

Master of Science Summary Guide – Hydrology

UNDERGRADUATE PREREQUISITE COURSES

Complete all by the end of Year 1

Physical Geology	College Chemistry 1 Inorganic	Calculus 2	Fluid Mechanics/Hydraulics
College Physics 1 Mechanics	College Chemistry 2 Inorganic	Vector Calculus	Statistics for Phys Sci/ Engr or
College Physics 2 Other	Calculus 1	Intro Differential Equations	Probability Theory

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

HWRS 518 f Fundamentals of Subsurface Hydrology Required	HWRS 519 s Fundamentals of Surface Hydrology Required	HWRS 517A f Fundamentals of Water Quality*	HWRS 528 s 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):

AREC/HWRS 575 **f** Economics Water, Environmental Markets/Policies **OR** AREC/HWRS 576 **s** Natural Res Law+Economics **OR** LAW/HWRS 641 **s** Water Law

PRIMARY FACULTY ADVANCED ELECTIVE COURSES

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

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

HWRS 503 f Subsurf Fluid Dyna	HWRS 531 f Hydrogeology	HWRS 555 s Intro Remote Sens	HWRS 501 f Tools for Data Ha.
HWRS 504 s Num Meth Subsurf	HWRS 532 s Envir Hydrogeo Lab	HWRS 573 f Hydr WR Mgmt	HWRS 630 f Adv Catchment Hyd
HWRS 505 f Vadose Zone Hydr	HWRS 535 s Adv Subsurface Hyd	HWRS 580 s Isotope Tracers Hyd	HWRS 642 s Anlys Hydr Systems
HWRS 516 f Hydr Transport Proc	HWRS 543A f Risk Assessment	HWRS 582 s Groundwater Mod	HWRS 645 s Stochastic MthSubs
HWRS 524 s Hydroclimatology	HWRS 549 f Statistical Hydro	HWRS 596G f Water-Rock-Micro	
	GEOS 553 s Glacial Quat Geol		

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

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

FIELD METHODS/FIELD SYNTHESIS

Complete **3** units total in the same calendar year

HWRS 513A s Field Methods/2	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.
HWRS 513B sum Field Synthesis/1	

THESIS OPTION: HWRS 910

HWRS 910 THESIS (4 units) **include only 4 units** in Plan of Study

NON-THESIS OPTION: HWRS 909

HWRS 909 REPORT (1 unit) **include only 1 unit** in Plan of Study

PROFESSIONAL DEVELOPMENT

HWRS 595A <i>Current Topics in Hydrology & Atmospheric Sciences</i> , the Weekly Colloquium - All Graduate Students (MS & PHD) must enroll for <u>at least one semester</u> (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)
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TYPICAL MASTER'S PROGRAM

Semester	Course	Units
Fall Year 1	HWRS 517A	3
	HWRS 518	3
	HWRS XXX (elective)	3
Spring Year 2	HWRS 519	3
	HWRS 528	3
	HWRS XXX (elective)	3
Fall Year 2	HWRS XXX (elective)	3
	XXX XXX (elective)	3
	HWRS 595A	1
	HWRS 900/910	1
Spring Year 2	HWRS 513A	2
	HWRS 513B	1
	HWRS 900/910	2
Total Units		32

ACADEMIC PROGRESS BENCHMARKS

Year 1: Begin course work and select a Major Advisor to chair your committee & submit request for Transfer Course Work form (if applicable), and submit Master's Plan of Study. Complete undergraduate prerequisites, if applicable.

End Year 2: Complete course work; finish research and submit for publication; submit Committee Appointment form

Refer to the [HYD Master of Science Degree Handbook](http://has.arizona.edu/master-science-hydrology) for details see <http://has.arizona.edu/master-science-hydrology>.

CONTINUING INTO DOCTORAL PROGRAM

An MS student who plans to continue in the doctoral program must have met all core course requirements with an average of 2 As and 2 Bs in order. **Continuing students** must submit the PhD application to the Graduate College to meet the appropriate deadline—January 15.

MASTER OF SCIENCE GRAD PATH FORMS

Once matriculated into a degree program, **Continuous Enrollment** is required (fall/spring). **Summer enrollment** is not required *unless* you need to complete program requirements. All requirements should be completed within **10 years** (from first course work) to ensure currency of knowledge

GradPath FAQ, <https://grad.arizona.edu/gsas/gradpath/faq?audience=35>

Responsible Conduct of Research Statement

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

Master's Plan of Study

Submit plan of study after second semester in residence (end of 1st year) All courses taken, future courses (major and minor), transfer courses, and research/thesis units must be included in the form.

Master's Committee Appointment

Master's committee must consist of three members; at least two must be current tenured, tenure-track, or approved tenure-equivalent UA faculty members. If the third member is not a current tenure-track UA faculty member, he or she must be approved by the Graduate College as a special member. A member who is not a current tenure-track faculty member will not be eligible to serve as sole chair of the committee but can serve as co-chair if approved to do so by the Graduate College.

Commencement Verification

Confirm name to be listed in commencement program, address to send diploma and other logistical contact information after graduation. Deadlines apply to ensure accuracy.

Master's Completion Confirmation

When the student's Advisor and committee members approve the student has completed all degree requirements, the Advisor must contact the Graduate Coordinator to process.

Transfer Credit

A maximum of 12 graduate units (approved by DGS) may be transferred from another university for use in the Plan of Study

Graduate College Petition (use for a variety of reasons)

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