# Doctoral Plan of Study – Hydrometeorology

## UNDERGRADUATE PREREQUISITE COURSES (Required for Admission)

- College Physics 1 Intro Mechanics
- College Physics 2 Electricity and Magnetism OR Optics and Heat (a 2-course sequence)
- College Chemistry 1 Inorganic
- College Chemistry 2 Inorganic
- Calculus 1
- Calculus 2
- Vector Calculus
- Intro Differential Equations
- Statistics for Phys. Sci / Engr or Probability Theory
- Fluid Mechanics/Hydraulics/Aerodynamics

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## CORE COURSES--Minimum 12 units (mandatory for all students)

- ATMO 541A Dyn Meteorology I
- ATMO 551A Phys Meteorology I
- HWRS 519 Fund Surface Hydr
- HWRS 524 Hydroclimatology

## REQUIRED ELECTIVE COURSES--33 units. Complete a minimum 6 units from EACH of the 3 areas listed below.

### Numerical Weather & Climate Prediction (6 units)

- ATMO 558 Mesoscale Meteorological Modeling
- ATMO 579 Boundary Layer Meteorology
- ATMO 551B Dynamic Meteorology 2

### Systems Science & Methods (6 units)

- HWRS 528 Fund: Systems Approach Hydrologic Modeling
- ATMO 545 Intro to Data Assimilation
- ATMO 555 Intro Remote Sens Atmo & Hydr

### Data Sciences (6 units)

- ARL 590 Remote Sensing Study Planet Earth
- ATMO 529 Objective Analy9sis Atmo Sciences
- HWRS 513A-B Field Hydr Meth + Anlys (2, 1)
- CE 528 Numerical Methods Hydraulics

## SEMINAR--1 unit (enroll one semester during residency, preferably first year)

- HWRS 595A Current Topics in Hydrology & Atmospheric Sciences – Thursdays at 4 pm. Grade is S, P, or K and does not count toward cumulative GPA.

## PROGRAMMING COMPETENCE & PROFESSIONAL DEVELOPMENT

- All students must demonstrate competence in statistics and computer programming (e.g. FORTRAN, MatLab, GrADS, NCL), numerical atmospheric models and specialized instrumentation. Participation in laboratory or field work may be a component. Competence may be demonstrated by successful completion of approved courses in these subjects (undergraduate or graduate level).
- All students must present the results of their research in a formal seminar or presentation at a scientific meeting in the form of an oral or poster presentation. Typically, students present at the HAS annual student research conference, El Día del Agua y la Atmósfera (Spring Semester) or at AGU (December) or AMS (January) meetings.

## Dissertation--Minimum 18 of HWRS/ATMO 920

*Need details? → schedule.arizona.edu or catalog.arizona.edu or has.arizona.edu/graduate-information (see PhD HYDROMET)*

### Courses Approved by Advisor on Individual Basis

- HWRS 505 Vadose Zone Hydrology (3 units)
- HWRS 543A Risk Assessment for Environmental Systems (3 units)
- HWRS 630 Advance Catchment Hydrology (3 units)
- ATMO 595B Global Climate Change (3 units)
- ATMO 595C General Circulation Observations and Modeling (3 units)
- BE 585 Remote Sensing Data and Method (3 units)
ACADEMIC PROGRESS BENCHMARKS

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

Refer to the ATMO Doctoral Degree Handbook for details, see http://has.arizona.edu/doctor-philosophy-atmospheric-sciences.

DOCTORAL GRADPATH 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 unless you complete requirements in the summer. All requirements should be completed within 6 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.

Doctoral Plan of Study
• List all course work for Major and Minor plus exactly 18 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

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

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.
• 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.

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

Updated 08/09/2022 (LR)