

THE DELTA CERTIFICATE IN RESEARCH, TEACHING, AND LEARNING:

A GUIDEBOOK FOR APPLICANTS AND ADVISORS



Acknowledgements

The Delta Program is a project of the Center of the Integration of Research, Teaching, and Learning (CIRTL). CIRTL is an NSF-sponsored initiative committed to developing and supporting a learning community of STEM faculty, post-docs, graduate students, and staff who are dedicated to implementing and advancing effective teaching practices for diverse student audiences. For more information, please call us at 261-1180 or visit www.delta.wisc.edu.

The Delta Certificate in Research, Teaching, and Learning Guidebook was based in large part on the College Teaching Certificate Guidebook (2002) from Michigan State University. This version of the guidebook (April 15, 2004) was written and compiled by Robert Mathieu, Aaron Brower, and Christine Pfund, revised (December 2005) by Brigid Nulty and Laurel Hedlund. This guidebook is also available on the Delta website www.delta.wisc.edu.

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THE DELTA CERTIFICATE IN RESEARCH, TEACHING, AND LEARNING

Student Achievements

The Delta Certificate in Research, Teaching, and Learning confers recognition of a student's accomplishments in applying the three pillars of Delta as demonstrated by:

- Knowledge of foundational research and scholarship on teaching and learning.
- Demonstrated application of research skills to the improvement of student learning.
- Awareness of how to promote successful learning with diverse audiences.
- Experience in teaching, broadly defined to include the college classroom and beyond.
- Engaged membership in a learning community that is focused on teaching and learning.

The Delta Certificate in Research, Teaching, and Learning also recognizes and supports the student's teaching and learning portfolio as a reflective record of their accomplishments.

General Guidelines

Welcome! And thank you for expressing interest in the Delta Certificate Program. This booklet is intended to help you navigate the expectations and process of pursuing the Delta Certificate in Research, Teaching and Learning. We hope you find the information useful and complete.

The Delta Certificate in Teaching and Learning was developed to honor the extraordinary efforts some students make to develop their own teaching skills. Earning a Certificate means that you apply the three foundational pillars of Delta –Teaching-as-Research, Learning-through-Diversity, and Learning Community – to your present teaching practice. More specifically it recognizes your achievements in five areas outlined on the previous page, as well as your development of a portfolio to exhibit your efforts.

The Delta Certificate requires the following:

- Completion of two graduate courses on teaching and learning, including at least one full-semester course offered by the Delta Program;
- Active participation in the Delta Learning Community for at least one semester;
- Completion of an internship experience;
- Development and presentation of a teaching and learning portfolio.

Each element of the Certificate program promotes your progress toward the Certificate, and must be completed to the satisfaction of the responsible faculty or Delta Program staff member. You will design your own program in collaboration with the Delta Certificate Coordinator and a Delta faculty mentor. Delta encourages you to include your research advisor in this design process.

Satisfaction of the requirements of the Delta Certificate is demonstrated primarily through a teaching and learning portfolio that is created throughout the certificate program. Your program plan should include steps toward development of this portfolio. The program concludes with a presentation of your portfolio to a committee, during which you will demonstrate and reflect upon your achievements.

The Delta Certificate program is designed to serve both pre-dissertator and dissertator graduate students, as most appropriate in each student's graduate career. The Delta Certificate is also available to post-doctoral researchers and master's students. The timeline for completion of the above requirements is intended to be flexible so as to fit within your overall graduate program. All requirements must be completed prior to completion of the student's Ph.D, master's or post-doctoral appointment. Once you have demonstrated your achievements and completed the requirements, you will receive a Delta Certificate.

The Delta Certificate in Research, Teaching and Learning is administered by the Delta Program in Research, Teaching and Learning (www.delta.wisc.edu), an interdisciplinary program on the UW-Madison campus. Delta is a program of the Center for the Integration of Research, Teaching and Learning (CIRTL).

Steps Toward the Delta Certificate

I. Submit a Proposal for Candidacy

To express interest in pursuing a Delta Certificate, you must submit a Certificate Proposal. You are expected to prepare your proposal in collaboration with the Delta Certificate Coordinator.

The Proposal should include: 1) a completed on-line application, 2) a signed Statement of Intent, and 3) a brief program proposal detailing your plan and timeline for completion of each requirement. (On-line application and Statement of Intent forms can be found on our website at www.delta.wisc.edu)

The proposal serves as an initial roadmap toward successful completion of the certificate and, as such, future changes in the plan are acceptable. (An example is included in the Appendix.)

II. Choose a Mentor

You will need to identify a mentor upon submitting your application. You should plan to meet with your faculty mentor at least twice during each semester in which you are actively involved pursuing your certificate. Your mentor will advise you and oversee your progress in the program and the development of your portfolio. The faculty mentor will also serve as one of the reviewers of your final portfolio.

III. Take Two Courses

As part of the Certificate program, you are expected to successfully complete two, for-credit graduate courses in teaching and learning. At least one of the courses must be a full-semester Delta offering. Both courses must promote your progress toward the Delta Certificate. If you wish to apply a non-Delta course toward the Certificate, you must seek approval from the Delta Certificate Coordinator.

You should include evidence of your participation and a reflection on your experiences in your portfolio.

Delta Program courses may be taken by dissertators as partial fulfillment of their semester three-credit requirement and can count towards a distributed minor.

IV. Participate in the Delta Learning Community

You are expected to be an active member of the Delta Learning Community as you work to complete the Certificate requirements. The Learning Community is special in that it is both intergenerational – comprised of faculty, staff, graduate students, and post-docs – and interdisciplinary – bringing together researchers from science, technology, engineering and math (STEM) and from the social, behavior, and economic (SBE) disciplines. You are required to participate and contribute to developing this unique community. You may do so through any of the following programs and activities.

- The year-long small discussion group, *Creating a Collaborative Learning Environment (CCLE)*: participate or facilitate.
- The semester-long small discussion group, *Expeditionary Learning*: participate or facilitate.
- Initiatives: organize or lead an event that would be of interest to the Delta community.

You are expected to be engaged, committed, and to contribute intellectually. Your contributions are crucial to implementing new ideas that continually improve the Delta Learning Community. You should include evidence of your participation and a reflection on your experiences in your portfolio.

V. Complete an Internship

The Delta Internship Program provides interns with the opportunity to work in partnership with faculty or instructional staff who are interested in teaching and learning. Internships can be particularly valuable collaborations that offer practical experience in teaching-as-research. During the internship you will participate in a seminar of peers to share your experiences. The products of the internship ought to be included in the portfolio.

Certificate candidates (and other internship applicants) can become interns once they have completed at least one semester-long teaching and learning course.

Internships occur in either a traditional academic setting or an informal educational setting. Opportunities are available on the UW-Madison campus as well as off campus and encompass a range of activities, including, but not limited to:

- Addition of an evaluative component to an existing course or laboratory;
- Curriculum (re)design and implementation;
- Instructional material design and implementation;
- Developing the instructional potential of academic research;
- Informal education and outreach experiences.

The Delta website offers more information, including a list of possible internships and a copy of the Internship Guidebook.

VI. Develop a Teaching and Learning Portfolio Throughout the Program

You shall demonstrate your achievements and completion of Certificate requirements primarily through a portfolio that is developed throughout the program. A portfolio is a combination of reflective journal, collection of evidence, and crafted curriculum vitae. It is intended to document and demonstrate your professional progress. Specifically, a teaching and learning portfolio is intended to help you demonstrate that you are an effective and reflective educator. The portfolio should reflect the three pillars of Delta, the expectations of the Certificate program, and your commitment to the improvement of student learning.

Delta courses and programs, as well as other activities, will provide you with the content and experiences necessary to develop a comprehensive portfolio. Specifically, Delta programs and courses provide frequent opportunities for you to develop products and reflective statements for your portfolio. Additionally, Delta offers Portfolio Workshops to assist you selecting materials, writing reflections, and assembling the product. Your portfolio will be reviewed by a Certificate Committee, which includes your faculty mentor as well as two to three other faculty/staff volunteers.

The Delta website offers information on portfolio workshops and copy of the Portfolio Guidebook.

VII. Present to Committee

Upon completion of your Certificate program you will present – both in writing and orally – your teaching and learning portfolio to the faculty/staff review committee. This committee will ultimately confer the Certificate. The portfolio must demonstrate all of the achievements represented by the Delta Certificate. In addition, all requirements must be completed to the satisfaction of the associated faculty and staff mentors. You must notify the Certificate Coordinator at the beginning of the semester in which you plan to complete the Certificate program so that a review committee can be arranged for you.

Requirement Checklist

Courses in Teaching and Learning (2 required) date completed

- | | |
|--|-------|
| <input type="checkbox"/> College Classroom | _____ |
| <input type="checkbox"/> Informal Science Education | _____ |
| <input type="checkbox"/> Instructional Materials Development | _____ |
| <input type="checkbox"/> Diversity in the College Classroom | _____ |
| <input type="checkbox"/> Effective Teaching with Technology | _____ |
| <input type="checkbox"/> International Students, International Faculty | _____ |
| <input type="checkbox"/> Other (with Coordinator approval) | _____ |

Learning Community Experience (1 required) date completed

- | | |
|--|-------|
| <input type="checkbox"/> Expeditionary Learning | _____ |
| <input type="checkbox"/> Creating a Collaborative Learning Environment | _____ |
| <input type="checkbox"/> Other (with Coordinator approval) | _____ |

Internship Program date completed

- | | |
|--|-------|
| <input type="checkbox"/> Internship Program Final Reflection | _____ |
|--|-------|

Teaching and Learning Portfolio date completed

- | | |
|---|-------|
| <input type="checkbox"/> Complete Teaching and Learning Portfolio | _____ |
|---|-------|

Additional Documentation Table

Please attach the necessary additional documentation (see below) with your on-line application:

	<i>Internship</i>	<i>Certificate</i>
<i>Curriculum vitae (CV)</i>	Yes	Yes
Project Proposal with timeline	<i>Proposed internship project and timeline for implementation</i>	<i>Proposed pathway and timeline through Delta activities</i>
Signatures/Letter of intent form(s)	<i>Form signed by degree research advisor and intern</i>	<i>Form signed by certificate applicant only</i>

Please refer to the Internship Guidebook and/or Certificate Guidebook for additional program application forms, descriptions, and requirements. Guidebooks can be down-loaded by clicking on the Internship or Certificate Program links at www.delta.wisc.edu

FOR STAFF USE ONLY:

Date received: _____

Received by: _____

Notes:

Signatures of intent form

This form can be printed out from the Delta web site: www.delta.wisc.edu.

Delta Certificate Signatures of Intent form

I have read and understand the requirements of the Delta Certificate in Research, Teaching, and Learning. I realize that this certificate will be pursued in addition to the continued pursuit of my regular graduate degree requirements. I intend to complete the requirements of this Certificate Program.

Delta Certificate Candidate's Signature

date

Print Certificate Candidate's Name Here

I have read and understand the requirements of the Delta Certificate in Research, Teaching, and Learning. I realize that this certificate will be pursued in addition to the continued pursuit of my student's regular graduate degree requirements and I support her/his involvement in the Certificate Program.

Dissertation research advisor's signature

date

Print Advisor Name Here

SUBMISSION PROCESS

You have three options for submitting this form:

Mail to:

Delta Program
c/o 284 Russell Labs Mailroom
1630 Linden Drive
Madison, WI 53706

Deliver to:

Delta Program
Science House
1645 Linden Drive
Madison, WI 53706

Online: Scan form into a PDF format and attach this PDF file, along with your other documents, to the on-line application form.

Appendix A: Core principles of the Delta Program

Teaching-as-Research

Teaching-as-Research involves the deliberate, systematic, and reflective use of research methods to develop and implement teaching practices that advance the learning experiences and learning outcomes of students and teachers.

Participants (students, postdocs, faculty and staff who take part in the suite of Delta activities) will learn to apply a research approach to their teaching practice. Conceptual steps in the teaching-as-research process are:

1. Learning foundational knowledge (What is known about the teaching practice?)
2. Creating goals for better student learning (What do we want students to learn?)
3. Defining measures of success (What evidence will we need in order to determine whether students have achieved learning goals?)
4. Developing and implementing teaching practices (What will we do in and out of the classroom to enable students to achieve learning goals?)
5. Collecting and analyzing "data" (How will we collect and analyze information to determine what students have learned?)
6. Reflecting, evaluating, and iterating (How will we use what we have learned to improve our teaching?)

The application of Teaching-as-Research is meant to lead participants to an on-going process of discovery and change.

The application of Teaching-as-Research is meant to create inclusive learning environments that help to enhance the learning for all.

The application of Teaching-as-Research will take place within a learning community - a collaborative environment that promotes shared learning and active participation, modeled after approaches to research.

Learning Community

Learning Communities bring people together for shared learning, discovery, and the generation of knowledge. Within a learning community (LC), all participants take responsibility for achieving the learning goals. Importantly, learning communities are the process by which individuals come together to achieve learning goals. These learning goals can be specific to individual courses and activities, or can be those that guide an entire teaching and learning enterprise.

The following four core ideas are central to the learning community process:

- Shared discovery and learning. Collaborative learning activities where participants share responsibility for the learning that takes place help the development of a learning community. Rather than relying on traditional “expert centered” lecture formats, practitioners should include collaborative learning techniques so learners can see their contribution to the learning goals.
- Functional connections among learners. Learning communities develop when the interactions among learners are meaningful, functional and necessary for the accomplishment of the “work” within the courses or learning activities (rather than serving as “window dressing” or simply as a “feel good” activities). Moreover, meaningful connections must extend throughout the entire learning community—among students, postdocs, faculty, and staff—rather than simply among cohort- or role-related peers.
- Connections to other related learning and life experiences. Learning communities flourish when implicit and explicit connections are made to experiences and activities beyond the course or program in which one participates. These connections help situate one’s learning in a larger context by solidifying one’s place in the broader campus community of learners and life experiences. These connections decrease one’s sense of curricular and personal isolation.
- Inclusive learning environment. Learning communities succeed when the diverse backgrounds and experiences of learners are welcomed in such a way that they help inform the group’s collective learning. Whenever possible, activities should be sought that help participants reach out and connect with others from backgrounds different from their own.

Learning-through-Diversity

The literacy and engagement of all students in science, technology, engineering, and mathematics (STEM) is a priority goal for U.S. higher education. The Center for the Integration of Research, Teaching, and Learning (CIRTL) seeks to contribute to this goal by enabling present and future STEM faculty to enhance the learning of all students whom they teach irrespective of, but not limited to, preferred learning styles, race, ethnicity and culture, gender, sexual orientation, disabilities, religion, age or socioeconomic backgrounds.

CIRTL's contributions to diversity in STEM are founded on the principle that excellence and diversity are necessarily intertwined. Faculty and students bring an array of experiences, backgrounds, and skills to the teaching and learning process. Effective teaching capitalizes on these rich resources to the benefit of all, which we call "Learning-through-Diversity" (LtD).

At the same time, CIRTL recognizes the reality that existing social and educational practices do not always promote equal success for all learners. Thus, creating equitable learning experiences and environments requires intentional and deliberate efforts on the part of present and future faculty. CIRTL is committed to developing a national STEM faculty who model and promote the equitable and respectful teaching and learning environments necessary for the success of Learning-through-Diversity.

To achieve these goals, CIRTL provides development experiences, programs and resources that promote the abilities of present and future faculty to:

- Know the diverse backgrounds of their students and their implications for learning.
- Identify curricular, teaching and assessment practices that promote learning for all.
- Draw upon the diversity of their students to enhance and enrich the learning of all.
- Recognize existing inequities, and promote an equitable, inclusive and respectful climate for learning.

These aims require specific attention of the practitioner to:

- Practitioner-participant interactions – such as inclusion and engagement of the ideas of all participants; respectful teaching behaviors; accessibility for all participants; mentoring of less experienced practitioners.
- Participant-participant interactions – such as welcoming and respectful inclusion in collaborative work; respect for the ideas of all and recognition of their value; accessibility in activities that occur outside of the primary learning environment.
- Participant-content interactions - such as how participants experience content; how content can be adapted and varied; and how exploring novel contexts for presentation can enrich the experience of participants and practitioners alike.

Appendix B: Delta Contacts

Delta Contacts

Christine Pfund Delta Associate Director Certificate Coordinator	cepfund@wisc.edu	1-1180
Don Gillian-Daniel Delta Associate Director Internship Program Coordinator	internship@delta.wisc.edu	5-9969

We also recommend candidates explore the Delta website for information and events.
www.delta.wisc.edu

Delta Faculty and Staff

Aaron Brower, Delta Co-Director, Social Work

Bob Mathieu, Delta Co-Director, Astronomy

Steve Ackerman, Atmospheric and Oceanic Sciences

David Baum, Botany

Shimiei Barger, Center for the Integration of Research, Teaching, and Learning (CIRTL)

Sandy Courter, Engineering Professional Development

Sharon Dunwwody, Journalism and Mass Communication

Jo Handelsman, Plant Pathology

Barb Ingham, Food Science

Joan Kwako, Mathematics Education

Greg Moses, Engineering Physics

Alice Pawley, Industrial and Systems Engineering

Thatcher Root, Chemical and Biological Engineering

Lillian Tong, Center for Biology Education

Appendix C: Sample Application

Delta Certificate Proposal Plan and Timeline

Eric Horsman

Faculty Mentor: Dr. Robert Mathieu

Program Plan:

While I am very interested in obtaining a Delta Certificate in Research, Teaching, and Learning, I must admit that my motivation follows more from the experience and knowledge the Certificate represents rather than the document itself. I would have participated in the Delta program even if I did not receive official recognition of my efforts. My original intention, in fact, was to only dabble in the program's offerings. However, with experience I recognized the substantial benefits of the reflection and revision inherent to so many of the activities I have participated in during the program. This recognition convinced me that the experience of completing all of the requirement for the Certificate will benefit me because I will be forced to reflect on several years of experience studying and discussing a range of interconnected ideas associated with teaching and learning.

With that said, I suspect that both the Certificate itself and its less immediately tangible underpinnings will benefit me as I pursue my career goals. I intend to pursue a career in higher education as a professor at an institution that values both research and teaching. The academic system within which I have been trained has shown me how to convince prospective employers of my research credentials. However, until I began participating in the Delta program, that system had neither helped me develop my teaching skills nor taught me how to demonstrate those skills to others. As I near completion of the program and begin to apply for jobs, I feel substantially more confident in the appearance and substance of both my research and teaching credentials than I did a few years ago. This confidence comes in part from my more thorough recognition of the benefits of applying my scientific curiosity to all aspects of my life, rather than limiting it to what is traditionally considered scientific. My participation in the Delta program is largely responsible for this realization.

Timeline:

Instructional Materials Development Course	Spring 2004
The College Classroom Course	Fall 2005
Learning Community Experience: Geology & Geophysics Dept. – TA Training	Fall 2005

With approval from Dr. Aaron Brower, Sarah Titus and I are conducting a series of three teaching assistant training sessions for the Department of Geology and Geophysics. Each session focuses on one of the three pillars of the Delta program is designed to give TAs practical knowledge that is of immediate use to them. Additionally, Ms. Titus and I are present the results of our ongoing education research as a variety of local and national teaching and geoscience conferences.

Internship seminar and project	Spring 2005
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Under the supervision of Dr. Laurel Goodwin I designed, implemented, and assessed the effectiveness of a set of instructional materials in an upper-level undergraduate geology course. These instructional materials were designed to help students improve their three dimensional visualization skills through practice using those skills.

Teaching and Learning Portfolio Defense	Spring 2006
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