Updating Curriculum 2017 Doctoral Programme in Mathematics FMNS UGM Feedback for Curriculum 2017 to have Curriculum 2022 Doctoral Programme in Mathematics FMNS UGM

# Feedback from Prof. Agus Suryanto FMNS Brawijaya University

3 November 2021

## Feedback:

- 1. Vission-Mission-Objective-and-Target.
- 2. PEO 1: "advanced mathematics" is not clear
- 3. PLO-2: What does "menguasai (mastery)" mean? Supporting courses are not determined yet.
- 4. "Scientific writing method" narated in which section?
- 5. Achievement+indicator for "complete in 3 years" should be elaborated.
- 6. Reguler versus by research. SKS MK hanya selisih 6 SKS. MK untuk by research masih banyak. Dapat diatasi dengan sit-in tanpa dinilai.
- 7. Terkait industry 4.0 dan society 5.0: Komputasi, Al, dan data scientist perlu diperhatikan.

# Best Practice UB for Achievement+indicator of 3 year completion

- Courses are completed in Semester I (14 credits): 2 credits Mathematics Philosophy (lecturer: from Math Programme), 3 credits Research Method, 3 courses, each is of 3 credits. Courses are determined by student and supervisor team.
- 2. Semester II student should write a proposal. By the end of Semester III, student must conduct a comprehensive exam.
- 3. To support point 1 and 2, we consider:
  - a) Student readiness. Detected since enrollment selection interview
  - b) Appropriateness of reserach topic and availability of supervisor candidate.
- 4. Publication is not easy. For open access publication, we use budget from supervisor research funding. (UB 100million rupiahs/prof)

## Students

Student I:

• Meeting/getting discussion partners. The Literature Review strongly supports the research material and aids in finding novelty. If possible, there are computer facilities with high speed. For the Python training on November 13 and 20, 2021, hopefully, there will be recordings.

Student II:

• The Literature Review greatly helps in finding novelty. Really helped by discussions and regular schedules with the Advisory Team. Other courses are going smoothly. If possible, there are computer facilities with high speed.

Student III:

• The Literature Review greatly helps in finding novelty. The research topic has been identified, so they have started compiling the report and comprehensive preparation.

#### Student IV:

• The topic and novelty have been identified. Sharing: Courses are determinde by the supervisor Team.

#### Student V:

 Sharing: Not all courses are taught by the supervisor Team. The Literature Review helps in dissertation topics and novelty, and additional supporting materials are available in the internet.

#### Student VI:

 Pursuing an S2 by research without lectures. For S3, only 3 courses and all are about the research topic, which is less effective. Fortunately, the supervisor asked them to sit in on S2. The difference between regular and by research programs is not clear. Regarding the Proofreading Grant, submission access is only allowed by the Advisory Team. The Advisory Team's busyness can reduce time efficiency. Is it possible in the future for submissions to be made directly by students?

#### Student VII:

• The Literature Review helps in finding novelty. Proposal: Involvement of all members of the supervisor Team from the beginning, both in lectures and guidance.

Student VIII:

• Sharing: High support from the supervisor Team. Since the first year, students are motivated for publication. It is proposed to hold colloquiums for basic courses, such as real analysis, etc. Considering the waiting time for publication in some journals, which can take quite a long time, is it possible to have training related to journals?

Student IX:

• Monthly scientific discussions can be activated again. Information regarding scientific discussions: Last month it already happened. Info from the Deputy S3 in Himpastika: Last month, Ms. Dwi from the field of Applied Mathematics was the speaker, and in November, it will be held with Mr. Musa from the field of Algebra.

## Feedback via google form 12 November 2021

- No feedback so far, thank you.
- Comprehensive examination if possible in the end of semester 2.
- For student wirth topic applied mathematics, computer programming should be a taken course
- Courses are better completed in semester I, so that student can be more focused in on dissertation research. Academic writing workshop should be more frequent.
- It's advisable that in the third semester, the focus should be on preparing for the comprehensive exam, along with continuous intensive computer programming training. Additionally, there should be a continuation of the Literature Review course to provide a clearer direction for dissertation research, especially regarding novelty. Thank you.
- Addition of credit hours for the Literature Review course. Announcement of new student graduations should include specific points or reasons so that prospective students can evaluate why they passed/failed. To graduate on time, the comprehensive exam should ideally be mandatory in the second or third semester, considering the lengthy process of publishing papers in international journals. A schedule for lab usage (for example, which days/times are allocated for S3 students) should be provided.

## Feedback via google form 12 November 2021

• In general, I think the curriculum of the study program is already good and can help me in preparing the proposal and conducting the dissertation research well and in a focused manner. However, perhaps the program can reevaluate the Dissertation course with components such as Comprehensive Examination, Scholarly Publications, Research Work, Dissertation Manuscript Assessment, and Closed Examinations. My input here is that the program might consider adding a seminar proposal course in the second or third semester with the goal of completing the research proposal and presenting the research plan. This way, students can take the comprehensive exam at least by the end of the third semester and immediately proceed with the research thereafter. The curriculum structure is good, it supports students in maximizing their study time. For students who have completed various stages of coursework, comprehensive exams, or other activities with final grades, it would be beneficial if these grades were included in the transcript of records, showing progress throughout the course. Currently, only course grades (completed) and dissertation grades (still empty) are listed in the transcript. I think it's already okay, with 12-15 credit hours for lectures, and then continue with research.

## Dr. M. Frederic Ezerman(1)

Research directions for graduate students who have prepared by taking several courses covering the topics above could include:

- Contemporary Cryptography: Exploring quantum-secure cryptosystems. Investigating privacypreserving techniques, such as zero-knowledge proof of knowledge. - Studying confidential computing methods.
- 2. 2. Massive Data Storage Systems: Researching DNA coding for data storage applications. Examining non-volatile memory technologies for efficient data storage. Investigating locally recoverable codes for error-resilient data storage systems.
- 3. 3. Error Control Systems in Quantum Processors: Developing error control mechanisms for quantum processors. Studying techniques to mitigate errors and improve the reliability of quantum computation systems.

## Dr. M. Frederic Ezerman (2)

**Proposed Main Referenced** 

- 1. Boaz Barak and Sanjeev Arora, *Computational Complexity: A Modern Approach*, Cambridge Univ. Press (2009).
- 2. Avi Widgerson, *Mathematics and Computation: A Theory Revolutionizing Technology and Science*, Princeton Univ. Press (2019). Free pdf version at

https://www.math.ias.edu/files/Book-online-Aug0619.pdf#page=1

- 3. Dan Boneh and Victor Shoup, A Graduate Course in Applied Cryptography, Stanford (2020). Available online at https://toc.cryptobook.us/, v5 is at https://crypto.stanford.edu/~dabo/cryptobook/BonehShoup\_0\_5.pdf
- 4. W. Cary Huffman, J-L Kim, P. Sole (editors), Concise Encyclopedia of Coding Theory. CRC Press (2021).

## Prof. Dr. Budi Nurani (1)

• Overall, the curriculum is already good. The objectives are comprehensive and in line with the National Qualifications Framework (KKNI) and the Indonesian Mathematical Society (IndoMS). While most graduates aim to become academics, there should also be preparation for those who will enter the professional world. The Competency Profile (CPL) is complete. For research-based doctoral programs (sharing experiences at Unpad), it's not easy to formulate the research-based doctoral program. The accreditation instrument forms are still for regular doctoral programs; there is no instrument yet for the by-research program. Unpad is facing difficulties in implementing the by-research program. By-research programs also count towards credit hours, so evaluation is needed, and assessment indicators need to be developed. From experience, by-research doctoral students must write a draft proposal. It's recommended that prospective students in the by-research program do an internship beforehand (several months in advance).

• At Unpad, the doctoral program is a new program. Prospective students are required to have a research proposal and publication (Q3, nationally accredited by Sinta 2). English language proficiency and TPA (Academic Potential Test) requirements vary for each intake. Doctoral students are allowed to sit in on undergraduate (S1) or master's (S2) courses depending on their needs. The byresearch program consists of 42 credits divided into several terms. Doctoral students only audit courses. A letter of introduction is provided from the doctoral Program Head to the respective Program Heads and instructors of the courses. Doctoral students receive qualitative assessments from instructors. Research proposal ideas are provided by the supervising professors. Some proposals may originate from students but are communicated with the supervising professors beforehand.

## Dr. Farikhin (1)

As users of graduates, we hope that in completing this doctoral mathematics program, there will be an increase in activities aimed at:

- 1. International Mobility: Enhancing international recognition, strengthening research group networks, and being adaptive to global issues.
- 2. Downstream Research: Developing mathematics based on industrial and societal problems. Research should still be within the domain of mathematics. The development of mathematical theories is directed towards the urgent needs of the nation and country.

## Dr. Farikhin (2)

- Experience at Undip as a user, 2 keywords for human resources development International mobility: The mathematics approach in big data has not yet emerged. Conducting research elaboration and collaboration
- Reviving research centers
- The research center study returns to the field of science
- There is a problem regarding continuity in cadreization to continue knowledge sharing.

FEEDBACK FROM ALUMNAE OF DOCTORAL PROGRAMME IN MATHEMATICS UGM ON CURRICULUM 2017

> Agus Maman Abadi (UNY)

Presented at Workshop and Panel Discussion on Curriculum 2017 for Updating to Curriculum 2022

> DOCTORAL PROGRAMME IN MATHEMATICS FAKULTY OF MATHEMATICS AND NATURAL SCIENCES UNIVERSITAS GADJAH MADA

> > Friday, November 26, 2021

#### 1. Vission of the Programme

 Clear, relevant, realistic, and supportive of the university's visionThe established vision aligns with the aspirations of a world-class university without abandoning the cultural values of the nationHas kept pace with scientific and technological developmentsIs commendable because it encompasses both national and international arenasIs in line with UGM's vision as well as the conditions and challenges of the futureHighly relevant to the demands of the times and the existing human resources potentialAligned with the Department's, Faculty's, and University's visionsThe vision clearly depicts the desired future.

- 1. Vission of the Programme
- The vision needs to be shortened.
- In the vision, the year 2026 is explicitly stated. Is it not too brief for a vision?
- It does not yet support UGM's vision in the field of community service. The vision is clear and easily understood; however, the aspect of community service has not been explicitly stated, whereas it is explicitly stated in the Mission.

### 2. Mission of the Programme

- It's already good, detailed clearly, easy to understand, comprehensive, and realistic.
- The established mission strongly supports the achievement of the vision. It aligns with the achievement of the program's vision.
- Aligned with the Department's, Faculty's, and University's missions.
- The mission is in line with the Tri Dharma of Higher Education in achieving the vision.

### 2. Mission of the Programme

- There is a need to include a mission related to program governance.
- Point e) improving quality should be aligned with advancements in science and technology.
- The mission is very generic; should it be explicitly related to the field of mathematics?
- There is a mission related to community service, but there is no vision statement regarding community service.

3. Programme Objective (Programme Educational Objective/PEO)

- It's already good, clear, comprehensive, and aligned with the goals of the Department, Faculty, and University.
- Easy to understand and has taken into account the KKNI level. Aligned with the vision and mission of the program.
- Aligned with the graduate profile.Includes aspects of spirituality, nationalism, and relevant competencies.
- Detailed with PEO 1 to 4.It is necessary to add a statement about the ability to compete internationally.
- This is to align with the mission and vision.

## 4. (Program Learning Outcome/PLO)

- It's already good, clear, and comprehensive.
- Aligned with the vision, mission, and objectives.
- Aligned with the S3 outcomes (KKNI level 9).
- Fulfills attitude, knowledge, general skills, and specific skills competencies.
- Takes into account relevant regulations and input from various parties.
- Publication qualifications have not been explained.
- PLO 2 regarding philosophy should be further clarified regarding the expected outcomes.

By Research Doctoral Programme

- There needs to be a research center in the Algebra, Analysis, etc. lab.
- Each laboratory has a research roadmap for the next 5 years.
- Prospective student research topics refer to research topics in the laboratory.
- Research topics in each laboratory are informed on the Mathematics S3 Program website.
- To apply for S3, prospective students make proposals according to research topics in the laboratory.
- The names of elective courses emerge from the research topics in each laboratory.

#### FEEDBACK FROM ALUMNAE ON CURRICULUM 2017 DOCTORAL PROGRAME IN MATHEMATICS FMNS UGM

Didik Khusnul Arif (Dept. of Mathematics FSDA-ITS)

Presented at Workshop and Panel Discussion on Curriculum 2017 for Updating to Curriculum 2022

DOCTORAL PROGRAMME IN MATHEMATICS FAKULTY OF MATHEMATICS AND NATURAL SCIENCES UNIVERSITAS GADJAH MADA

Friday, November 26, 2021

#### 9. Content of Courses

- Already very good and up-to-date.
- The syllabus provided is very suitable for my field of interest and quite comprehensive.
- The syllabus has become more open, adopting the latest journal publications. It has kept up with scientific and technological developments.
- It needs to be adjusted to match its S3 research.
- The content already covers all aspects of the field of interest."

#### 9. Content of Courses

- There are some courses without syllabi, such as those in the fields of statistical computing and mathematical computing.
- The curriculum lists several elective courses, but I couldn't find their syllabi (apologies if I missed them).
- For the "Stat Data Mining" course, the syllabus should be explained in more detail to highlight the differences from the syllabus at the master's level.
- As a suggestion for the Analysis group, perhaps adding a course on "Semigroup Operators" might not be necessary, considering that Functional Analysis is still too general.
- This adjustment would better serve students focusing on applied analysis.
- Not all courses have their syllabi available yet. For example, I couldn't find the syllabus for the "Graph Theory" course.

### 10. References of the Courses

- The latest journal references need to be clearly communicated to students.
- The bibliography for each course is already quite comprehensive, good, and many have been subscribed to.
- For some courses, newer references need to be selected. Some feel that it's not comprehensive enough and needs upgrading.
- The references already match the syllabus content and are up-to-date.
- If there are recent journals relevant to elective courses, they can be added. In this digital age, bibliographic references can be found everywhere.

10. References of the Courses

 Better to increase the number of references from recent publications, especially those from the latest journals. This will enhance the quality of the reference library while maintaining its relevance to the curriculum and the latest developments in the field.

- The monitoring and evaluation are conducted regularly and scheduled, and the results need to be communicated to the students.
- It's already very good and appropriate.
- Monitoring and evaluation serve as stimuli in completing dissertation research. Learning monitoring and evaluation have been carried out.
- There are no follow-ups needed from the monitoring and evaluation results that need improvement.
- The monitoring and evaluation of the learning process should be scheduled and intensified.

- Monitoring and evaluation should be conducted more regularly, preferably every semester, with variations in methods.
- Learning monitoring and evaluation need to be intensified to ensure timely graduation.
- This practice is helpful for students' smooth study progress. It's excellent because it provides us with feedback, motivation, and encourages us to strive for progress in every semester.

- It's already well-scheduled and implemented routinely.
- It should be conducted more frequently, preferably every semester, with variations in methods.
- Scheduled supervision/guidance for dissertation writing is crucial to ensure students stay on track with their research.
- A schedule and regular meetings with students need to be established to monitor progress more closely.
- This routine practice must be carried out to track progress each semester, identify obstacles early, and address them promptly.

- Satisfaction surveys need to be conducted regularly.
- This is excellent because from here, we receive feedback, motivation, and it encourages us to strive for progress every semester.

Additional Feedback

- To minimize the risk of failure in pursuing a doctoral programme, it would be advisable to establish a kind of pre-matriculation or internship programme for students interested in enrolling in the doctoral programme in Mathematics at the Faculty of Mathematics and Natural Sciences, Universitas Gadjah Mada (UGM).
- This doctoral internship or matriculation programme could be officially organized and last for a period of 1 semester or 1 year. This would be beneficial for selecting and preparing prospective new students for the Mathematics doctoral programme at UGM.
- If students pass the matriculation, they would then be eligible to continue their doctoral studies in the Mathematics programme at UGM. We have high hopes for UGM, especially for the Mathematics programme, to consistently uphold the development of mathematics as the foundation of knowledge. The Mathematics programme at UGM should continue to be a guiding light for the advancement of mathematical knowledge, particularly in Indonesia.

#### FEEDBACK FROM ALUMNAE ON CURRICULUM 2017 DOCTORAL PROGRAME IN MATHEMATICS FMNS UGM

#### Mutijah (UIN Prof. K.H. Saifuddin Zuhri Purwokerto)

Presented at Workshop and Panel Discussion on Curriculum 2017 for Updating to Curriculum 2022

> DOCTORAL PROGRAMME IN MATHEMATICS FAKULTY OF MATHEMATICS AND NATURAL SCIENCES UNIVERSITAS GADJAH MADA

> > Friday, November 26, 2021

### 5. Curriculum Struture for Regular Programme

- It's clear, structured, and directed.
- Aligned with the vision-mission-goals and supports learning outcomes.
- There are already many elective courses available, allowing students to freely choose according to their interests and dissertation themes.
- The progression of each semester is quite clear.It's already in line with scientific and technological developments.
- The curriculum structure is excellent, matching the field of interest and the desired goals.
- Very comprehensive and balanced between in-depth basic material and material leading to specialization.
- Aligned with students' needs.

5. Curriculum Struture for Regular Programme

- Programming courses are needed because many students cannot create computer programmes.
- The curriculum set is in line with the workload required in the doctoral programme. However, often the material covered in the literature review is more advanced than elective courses, so it's better to take elective courses in the field of interest to strengthen theoretical understanding, then focus on literature review relevant to the research topic.
- By research is better (even though at that time, student have to take courses that are not directly related to your Ph.D. research).

5. Curriculum Struture for Regular Programme

- The number of credits and timing are already relevant; it just needs monitoring of implementation.
- There should be a separate interest in combinatorics.
- The curriculum structure needs to be detailed according to the profile of graduates.

6. Curriculum Struture for By Research Doctoral Programme

- It's already good, with an emphasis on research areas.
- The number and qualifications of publications need to be specified.
- It is hoped that this curriculum can be implemented for doctoral candidates with competencies that are highly relevant to their field of interest, meaning that they have truly covered the basic theories for their doctoral research.
- The curriculum structure for by research needs a clearer research roadmap, focused only on research that supports their dissertation research.

6. Curriculum Struture for By Research Doctoral Programme

- There is a need for a monitoring program for students in the By Research program.
- There's no need for elective courses; students directly focus on their dissertation research (What's the difference from the regular curriculum?).
- Assuming students have already chosen their research topic upon enrollment. If there's a need for in-depth research for the dissertation, it could be named "preliminary research" or something similar.

7. Learning teaching Method

- The teaching methods are already appropriate and good.
- Teaching is student-focused. Students actively develop knowledge through discussions and projects.
- Emphasis is needed on research-based learning.
- Project-based learning methods need to be sharpened.
- To improve its quality, although it emphasizes independence and is individualoriented, it may be necessary to clarify the targets of the courses and for the supervising professors to confirm the students' understanding of the courses taken.
- For dissertation writing to proceed smoothly, the advisor and student should create a schedule and guidance targets.

7. Learning teaching Method

- The teaching in lectures is already good.
- Specifically for dissertation supervision, it's scheduled every week like regular classes, with all supervisors present at the forum.
- Students present their progress, even if it may be limited. Students will always prepare their progress every week. (This is my personal experience, which allowed me to graduate on time.)

#### 8. Assessment Method

- The assessment methods must comply with the applicable academic regulations.
- It's already good because the assessment methods are becoming more detailed and clear.
- It's fair and transparent.
- The Assessment Standard Operating Procedures (SOP) are good and measurable, including the assessment of publication outcomes.
- To accommodate the knowledge and achievements already obtained by prospective students, such as publications or previous work.
- Recognition could be in the form of conversion or equivalency into one of the courses according to the qualifications of each course.

#### 8. Assessment Method

• The points and assessment methods need to be outlined at the beginning of the course. The assessment method, especially for dissertations, which is based on several components, seems adequate to me, but the final assessment written in the final transcript may need improvement. After we collect the dissertation scores from several components, at the end of the assessment at graduation, the GPA is calculated based on letter grades, not the cumulative score of the components we collect little by little from the beginning of the semester, such as comprehensive exams, monitoring scores, publications, closed exams, etc. For example, if we get a total score of 3.86, it will ultimately be calculated as 3.75 for the dissertation, following the A-letter grade (3.86 falls into the A- range), and this is regrettable considering our diligent and enthusiastic efforts in each step.

Additional Feedback

• For the further development of graduates' expertise after completing the Doctoral Program in Mathematics at the Faculty of Mathematics and Natural Sciences, Universitas Gadjah Mada (UGM), the selection of proposals for both the Regular Doctoral Program and the By Research Program should be tailored to the candidate's home department. This ensures that when they return to their respective institutions, they can immediately apply their field of expertise.Based on the points above, it is hoped that the courses in the Doctoral Program in Mathematics at UGM can accommodate all fields of expertise. For example, in the field of education, as far as I know, during the Doctoral Program in Mathematics at UGM, there hasn't been any research theme specifically focused on education, even though there are phenomena in the field of education with parameters that can be developed into mathematical models.

Questionaire for Lecturer Curriculum S3 Mathematics Year 2017

## Respondent





 Number of respondent: 30 (80 % of the total number of lecturers)

## Results

- The formulation of vision and mission is already appropriate. -> 90.83%
- The formulation of programme objective is already appropriate. -> 92.5%
- The formulation of programme goal is already appropriate.-> 89.16%
- The formulation of strategies to achieve the goals is already appropriate.
  -> 88.33 %
- The formulation of graduate profile is already appropriate. -> 92.5%
- The formulation of study materials for the Programme Curriculum is appropriate and comprehensive. -> 90%

## Results

- The S3 curriculum has provided expertise areas tailored to the needs of the Business and Industrial World (DUDI) -> 75%
- The formulation of learning outcomes includes aspects of attitude, knowledge, skills (general and specific), and aligns with the graduate profile and program objectives -> 94.16%
- The curriculum document of the study program describes clear teaching and learning strategies -> 85.83%
- The monitoring and evaluation procedures for S3 program students are clear, complete, and efficient -> 84.16%

## Results

- Student assessment reflects the expected learning outcomes in the curriculum content -> 89.16%
- The formulation of the S3 program's student assessment rubric is appropriate -> 75%
- The formulation of the S3 program's student assessment rubric is clear -> 85.83%
- The curriculum is periodically evaluated as needed -> 96%
- The S3 program involves parents in curriculum updates -> 100%

## **Courses Offered**



#### Suggestions:

Courses are divided into major clusters where each cluster can contain several more specific courses according to their research topics.

Each Laboratory should ideally have openended courses, such as Selective Topics. This is to anticipate needs related to scientific developments that may not have been accommodated in existing courses up to now.

 The syllabus, Course Outcome (CO), and content need to be reviewed for improvement. Courses that have not been conducted for a long time should be re-evaluated.

# Formulation of standard assessment for doctoral program candidates' proposals (1).



There are 2 methods:

First, the proposal is evaluated if there is no prior contact with the prospective Supervisor, and if it is decided to accept it, then the Supervisor is determined during the meeting.

Second, if there is already contact with the Supervisor, then the research topic can be adjusted according to the Supervisor.

If the proposal is used as the basis for assessment, then all students are required to intern first. If, as it is now, some students intern and some do not, evaluating the proposal becomes unfair. If the situation remains as it is now, it is better not to use the proposal as the basis for assessing student registrations.

# Formulation of standard assessment for doctoral program candidates' proposals (2).



The proposal evaluation team needs to have a better understanding of the proposals they will assess. For this purpose, S3 prospective students should be given the opportunity to present their proposals to the evaluation team (interview).

The presence of motivation and scholarly contributions should receive high points.

For students' readiness for study, other aspects can be considered, such as GPA, publication track record, communication and discussion with desired professors as potential supervisors, etc.

Proposal assessment may be more focused on examining the alignment of the research direction desired by the prospective student with the research directions of the laboratories under the Department of Mathematics.

## **General Feedback**

- It is advisable to list the flagship topics of the UGM Mathematics Doctoral Programme, which are its characteristics.
- Special strategies need to be implemented for promoting the Mathematics doctoral programme, such as a personal approach, promotion/visits to potential areas, financial support for S3 students through research projects, and maximal facilitation of infrastructure and facilities.
- □ Students should be required to write weekly minutes and report research progress to the supervisory team regularly to accelerate the study period.
- Specifically for student assessment, starting from registration, comprehensive exams, and final exams, separate workshops should be held. If necessary, experts should be invited as speakers (to make it more acceptable to the lecturers, if from reliable sources).

## **General Feedback**

- It must be ensured that the workload for the S3 program is higher than that of the S2 by research programme.
- The quality of measurable publications that can be jointly approved needs to be discussed. One of them is quartile (Q1, Q2, Q3, and Q4). If this is not agreed upon, it is advisable to consider other ways to assess the quality of publications.
- The assessment of student publications needs to be differentiated based on measurable quality (not subjective).
- Review of courses, Module Handbook, SOP, rubrics, and deadlines for dissertation revisions (from both the student and faculty perspectives).
- □ For S3 admissions, please consider a research project-based pathway.