UM BRIDGES

Bridging the Food-Energy-Water Nexus

Trainee Development Plan

v. 1.31.19

Goal

The purpose of this development plan is to help you identify your graduate-training goals and make a plan to achieve those goals. This development plan is specific to the BRIDGES training program and your INFEWS training goals, but you are encouraged to undertake a similar process thinking about your long-term career goals. A development plan is a working document, and you should revisit and rework this document as you move through your graduate studies.

Context

An "Individual Development Plan" (IDP) is a structured planning tool that has 4 primary steps.

1. Self-assessment: consider your skills and interests;
2. Identify your objectives: this can be exploring your graduate studies and research "end game" – whatever your primary objective – then working to understand how your skills and interests compare to that overarching objective;
3. Set goals: make a concrete plan for how you will prepare for/achieve your objective;
4. Implement the plan: work with mentors to achieve your goals and ultimately, your objective.

There are a number of IDP planning tools available. For your career, we recommend the free, on-line IDP provided by AAAS, at https://myidp.sciencecareers.org/. We recommend starting the AAAS IDP process prior to thinking more specifically about your INFEWS training/research plan in order to provide the broader context behind this exercise.

For this development plan, you will work through steps 1 and 2 ahead of time, and begin working on step 3 (pages 1-7).You will then meet with the Program Coordinator to talk about your objectives and required skills, and begin to identify which BRIDGES components might forward your skills and objectives. Finally, you will meet with your advisor to share and refine your objectives and identify steps and resources to achieve your objectives and develop necessary skills. **A completed first-round development plan, signed by your advisor, is due to the Program Coordinator by January 31st.** Please provide an electronic scan of the last two pages of the document. If you don't have a scanner, you can provide the hard copy to the Program Assistant, Teresa Clark, who can scan and forward the document on to the Program Coordinator for you.

After, it will be up to you to determine the amount of effort you want to invest in continually identifying skills and actions you need to achieve your objectives, but we urge you to continually reassess as you move forward in your grad studies and career.

If you do not change direction, You may end up where you are heading.

- *Lao Tzu*

How can I move forward when I don't know which way I'm facing?

- *John Lennon*

Alice: Would you tell me, please, which way I ought to go from here? Cheshire Cat: That depends a good deal on where you want to get to.
- *Alice in Wonderland*

HOMEWORK

Self-Assessment

Please complete this section prior to your meeting with the BRIDGES Program Coordinator. Answer these questions regarding your graduate training or research.

Interests Assessment

Assess your interest in the following areas (both for graduate school and beyond) as low, moderate, or high interest.

INFEWS Topics	**Low (1)**	**Mod (2)**	**High (3)**
Work/research related to water science and systems			
Work/research related to energy science and systems			
Work/research related to food science and systems			
Work/research at the food-water nexus			
Work/research at the food-energy nexus			
Work/research at the water-energy nexus			
Interdisciplinary Research and Work	**Low (1)**	**Mod (2)**	**High (3)**
Conducting physical or biological science			
Conducting social science			
Implementing/advocating for policy and law			
Applying systems thinking approaches			
Working in an interdisciplinary team			
Writing scientific manuscripts			
Grant writing and pursual			
Writing position or policy papers			
Writing reports			
Giving presentations about science			
Developing curricula			
Teaching in a classroom			
Teaching or training informally			
Discussing science with others			
Attending conferences and scientific meetings			
Using quantitative methods in science			
Using qualitative methods in science			
Management and Leadership Skills	**Low (1)**	**Mod (2)**	**High (3)**
Using science to inform/influence policy and law			
Managing/supervising others			
Mentoring others			
Planning and organizing projects			
Planning and organizing events			
Planning and organizing research			
Developing/managing budgets			
Managing data			
Work/research-related travel			
Add your own if necessary	**Low (1)**	**Mod (2)**	**High (3)**

Skills Assessment

Assess your proficiency in the following areas as low, moderate, or high proficiency.

INFEWS Knowledge	**Low (1)**	**Mod (2)**	**High (3)**
Knowledge of water science			
Knowledge of water system policy and law			
Knowledge of water system economics			
Knowledge of social issues related to water systems			
Knowledge of energy science			
Knowledge of energy system policy and law			
Knowledge of energy system economics			
Knowledge of social issues related to energy systems			
Knowledge of food science			
Knowledge of food system policy and law			
Knowledge of food system economics			
Knowledge of social issues related to food systems			
Understanding of food-water system/nexus tradeoffs and issues			
Understanding of food-energy system/nexus tradeoffs and issues			
Understanding of water-energy system/nexus tradeoffs and issues			
Understanding complex adaptive systems			
Interdisciplinary Research Skills	**Low (1)**	**Mod (2)**	**High (3)**
Conceptualizing and creating research topics and questions			
Narrowing and targeting research topics and questions			
Identifying creative approaches to address research topics and questions			
Applying systems thinking approaches			
Understanding peer-reviewed literature from biophysical sciences			
Understanding peer-reviewed literature from social sciences			
Applying appropriate/advanced research methods in the physical or biological sciences			
Applying appropriate/advanced research methods in the social sciences			
Creating appropriate experimental designs			
Finding data in home discipline			
Finding data in other disciplines			
Working with and interpreting data			
Conducting statistical analyses			
Working with and interpreting numbers and quantitative analyses			
Working with and interpreting qualitative analyses			
Working in a cross-disciplinary research team			
Navigating the peer review process			
Science and Interdisciplinary Communication	**Low (1)**	**Mod (2)**	**High (3)**
Basic writing and editing skills			
Writing scientific publications			
Writing grant proposals			
Writing for non-scientists			
Speaking about research clearly and effectively			
Presenting research to scientists within discipline			
Presenting research to non-scientists or those outside of discipline			
Speaking to the media			
Negotiating difficult conversations			
Training or teaching others			
Targeting communication for a specific audience			
Management and Leadership Skills	**Low (1)**	**Mod (2)**	**High (3)**
Providing instructive feedback			
Receiving and responding to feedback			
Planning and organizing projects			
Time management			

Developing/managing budgets			
Data management			
Creating vision and goals			
Inspiring and motivating others			
Serving as a role model			
Developing and maintaining intellectual community			
Developing and maintaining a career/disciplinary network			
Add your own if necessary	**Low (1)**	**Mod (2)**	**High (3)**

Values Assessment

Rate the importance of the following values in your research/career: low, moderate, or high importance.

Value	**Low (1)**	**Mod (2)**	**High (3)**
Work with a team			
Work independently			
Work to help society			
Work to help people			
Influence people			
Predictability in work			
Variety in work			
Intellectual challenge			
Supervision of others			
Diversity of team			
Continued learning			
Be the expert			
Test/apply cutting-edge or unproven methods			
Take risks and apply approaches unfamiliar to you			
Travel			

Identify Objectives

Please complete this section prior to your meeting with the BRIDGES Program Coordinator. Be as specific as you can, but brevity is fine.

What are your objectives for graduate school? What do you want to learn?

When you leave graduate school, you want to be an expert in these following topics of your home discipline:

When you leave the BRIDGES traineeship, you want to be an expert in the following nexus topics:

How do you believe the BRIDGES traineeship will help your research?

How do you believe the BRIDGES traineeship will help your career?

Compare your skills and interest with your objectives. Identify in which skills must you be proficient to meet your objectives(circle those skills on pages 2-3). Of those, which skills are of most critical need for further development (low skill)? Which skills would benefit from further/continued development because they are of high interest? Which skills could benefit from further development but are not priorities? How does considering your values modify this list?

	Moderate Interest	***High Interest***
Mod Skill	**Skills that wouldn't hurt to develop but not priority**	**Skills that would benefit from further development/continual improvement**
Low Skill	**Skills that could benefit from further development**	**Skills in critical need of further development**

BRIDGES requirements

Think about how you might like to complete these requirements and come prepared to discuss with Program Coordinator.

All Trainees
Internship (80 hours MS/120 hours PhD)

PhD Trainees
International experience

All Fellows
Broader impacts (4 hours)

PhD Fellows
Lead trainee experience in Year 2

Summarize your objectives

What are your top 3-5 graduate school objectives?

What are your top 3-5 BRIDGES training objectives?

Goal Setting

Prior to meeting with the Program Coordinator, identify at least two skills identified as critical or that would benefit from development, list specific step(s) you will take. Develop this list over the course of your graduate studies.

Required skill	Specific step	When will you take this step?	How will you know you've improved?	Available resources

Critical Skill	Specific step	When will you take this step?	How will you know you've improved?	Available resources

Completing your traineeship

Item	Relation to Critical Skill	Traineeship
Year 1 *Fall* *Spring* *Summer*		Core Course Fall Sci Coms Spring Seminar Numeracy M-Internship LA *PF*-exp plan *F*- BI plan RCR
Year 2 *Fall* *Spring* *Summer*		Spring Sci Coms Research talk M-Internship M-Thesis P-Internship LA *F*- BI *F*-colab *PF* – lead exp

Year 3 *Fall* *Spring* *Summer*		P-Internship P-International
Year 4 *Fall* *Spring*		P-Dissertation

Implementing your development plan

Review and rework your plan with your advisor. Return a signed copy of the final 2 pages of this document to the Program Coordinator for your files. Remember this plan is a living document and consider revisiting annually with your advisor.

for:_____

date:_____

List all planned courses and traineeship elements and identify how they relate to critical skills and/or list other critical skills that require development and planned activities.

Year 1

	Fall	***Spring***	***Summer***
Courses			
Seminars			
Workshops			
Other BRIDGES			
Critical Skills			

Year 2

	Fall	***Spring***	***Summer***
Courses			
Seminars			
Workshops			
Other BRIDGES			
Critical Skills			

Year 3 (PhD only)

		Fall	***Spring***	***Summer***
Courses				
Seminars				
Workshops				
Other BRIDGES				
Critical Skills				

Year 4 (PhD only)

	Fall	***Spring***	***Summer***
Courses			
Seminars			
Workshops			
Other BRIDGES			
Critical Skills			

Notes:

Advisor:_____ Date:_____

Printed Name Signature