (GPA) _____ Student Status Normal Probation No. _____

Would like to select submajor:
 Nano-Advanced Material Engineering Nano-Bioengineering

Reason for the selection of the above submajor:

Student's Signature _____
Date _____

Advisor's Comment _____

Advisor's Signature _____
Date _____

FOR ISE NANO STUDENTS ONLY

Sub-major selection

Student's reason for the sub-major selection

Student's signature

Advisor's comment and signature

SWITCH OF SUB-MAJOR

- After the selection of the sub-major and having been assigned to the sub-major for at least **one** semester, students shall make only **one** request to switch the sub-major.
- The switch of sub-major can be requested during the same announced period of the sub-major selection every year.



END OF SESSION

THANK YOU FOR YOUR ATTENTION

NEXT, Q&A SESSION