

Master of Science Plan of Study – Hydrology (Effective Fall 2019) *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

Complete 12 units

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

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|---|--|--|--|
| <input type="checkbox"/> HWRS 518 <i>f</i> Fundamentals of Subsurface Hydrology Required | <input type="checkbox"/> HWRS 519 <i>s</i> Fundamentals of Surface Hydrology Required | <input type="checkbox"/> HWRS 517A <i>f</i> Fundamentals of Water Quality* | <input type="checkbox"/> HWRS 528 <i>f</i> Fundamentals: A Systems Approach Water Res* |
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*Optional: You may complete **one** of these Non-Primary Faculty Courses in lieu of 517A or 528 (but not both):

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|---|---|--|
| <input type="checkbox"/> AREC/HWRS 575 <i>f</i> Economics Water, Environmental Markets/Policies OR | <input type="checkbox"/> AREC/HWRS 576 <i>s</i> Natural Res Law+Economics OR | <input type="checkbox"/> LAW/HWRS 641 <i>s</i> Water Law |
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PRIMARY FACULTY ADVANCED ELECTIVE COURSES

THESIS OPTION Complete 12 units (minimum 9 Primary**) |

NON-THESIS OPTION Complete 15 units (minimum 12 Primary**) |

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| <input type="checkbox"/> HWRS 503 <i>f</i> Subsurf Fluid Dyna | <input type="checkbox"/> HWRS 531 <i>f</i> Hydrogeology | <input type="checkbox"/> HWRS 555 <i>s</i> Intro Remote Sens | <input type="checkbox"/> HWRS 603A <i>?</i> Well Hydrau Anlys |
| <input type="checkbox"/> HWRS 504 <i>s</i> Num Meth Subsurf | <input type="checkbox"/> HWRS 532 <i>s</i> Envir Hydrogeo Lab | <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 535 <i>s</i> Adv Subsurface Hyd | <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 543A <i>f</i> Risk Assessment | <input type="checkbox"/> HWRS 580 <i>s</i> Isotope Tracers Hyd | <input type="checkbox"/> HWRS 645 <i>s</i> Stochastic MthSubs |
| <input type="checkbox"/> HWRS 521 <i>f</i> WR Sys, Plan, Mgmt | <input type="checkbox"/> HWRS 549 <i>f</i> Statistical Hydro | <input type="checkbox"/> HWRS 582 <i>s</i> Groundwater Mod | <input type="checkbox"/> HWRS 655 <i>f</i> Stochastic MthSurf |
| <input type="checkbox"/> HWRS 524 <i>s</i> Hydroclimatology | <input type="checkbox"/> GEOS 553 <i>?</i> Glacial Quat Geol | <input type="checkbox"/> HWRS 596G <i>f</i> Water-Rock-Micro | <input type="checkbox"/> HWRS 696H or HWRS 696T <i>?</i> |

Optional: You may complete **one course from the list of Non-Primary Faculty Courses below (pre-approved, no petition required)

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| <input type="checkbox"/> AREC 577 | <input type="checkbox"/> ENVS 566, 596B, 696M | <input type="checkbox"/> PA 581 | If a course number is not on this list, it's not pre-approved! |
| <input type="checkbox"/> ATMO 529, 558, 595C | <input type="checkbox"/> LAW 596B, LAW 606, 641 | <input type="checkbox"/> WSM 696M, 696Q | |

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 Master of Science HWRS Program Guide for details. |
| <input type="checkbox"/> HWRS 513B <i>sum</i> Field Synthesis/1 | |

THESIS OPTION: HWRS 910

NON-THESIS OPTION: HWRS 909

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| <input type="checkbox"/> HWRS 910 THESIS (4 units) include only 4 units in Plan of Study | <input type="checkbox"/> HWRS 909 REPORT (1 unit) include only 1 unit in Plan of Study |
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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) but **do not include** in Plan of Study

Presentation Requirement - **Make an oral or poster presentation** of Master's Thesis research or Master's Report project at an approved conference (e.g. El Día, AGU, AHS, AMS) – Submit email with details to DGS-H (see [Master's HWRS Program Guide](#))

ACADEMIC PROGRESS BENCHMARKS + FORMAL EXAM

See [Master of Science HWRS Program Guide](#) for details

Year 1

Before/Beginning of Year 1:

- Meet with Director of Graduate Studies-Hydrology (DGS) to discuss undergraduate course deficiencies (if any)
- Make a plan to complete specific courses for the first two semesters
- Submit the **Responsible Conduct of Research Form** in GradPath
- (optional) Discuss potential transfer course work with the DGS and submit the **Transfer Course Form** in GradPath

End of Year 1 (end of second semester in residence):

- Complete undergraduate course deficiencies by end of Year 1
- Meet with the DGS and make a plan to complete degree requirements
- Submit the **Master's Plan of Study Form** in GradPath

Year 2

Before/Beginning of Year 2:

- Meet with faculty advisor to discuss the topic selected for the Master's Thesis or Master's Report
- Make a plan that includes a timeframe for completion: 1) define topic and scope of work by *date*, 2) write abstract and outline by *date*, 3) do the work—field, lab, computer programming, etc.—with specific start and end dates in mind *dates*, and 4) start writing about the work by *date*

Beginning of *Final* Semester:

- Meet with faculty advisor to discuss timing of the final exam
- Define committee membership and reserve a room for the exam
- Submit the **Master's Committee Appointment Form** in GradPath

End of *Final* Semester:

- Complete your work and writing
- Submit your abstract to the program coordinator and ask her to announce the date/time/location of your public presentation (if any) for the exam
- Ask the program coordinator to prepare an Exam Worksheet and Change of Grade form for your faculty advisor to complete at the exam
- Ask the graduate coordinator to submit the **Master's Completion Confirmation Form** on your behalf
- Contact the DGS about **Exit Interview** (may be able to do online)
- Return your **KEYS** (see Santander) and tidy office space!

MASTER OF SCIENCE GRAD PATH FORMS

Once matriculated into a degree program, **Continuous Enrollment** is required during the Academic Year, Fall Semester and Spring Semester. Summer enrollment is *not* required except when enrolled for a course. Degree requirements should be completed within **6 years** (from earliest course) to ensure currency of knowledge. See Master of Science HWRS Program Guide for details.

Required Forms

*Login to **Student Access** to complete GradPath forms*

Responsible Conduct of Research (RCR) Statement

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

Master's Plan of Study (minimum 31 units)

- Submit Master's Plan of Study after second semester in residence
- **Thesis** students: Include **27** course units, **4** 910-thesis units
 - **Do not include** HWRS 595A Weekly Colloquium
- **Non-Thesis** students: Include **30** course units, **1** 909-report unit
 - **Do not include** HWRS 595A Weekly Colloquium
- After completing all required course work, you are expected to complete the Master's Thesis or Report within 1 year

Master's Committee Appointment

- Get approval from department first; request special member, if any, with Program Coordinator

Master's Completion Confirmation

- Department will submit form on your behalf after you have passed the Master's Final Oral Exam
 - *Thesis Students Only:* Form processed after your thesis manuscript has been submitted for digital archive by ProQuest/UMI

Other Forms

Transfer Credit

- A maximum of 6 graduate units (if approved by DGS) may be transferred from another university for use in the Plan of Study

Petition (use for a variety of reasons)

- Examples: Petition to take a leave of absence (temporarily suspends continuous enrollment) or extend time to complete a course