Bachelor of Science Degree in Hydrology and Atmospheric Sciences (**HAS major, EHY Track**)
Departmental Advisor Grid ⌘ Catalog **AY2023-2024 & Beyond**

	FALL		COMMON FRESHMAN CORE		SPRING		
	LANG Req	4	2nd Semester Language Req		**MATH 129**	3	Calculus II
	MATH122A **MATH 122B**	5	Functions for Calculus 1st Semester Calculus		**CHEM152**	4	General Chemistry II
	CHEM151[3]	4	General Chemistry I *(GE Core: Exploring Perspectives (EP) – Natural Scientist)*		**GEOS 251**	4	Physical Geology
	ENGL 101	3	First-Year Composition I		**ENGL 102**	3	First-Year Composition II
					HWRS 195a	1	Careers in HAS (*recommended)
					GE Core[3]	1	*Entry Course: Intro to General Education (GE) Experience*
	TOTAL 16				TOTAL 16		

	SOPHOMORE YEAR				SPRING		
	MATH 223	4	Vector Calculus		**C E 218**	3	Mechanics of Fluids
	HWRS 350	3	**Principles of Hydrology**		**MATH 254**	3	Intro Ordinary Diff Equations
	PHYS 141	4	Introduction to Mechanics		**GEOS 304**	4	Structural Geol. [OR GEOS302]
	GE Core[3]	3	*GE Core: Building Connections*		**GE Core**[3]	3	*GE Core: Building Connections*
	GE Core[3]	3	*GE Core: EP- Social Scientist*		**PHYS 143**	2	Intro Optics-Thermodynamics
	TOTAL 17				TOTAL 15		

	FALL		JUNIOR YEAR		SPRING		
	HWRS 431	4	Hydrogeology		**Tech Elec**[1]	3	*Elective:*
	SIE 305	3	Intro Engr. Probability & Statistics		**ATMO 436A**	3	Fundamentals of the Atmospheric Sciences
	CE 427[2]	3	Comp App Hydraulics [**OR other HAS Elective**]		**Tech Writing & Communication Theme**	3	*Choose from: ENVS 408, ENVS 415, JOUR 455, JOUR 472, ENGL 313, ENGL 308*
	GE Core[3]	3	*GE Core: EP - Humanist*		**CE 423**	3	Hydrology
	Comp Elec Theme	3	Choose from: HWRS 401, CSC 250, HWRS 428, RNR 403, RNR 417, BE 485		**HWRS 413A**	3	**Field Hydrology** (2 cr. in Spring + 1 cr. Summer pre-session)
	TOTAL 16				TOTAL 15		

	FALL		SENIOR YEAR		SPRING		
	HWRS 443A	3	Risk Assess for Env. Sys		**GE Core**[3]	3	*GE Core: Building Connections*
	HWRS 417A	3	Fundamentals of Water Qual.		**HWRS 449**	3	Statistical Hydrology
	HWRS 498[2]	2	**Senior Capstone (OR other HAS Elective)**		**HWRS 482**[2]	3	Appl. Groundwater Modeling [**OR other HAS Elective**]
	GE Core[3]	3	*GE Core: EP - Artist*		**HWRS 498**[2]	2	**Senior Capstone 2nd semester**
	HWRS 405	3	Vadose Zone Hydrology		**Water Policy, Law, or Econ Elective Theme**	3	*Choose from: GEOG 468 (sp); AREC 479 (sp); POL 481 (fa); RNR 485 (sp); PA 484 (sp)*
					GE Core[3]	1	*Exit Course: GE Portfolio Course*
	TOTAL 14				TOTAL 15		

100% Engagement course, notation on transcript
Highlighted Classes avail. at 500 level for students accepted to the Accelerated Master's Program (AMP) in Hydrology. A max of 12 units may fulfill both undergraduate & AMP requirements
Highlighted classes indicate courses that are ***possible*** to transfer from other academic institutions. A maximum of 64 units may be transferred and applied to a UA BS degree. Check with your advisor to ensure classes will transfer and fulfill degree requirements

[1] TECHNICAL ELECTIVE options. Complete 1 course (minimum 3 units) with advisor approval. Tech elective courses may not be prerequisite to or equivalent to any required course. Students who wish to officially emphasize Surface Water, Groundwater, Water Quality, Water Resources, or Atmospheric Science may apply for an undergraduate certificate, see academic advisor for more information **Tech Electives include:**

- **Surface Water** – CE 427, RNR 417, CE 214, CE 323. (CE 214 and 323 are exceptions to prerequisite/equivalent rule.)
- **Groundwater** – HWRS 482, HWRS 405, GEOS 302, GEOS 304, GEOS Elective, or HWRS 518 for advanced students who meet eligibility requirements.
- **Water Quality** – HWRS 480, CHEM 241a, MIC 205A & L after taking MIC 181R, WSM 468, CHEE/CE476a
- **Water Resources** –POL 481, ENVS 444, ENVS 454, HWRS 520, for advanced students who meet eligibility requirements.
- **Atmospheric Science –** ATMO 469A, ATMO 469B, GEOS 412A, GEOS 479, GEOS 437, GEOS 478, GEOS 483, MATH 313, PHYS 241

Additional electives in these categories may be available **with advisor approval.**

[2] HAS MAJOR ELECTIVES (Advanced Courses in HAS) – Complete 3 courses: (1) HWRS 482; (2) GEOS 450; (3) HWRS 498; (4) CE 427; [5] RNR 403, 417, or 420; (6) ATMO 451B; (7) ATMO 455; (8) ATMO 421 or GEOG 430. Consult Catalog and Schedule of Classes for semester of offering! The instructor must approve the Senior Capstone topic ≥ semester prior to enrollment; Honors students may complete an approved Senior Honors Thesis in lieu of the Senior Capstone course.

[3] General Education Core must meet University requirements. At least 12 units of Exploring Perspectives and 9 units of Building Connections are required. Exploring Perspectives must include 1 Natural Scientist focus, 1 Social Scientist focus, 1 Humanist focus, and 1 Artist focus class. Transfer Students may not need the entry/exit 1-unit courses.