



**Mahidol University**  
Institute of  
Molecular Biosciences

# **M G G E**

**HANDBOOK**

## **2021**



**International Program**  
**Molecular Genetics and Genetic Engineering**

# CONTENTS

2021

Page

1. Administration	2
1.1 Administrators	2
1.2 M.Sc. - Ph.D. Administrative Program Committee	2
2. Graduate Programs	3
2.1 Curriculum	4
2.1.1 Master of Science Program	4
2.1.2 Doctor of Philosophy Program	4
2.2 List of Courses and Course description	8
2.3 Faculty	14
3. Appendices	15
3.1 Program Learning Outcomes (PLOs)	15
3.2 Curriculum Mapping (M.Sc.)	16
3.3 Curriculum Mapping (Ph.D.)	17
3.4 Students' Thesis Process	22
3.5 Course Registration and Fee Payment for Graduate Students, Academic Year 2021	28
3.6 Announcements	29
3.7 Laboratory Guidelines	33
3.8 Professional and Personal Skills Development	34
3.9 Appeal Procedure	35
3.10 Course Schedule 2021	36

## 1. Administration

### 1.1 Administrators

Prof. Narattaphol Charoenphandhu	Director
Assoc. Prof. Apinunt Udomkit	Deputy Director for Academic Affairs
Asst. Prof. Narisorn Kitiyanant	Deputy Director for Administration
Asst. Prof. Arthorn Sanpanich	Acting Deputy Director for Planning and Quality Development

### 1.2 M.Sc.-Ph.D. Administrative Program Committee

Asst. Prof. Thananya Thongtan	Program Advisor
Assoc. Prof. Panadda Boonserm	Program Director
Assoc. Prof. Chalernporn Ongvarrasopone	Member
Assoc. Prof. M.L. Saovaros Svasti	Member
Asst. Prof. Kusol Pootanakit	Member
Asst. Prof. Chalongrat Noree	Member
Lect. Dr. Poochit Nonejuie	Member
Assoc. Prof. Apinunt Udomkit	Member & Secretary

## 2. Graduate Programs

The international postgraduate program in *Molecular Genetics and Genetic Engineering* was established in 1994. The program provides comprehensive lectures and research opportunities in both basic and applied aspects as follows:

- Molecular Medicine
- Molecular Biology for Agricultural and Industrial Applications
- Molecular Microbiology
- Shrimp Molecular Biology
- Structural Molecular Biology
- Bioinformatics
- Multi-Omics
- Drug Discovery
- Genome Editing and Cell-Based Technology

### Education Philosophy

The M.Sc. program philosophy is to facilitate learners to attain academic achievement through learning-centered education, outcome-based education and constructivism for their self-development of knowledge and new skills in Molecular Biology/Genetics and related fields.

The Ph.D. program philosophy is to facilitate learners to attain academic achievement through learning-centered education, outcome-based education and constructivism for their self-development of novel knowledge, skills and innovative concepts in Molecular Biology/Genetics and related fields.

### Career Opportunities of the Graduates

- Academic staff in Molecular Genetics and relevant disciplines in the university
- Researchers in research institutes, universities or private sectors
- Biotechnology entrepreneurs
- Others such as sale representatives or product specialists

## 2.1 Curriculum

### 2.1.1 Master of Science Program

The M.Sc. curriculum consists of one-year course work (24 credits) and one-year research project (12 credits). Possible transfer to the Ph.D. program after completion of at least two years study would be considered on the basis of academic performance.

Year	Semester 1	Semester 2
1	MBMG 500 Essentials in Molecular Biology <div>2 (2-0-4)</div> MBMG 512 DNA Engineering <div>2 (1-2-3)</div> MBMG 513 Gene Expression and Applications <div>3 (2-2-5)</div> Elective course not less than <div>3 credits</div> <div><b>Total 10 credits</b></div>	MBMG 514 Protein Structure and Function <div>3 (2-2-5)</div> MBMG 515 Protein Technologies and Applications <div>2 (1-2-3)</div> MBMG 516 Cell Technologies and Applications <div>3 (1-6-4)</div> MBMG 615 Research Rotations in Molecular Biology <div>3 (0-9-3)</div> <div><b>Total 11 credits</b></div>
2	MBMG 521 Molecular Genetics and Genetic Engineering Seminar I <div>1 (1-0-2)</div> Elective course not less than <div>1 credit</div> MBMG 698 Thesis <div>6 (0-18-0)</div> <div><b>Total 8 credits</b></div>	MBMG 522 Molecular Genetics and Genetic Engineering Seminar II <div>1 (1-0-2)</div> MBMG 698 Thesis <div>6 (0-18-0)</div> <div><b>Total 7 credits</b></div>

### 2.1.2 Doctor of Philosophy Program

The Doctor of Philosophy program is composed of two study plans.

**2.1.2.1** The first study plan is a research program designed for those who obtained an M.Sc. degree with research experience. No course work is required.

### Plan 1 Dissertation only

Year	Semester 1	Semester 2
1	(Qualifying Examination) MBMG 898 Dissertation 8 (0-24-0) <b>Total 8 credits</b>	MBMG 898 Dissertation 8 (0-24-0) <b>Total 8 credits</b>
2	MBMG 898 Dissertation 8 (0-24-0) <b>Total 8 credits</b>	MBMG 898 Dissertation 8 (0-24-0) <b>Total 8 credits</b>
3	MBMG 898 Dissertation 8 (0-24-0) <b>Total 8 credits</b>	MBMG 898 Dissertation 8 (0-24-0) <b>Total 8 credits</b>

#### Notes:

1. Students may take some coursework upon the recommendation of the major advisor or the program committee and must meet the assessment criteria of the course (e.g. seminar course registration for Audit).
2. This study plan may include overseas research experience.

**2.1.2.2** The second study plan consists of both course work and research.

### Plan 2 Course works and Dissertation

#### Plan 2.1 For students holding an M.Sc. degree

For those who obtained an M.Sc. degree, students are expected to undertake at least 12 credits of course work and conduct a research thesis for 36 credits.

Year	Semester 1	Semester 2
1	MBMG 504 Advanced Research skill in Molecular Biology 3 (0-9-3) Elective course not less than 2 credits (Qualifying Examination) <b>Total 5 credits</b>	MBMG 699 Dissertation 8 (0-24-0) Elective course not less than 1 credit <b>Total 9 credits</b>
2	MBMG 621 Doctoral Seminar in Molecular Genetics and Genetic Engineering	MBMG 622 Doctoral Research Seminar in Molecular Genetics and Genetic Engineering

Year	Semester 1	Semester 2
	1 (1-0-2) MBMG 699 Dissertation 7 (0-21-0) Elective course not less than 3 credits <b>Total 11 credits</b>	1 (1-0-2) MBMG 699 Dissertation 7 (0-21-0)  <b>Total 8 credits</b>
3	MBMG 623 Advanced Doctoral Research Seminar in Molecular Genetics and Genetic Engineering 1 (1-0-2) MBMG 699 Dissertation 7 (0-21-0) <b>Total 8 credits</b>	MBMG 699 Dissertation 7 (0-21-0)  <b>Total 7 credits</b>

### Plan 2.2 For students holding an B.Sc. degree

For those who graduated with a B.Sc. Degree with a GPA above 3.5, the course requirements are 26-credit course work including seminars and a 48-credit research thesis.

Year	Semester 1	Semester 2
1	MBMG 500 Essentials in Molecular Biology 2 (2-0-4) MBMG 512 DNA Engineering 2 (1-2-3) MBMG 513 Gene Expression and Applications 3 (2-2-5) Elective course not less than 3 credits <b>Total 10 credits</b>	MBMG 514 Protein Structure and Function 3 (2-2-5) MBMG 515 Protein Technologies and Applications 2 (1-2-3) MBMG 516 Cell Technologies and Applications 3 (1-6-4)  <b>Total 8 credits</b>
2	(Qualifying Examination) MBMG 504 Advanced Research Skill in Molecular Biology 3 (0-9-3) Elective course not less than 2 credits <b>Total 5 credits</b>	MBMG 799 Dissertation 8 (0-24-0) Elective course not less than 1 credit  <b>Total 9 credits</b>

Year	Semester 1	Semester 2
3	MBMG 621 Doctoral Seminar in Molecular Genetics and Genetic Engineering <div>1 (1-0-2)</div> MBMG 799 Dissertation <div>10 (0-30-0)</div> <b>Total 11 credits</b>	MBMG 622 Doctoral Research Seminar in Molecular Genetics and Genetic Engineering <div>1 (1-0-2)</div> MBMG 799 Dissertation <div>10 (0-30-0)</div> <b>Total 11 credits</b>
4	MBMG 623 Advanced Doctoral Research Seminar in Molecular Genetics and Genetic Engineering <div>1 (1-0-2)</div> MBMG 799 Dissertation <div>10 (0-30-0)</div> <b>Total 11 credits</b>	MBMG 799 Dissertation <div>10 (0-30-0)</div> <b>Total 10 credits</b>



## 2.2 List of Courses

### Required Courses

		Credit (Lecture-Lab-Self Study)
MBMG 500	Essentials in Molecular Biology	2 (2-0-4)
MBMG 504	Advanced Research Skills in Molecular Biology	3 (0-9-3)
MBMG 512	DNA Engineering	2 (1-2-3)
MBMG 513	Gene Expression and Applications	3 (2-2-5)
MBMG 514	Protein Structure and Function	3 (2-2-5)
MBMG 515	Protein Technologies and Applications	2 (1-2-3)
MBMG 516	Cell Technologies and Applications	3 (1-6-4)
MBMG 521	Molecular Genetics and Genetic Engineering Seminar I	1 (1-0-2)
MBMG 522	Molecular Genetics and Genetic Engineering Seminar II	1 (1-0-2)
MBMG 615	Research Rotations in Molecular Biology	3 (0-9-3)
MBMG 621	Doctoral Seminar in Molecular Genetics and Genetic Engineering	1 (1-0-2)
MBMG 622	Doctoral Research Seminar in Molecular Genetics and Genetic Engineering	1 (1-0-2)
MBMG 623	Advanced Doctoral Research Seminar in Molecular Genetics and Genetic Engineering	1 (1-0-2)

### Elective Courses

MBMG 601	Current Topics in Molecular Biology	1 (1-0-2)
MBMG 610	Innovation in Research	1 (1-0-2)
MBMG 614	Analysis of Research Publications for Molecular Bioscience	2 (0-6-2)
MBSB 501	Systems Biosciences	3 (3-0-6)
MBSB 604	Virus-Cell Interactions and Immunity	3 (3-0-6)
GRID 521	Research Ethics	1 (1-0-2)
SCBC 612	Functional Genetics and Genomics	2 (2-0-4)
SCID 500	Cell and Molecular Biology	3 (3-0-6)
SCID 518	Generic Skills in Science Research	1 (1-0-2)

For more details: <https://mb.mahidol.ac.th/en/molecular-genetics-and-genetic-engineering/>

## Course Description

### (1) Required Courses

**Credits (lecture – practice – self-study)**

**MBMG 500    Essentials in Molecular Biology**

**2 (2-0-4)**

Overview of cell structure and function; structure of nucleic acids; genes and genome organization; DNA replication; transcription; translation; protein structure and function; protein trafficking; isolation, purification and detection of nucleic acids; basic DNA cloning; polymerase chain reaction (PCR) and DNA sequencing; basic protein analysis

**MBMG 512    DNA Engineering**

**2 (1-2-3)**

Recombinant DNA techniques; vector and restriction enzymes; in-silico plasmid construction; DNA electrophoresis; DNA ligation; transformation; screening of recombinant clones; plasmid DNA preparation; centrifugation; spectrophotometer; pH meter and biological buffer systems

**MBMG 513    Gene Expression and Applications**

**3 (2-2-5)**

Construction of genomic and cDNA libraries; post-transcriptional gene regulation; applications of polymerase chain reaction; DNA marker; genomic DNA analysis; expression systems in bacteria, yeast, plant, and mammalian cells; virus gene structure and regulation; mobile genetic elements; DNA technology in clinical diagnosis; reporter gene detection; transcriptome analysis; computational programs for DNA cloning and analysis

**MBMG 514    Protein Structure and Function**

**3 (2-2-5)**

Molecular biology of proteins; PCR-based site-directed mutagenesis; BioEdit for sequence analysis; fluorescence microscopy; DNA sequence analysis; protein chromatography; antibody production; SDS-PAGE and western blot analysis; protein purification; Circular Dichroism spectroscopy; enzyme kinetic assay; Image J; protein-protein interaction; immunoprecipitation assay; Pymol; X-ray crystallography

<b>MBMG 515</b>	<b>Protein Technologies and Applications</b>	<b>2 (1-2-3)</b>
	Proteomics; expression profiling by 2D Electrophoresis; mass spectrometry; bioinformatics tools for proteomic analysis; phage display; protein database and protein visualization; drug design; fluorescent protein technology	
<b>MBMG 516</b>	<b>Cell Technologies and Applications</b>	<b>3 (1-6-4)</b>
	Basic mammalian cell culture technique; biosafety; mammalian cell expression system; RNAi; genome editing; flow cytometry; cell cycle; cellular homeostasis; cytotoxicity; MTT assay; real-time PCR; semi-quantitative PCR; cell applications	
<b>MBMG 521</b>	<b>Molecular Genetics and Genetic Engineering Seminar I</b>	<b>1 (1-0-2)</b>
	Research articles from scientific journals in Molecular Genetics and Genetic Engineering and other disciplines related to the research topic of the student; ethics in research citation	
<b>MBMG 522</b>	<b>Molecular Genetics and Genetic Engineering Seminar II</b>	<b>1 (1-0-2)</b>
	Rationale and research questions; results obtained from student's research; comparative discussion with previous studies in related topics; ethics in research citation	
<b>MBMG 615</b>	<b>Research Rotations in Molecular Biology</b>	<b>3 (0-9-3)</b>
	Research principles in Molecular Medical and Agricultural Biosciences; searching databases or literature related to the project during each rotation; performing experiments in Molecular Biology with research ethics awareness; responsibility to work assigned; communicating and working with others effectively; planning to achieve goals efficiently; analysis and interpretation of the experimental data; presentation of the results via a short seminar	
<b>MBMG 621</b>	<b>Doctoral Seminar in Molecular Genetics and Genetic Engineering</b>	<b>1 (1-0-2)</b>
	Literature review of the research in the field of interest related to the students' theses; discuss, criticize and make recommendation on further research direction	
<b>MBMG 622</b>	<b>Doctoral Research Seminar in Molecular Genetics and Genetic Engineering</b>	<b>1 (1-0-2)</b>

MBMG 623	Advanced Doctoral Research Seminar in Molecular Genetics and Genetic Engineering	1 (1-0-2)
	In-depth analysis of results of students' Ph.D. researches in Molecular Genetics and Genetic Engineering; new concepts or theories from knowledge gained	

MBMG 601	Current Topics in Molecular Biology	1 (1-0-2)
	Ethics in Molecular Biology research; interpretation, critical review and discussion of recent publications related to cutting-edge knowledge and technology in Molecular Biology	

<b>MBMG 614</b>	<b>Analysis of Research Publications for Molecular Bioscience</b>	<b>2 (2-0-4)</b>
<p>Analytical evaluation of current literature in molecular biosciences; oral presentation of scientific papers published within the last two years; writing review reports; assessment by teaching faculty to improve cognitive development</p>		

MBSB 603	Molecular Diagnosis and Molecular Therapy	2 (2-0-4)
----------	---	-----------

Molecular diagnosis; DNA-based diagnosis; RNA-based diagnosis; protein-based diagnosis; clinical biomarkers; prenatal diagnosis; paternity testing; forensic medicine; development of new diagnostic kit; molecular therapy; drug delivery systems; drug carriers and case studies; DNA-based therapy; RNA-based therapy; protein-based therapy; cell-based therapy; development of new therapy

**MBSB 604      Virus-Cell Interactions and Immunity      3 (3-0-6)**

Virology; RNA viruses; DNA viruses; virus replication; virus attachment and entry virus; integration; intracellular trafficking; virus assembly, maturation and release; viral pathogenesis; cellular responses to viral infection; antiviral agents; vaccinology; vaccine design and development; vaccine trials; vaccine production; storage and quality control

**GRID 521      Research Ethics      1(1-0-2)**

Regulations of research ethics, authorship, research misconducts; principle of ethics in human research; participant recruitment and informed consent process, vulnerability group and additional safeguard; privacy protection and confidential assurance; welfare, ethics and regulation on animal experimentation; guidance for the care and use of laboratory animal, safety and biosafety guidelines

**SCBC 612      Functional Genetics and Genomics      2 (2-0-4)**

Functional Genetics; model organisms; genome biology; systems biology; comparative genomics and evolutionary genetics

**SCID 500      Cell and Molecular Biology      3 (3-0-6)**

Cell structure and function; life and information flow in cell, energy flow in biosystem; cell signaling; cell division; cellular differentiation; cell death and development

**SCID 518      Generic Skills in Science Research      1 (1-0-2)**

Qualities of a good researcher; effective searching of the scientific information; laboratory safety, biosafety, chemical safety, radiation safety and electrical safety; ethics of research in human subjects and experimental animals in science; intellectual property rights; research

misconduct attribution of credit and responsibility; techniques in formulating and writing thesis proposals, research projects, grant applications, research reports and manuscript for publication

### **(3) Thesis**

<b>MBMG 698</b>	<b>Thesis</b>	<b>12 (0-36-0)</b>
-----------------	---------------	--------------------

Research in Molecular Medical and Agricultural Biosciences conducted with strict research ethics awareness under the supervision of the thesis advisory committee; thesis writing; publication of research work in standard journals or a conference's proceedings

<b>MBMG 699</b>	<b>Dissertation</b>	<b>36 (0-108-0)</b>
-----------------	---------------------	---------------------

<b>MBMG 799</b>	<b>Dissertation</b>	<b>48 (0-144-0)</b>
-----------------	---------------------	---------------------

<b>MBMG898</b>	<b>Dissertation</b>	<b>48 (0-144-0)</b>
----------------	---------------------	---------------------

Literature review on subject related to the student's research; research in molecular genetics and genetic engineering conducted with strict research ethics awareness under the supervision of the thesis advisory committee; thesis writing; publication of research work in international journals

## 2.3 Faculty

### Institute of Molecular Biosciences

Tel. 0 2441 9003-7

Prof. Chanan Angsuthanasombat

[chanan.ang@mahidol.ac.th](mailto:chanan.ang@mahidol.ac.th); ext. 1237

Prof. Duncan Richard Smith

[Duncan\\_r\\_smith@hotmail.com](mailto:Duncan_r_smith@hotmail.com); ext. 1266

Assoc. Prof. Panadda Boonserm

[panadda.boo@mahidol.ac.th](mailto:panadda.boo@mahidol.ac.th);

*Program Director*

ext. 1459, 1265

Assoc. Prof. Chalernporn Ongvarrasopone [chalernporn.ong@mahidol.ac.th](mailto:chalernporn.ong@mahidol.ac.th);

*Member of the Administrative Program Committee*

ext. 1201, 1280

Assoc. Prof. Chartchai Krittanai

[chartchai.kri@mahidol.ac.th](mailto:chartchai.kri@mahidol.ac.th), ext. 1410

Assoc. Prof. Kanokporn Triwitayakorn

[kanokporn.tri@mahidol.ac.th](mailto:kanokporn.tri@mahidol.ac.th); ext. 1368

Assoc. Prof. Apinunt Udomkit

[apinunt.udo@mahidol.ac.th](mailto:apinunt.udo@mahidol.ac.th); ext. 1236

*Secretary of the Administrative Program Committee*

Assoc. Prof. M.L. Saovaros Svasti

[saovaros.sva@mahidol.ac.th](mailto:saovaros.sva@mahidol.ac.th); ext. 1357

*Member of the Administrative Program Committee*

Assoc. Prof. Sarin Chimnaronk

[sarin.chi@mahidol.ac.th](mailto:sarin.chi@mahidol.ac.th); ext. 1468

Assoc. Prof. Surapon Piboonpocanun

[piboons@gmail.com](mailto:piboons@gmail.com); ext. 1233

Asst. Prof. Kusol Pootanakit

[kusol.poo@mahidol.ac.th](mailto:kusol.poo@mahidol.ac.th); ext. 1467, 1249

*Member of the Administrative Program Committee*

Asst. Prof. Chalongrat Noree

[chalongrat.nor@mahidol.ac.th](mailto:chalongrat.nor@mahidol.ac.th); ext. 1274

*Member of the Administrative Program Committee*

Asst. Prof. Duangrudee Tanramluk

[duangrudee.tan@mahidol.ac.th](mailto:duangrudee.tan@mahidol.ac.th); ext. 121

Dr. Poochit Nonejuie

[poochit.non@mahidol.ac.th](mailto:poochit.non@mahidol.ac.th); ext. 1249

*Member of the Administrative Program Committee*

## 3. Appendices

### 3.1 Program Learning Outcomes (PLOs)

#### 3.1.1 Program Learning Outcomes (Master of Science Program)

At the completion of the program, students will be able to:

- PLO1** Integrate comprehensive knowledge in Molecular Biology and related disciplines to solve scientific research problems.
- PLO2** Conduct systematic research in Molecular Biology with specialized technical skills.
- PLO3** Present research findings in Molecular Biology to scientific community.
- PLO4** Demonstrate scientific integrity including ethical responsibilities and safety practices as appropriate.
- PLO5** Illustrate professional and interpersonal skills for lifelong learning.

#### 3.1.2 Program Learning Outcomes (Doctor of Philosophy Program)

At the completion of the program, students will be able to:

- PLO1** Integrate comprehensive knowledge in Molecular Biology and related disciplines to solve scientific research problems
- PLO2** Formulate and test hypothesis from substantial body of knowledge by independently conducting research in Molecular Biology
- PLO3** Originate new insights in Molecular Biology and research output at international standard
- PLO4** Disseminate novel concepts and/or innovative ideas in Molecular Biology to international scientific community
- PLO5** Demonstrate proficiency in scientific integrity including ethical responsibilities and safety practices as appropriate
- PLO6** Develop professional and interpersonal skills for self-improvement and lifelong learning



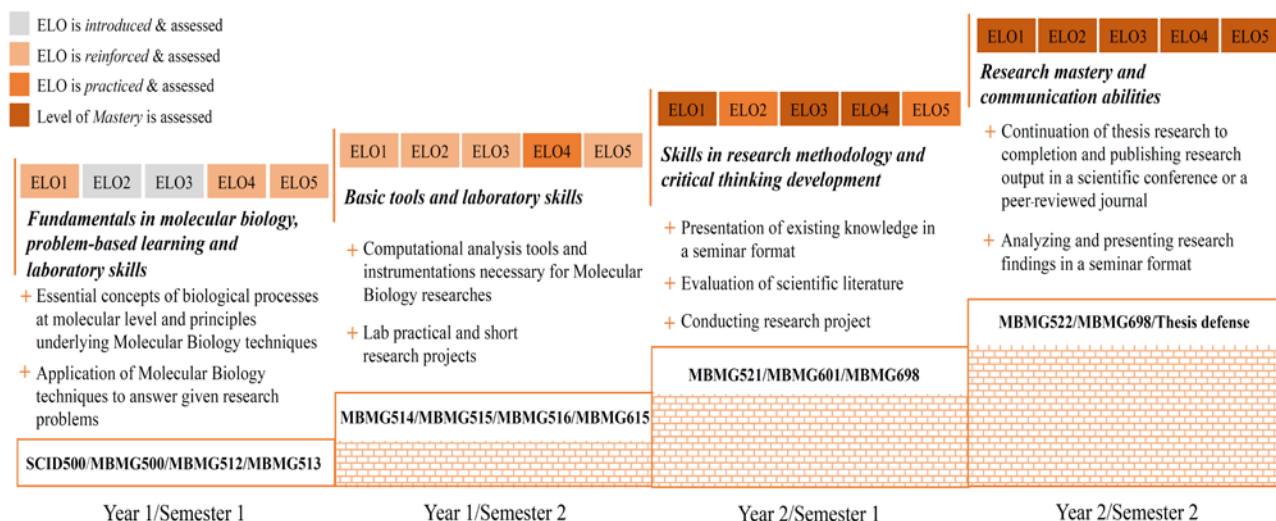
### 3.2 Curriculum Mapping (M.Sc.)

No.	Course code	Course title	Credits (lecture-lab-self study)	PLO1	PLO2	PLO3	PLO4	PLO5
1	MBMG500	<b>Required courses</b> Essentials in Molecular Biology	2(2-0-4)	I			I	
2	MBMG512	DNA Engineering	2(1-2-3)	R	I	I	R	R
3	MBMG513	Gene Expression and Applications	3(2-2-5)	R	I	I	R	R
4	MBMG514	Protein Structure and Function	3(2-2-5)	R	I	I	R	R
5	MBMG515	Protein Technologies and Applications	2(1-2-3)	R	I	I	R	R
6	MBMG516	Cell Technologies and Applications	3(1-6-4)	P	I	I	R	R
7	MBMG521	Molecular Genetics and Genetic Engineering Seminar I	1(1-0-2)	P		R	P	P
8	MBMG522	Molecular Genetics and Genetic Engineering Seminar II	1(1-0-2)	P	R	P	P	P
9	MBMG615	Laboratory Rotations in Molecular Biology	3(0-9-3)	R	R	R	M	R
		<b>Elective courses</b>						
1	MBMG601	Current Topics in Molecular Biology	1(1-0-2)	M		R	R	R
2	SCID500	Cell and Molecular Biology	3(3-0-6)	I				I
3	SCID 518	Generic Skills in Science Research	1(1-0-2)	R	I	I	R	R
4	GRID521	Research Ethics	1(1-0-2)	R			R	R
		<b>Thesis</b>						
	MBMG698	Thesis	12(0-36-0)	M	M	M	M	M

#### Notes:

I = ELO is introduced & assessed      R = ELO is reinforced & assessed

P = ELO is practiced & assessed      M = Level of Mastery is assessed



### 3.3 Curriculum Mapping (Ph.D.)

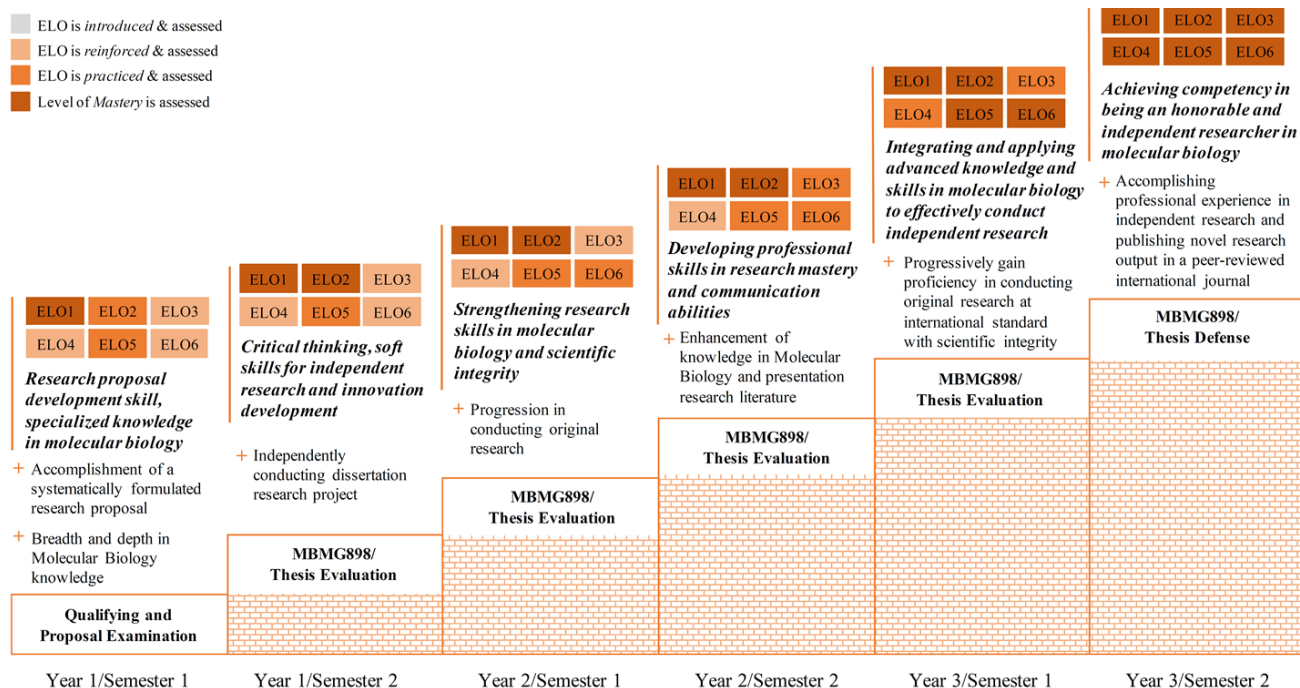
No.	Course code	Course title	Credits (lecture-lab-self study)	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
<b>Required Courses</b>									
1	MBMG 500	Essentials in Molecular Biology	2(2-0-4)	I				R	R
2	MBMG 504	Advanced Research Skills in Molecular Biology	3(0-9-3)	R	P	R	P	P	P
3	MBMG 512	DNA Engineering	2(1-2-3)	R	I			R	R
4	MBMG 513	Gene Expression and Applications	3(2-2-5)	R	I			R	R
5	MBMG 514	Protein Structure and Function	3(2-2-5)	R	I			R	R
6	MBMG 515	Protein Technologies and Applications	2(1-2-3)	R	I			R	R
7	MBMG 516	Cell Technologies and Applications	3(1-6-4)	P	I			R	R
8	MBMG 621	Doctoral Seminar in Molecular Genetics and Genetic Engineering	1(1-0-2)	P			R	P	M
9	MBMG 622	Doctoral Research Seminar in Molecular Genetics and Genetic Engineering	1(1-0-2)	P	R	R	P	M	M
10	MBMG 623	Advanced Doctoral Research Seminar in Molecular Genetics and Genetic Engineering	1(1-0-2)	P	P	R	M	M	M

No.	Course code	Course title	Credits (lecture-lab-self study)	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
		<b>Elective Courses</b>							
1	MBMG 610	Innovation in Research	1(1-0-2)	R			R	R	P
2	MBMG 614	Analysis of Research Publications for Molecular Biosciences	2(0-6-2)	R	R		R	P	P
3	MBSB 501	Systems Biosciences	3(3-0-6)	R	I			R	R
4	MBSB 603	Molecular Diagnosis and Molecular Therapy	2(2-0-4)	R	I			R	R
5	MBSB 604	Virus-Cell Interactions and Immunity	3(3-0-6)	R	I			R	R
6	SCBC 612	Functional Genetics and Genomics	2(2-0-4)	R	I	R	I	I	
7	SCID 500	Cell and Molecular Biology	3(3-0-6)	I				I	
8	SCID 518	Generic Skills in Science Research	1(1-0-2)			I	I	R	R
		<b>Dissertation</b>							
1	MBMG 699	Dissertation	36 (0-108-0)	M	M	M	M	M	M
2	MBMG 799	Dissertation	48 (0-144-0)	M	M	M	M	M	M
3	MBMG 898	Dissertation	48 (0-144-0)	M	M	M	M	M	M

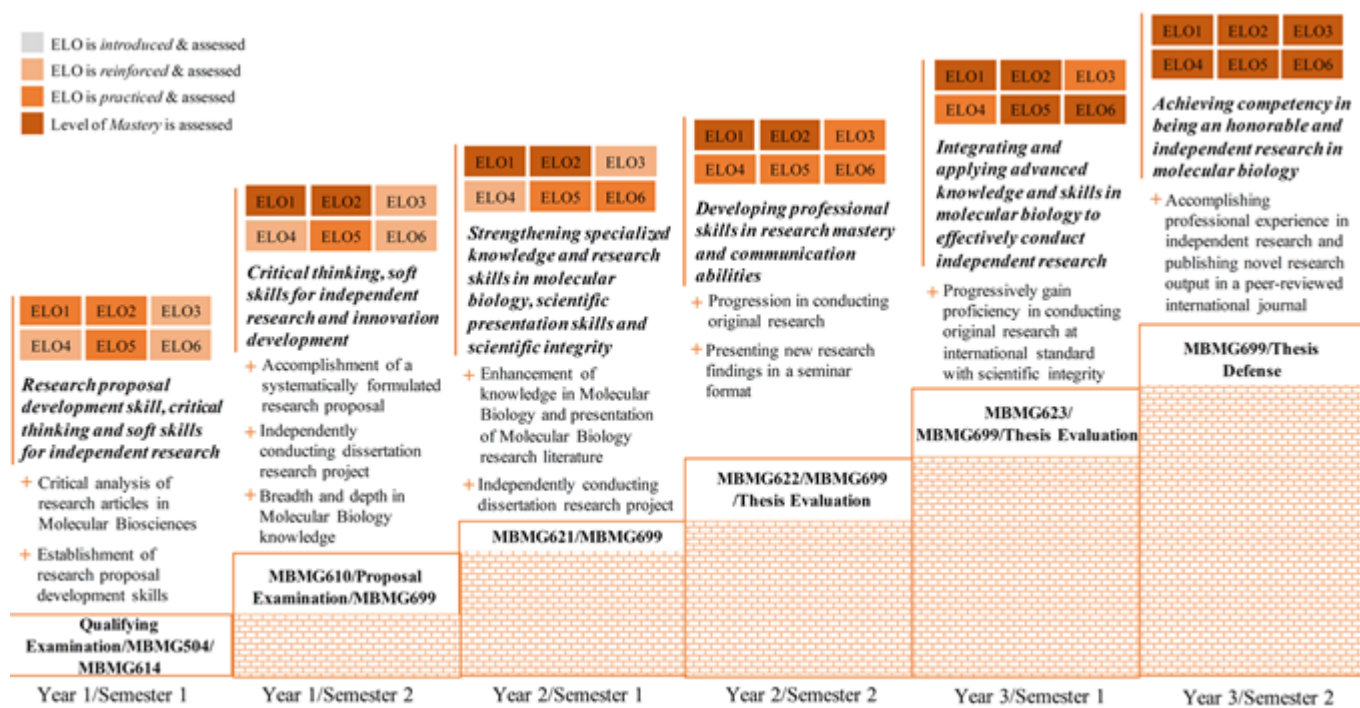
**Notes:**

I = ELO is introduced & assessed      R = ELO is reinforced & assessed  
P = ELO is practiced & assessed      M = Level of Mastery is assessed

## Plan 1



## Plan 2.1

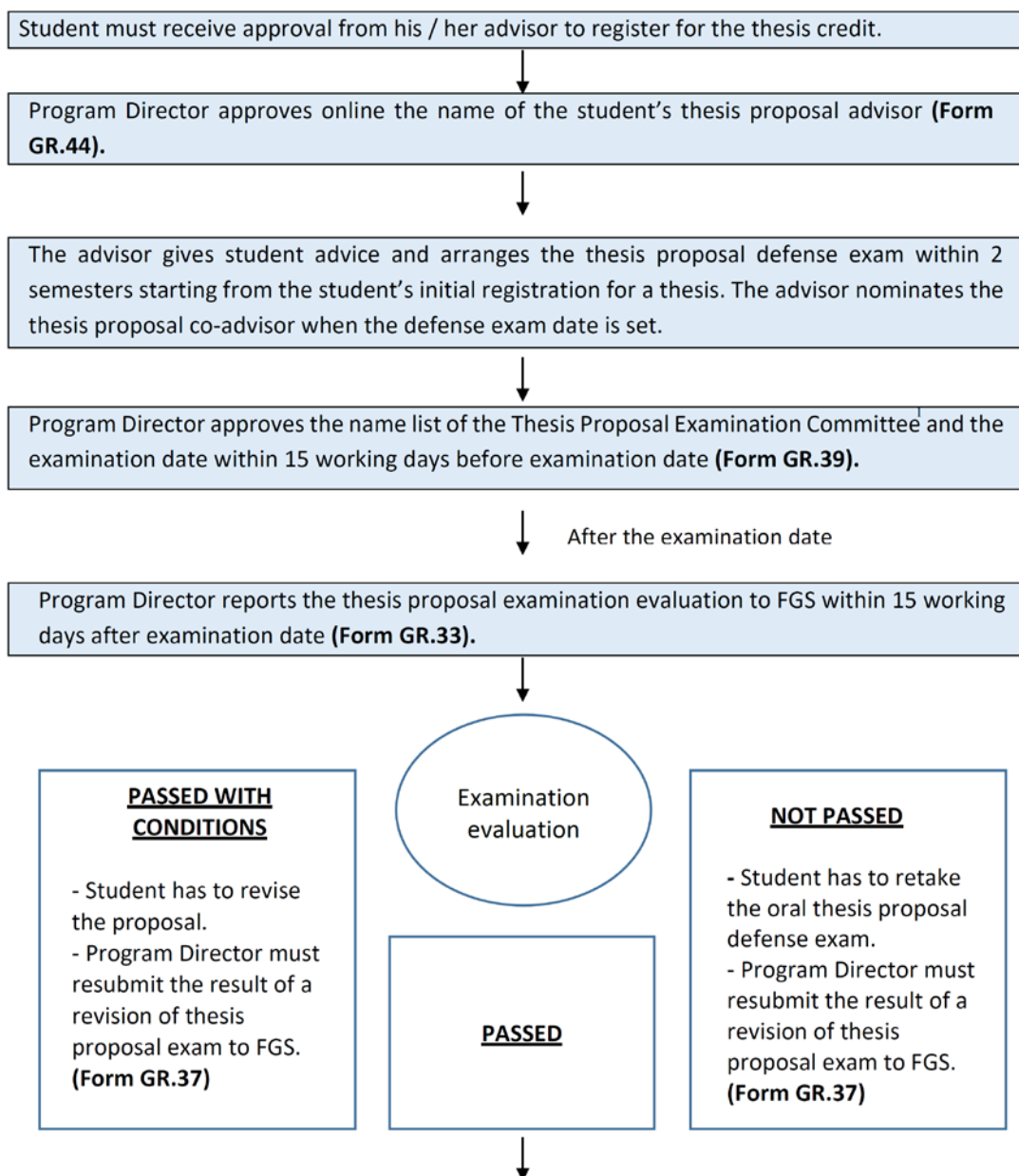


## Plan 2.2

<p>ELO is introduced &amp; assessed</p> <p>ELO is reinforced &amp; assessed</p>		<p>ELO is practiced &amp; assessed</p> <p>Level of Mastery is assessed</p>		<p>ELO1 ELO2 ELO3</p> <p>ELO4 ELO5 ELO6</p> <p><b>Research proposal development skill, critical thinking and soft skills for independent research</b></p> <p>+ Critical analysis of research articles in Molecular Biosciences.</p> <p>+ Establishment of research proposal development skills</p> <p>+ Breadth and depth in Molecular Biology knowledge</p> <p><b>MBMG504/MBMG614/Qualifying Examination</b></p>			<p>ELO1 ELO2 ELO3</p> <p>ELO4 ELO5 ELO6</p> <p><b>Critical thinking, soft skills for independent research and innovation development</b></p> <p>+ Development of a model of innovative products from research</p> <p>+ Accomplishment of a systematically formulated research proposal</p> <p>+ Independently conducting dissertation research project</p> <p><b>MBMG610/MBMG799/Proposal Examination</b></p>			<p>ELO1 ELO2 ELO3</p> <p>ELO4 ELO5 ELO6</p> <p><b>Strengthening specialized knowledge and research skills in molecular biology, scientific presentation skills and scientific integrity</b></p> <p>+ Enhancement of knowledge in Molecular Biology and presentation of Molecular Biology research literature</p> <p>+ Independently conducting dissertation research project</p> <p><b>MBMG621/MBMG799</b></p>			<p>ELO1 ELO2 ELO3</p> <p>ELO4 ELO5 ELO6</p> <p><b>Developing professional skills in research mastery and communication abilities</b></p> <p>+ Progression in conducting original research</p> <p>+ Presenting new research findings in a seminar format</p> <p><b>MBMG622/MBMG799</b></p>			<p>ELO1 ELO2 ELO3</p> <p>ELO4 ELO5 ELO6</p> <p><b>Integrating and applying advanced knowledge and skills in molecular biology to effectively conduct independent research</b></p> <p>+ Progressively gain proficiency in conducting original research at international standard with scientific integrity</p> <p><b>MBMG623/MBMG799/Thesis Evaluation</b></p>			<p>ELO1 ELO2 ELO3</p> <p>ELO4 ELO5 ELO6</p> <p><b>Achieving competency in being an honorable and independent research in molecular biology</b></p> <p>+ Accomplishing professional experience in independent research and publishing novel research output in a peer-reviewed international journal</p> <p><b>MBMG799/Thesis Defense</b></p>		
<p>ELO1 ELO2</p> <p>ELO5 ELO6</p> <p><b>Fundamentals in molecular biology and essential laboratory skills</b></p> <p>+ Essential concepts of biological processes at molecular level</p> <p>+ Principles underlying Molecular Biology techniques and lab practical</p> <p><b>SCID500/MBMG500/MBMG512/MBMG513</b></p>		<p>ELO1 ELO2</p> <p>ELO5 ELO6</p> <p><b>Advanced knowledge and laboratory skills in molecular biology, presentation and communication skills</b></p> <p>+ Principles and applications of advanced techniques in Molecular Biology</p> <p>+ Lab report writing and presentation</p> <p><b>MBMG514/MBMG515/MBMG516</b></p>		<p>ELO1 ELO2 ELO3</p> <p>ELO4 ELO5 ELO6</p> <p><b>Research proposal development skill, critical thinking and soft skills for independent research</b></p> <p>+ Critical analysis of research articles in Molecular Biosciences.</p> <p>+ Establishment of research proposal development skills</p> <p>+ Breadth and depth in Molecular Biology knowledge</p> <p><b>MBMG504/MBMG614/Qualifying Examination</b></p>			<p>ELO1 ELO2 ELO3</p> <p>ELO4 ELO5 ELO6</p> <p><b>Critical thinking, soft skills for independent research and innovation development</b></p> <p>+ Development of a model of innovative products from research</p> <p>+ Accomplishment of a systematically formulated research proposal</p> <p>+ Independently conducting dissertation research project</p> <p><b>MBMG610/MBMG799/Proposal Examination</b></p>			<p>ELO1 ELO2 ELO3</p> <p>ELO4 ELO5 ELO6</p> <p><b>Strengthening specialized knowledge and research skills in molecular biology, scientific presentation skills and scientific integrity</b></p> <p>+ Enhancement of knowledge in Molecular Biology and presentation of Molecular Biology research literature</p> <p>+ Independently conducting dissertation research project</p> <p><b>MBMG621/MBMG799</b></p>			<p>ELO1 ELO2 ELO3</p> <p>ELO4 ELO5 ELO6</p> <p><b>Developing professional skills in research mastery and communication abilities</b></p> <p>+ Progression in conducting original research</p> <p>+ Presenting new research findings in a seminar format</p> <p><b>MBMG622/MBMG799</b></p>			<p>ELO1 ELO2 ELO3</p> <p>ELO4 ELO5 ELO6</p> <p><b>Integrating and applying advanced knowledge and skills in molecular biology to effectively conduct independent research</b></p> <p>+ Progressively gain proficiency in conducting original research at international standard with scientific integrity</p> <p><b>MBMG623/MBMG799/Thesis Evaluation</b></p>			<p>ELO1 ELO2 ELO3</p> <p>ELO4 ELO5 ELO6</p> <p><b>Achieving competency in being an honorable and independent research in molecular biology</b></p> <p>+ Accomplishing professional experience in independent research and publishing novel research output in a peer-reviewed international journal</p> <p><b>MBMG799/Thesis Defense</b></p>		
Year 1/Semester 1		Year 1/Semester 2		Year 2/Semester 1			Year 2/Semester 2			Year 3/Semester 1			Year 3/Semester 2			Year 4/Semester 1			Year 4/Semester 2		

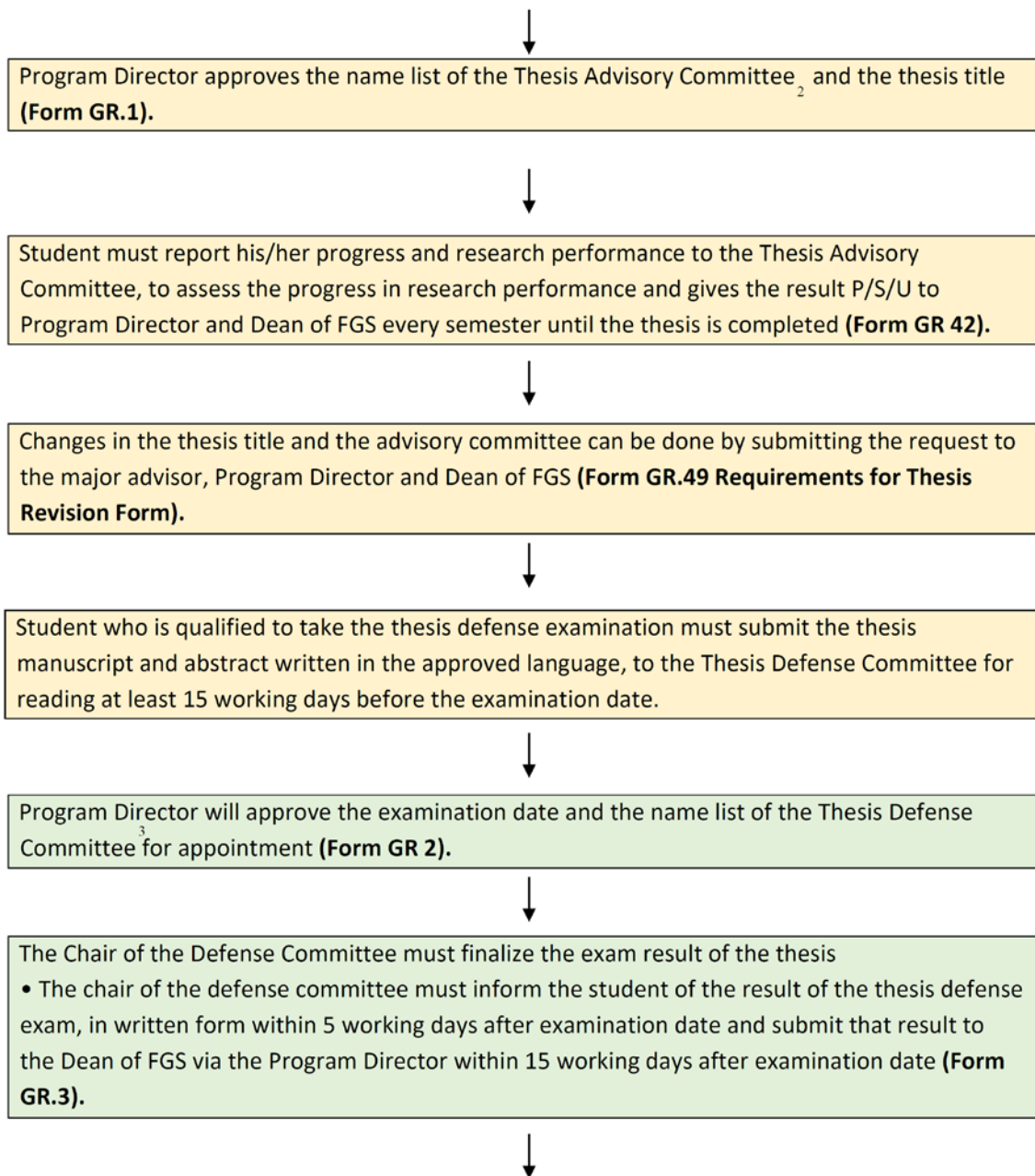
### 3.4 Students' Thesis Process

#### Steps for Thesis Process (Master's Degree Program)



<sup>1</sup> Number of committee members is at least 3 members, the chair of the committee must be a thesis proposal advisor, and the member must be a regular instructor or external examiner.





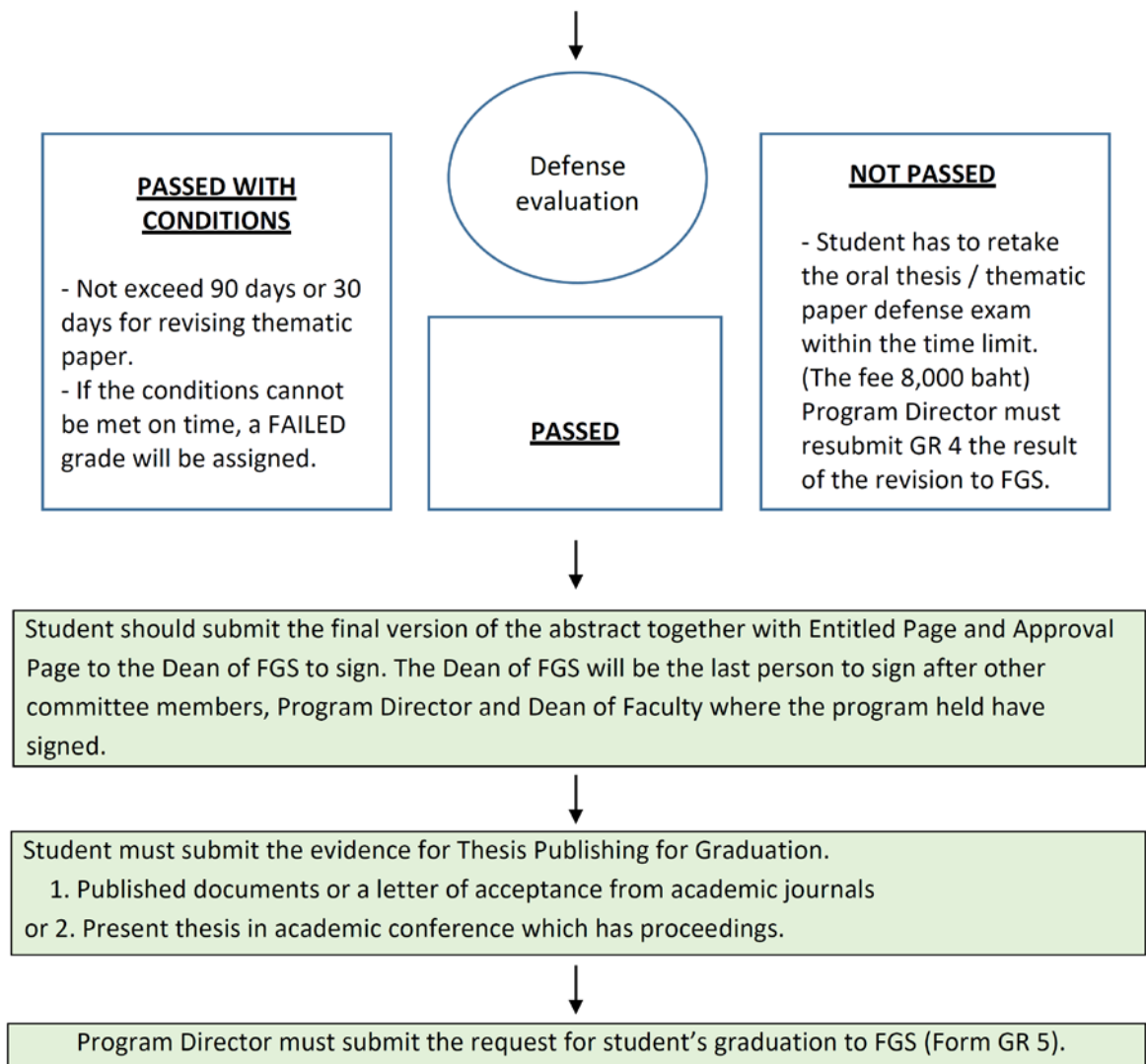
---

<sup>2</sup> The Thesis Committee consists of at least 3 committee members

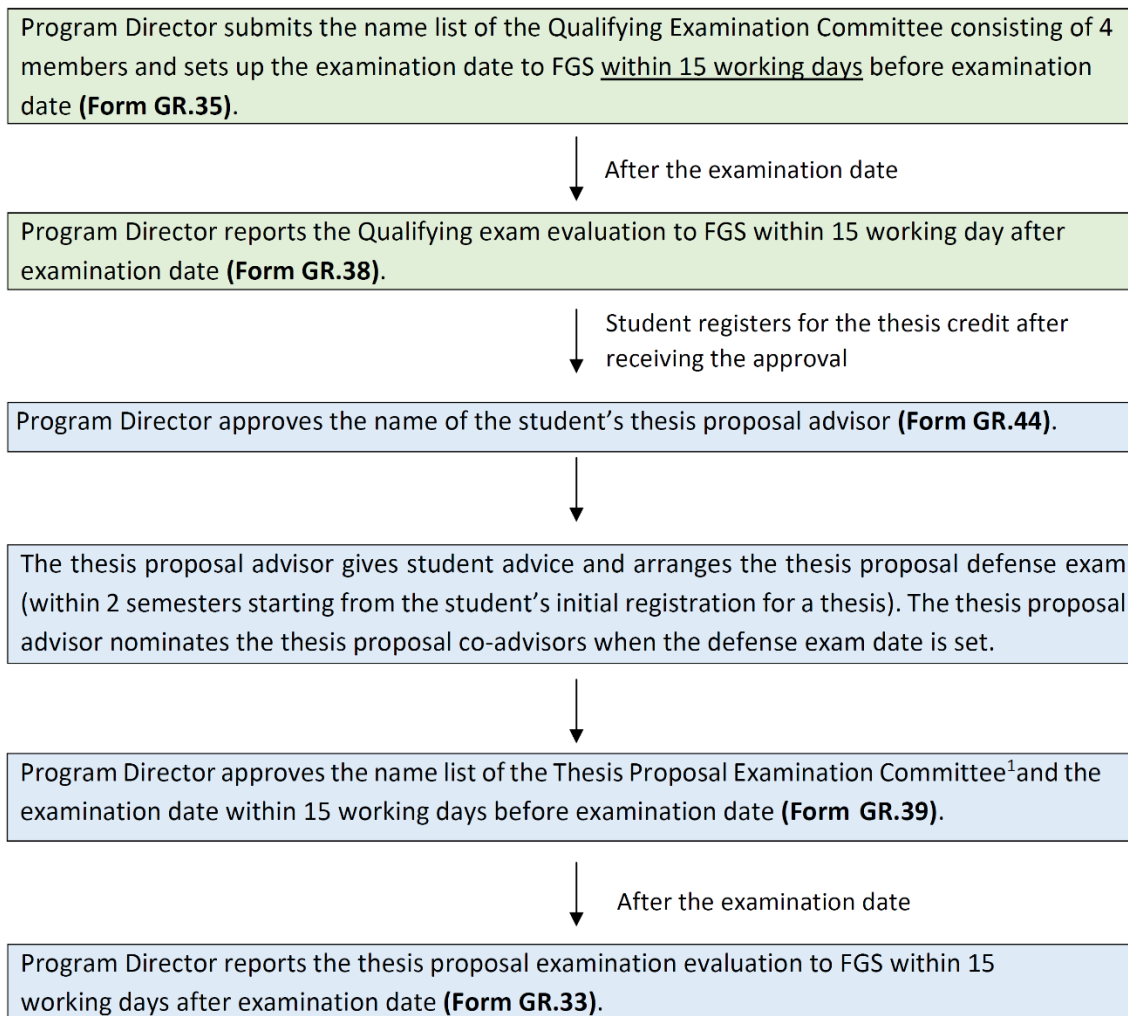
(1) major advisor (2) at least two co-advisors who are regular instructor or external person with Ph.D degree or have at least an academic title of no less than an associate professor.

<sup>3</sup> The Thesis Defence Examination Committee consists of at least 3 committee members (1) major advisor (2) at least one external examiner and (3) co-advisor or a program instructor.



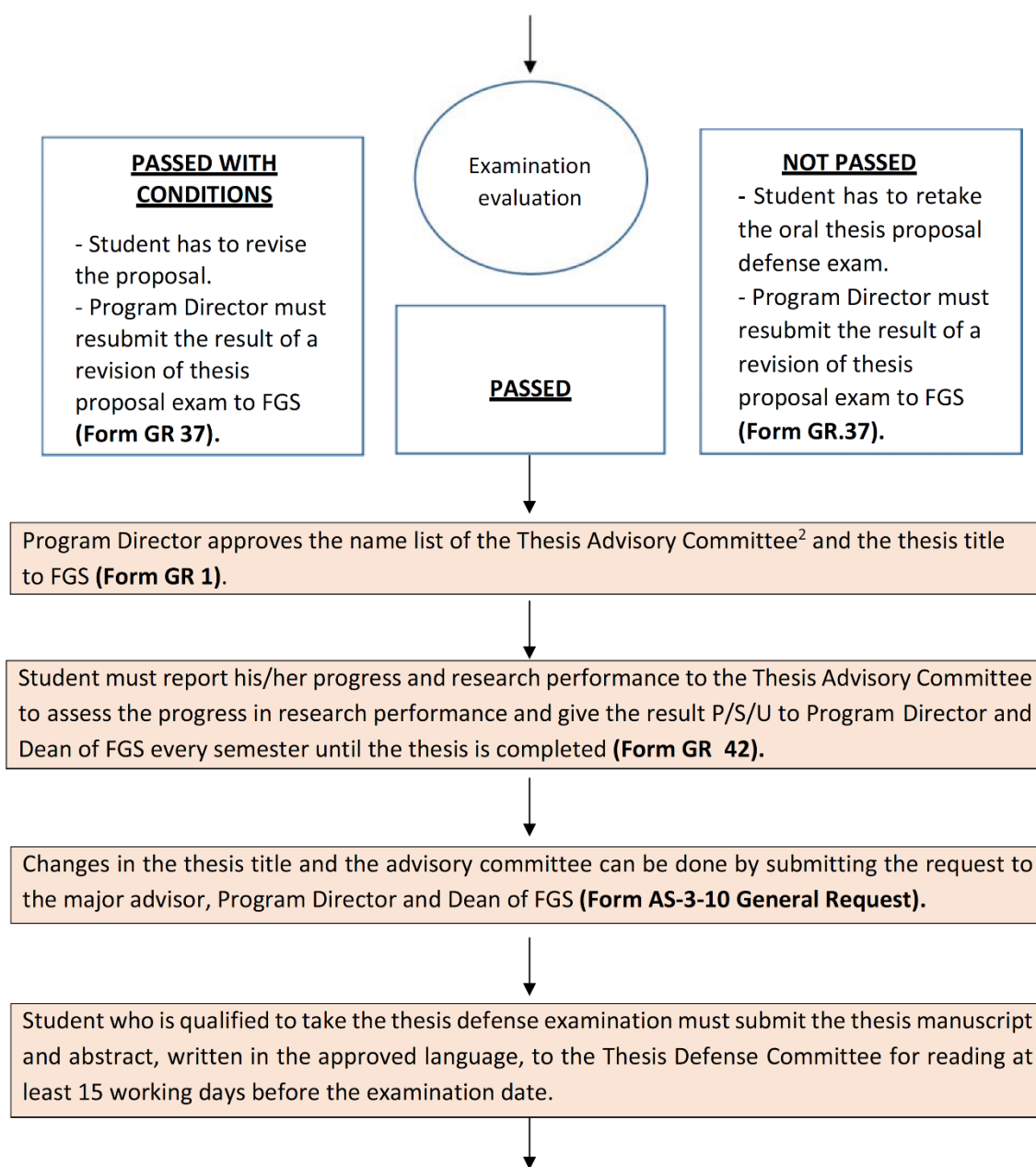


## Steps for Thesis process (Doctoral Degree Program)



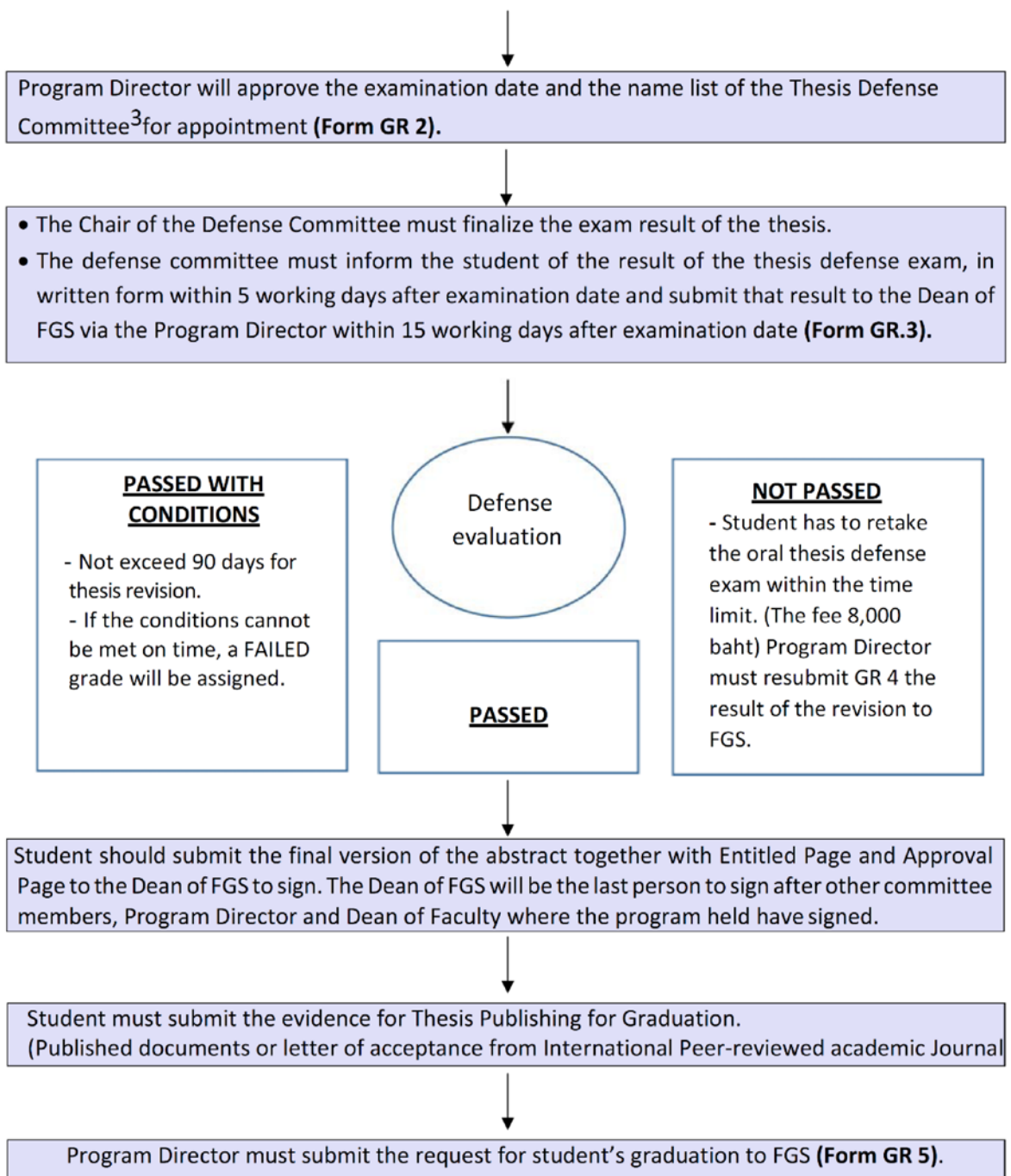
---

<sup>1</sup> Number of committee members is at least 4 members. The chair of the committee must be a thesis proposal advisor, and the member must be a regular instructor or external examiner.



<sup>2</sup> The Thesis Committee consists of at least 4 committee members

(1) major advisor (2) at least three co-advisors who are regular instructor or external person with Ph.D degree or have at least an academic title of no less than an associate professor.



<sup>3</sup> The Thesis Defense Examination Committee consists of at least 5 committee members (1) major advisor (2) at least one external examiner as the chair and (3) co-advisors or program instructors.

### 3.5 Course Registration and Fee Payment for Graduate Students, Academic Year 2021, Faculty of Graduate Studies, Mahidol University

Registration Process Activities		Timetable		
		1 <sup>st</sup> Semester	2 <sup>nd</sup> Semester	Summer
1.	Semester start-end dates	Aug 9 - Dec 3, 2021	Jan 10 - May 6, 2022	May 23 - Jul 15, 2022
2.	Students meet the advisors to ask for course registration approval	from Jul 5, 2021	from Dec 6, 2021	from May 2, 2022
3.	Registration period via Student Service System at <a href="https://graduate.mahidol.ac.th">https://graduate.mahidol.ac.th</a>			
	3.1 Regular Registration	Jul 5 - Jul 16, 2021	Dec 6 - Dec 17, 2021	May 2 - May 6, 2022
	3.2 Regular Registration closed	Jul 17 - Aug 8, 2021	Dec 18, 2021 - Jan 9, 2022	May 7 - May 22, 2022
	3.3 Fee payment deadlines (before 11.00 pm) (If payment is over due, students will be charged 2,000 baht.)	Aug 6, 2021	Jan 7, 2022	May 20, 2022
	3.4 Late Registration	Aug 9 - Aug 20, 2021	Jan 10 - Jan 21, 2022	May 23 - May 27, 2022
	3.5 Payment for late registration	Aug 7 - Sep 10, 2021	Jan 8 - Feb 11, 2022	May 21 - Jun 10, 2022
*	3.6 Late payment of 2,000 baht	Aug 9 - Oct 1, 2021	Jan 10 - Mar 4, 2022	May 23 - Jun 17, 2022
	3.7 Add / Drop course Registration (Refund Graduate Tuition Fee Drop Course)	Aug 9 - Aug 20, 2021	Jan 10 - Jan 21, 2022	May 23 - May 27, 2022
	3.8 Submit Refund Graduate Tuition Form (AS-3-05) (For dropped course during Add / Drop period)	Aug 9 - Sep 8, 2021	Jan 10 - Feb 9, 2022	May 23 - Jun 17, 2022
	3.9 Add / Drop course Payment	Aug 9 - Sep 10, 2021	Jan 10 - Feb 11, 2022	May 23 - Jun 17, 2022
	3.10 Course withdrawal (no refund)	Aug 21 - Nov 26, 2020 or until the week before the final exam	Jan 22 - Apr 29, 2022 or until the week before the final exam	May 28 - Jul 8, 2022 or until the week before the final exam
4.	Advisor or Program director give approval for each student	within 7 days after receiving student registration request		
5.	Registration staff will send invoice and course list via e-mail to each student. The students can download and print out the invoice to make each payment at the bank counter or electronic payment <u>Registration period</u> 5.1 Regular Registration 5.2 Late Registration 5.3 Add/ Drop Course Registration	12 days after receiving student registration request		
6.	Announcement of student enrollment's list and payment status at <a href="https://graduate.mahidol.ac.th">https://graduate.mahidol.ac.th</a> (Student Service System)	from Jul 19, 2021	from Dec 20, 2021	from May 9, 2022
7.	Students who do not register and/ or do not pay the fee must contact the Academic Services Section, Salaya to confirm the student status	Sep 13 - Sep 24, 2021	Feb 14 - Feb 25, 2022	-
8.	Students status terminated due to non-registration and/ or non-payment of fees	Oct 1, 2021	Mar 4, 2022	-
**9.	Student Service System closed	Nov 29 - Dec 5, 2021	Apr 25 - May 1, 2022	Jun 27 - Jul 3, 2022
10.	Students give comments on the Online Course Evaluation Form	Nov 8 - Dec 20, 2021	Apr 11 - May 23, 2022	Jun 25 - Aug 15, 2022
11.	Program Directors submit evaluation of student's achievement in each course to FGS.	within Dec 24, 2021	within May 27, 2022	within Jul 22, 2022
12.	Announcement of Grade Report at <a href="https://graduate.mahidol.ac.th">https://graduate.mahidol.ac.th</a> (Student Service System)	from Dec 29, 2021	from Jun 1, 2022	from Jul 27, 2022

## 3.6 Announcements



### Mahidol University Institute of Molecular Biosciences

#### Post-graduate Programs in Molecular Genetics and Genetic Engineering Institute of Molecular Biosciences Mahidol University

---

##### Criteria for the change in M.Sc. student status

The Institute Curriculum Committee has announced the following criteria for M.Sc. student who wishes to bypass to Ph.D. study program:

1. The student must attend at least a full year of course work and pass the required first-year course work which are: MBMG 500 Essentials in Molecular Biology, MBMG 512 DNA Engineering, MBMG 513 Gene Expression and Applications, MBMG 514 Protein Structure and Function, MBMG 515 Protein Technologies and Applications, MBMG 516 Cell Technologies and Applications and MBMG 615 Research Rotations in Molecular Biology
2. The change from M.Sc. to Ph.D. status must be made within one year after starting a research thesis, and must be approved by the Institute Curriculum Committee according to the following considerations:
  - 2.1 A reason for switching from M.Sc. to Ph.D. program.
  - 2.2 Demonstrated academic and research abilities. The student must have at least a GPA of 3.5 in the first year of course work.
  - 2.3 If the student has a scholarship under the major advisor's project, the student will not be allowed to change the thesis major advisor unless an agreement is made between the student and the major advisor.
3. The student must pass an interview by the examination committee which will be appointed by the chair of the Curriculum Committee. The student must contact the MGGE educational office at least 2 weeks in advance.

This announcement will be effective from April 4, 2018.

A handwritten signature in blue ink, reading 'P. Boonserm'.

Assoc. Prof. Dr. Panadda Boonserm  
Program Director



## Mahidol University

### Institute of Molecular Biosciences

#### Post-graduate Programs in Molecular Genetics and Genetic Engineering

#### Institute of Molecular Biosciences

#### Mahidol University

---

#### Guidelines for students' thesis research

##### M.Sc. students

1. The student must complete the M.Sc. program within three years. The third-year student must appoint the thesis defense committee before the deadline for graduation of that academic year. The appointment for thesis examination date must be made before the advisor can submit thesis proposal for the next-year student.
2. The student must pass the Thesis Proposal Examination within the first semester after registered for the thesis.
3. At least 60% of the student's research time must be carried out at the Institute.
4. Each student must be evaluated for the progress of his/her research every semester.
5. The M.Sc. thesis or part of it must be presented at the conference with a peer review process and have a full proceeding (with the student's name as the first author and the major advisor as a corresponding author) or published in a peer-reviewed international journal (with the student's name as an author and the major advisor as the first or corresponding author).
6. A student can submit his/her thesis for publication only after his/her thesis topic has been approved by the Faculty of Graduate Studies.

##### Ph.D. students

1. The student must pass the Qualifying Examination within two semesters (for students with a Master's degree) or four semesters (for students with a Bachelor's degree) after officially enrolled.
2. The student must pass the Qualifying Examination before being allowed to register for Thesis.
3. The student must take the Thesis Proposal Examination within two semesters after registered for the thesis.
4. Students with a Master's degree cannot take more than 4 years and students with a Bachelor's degree cannot take more than 6 years to complete their study.
5. At least 60% of the student's research time must be carried out at the Institute.
6. Each student must be evaluated for the progress of his/her research thesis every semester. This evaluation may be omitted during the period of student's overseas training with the consent from the Administrative Program Committee. This omission will be allowed only once in the entire period of Ph.D. thesis.
7. Publication for graduation of Ph.D. students must have student's name as the first author and the thesis major advisor as a corresponding author (For the first publication: student's name as the first author and major advisor as the corresponding author, For the second publication: student's name as the first author and major advisor as the corresponding author or co-author). Student can take the Thesis Defense Examination when at least one publication is accepted for publication. The publication must be related to the thesis, and the date of publication must be after taking the Thesis Proposal Examination.
8. A student can submit his/her thesis for publication only after his/her thesis topic has been approved by the Faculty of Graduate Studies.

This announcement is to be effective from April 4, 2018.

Assoc. Prof. Dr. Panadda Boonserm  
Program Director



# Mahidol University

## Institute of Molecular Biosciences

Doctor of Philosophy program in Molecular Genetics and Genetic Engineering

Institute of Molecular Biosciences

Mahidol University

---

### Qualifying Examination

#### Objectives

The purpose of the qualifying examination is to assess whether the student has adequate knowledge in the field of study to begin a Ph.D. thesis research. This will be determined by testing both fundamental knowledge related to the student's research and the oral communication skill.

#### Prerequisite

Students who wish to take qualifying examination must complete all the first-year course work.

#### Format

Students will be tested on fundamentals of their research field. The examination will be composed of a 30 minutes student's presentation on the research background and literature reviews followed by a questioning session from the Qualifying Committee and participating faculty members.

Before the exam, the students must

1. notify their intention to take the qualifying exam and appoint the exam date with the program director one month in advance. The Qualifying Examination Committee, composing of four faculty members for each student, will be appointed by the program director for each student.
2. submit the abstract (not exceed 250 words) and copies or PDF of at least three research articles to each committee member two weeks ahead of the exam.

#### Evaluation

The examination will be evaluated by the Qualifying Committee, and the student will be informed of the result after the exam.

Students who do not pass the exam must retake the exam within six months with the same Qualifying Examination Committee. Students who fail the second qualifying examination will be retired or will be asked to change the status from Pd.D. to Master's student.

This announcement will be effective from July 21, 2017

Assoc. Prof. Dr. Panadda Boonserm

Program Director





**Mahidol University**  
**Institute of Molecular Biosciences**

**Post-graduate Programs in Molecular Genetics and Genetic Engineering**  
**Institute of Molecular Biosciences**  
**Mahidol University**

---

**Criteria for Evaluating Students' Studies**

This is to inform all MGGE students of the decision made by the Graduate Programme Committee from the meeting on May 3, 2016. The establishment of criteria for evaluating students' studies is intended to maintain a high standard of the programme in Molecular Genetics and Genetic Engineering.

The criteria are as follows:

1. Students who have attended class regularly and taken examinations, or unreasonably missed the final test will be graded as a normal rating and will not receive an "I" (Incomplete).
2. In the case of MGGE scholars, if they have received a grade lower than "B" for a required course, their scholarships will be terminated and consequently
  - 2.1 they must pay graduate tuition at a normal rate of 18,000 ฿ per credit for the following semester;
  - 2.2 they must pay the Research Supplies Fee of 150,000 ฿ for a research M.Sc. thesis;
  - 2.3 they must pay the Research Supplies Fee of 300,000 ฿ for a research Ph.D. thesis.
3. Students who could not pass a required course after the second attempt will be terminated from the programme.
4. Students who have received a grade lower than "B" for two required courses will not be allowed to perform the thesis research.
5. Students who have received a "U" rating for two semesters of the research performance must withdraw from the programme.
6. Changing of the above criteria can only be performed by the Graduate Programme Committee.

This announcement will be effective from July 21, 2017.

A handwritten signature in blue ink, appearing to read "P. Boonserm".

Assoc. Prof. Dr. Panadda Boonserm  
Program Director

### 3.7 Laboratory guidelines

Your actions and behavior in the laboratory should reflect an attitude of professional concern and commitment to excellence. Cooperation and communication with your colleagues is essential. We will all learn more if we work in an atmosphere of cooperation rather than competition. Materials, supplies, and equipment are often limited so use only what is needed. Please return supplies to their proper places as soon as you have finished with them.

1. Laboratory coats must be worn in the radioactive laboratory and should be worn while performing any bench work.
2. Gloves may be contaminated so do not wear them to answer the telephone or to open a door while walking through the Institute.
3. Closed-in shoes must be worn in the laboratory.
4. Equipment must not be used until you have been properly trained in its use.
5. Special permission must be obtained to work outside the normal working hours of Monday - Friday 0800-2000 hr.
6. Eating and drinking are NOT allowed in the laboratory.
7. In the laboratories performing genetic manipulation experiments, the windows and doors must remain closed to prevent cross-contamination.
8. If equipment is broken or reagents consumed, please inform the appropriate people.
9. The computers must only be used for research purposes and NOT for playing games.
10. When borrowing equipment or reagents from other laboratories, please inform people in that laboratory BEFORE taking the material.
11. Return the material that you borrowed to the laboratory from where it came.
12. Students must be dressed politely when attending courses.
13. Dishonesty and unethical behavior including plagiarism and fraudulent manipulation of data will not be tolerated.
14. Students breaking the above rules are subject to dismissal from the program.

### 3.8 Professional and Personal Skills Development

At present, it is widely accepted that successful students both in work and personal life have some knowledge they acquire outside of school. Since Professional and Personal Skills Development or Soft skills are as important as the knowledge in school, the dean of the Faculty of Graduate Studies, with the approval of the Faculty of Graduate Studies policy committee, saw it beneficial to provide Soft Skills development to students in the graduate programs in order to comply with the Faculty of Graduate Studies' strategies that develop the graduates' qualities to meet the international standards. The Deputy Dean for Student Affairs formed the student affairs committee consisting of representatives of all sections to set up Soft Skills development guideline under the project – Professional and Personal Skills Development.


The standard professional and personal skills required for the graduate students in Mahidol University are:

1. Communication and Language Skills
2. Leaderships and Management skills
3. Creative and Innovative Skills (For students with ID 61 onwards)
4. Digital Literacy Skills
5. Health Literacy Skills (For students with ID 62 onwards)
6. Entrepreneurial Literacy Skills (For students with ID 62 onwards)

#### Policies

- Graduate students with student ID no. 59xxxxx and later must pass the Professional and Personal Skills Development to qualify for graduation. Every candidate student must pass at least 1 activity in every required skills.
- The activity students take part in will be reported in their transcript.
- Students will get a certificate for every activity attended.
- Students can register for the activities through the website which will have a schedule of activities for the students to choose.
- If the students' program has activities or courses that are similar to the required skills in this project, they can send a request form to the student affairs committee under the committee's agreement meeting will be held every 2 months.
- The maximum of comparable skills in the students' program are 2 skills, one of which the student shall take in the Faculty of Graduate Studies.

### 3.9 Appeal Procedure




**Mahidol University**  
Institute of  
Molecular Biosciences

## Complaints and Appeals Process

Institute of Molecular Biosciences

### Complaint/Appeal relates to the following:

1. Academic/Support staff
2. Graduate Programs/ Services
3. Comments/suggestion



### Complaints/Appeals Form contains:


1. Name, Surname, Address, telephone number
2. Complaint/Appeal issue
3. Polite contents
4. Signature at the end of the form

### The following items will not be considered:

1. Thailand's monarchy
2. Policy of the Thai Government
3. Judicial process
4. No signature/ Items that cannot be traced
5. Complaints that have already been considered by the Government

### Procedures

1. Obtain Complaints/Appeals Form from the MB Legal Affairs Division or download from the MU Legal Affairs Division website
2. Submit the signed completed form by post or e-mail **Or**
3. Submit the form in MB Suggestion Box at the **1st floor in front of the meeting rooms or the 3rd floor in front of the library**



**WE MEMB**

For more information, please contact  
Ms.Issariya Dissariyawongwarang Ext. 1451

### 3.10 Course Schedule 2021

Course (coordinator)	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
MBMG 500 Essentials in Molecular Biology (Apinunt)	3 Aug - 26 Aug Mon, Tue, Thu: 9.00-15.30									
MBMG 512 DNA Engineering (Chalernporn)		6 – 23 Sep Mon-Fri 9.00-16.00								
MBMG 513 Gene Expression and Applications (Kusol)		27 Sep – 29 Oct Mon-Fri 9.00-16.00								
MBMG 514 Protein Structure and Function (Panadda)			8 Nov – 26 Nov Mon-Fri 9.00-16.00							
MBMG 515 Protein Technologies and Applications (Chartchai)					29 Nov - 17 Dec Mon-Fri: 9.00-16.00					
MBMG 516 Cell Technologies and Applications (Saovaros)						4 -28 Jan Mon-Fri: 9.00-16.00				
MBMG 615 Research Rotations in Molecular Biology (Poochit)							Rotation I 31 Jan – 25 Feb	Rotation II 28 Feb – 25 Mar	Rotation III 28 Mar-22 Apr	
MBMG521, 522 Mol Genet & Genet Eng Seminar I, II (Sarin, Kanokporn)	To be announced Fri: 10.00-11.30									
MBMG601 Current Topics in Mol Biol (Duangrudee)			6 Oct-1 Dec Wed: 9.30-11.30							
MBMG504 Adv Res Skill in Mol Biol (Chalernporn)		9 Aug – 26 Oct								
MBMG621, 622, 623 Doctoral Seminar (Kusol, Duncan )	To be announced									
MBMG614 Analysis of Res Publication for Mol Biosci (Chalongrat)		5Aug – 26 Nov Th: 10.00-12.00								
MBMG 610 Innovation in Research (Surapon)						4 Jan – 26 Apr				

SCID500 Cell Mol Biol  
TBA

M.Sc./Yr 1

M.Sc./Yr 2

Ph.D.



Institute of Molecular Biosciences  
Mahidol University, Salaya Campus,  
Phutthamonthon, Nakhon Pathom 73170  
Tel. 02-441-9003-7