

<i>Name</i>		<i>Date</i>		
<b>Research and Teaching Goals/Objectives*</b>	<b>Educational Activities (Courses, Workshops, Conferences)</b>	<b>Relate to Research Project</b>	<b>Benchmarks for Successful Completion</b>	<b>Targeted/Set Dates for Completion</b>
<i>Goal 1: Research excellence</i>  Specific Objectives: 1. 2.				
<i>Goal 2: Study design, data collection, analytic techniques</i>  Specific Objectives: 1. 2.				
<i>Goal 3: Leadership/management</i>  Specific Objectives: 1. 2.				
<i>Goal 4: Oral communication of research findings</i>  Specific Objectives: 1. 2.				
<i>Goal 5: Scientific writing</i>  Specific Objectives: 1. 2.				

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<i>Goal 6: Responsible conduct of research</i>  Specific Objectives: 1. 2.				
<i>Goal 7: Teaching excellence</i>  Specific Objectives: 1. 2.				
<i>Goal 8: Collaboration</i>  Specific Objectives: 1. 2.				
<b>Personal Goals/Objectives*</b>	<b>Activities</b>	<b>Products or Endpoints</b>		<b>Targeted/Set Dates for Completion</b>
<i>Goal 1:</i>  Specific Objectives: 1. 2.				
<i>Goal 2:</i>  Specific Objectives: 1. 2.				



## 8 ACADEMIC CAREER COMPETENCIES FOR TEAM-SCIENCE SCHOLARS

We have identified the following 8 academic career competencies required for any graduate student, regardless of discipline, to achieve to successfully advance in an academic career in biomedical or behavioral research. These began as an adaptation of a learner-based curriculum developed by Bakken and were modified in an iterative process with input from over 30 faculty in 10 academic disciplines. Details on the activities available to the scholars to meet these objectives and the criteria for successful completion are provided.

- 1) **Research excellence:** Acquire research expertise in a particular area;
- 2) **Study design, data collection, analytic techniques:** Investigate a cutting edge research problem employing discipline-specific techniques;
- 3) **Leadership/management:** Manage a research team and provide leadership in advancing a science discipline;
- 4) **Oral communication of research findings:** Communicate knowledge through verbal presentations in different types of venues to a variety of audiences;
- 5) **Scientific writing:** Write well-organized and logical abstracts, journal publications, research proposals and grant applications;
- 6) **Responsible conduct of research:** Conduct research according to professional ethics and regulatory guidelines;
- 7) **Teaching excellence:** Teach others through classroom teaching and individual mentoring incorporating evidence-based strategies for teaching and learning;
- 8) **Collaboration:** Communicate and cooperate with others within and across disciplinary boundaries and national borders

Adapted from: Bakken LL. An evaluation plan to assess the process and outcomes of a learner-centered training program for clinical research. *Medical Teacher*. 2002;24(2):162-168

Specific Objectives for each Career Competency	Activities available to students to meet Specific Objective	Evidence of successful completion of Specific Objective
<b>1. Research excellence</b> Acquire research expertise in a particular area:		
<input type="checkbox"/> 1. Apply a discipline-specific skill set to empirically or theoretically investigate a scientific question (includes technical performance of experiments, simulation, analytical skills specific to discipline) <input type="checkbox"/> 2. Provide a coherent and specific chain of reasoning for one's research based on existing evidence and past research (includes critical thinking and application of theory) <input type="checkbox"/> 3. Articulate the relevance and importance of one's own research within a scientific field <input type="checkbox"/> 4. Interpret one's research findings within the context of existing knowledge <input type="checkbox"/> 5. Incorporate evolving methodologies into one's own research <input type="checkbox"/> 6. Access (e.g., through relevant data bases), read, critique, and synthesize past and on-going research relevant to one's own area of study <input type="checkbox"/> 7. Maintain and utilize computer and other technological skills including skills in data collection and analysis, literature searches, scientific writing and communications <input type="checkbox"/> 8. Critique the research of others providing scientific justification for identified strengths and weaknesses (e.g. grant proposals, manuscript reviews) <input type="checkbox"/> 9. Acknowledge the social, cultural, and historical context of one's own research career development with particular attention to gender and underrepresented minority and disability issues <input type="checkbox"/> 10. Build collaborations and professional networks to enhance one's own research	<input type="checkbox"/> Develop and continuously revise an individualized career development plan (ICDP) in conjunction with Career Coach, Coordinator, and Research Advisor/PhD Advisor <input type="checkbox"/> Enroll in coursework in chosen field as required in individual graduate program <input type="checkbox"/> Perform hands-on mentored research <input type="checkbox"/> Read and become familiar with proposals funding mentors/advisors' research <input type="checkbox"/> Attend journal clubs, seminars, and lab meetings <input type="checkbox"/> Participate in grant and manuscript review process <input type="checkbox"/> Meet regularly with Career Coach, Coordinator, Research Advisor/PhD Advisor <input type="checkbox"/> Attend professional meetings and join national organizations related to the chosen area of research <input type="checkbox"/> Attend computer courses offered by DoIT or other campus entities as necessary <input type="checkbox"/> Subscribe to or otherwise regularly access key journals in chosen research area <input type="checkbox"/> Prepare a poster or paper for presentation of one's research <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> Complete required coursework with grades $\geq$ B <input type="checkbox"/> Assessments of Coping Efficacy, Career Efficacy, and Outcomes Expectations remain positive <input type="checkbox"/> Background for dissertation includes review of all relevant research <input type="checkbox"/> Successful completion of preliminary examination ("Prelims"), qualifier examination, or dissertation proposal (varies by field) <input type="checkbox"/> Dissertation completed <input type="checkbox"/> Portfolio <sup>1</sup> assessment by Career Coach, Coordinator, and Research Advisor indicates achievement of appropriate benchmarks along a timeline <input type="checkbox"/> Peer review of submitted abstracts or manuscripts is positive <input type="checkbox"/> Manuscripts are accepted into peer reviewed journals <input type="checkbox"/> Offer of postdoctoral fellowship or faculty position in chosen field <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

<sup>1</sup> The term "portfolio" is used to refer to the aggregate body of academic accomplishments and other relevant experience achieved by the TEAM-Science Student.

Specific Objective	Activities available to students to meet Specific Objective	Evidence of successful completion of Specific Objective
<b>2. Study design, data collection, analytic techniques</b> Investigate a cutting edge research problem employing discipline-specific techniques:		
<input type="checkbox"/> 1. Formulate a researchable question <input type="checkbox"/> 2. Determine what study design, analytical tool, or simulation is appropriate to answer it <input type="checkbox"/> 3. Categorize research designs or analytical methods and state the purpose and limitations of each <input type="checkbox"/> 4. State the relationship between the chosen research design or analytic method and the type of data collected or problem being analyzed <input type="checkbox"/> 5. Collect data using appropriate sampling techniques <input type="checkbox"/> 6. Analyze data using statistical techniques or qualitative skills specific to one's discipline	<b>In Addition to Activities in Specific Objective #1</b> <input type="checkbox"/> Take courses as determined by selected graduate program <input type="checkbox"/> Attend and present at seminars within chosen graduate program <input type="checkbox"/> Regular meetings with laboratory groups and/or thesis or dissertation advisor <input type="checkbox"/> Meet with graduate committee at least annually <input type="checkbox"/> Study groups <input type="checkbox"/> Individualized tutoring <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> Complete required coursework with grades > B <input type="checkbox"/> Independently performs analyses in conduct of research <input type="checkbox"/> Answers questions regarding study design or analyses posed by colleagues and faculty when presenting research <input type="checkbox"/> Dissertation proposal shows specific objectives, study design and analytical plan that supervisors (e.g. major professor, graduate committee) agree are appropriate to question being investigated <input type="checkbox"/> Completion of preliminary examination <input type="checkbox"/> Completion of dissertation <input type="checkbox"/> Lead author in publication of research in a peer reviewed venue. <input type="checkbox"/>
Specific Objective	Activities available to students to meet Specific Objective	Evidence of successful completion of Specific Objective
<b>3. Leadership/management</b> Manage a research team and provide leadership in advancing a science discipline:		
<input type="checkbox"/> 1. Practice self-directed learning <input type="checkbox"/> 2. Plan and adhere to a timeline for research projects <input type="checkbox"/> 3. Mentor more-junior trainees and students in career development <input type="checkbox"/> 4. Establish a network of professional colleagues <input type="checkbox"/> 5. Organize and prioritize multiple competing tasks and roles <input type="checkbox"/> 6. Manage time effectively <input type="checkbox"/> 7. Run an organized research team and effective administrative meeting <input type="checkbox"/> 8. Recognize gender, racial, or other bias <input type="checkbox"/> 9. Identify possibilities for personal, interpersonal, and institutional responses <input type="checkbox"/> 10. Behave in a culturally competent manner <input type="checkbox"/> 11. Role model culturally competent behavior for others <input type="checkbox"/> 12. Interview effectively for post-graduate position (e.g. postdoc, faculty position) <input type="checkbox"/> 13. Organize curriculum vitae, resume, or portfolio in keeping with standards for one's discipline <input type="checkbox"/> 14. Observe, practice, and continually refine negotiating strategies to advance one's research program and career at increasingly advanced levels	<input type="checkbox"/> Revise ICDP frequently <input type="checkbox"/> Participate in Wisconsin Mentoring Seminar and mentor undergraduate students in research <input type="checkbox"/> Participate in annual Advisory Board meeting <input type="checkbox"/> Attend workshops, seminars, conferences aimed as building skills for the professoriate or future faculty development <input type="checkbox"/> Recognize and take opportunities for individual leadership (e.g. organize and lead a discussion; join a GRS/TEAM-Science subcommittee) <input type="checkbox"/> Participate as student representative to departmental or campus committees <input type="checkbox"/> Enroll in in Women & Leadership in Medicine, Science & Engineering course. InterEng or Medicine 650 (Spring Semester) <input type="checkbox"/>	<input type="checkbox"/> Portfolio assessment by Coordinator and Career Coach reveals expected achievement of academic benchmarks related to leadership skills <input type="checkbox"/> Student remains in an academic career <input type="checkbox"/> Student encourages others to enter academic careers <input type="checkbox"/> Assessments of Coping Efficacy, Career Efficacy, and Outcomes Expectations remain positive <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Specific Objective	Activities available to students to meet Specific Objective	Evidence of successful completion of Specific Objective
<b>4. Oral communication of research findings</b> Communicate knowledge through verbal presentations in different types of venues to a variety of audiences:		
<input type="checkbox"/> 1. Prepare and deliver poster and/or paper presentations for professional conferences and local research forums <input type="checkbox"/> 2. Deliver a focused and well organized presentation of one's own research with background, research question/hypothesis, methods, results, and conclusions within allotted time <input type="checkbox"/> 3. Use computer technology (e.g. Power Point) to prepare presentations <input type="checkbox"/> 4. Translate one's research into language for communicating with other scientists/engineers and community audiences ( <b>multidisciplinary audience</b> )	<input type="checkbox"/> Present preliminary dissertation proposal to graduate committee <input type="checkbox"/> Present and defend completed research for dissertation <input type="checkbox"/> Present papers/abstracts at international, national meetings or local forums <input type="checkbox"/> Participate in opportunities within scholar's own department to present research (e.g. lectures in courses, lab meetings, seminar series) <input type="checkbox"/> Work with community group(s) to apply research in a practical setting (e.g. guest presentations in K-12 classrooms, industrial settings) <input type="checkbox"/> Enroll in individual skill building activities on oral communication <input type="checkbox"/> Present at meetings of GRS/TEAM-Science communities.	<input type="checkbox"/> Complete required coursework with grades > B <input type="checkbox"/> Portfolio assessment at annual review indicates continued improvement or achievement of excellence on participant evaluations of scholar's lectures, poster discussions, or other verbal presentations <input type="checkbox"/> Assessments of Coping Efficacy, Career Efficacy, and Outcomes Expectations remain positive <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Specific Objective	Activities available to students to meet Specific Objective	Evidence of successful completion of Specific Objective
<b>5. Scientific writing</b> Write well-organized and logical abstracts, journal publications, research proposals, and grant applications:		
<input type="checkbox"/> 1. Apply rules of Standard English usage, style, and composition (i.e. academic scientific communication) <input type="checkbox"/> 2. Develop process strategies for organizing and drafting abstracts, journal articles, and grant proposals according to general and specific format guidelines <input type="checkbox"/> 3. Accurately report research findings citing the strengths and limitations of studies <input type="checkbox"/> 4. Report research in an ethically responsible manner <input type="checkbox"/> 5. Use specialized software to prepare journal publications and other scientific documents. (e.g. EndNote, NVivo, SPSS, SAS, etc.) <input type="checkbox"/> 6. Master the "politics" of journal article and grant submission (e.g. how to address reviewer's criticisms, how and when to communicate with journal editors or granting agencies, authorship issues, etc.)	<input type="checkbox"/> Engage in individual discussions with Research Advisor regarding editing of one's own abstracts and manuscripts <input type="checkbox"/> Acquire guidebooks for assistance with writing (e.g. Strunk and White's <i>Elements of Style</i> ) <input type="checkbox"/> Work with Writing Center if needed <input type="checkbox"/> Write abstract for presentation at scientific meeting <input type="checkbox"/> Write dissertation proposal, yearly research progress reports, and dissertation <input type="checkbox"/> Write research findings for publication in peer-reviewed journal; revise-and-re-submit as needed <input type="checkbox"/> Write grant proposal if appropriate to level of training and research area <input type="checkbox"/> Enroll in individual skill building related to writing skills if needed <input type="checkbox"/>	<input type="checkbox"/> Assessments of Coping Efficacy, Career Efficacy, and Outcomes Expectations remain positive <input type="checkbox"/> Feedback from internal reviewers of writing is positive <input type="checkbox"/> Peer review of submitted manuscripts is positive related to writing <input type="checkbox"/> Dissertation is completed and accepted by committee <input type="checkbox"/> Publications are accepted <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Specific Objective	Activities available to students to meet Specific Objective	Evidence of successful completion of Specific Objective
<b>6. Responsible conduct of research</b> Conduct research according to professional ethics and regulatory guidelines:		
<input type="checkbox"/> 1. Make a principled decision when faced with an ethical choice <input type="checkbox"/> 2. Be knowledgeable and respectful of diverse ethical challenges <input type="checkbox"/> 3. Be sensitive to issues involving the integrity of research <input type="checkbox"/> 4. Know institutional and governmental policies regarding the ethical conduct of research in one's field (e.g. regarding the use of human subjects, research animals, radionuclides, hazardous waste, stem cells, etc.) <input type="checkbox"/> 5. Practice professional standards of conduct in one's field	<input type="checkbox"/> Enroll in a didactic course or seminar dedicated to these issues <input type="checkbox"/> Observe role models exhibiting ethical and responsible research practices <input type="checkbox"/> Participate in writing reports or submitting protocols to appropriate institutional committees if applicable to one's research <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> Complete required coursework with grades > B <input type="checkbox"/> Research performed adheres to ethical guidelines <input type="checkbox"/> Scholar can articulate potential conflict of interest issues or ethical issues relevant to chosen research area <input type="checkbox"/> Protocols involving scholar's research receive approval from appropriate committee <input type="checkbox"/> <input type="checkbox"/>
Specific Objective	Activities available to students to meet Specific Objective	Evidence of successful completion of Specific Objective
<b>7. Teaching excellence</b> Teach others through classroom teaching and individual mentoring incorporating evidence-based strategies for teaching and learning:		
<input type="checkbox"/> 1. Plan teaching or mentoring activities with appropriate scope, sequence, and focus suitable for audience and setting <input type="checkbox"/> 2. Lead small and large group discussions with students at different levels appropriate to the discipline <input type="checkbox"/> 3. Master several lectures and seminars in a specific field of science or engineering <input type="checkbox"/> 4. Construct and evaluate the effectiveness of tests given to students in one's classes <input type="checkbox"/> 5. Supervise the teaching of others (e.g. teaching assistants) and provide specific feedback	<input type="checkbox"/> Develop a personal teaching philosophy statement <input type="checkbox"/> Selected readings on the teaching of science <input type="checkbox"/> Participate in teaching opportunities within scholar's own department (e.g. lectures in courses, lab meetings, teaching course in Microbiology) <input type="checkbox"/> Participate in HHMI training graduate mentors summer program <input type="checkbox"/> Participate in courses/workshops on teaching improvement <input type="checkbox"/> Teaching Assistant opportunities <input type="checkbox"/> Engage in service learning or community outreach <input type="checkbox"/> Enroll in individual skill building activities to enhance teaching	<input type="checkbox"/> Portfolio assessment by Career Coach, Coordinator, Research Advisor indicates excellence or progressive improvement in teaching (ability to provide audience with learning objectives, handouts, participant evaluations, teaching philosophy statement) <input type="checkbox"/> Supervisor comments that teaching was satisfactory and all tasks completed <input type="checkbox"/> Scholar expresses self-efficacy to teach, enjoyment of teaching, and a desire to teach as a reason to continue onward toward the professoriate <input type="checkbox"/>
Specific Objective	Activities available to students to meet Specific Objective	Evidence of successful completion of Specific Objective
<b>8. Collaboration</b> Communicate and cooperate with others within and across disciplinary boundaries and national borders:		
<input type="checkbox"/> 1. Function as a member of a team assuming different roles (e.g. leader of a laboratory team, committee member, research collaborator, member of a design team) <input type="checkbox"/> 2. Recognize and resolve conflict with positive outcomes for all involved <input type="checkbox"/> 3. Be able to receive feedback about one's research <input type="checkbox"/> 4. Be able to give feedback	<input type="checkbox"/> Observe role models working collaboratively in different settings <input type="checkbox"/> Work with other members of research group on a joint project <input type="checkbox"/> Attend professional development activities presented by TEAM-Science and appropriate GRS community. <input type="checkbox"/> Participate on a committee or working group	<input type="checkbox"/> Portfolio contains evidence of involvement in collaborative activities (e.g. project with a student, product design by team) <input type="checkbox"/> Authorship on abstracts and manuscripts reflects different roles (e.g. lead author on some and secondary author on others) <input type="checkbox"/>