

Dual Master's Degree in Mathematics Overview

The main objective of the **dual master's** program in mathematics is to enable students to acquire the learning experience in an environment different from their home institutions. Since they will have a degree from each country their employment opportunity will increase. They also will be able to provide feedback on the teaching and the learning techniques of their host institutions. Such exposure will broaden their outlook on the possible applications of mathematics for success in real life.

Both institutions agree to accept each other's qualified graduate students each academic year to pursue the MS in Mathematics degree as participants in the Graduate Dual Degree Program (GDDP). Accepted students will enroll in the host institution's degree program as regular full-time graduate students. Students will be required to meet all host institution requirements to remain in good standing within the GDDP during the duration of their studies at the host institution.

Student Selection

- 1) The Partner Institutions will be responsible for nominating eligible student applicants for this program. The Partners will ensure that each GDDP nominee:
 - a. Has completed requirements as agreed to between FHA and UWM.
 - b. Has submitted the application and all documents required of the host institution's international students.
 - c. Has established that course offerings available at the host institution are compatible with her/his academic goals.
 - d. Has no disciplinary action pending at the home institution.
 - e. Is eligible to apply for admission to the host institution.
- 2) The Partners will provide each other with the names of selected students, their academic qualifications, and their planned programs of study prior to their enrollment. FHA shall provide this information to UWM no later than May 30th for the fall semester and no later than October 15th for the spring semester. UWM shall provide this information to FHA no later than May 30th for the winter semester and no later than November 30th for the summer semester.
- 3) To be admitted at UWM, the selected FHA Students must successfully apply and gain admission to UWM via the UWM admission process.
- 4) To be admitted at FHA, the selected UWM Students must successfully apply and gain admission to FHA via the FHA admission process.

Application and Admission Requirements

- 1) FHA Students' evaluation for UWM admission will be completed by UWM's Department of Mathematical Sciences.
- 2) UWM Students' evaluation for FHA admission will be completed by FHA's Department of Technomathematics.
- 3) All FHA Students applying to UWM must meet the current minimum English proficiency requirements to be admitted.

A. Registration and Enrollment Requirements

- 1) The Partners will provide course descriptions to each other for all home institution courses completed by GDDP Students admitted to the host institution.
- 2) FHA Students participating in the GDDP must be registered for a full course load (minimum 8 credits per semester) while enrolled at UWM and UWM students participating in GDDP must register for 30 FH credits each semester while at FHA.
- 3) Once a Student is offered and accepts admission to the GDDP, the host institution will appoint an advisor to assist GDDP Students with course selections.

B. Language of Instruction

- 1) The language of instruction for the GDDP is English. FHA ensures that sufficient courses will be provided in English so as to ensure participating UWM students are able to complete FHA degree requirements.

C. English Language Instruction

- 1) FHA Students who do not meet UWM English language proficiency requirements at the time of application may be required to enroll in UWM's English as a Second Language Program preceding or during their academic studies as a condition of admission.
- 2) FHA Students who meet UWM English language proficiency requirements and desire further English language instruction may choose to enroll in UWM's English as a Second Language preceding or during their academic studies.
- 3) UWM's English as a Second Language Program fees are separate from UWM tuition and are the sole responsibility of the student enrolled in the program.

D. Transfer Credit

- 1) FHA Students shall be eligible to receive transfer credit at UWM for graduate courses completed at FHA in accordance with the UWM College of Letters & Science's transfer credit review and approval process.
- 2) FHA students may transfer a maximum of 12 credits to UWM. The number of transfer credits will be determined by the UWM Department of Mathematics. The transfer credits must be from graduate-level courses and not from undergraduate courses. The transfer credits must have been earned no more than five years prior to the date of matriculation at UWM. The transfer credits may not have been used to attain a prior degree and must have earned a grade of "B" or better. The remainder of credits earned toward the UWM MS in Mathematics degree must be from UWM-approved courses offered by UWM.
- 3) UWM students may transfer a maximum of 60 FHA-equivalent credits from UWM. The remainder of credits earned toward the FHA MS in Mathematics degree must be from FHA-approved courses offered by FHA.
- 4) To earn degrees from both home and host institutions, students must satisfy the degree requirements of both institutions.

E. Recognition and Grades

- 1) The host institution will issue a transcript of records to each GDDP Student as record of the student's performance during his/her enrollment at the host institution.
- 2) All credits earned by GDDP Students while at the host institution will be recognized by the home institution in accordance with its academic policies.

- 3) FHA and UWM will endeavor to ensure the timely issuance of transcripts, certificates, or other assessments of student learning.
- 4) The following grading scale is to be used for the transcripts of records associated with the GDDP:

| Grading Text at FHA | Grading points at FHA | Grading Texts at UWM |
|-----------------------------|-----------------------|----------------------|
| Sehr gut / very good | 15 | A |
| | 14 | A |
| | 13 | A- |
| Gut / good | 12 | B+ |
| | 11 | B |
| | 10 | B- |
| Befriedigend / satisfactory | 9 | C+ |
| | 8 | C |
| | 7 | C- |
| Ausreichend / sufficient | 6 | D+ |
| | 5 | D |
| Nicht ausreichend/Fail | 4 | E, F |
| | 3 | E, F |
| | 2 | E, F |
| | 1 | E, F |

F. Awarding of Degree

- 1) After successful completion of all UWM degree requirements, GDDP Students will receive a MS in Mathematics from UWM.
- 2) After successful completion of all FHA degree requirements, GDDP Students will receive an MS in Mathematics from FHA.
- 3) GDDP Students who complete all degree requirements of both institutions shall receive degrees from both institutions.

2.2 Visas and Immigration Status

Upon admission to UWM and proof of sufficient funding, UWM will provide immigration documents for FHA Students to use with their applications for student visas. Students are responsible for paying government visa application and processing fees, including the Student Exchange Visitor Information System (SEVIS) fees. Each student is responsible for maintaining valid and legal immigration status for the entire duration of enrollment at UWM. Upon admission to FHA, UWM students will receive an invitation letter from FHA. US citizen can enter and stay in Germany for 90 days without any visa. During this 90 days period UWM students must apply for German student visa at the town administration in Aachen. FHA will provide necessary German documents for obtaining this visa.

2.3 Laws and Regulations

GDDP Students are subject to laws of the national, state, and local jurisdictions in which the Partners are located, and are expected to comply with such laws. In addition, each GDDP Student

will be expected to comply with the host institution's policies and procedures. GDDP Students will have the same privileges and responsibilities conferred to other full-time host institution students during their program. A student who fails to maintain satisfactory academic performance or who violates host institution policies may be subject to discipline up to and including dismissal.

2.4 Withdrawal

Students who withdraw from, or are unable to maintain enrollment in, the GDDP will be subject to the host institution refund policy with regard to all tuition and fees.

Example 1: Study Plan for UWM students in Dual Degree Program starting UWM Fall (September – December).

| UWM | | FHA | |
|----------------------------|----------------------------|---|--|
| Fall (Sept. – Dec.) | Spring (January - May) | Winter (Sept. – Feb.) | Summer (March – August) |
| Math 601 or Math 701 | Math 602 or Math 702 | Maß- und Intergrationstheorie (UWM math 711) | Numerik für Differential- gleichungen 2 (UWM Math 813) |
| Math 621 | Math 622 | Theorie gewöhnlicher und partieller Differentialgleichungen | Diskrete Mathematik |
| Math 631 | Math 632 | Numerik für Differential- gleichungen 1 (UWM Math 813) | Operation Research |
| | | Lineare und nichtlineare Funktionalanalysis | Reading and Research |
| | | Seminar | Thesis |
| 9 credits | 9 credits | | |

Example 2: Study Plan for UWM students in Dual Degree Program starting UWM Fall (September – December); Statistics.

| UWM | | FHA | |
|------------------------|---------------------------|--|--|
| Fall (Sept. – Dec.) | Spring (January - May) | Winter (Sept. – Feb.) | Summer (March – August) |
| Math 621 | Math 622 | Maß- und Intergrationstheorie (UWM Math 711) | Numerik für Differential- gleichungen 2 (UWM Math 813) |
| MthStat 563 | MthStat 564 | Stochastik 1 (UWM Math 771) | Stochastik 2 (UWM Math 873) |
| MthStat 761 | MthStat 762 | Computermathematik 1 (UWM Math 793) | Computermathematik 2 (UWM Math 793) |
| | | Numerik für Differential- gleichungen 1 (UWM Math 813) | Thesis |
| 9 credits | 9 credits | | |

Example 3: Study Plan for FHA students in Dual Degree Program starting FH Winter (September to February).

| FHA | | UWM | |
|---|---|------------------------|-------------------------------|
| Winter (Sept. – Feb.) | Summer (March – August) | Fall (Sept. – Dec.) | Spring (Jan. – May) |
| Maß- und Intergrationstheorie (UWM Math 711) | Mathematische Statistik 1 (UWM Stat 761) | MthStat 563 | MthStat 564 |
| Stochastik 1 (UWM Math 771) | Stochastik 2 (UWM Mthstat 869) | Math 768 | MthStat 762 |
| Computermathematik 1 | Computermathematik 2 | Math 726 | Math 790 – Master’s Thesis |
| Numerik für Differential- gleichungen 1 | Bildverarbeitung (Image Processing) | Math 535 | |
| | | 9 credits | 9 credits |

At the end of UWM Spring semester the student earns his/her UWM MS degree. After returning to FHA the student earns his/her FHA MS degree.

Example 4: Study Plan for FHA students in Dual Degree Program starting FH Winter (September to February).

| FHA | | UWM | |
|--|--|------------------------|-------------------------------|
| Winter (Sept. – Feb.) | Summer (March – August) | Fall (Sept. – Dec.) | Spring (Jan. – May) |
| Lineare und nichtlineare Funktionalanalysis (UWM Math 726) | Parallele Rechnerarchitekturen | MthStat 563 | MthStat 564 |
| Stochastik 1 (UWM Math 771) | Stochastik 2 (UWM Mthstat 869) | MthStat 761 | MthStat 762 |
| Computermathematik 1 | Computermathematik 2 | Math 768 | Math 790 – Master’s Thesis |
| Numerik für Differential- gleichungen 1 (UWM Math 813) | Bildverarbeitung (Image Processing) | | |
| | | 9 credits | 9 credits |

Example 5: Study Plan for FHA students in Dual Degree Program starting FH Winter (September to February).

| FHA | | UWM | |
|--|---|----------------------------|----------------------------|
| Winter (Sept. – Feb.) | Summer (March – August) | Fall (Sept. – Dec.) | Spring (Jan. – May) |
| Theorie gewöhnlicher und partieller Differentialgleichungen (UWM Math 716) | Parallele Rechnerarchitekturen | Math 601 or Math 701 | Math 602 or Math 702 |
| Numerik für Differentialgleichungen 1 (UWM Math 813) | Computermathematik 2 (UWM Math 793) | Math 621 or Math 711 | Math 622 or Math 712 |
| Computermathematik 1 (UWM Math 793) | Bildverarbeitung (Image Processing) | Math 715 | Math 790 – Master’s Thesis |
| Wissenschaftliche Visualisierung | Verteilte Systeme (Distributed Systems) | | |
| | | 9 credits | 9 credits |

At the end of FHA Summer the student earns his/her FHA MS degree. After returning to UWM the student earns his/her UWM MS degree.