MARY K. BEALS, Ph.D.

Assistant Professor in Practice (Candidate) — Biological Sciences & Chemistry

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PROFESSIONAL SUMMARY

Student-centered educator and applied biologist with two decades of university teaching across lecture, lab, hybrid, and fully online modalities. Builder of practice-ready, RSI-driven learning experiences in Botany, Ecology (fully online), Majors Biology, A&P, and General Biology—anchored in evidence-based pedagogy, course redesign (backward design, common outcomes, aligned assessments), UDL, and transparent rubrics. Current focus: AI-literate learning, low-cost experiential labs, and data-informed, RSI-compliant course improvement at multi-section scale.

INSTRUCTIONAL INNOVATION & DIGITAL SCHOLARSHIP

- NotebookLM-powered Digital Lab Manuals & Notebooks (Botany & Ecology, 2025): centralizes handouts, protocols, PPE/safety, micro-rubrics, and reflective prompts; student-owned notebooks for professional artifacts; integrates AI-use disclosure.
- AI-literate coursework: explicit AI policy; "AI Disclosure & Critique" micro-assignment; fact-verification with reputable sources; bias/accuracy evaluation; AI limited to brainstorm/outline/proofing—not ghostwriting.
- Low-cost, household-materials online labs (Ecology): biodiversity quadrats, bean-predation selection model, decomposition race, pollen traps, seed-dispersal design challenge; skills in sampling, modeling, experimental design, and data viz.
- Canvas blueprints & SU-branded templates: module intro pages; rubric CSVs; exportable assignment packages; RSI playbook blocks (weekly briefings, guided prompts, feedback cadence) for multi-section consistency.
- Assessment redesign: 3 Practicums (skills-forward), mini-rubrics for drawings/micrographs, safety micro-quizzes, grace-token deadline policy; alignment to module-level outcomes and course competencies.
- Learning analytics loop: lightweight dashboards (grade patterns, item analysis) inform scaffolding tweaks, targeted outreach, and resource placement; closes the feedback loop every module.

RSI & COURSE REDESIGN (HIGHLIGHTS)

- RSI framework (online/hybrid): instructor-initiated weekly briefings; micro-lectures with guiding questions; structured discussions with active facilitation; 72-hour feedback on key tasks; rotating virtual office hours; targeted nudges using Canvas analytics (weekly reminders and recaps).
- Course redesign at scale: backward design from PLO/CLO → MLOs; common assignments and rubrics; blueprint shells with embedded RSI elements (check-ins,

reflection prompts, response time standards); multi-section alignment while preserving instructor voice.

- Compliance & quality: aligns with Regular & Substantive Interaction expectations, Quality Matters principles (clarity, alignment, accessibility), and program assessment cycles; artifacts packaged for adoption/onboarding.

AREAS OF PRACTICE & STRENGTHS

Curriculum & course redesign (backward design, alignment) • RSI implementation & documentation • Online/hybrid course development • Lab pedagogy & safety • Learning analytics & student success • Mentoring & academic advising • Applied environmental biology (phytoremediation; plant physiology/anatomy) • LMS & EdTech: Canvas, Moodle, Blackboard; McGraw Hill Connect; NotebookLM; mobile/iPad integration • Responsible AI in T&L; prompt design; bias/accuracy evaluation

COURSES TAUGHT / REDESIGNED

- Ecology (Online, 2021–present): fully asynchronous lectures; low-cost labs; digital lab manual; 3 practicums; AI-literate tasks; RSI cadence (weekly briefings, targeted outreach).
- Botany (Lecture & Lab, 2010–present; 2025 refresh): 6-module sequence with phases; micro-rubrics; SU-branded Canvas templates; NotebookLM notebooks; embedded RSI touchpoints.
- Majors Biology I (2025): module-aligned outcomes; research-adjacent writing; inclusive assessments; RSI discussion facilitation and micro-lectures.
- Anatomy & Physiology (lab/lecture): safety-first labs; skills mapping to healthcare competencies; standardized rubrics.
- General Biology (lecture & lab): summer coordinator/editor for non-majors lab manual; active-learning redesign and common assessments.

EDUCATION

- Ph.D., Urban Forestry, Environment & Natural Resources — Southern University and A&M College, 2021 — Dissertation: Phytoremediation Efficacy of Eastern Cottonwood (Populus deltoides) to Heavy Metal Contamination.
- M.S., Biological Sciences — Southern University and A&M College, 2004 — Thesis: Phytoremediation Potential and Response of Phaseolus vulgaris to Cadmium.
- A.S., Crime Scene Investigations/Forensics — Everest University (Online), 2008.
- B.S., Biological Sciences — Southern University and A&M College, 2001.

PROFESSIONAL CERTIFICATIONS (SELECTED)

- Tennessee State University AI SuperUser Certification (2025).
- IBM Advanced AI (2024); IBM AI (2021); IBM Cybersecurity (2023); IBM IoT (2022); IBM Data Science & Design Thinking (2020).
- AWS Cloud Computing (2022); Apple Teacher — iPad & Mac (2018).

- Quality Matters — Applying the QM Rubric (2010); Improving Your Online Course (2020).
- Moodle (2016), Blackboard (2014) — Online LMS Training; Online Course Development (2009–2010).
- TopHat Online Engagement Training (2018).

ACADEMIC APPOINTMENTS & TEACHING

- Southern University and A&M College — Department of Biological Sciences & Chemistry, Baton Rouge, LA
- Instructor (2002–present): General Biology (lecture & lab); Majors Biology I (2025).
- Instructor (2010–present): Botany (lecture & lab).
- Instructor (2015–present): Biology Lab (Virtual/Online Labs).
- Instructor (2021–present): Ecology (fully online, RSI-operationalized).
- Instructor (2002–2008; 2018): Anatomy & Physiology (lab/lecture).
- Instructor & Research Advisor (2006–2016): Upward Bound TRIO Program (STEM research mentorship).
- Research Assistant (2004): Parasitology, LSU School of Veterinary Medicine.

COURSE & CURRICULUM LEADERSHIP (SELECTED)

- SBIO 101B/102B RSI & Course Content Redesign Team (QEP) — contributor (RSI documentation; module alignment; discussion/feedback standards).
- General Biology Non-Majors Lab Manual — Editor/Coordinator (active-learning redesign, common assessments, rubric alignment).
- Online Ecology labs — safety protocols, household-materials kits, Canvas blueprints with embedded RSI elements.
- Textbook reviewer: McGraw Hill, Elsevier, Mosby, W.H. Freeman.

MENTORING & ADVISING

- Faculty/Student Mentor & Advisor (2008–present): course planning, research placements, internships, conference prep.
- Upward Bound TRIO (2006–present): environmental & green-tech projects (phytoremediation, soil/water toxicity).
- Pre-Med/Pre-Health Advisor; Faculty Advisor/Sponsor: MAPS, Sigma Xi, Tri-Beta, Beta Kappa Chi; Advisor: JagBites Dental Club.

SERVICE & COMMITTEES (SELECTED)

- Institute of Teaching and Learning Excellence (ITLE) Committee; First 36 Pilot Program; Tablet PC Pilot Program.
- Planning/Steering: Beta Kappa Chi / National Institute of Science Annual Conference.
- Science Fair Judge (regional/state); Med School Admit (MSA) Program — committee member & organizer.

RESEARCH & SCHOLARLY INTERESTS

Applied phytoremediation of contaminated urban/industrial soils; physiological/anatomical plant responses; environmental monitoring; translational links to community health and STEM learning.

PUBLICATIONS & ABSTRACTS (SELECTED)

- Thota, K.C., Kandel, S., Abdulkadir, A., Beals, M., D'Auvergne, O., Rosby, R., & Hossain, E. (2025). Phytochemical profiling and antimicrobial efficacy of Loropetalum chinense var. rubrum leaf crude extracts… (Abstract).
- Hossain, E., Tasnim, H., Rogers, B.T., Rosby, R., Beals, M., & D'Auvergne, O. (2023). NADPH oxidase inhibitor diphenyleneiodonium prevents arsenic-induced downregulation of ABCG1 in mouse aortic endothelial cells. International Journal of Toxicology, 42(1), 73–73. (Abstract).
- Beals, M.K., Miller, J.E., Olcott, D.D., LeBleu, M., Garber, J., & Foti, J. (2005). Integrated approach for controlling nematode parasites in small ruminants. BKX/NIS Joint National Meeting (Abstracts).
- Beals, M.K., & Tate, T.M. (2004–2003). Phytoremediation potential of Phaseolus vulgaris. BKX/NIS; SOT Southeastern Section (Abstracts/Posters).

HONORS & MEMBERSHIPS

- Awards: 2nd Place (Oral), BKX/NIS Joint National Meeting (2003); 3rd Place (Oral), BKX/NIS (2002).
- Honor Societies/Organizations: Beta Kappa Chi; Sigma Xi; National Institute of Science; Beta Beta Beta; Endocrine Society; South Central Region SOT; MAPS; Alpha Kappa Alpha Sorority, Inc.

REFERENCES

Available upon request (extended list available).