

Doctor of Philosophy Plan of Study – Hydrology (Effective AY2019-2020) *Rev. August 2019*

UNDERGRADUATE PREREQUISITE COURSES

Complete all by the end of Year 1

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|--|--|---|--|
| <input type="checkbox"/> Physical Geology | <input type="checkbox"/> College Chemistry 1 Inorganic | <input type="checkbox"/> Calculus 2 | <input type="checkbox"/> Fluid Mechanics/Hydraulics |
| <input type="checkbox"/> College Physics 1 Mechanics | <input type="checkbox"/> College Chemistry 2 Inorganic | <input type="checkbox"/> Vector Calculus | <input type="checkbox"/> Statistics for Phys Sci/ Engr or Probability Theory |
| <input type="checkbox"/> College Physics 2 Other | <input type="checkbox"/> Calculus 1 | <input type="checkbox"/> Intro Differential Equations | |

CODING: All graduate students are expected to have or to acquire capability for basic coding/computer programming (e.g. Python, MATLAB, Fortran, C++). Semester courses or short courses offered by various departments and the University Information Technology center are available. No graduate credit is granted for this work.

MASTER’S CORE COURSES + PRIMARY FACULTY ADVANCED ELECTIVE COURSES

Complete 21 units (minimum) from Master’s Core and Primary Faculty categories

Master’s Core Courses* not absolutely required but may be used to prepare for the Doctoral Qualifying Examination

Semester of Offering: *f* Fall, *s* Spring, *sum* Summer

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| <input type="checkbox"/> HWRS 517A <i>f</i> Water Quality C | <input type="checkbox"/> HWRS 518 <i>f</i> Subsurface Hydro C | <input type="checkbox"/> HWRS 519 <i>s</i> Surface Hydro C | <input type="checkbox"/> HWRS 528 <i>f</i> Wat Res Systems C |
| <i>Primary Faculty Advanced Electives</i> | | | |
| <input type="checkbox"/> HWRS 503 <i>f</i> Subsurf Fluid Dyn | <input type="checkbox"/> HWRS 524 <i>s</i> Hydroclimatology | <input type="checkbox"/> HWRS 549 <i>f</i> Statistical Hydro | <input type="checkbox"/> HWRS 596G <i>f</i> Water-Rock-Micro |
| <input type="checkbox"/> HWRS 504 <i>s</i> Num Meth Subsurf | <input type="checkbox"/> HWRS 531 <i>f</i> Hydrogeology | <input type="checkbox"/> HWRS 570 <i>s</i> Comp Sim WQ Proc | <input type="checkbox"/> HWRS 630 <i>f</i> Adv Catchment Hyd |
| <input type="checkbox"/> HWRS 505 <i>f</i> Vadose Zone Hydr | <input type="checkbox"/> HWRS 532 <i>s</i> Envir Hydrogeo Lab | <input type="checkbox"/> HWRS 573 <i>f</i> Hydr WR Mgmt | <input type="checkbox"/> HWRS 642 <i>s</i> Anlys Hydr Systems |
| <input type="checkbox"/> HWRS 516 <i>f</i> Hydr Transport Proc | <input type="checkbox"/> HWRS 535 <i>s</i> Adv Subsurface Hyd | <input type="checkbox"/> HWRS 580 <i>s</i> Isotope Tracers Hyd | <input type="checkbox"/> HWRS 645 <i>s</i> Stoch Meth Subsurf |
| <input type="checkbox"/> HWRS 521 <i>f</i> WR Sys, Plan, Mgmt | <input type="checkbox"/> HWRS 543A <i>f</i> Risk Assessment | <input type="checkbox"/> HWRS 582 <i>s</i> Groundwater Mod | <input type="checkbox"/> HWRS 655 <i>f</i> Stoch Meth Surface |

FIELD METHODS/FIELD SYNTHESIS

Complete 3 units total in the same calendar year

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| <input type="checkbox"/> HWRS 513A <i>s</i> Field Methods (2) | <input type="checkbox"/> Prior experience or education may be used to satisfy this requirement, but you must file a petition for approval; however, no academic credit can be awarded. See the Doctor of Philosophy HWRS Program Guide for details. |
| <input type="checkbox"/> HWRS 513B <i>sum</i> Field Synthesis (1) | <input type="checkbox"/> HWRS (Primary Course) _____ Substitution units (3) in lieu of field course sequence |

OTHER ADVANCED ELECTIVE COURSES

Complete 12 units from Primary, Other, and Transfer categories

See [Doctor of Philosophy HWRS Program Guide](#) for details. All course work, including Transfer, must be approved by the DGS-Hydrology.

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|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|--------------------------|--------------------------|

DOCTORAL MINOR

Select a complementary area of study (see Program Guide) to complete the Minor Plan of Study. Contact the Minor department for specific exam and course requirements (typically 12 units but ranges from 9 to 15 units).

DISSERTATION: HWRS 920

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| <input type="checkbox"/> HWRS 920 Dissertation: Include exactly 18 units total in Plan of Study |
| <input type="checkbox"/> You may need to <u>delete</u> excess 920 units from Plan of Study |

PROFESSIONAL DEVELOPMENT

HWRS 595A *Current Topics in Hydrology & Atmospheric Sciences*, the Weekly Colloquium - All Graduate Students (MS & PHD) must enroll for at least one semester (1-unit maximum per semester) during academic residency but **do not include** in Plan of Study

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| <input type="checkbox"/> Near end of academic residency, make <u>two</u> (2) presentations of dissertation research at approved regional, national, or international conferences |
| <input type="checkbox"/> Of two (2) required presentations, minimum 1 oral presentation |
| <input type="checkbox"/> Submit email memo with details (see PHD HWRS Program Guide) to DGS-H |

ACADEMIC PROGRESS BENCHMARKS + FORMAL EXAMS

See [Doctor of Philosophy HWRS Program Guide](#) for details

YEAR 1 Second Sem: Take Doctoral Qualifying Examination – Major, Minor (if any)

YEAR 2 End: Submit Doctoral Plan of Study by the end of 4th semester to allow time for adjustment or revision (e.g. take additional course units if necessary)

YEAR 2.5 to 3: Initiate Doctoral Comprehensive Examination Process – 1) Major Written, 2) Minor Written (if any), and 3) Combined Oral in Major and Minor

YEAR 4 End: Take Doctoral Final Oral Examination-Dissertation Defense

DOCTOR OF PHILOSOPHY GRAD PATH FORMS

Once matriculated into a degree program, **Continuous Enrollment** is required (fall/spring, fall/spring)—see Graduate Catalog for policies. **Summer enrollment** is *not required* except in cases where a financial aid sponsor, visa sponsor, or other entity requires enrollment for the diploma term (August). Otherwise, the diploma terms are spring (May) and fall (December). The PHD degree program has a **10-Year CLOCK** which begins with the earliest coursework.

Login to Student Access to complete required forms

Responsible Conduct of Research Statement

- All students must complete this form. Additionally, an RCR Workshop is required for anyone funded by NSF, NIH, or NIFA grants.

Doctoral Plan of Study

- List all course work for Major and Minor plus exactly 18 dissertation units
- **Delete** 595A (weekly colloquium) and any **excess** 920 Dissertation units
- Submit by end of Year 2/fourth semester in residence

Comprehensive Exam Committee Appointment

- File after ALL course work has been completed
- List all members of Major and Minor committees (*no Special Members*)

Announcement of Doctoral Comprehensive Exam

- After completion of written exams, submit this form to announce the oral exam (closed exam, not open to the public)

Results of Comprehensive Exam

- Faculty dissertation director submits e-form after oral exam
- Comp Exam **5-YEAR CLOCK** starts: Complete all degree requirements within next 5 years or begin Comprehensive Exam process again

Prospectus/Proposal Confirmation

- First, submit a *draft copy* of dissertation abstract (does not have to be the final product) to the Program Coordinator for your file
- Then submit the Prospectus/Proposal form (department will confirm)

Doctoral Dissertation Committee Appointment

- List all members of Major and Minor, if any, who will participate in final oral exam (dissertation defense)
- Request Special Member, if any, with Program Coordinator

Announcement of Final Oral Defense

- Submit at least 10 *business* days in advance
- List date, time, and location of dissertation defense
- List all committee members who will participate (Minor may opt out)
- Graduate College will announce the exam in the UA Master Calendar because the initial presentation is open to the public

Results of Final Oral Defense

- Faculty dissertation director will submit e-form after the exam
- Result will be reported as Pass Without Revision, Pass With Revision, or Fail (one re-take is allowed—see PHD HWRS Program Guide for details)

After making all required revisions (if any) to the dissertation manuscript, you must submit your dissertation to the Graduate College for the ProQuest/UMI digital archive. The Student Academic Services liaison will assist you with this process.

Other Forms

Transfer Credit

- A maximum of **12** graduate units of course work taken while in a degree program (approved by DGS-H) may be transferred from another university for use in the major Plan of Study
- No more than **12** graduate units taken in a *non-degree status* may be used

Graduate College Petition (used for a variety of reasons)

- Petition for a leave of absence (temporarily suspends Continuous Enrollment requirement but **the CLOCKS** do not stop)
- Petition for extension of time to complete a course
- Petition for extension of time to complete the degree program

Read more at: schedule.arizona.edu | catalog.arizona.edu | has.arizona.edu/graduate-information | has.arizona.edu/professional-development | has.arizona.edu/professional-careers