LEARNLAB Learning Sciences Certificate

Goals of the Learning Sciences Certificate

The overarching goal of a LearnLab Learning Sciences certificate is to enhance the competitiveness of LearnLab graduates when they go on the job market, especially for individuals applying to work in Dept's of Education and/or Learning Sciences. To this end, the certificate aims to promote competence in four broad categories of the Learning Sciences that are likely to be valued by hiring committees:

1) Coursework
2) Teaching
3) Professional Development
4) Research

In addition to completing requirements in each of these four categories (detailed below), the student is required to write a short summary on his/her LearnLab experiences. This certificate application in its entirety will serve as the basis for a recommendation letter to be written for that student by the LearnLab Executive Committee.

1) Coursework[1]

To fulfill coursework requirement, students will pass one course in each of three categories: *statistics*, *methodology*, and *learning science elective*. The student is required to receive grade of at least a B in each of these courses, and the student may not receive a B or less in more than one of the courses. The courses listed below are already approved by the EC as satisfying this requirement.

Statistics:
___ Experimental Design for the Behavorial and Social Sciences (CMU Statistics)
___ Language and Statistics (CMU LTI)
___ Basic Applied Statistics (Pitt)
___ Applied Statistical Methods (Pitt)
___ Basic Applied Statistics (Pitt)

Research Methods:
___ Educational Research Methods (CMU Psych & HCII)
___ Design of Educational Systems (Pitt LSAP)
___ Educational Goals, Instruction, & Assessment (CMU Psych)
___ Research Methods in Applied Linguistics (Pitt Linguistics)

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[1] For each of the coursework, teaching, and research requirements, it is possible for the student to elect a course or advisor that are not among the choices listed -- to do so, the student must submit a one-page proposal outlining why the course(s) or advisor is suitable for satisfying the intended requirement(s). The student must allow at least a month's time in order to for the EC to process the request. For the coursework and teaching requirements, the proposed alternate courses may not be "half-courses", unless the student takes multiple half courses and receives approval from the EC.

Elective:

        ___ Transfer of Knowledge (Pitt Psych)
        ___ Second Language Acquisition (Psych Linguistics)
        ___ Scientific Research in Education (CMU Psych)
        ___ Cognitive Modeling and Intelligent Tutoring Systems (CMU HCII)
        ___ Applications of Cognitive Science (CMU Psych)
        ___ Learning in Humans and Machines (CMU Psych)
        ___ Applied Machine Learning (CMU HCII)
        ___ Human Expertise (CMU Psych)
        ___ The Role of Technology in Learning in the 21st century (CMU HCII)
        ___ Information Processing and Learning (CMU Machine Learning)
        ___ Learning and Motivation (CMU HCII)
        ___ Educational Game Design (CMU HCII)
        ___ Machine Learning (CMU Machine Learning)

2) Teaching Requirement[1]

To fulfill the teaching requirement, students will TA or teach one of the courses listed in the Coursework Requirement section (the course can be in any category). Additionally, the following undergraduate courses would be acceptable to TA or teach. NOTE: The TA position must include a substantial teaching component in the form of giving a lecture or leading a recitation; it cannot be comprised solely of grading duties.

        ___ Cognitive Psychology (CMU or Pitt Psych)
        ___ Developmental Psychology (CMU or Pitt Psych)
        ___ Principles of Child Development (CMU Psych)
        ___ Cognitive Development (CMU Psych)
        ___ Intro to Psychology
        ___ Applications of Linguistics (Pitt Psych)
        ___ Complex Learning (Pitt Psych)
        ___ Learning and Problem Solving (Pitt Psych)
        ___ Human Cogn: Learning & Memory (Pitt Psych)
        ___ Human Cogn: Skill Acquisition (Pitt Psych)
        ___ An ESL course at the ELI

3) Professional Development

A student is also required to engage in professional development activities that relate to the learning sciences in three categories.

Mentorship (one of the following)

        ___ Mentor a LEARNLAB intern
        ___ Mentor at the LEARNLAB Summer School
        ___ Directly supervise a research or teaching assistant (for a minimum of one semester)

Participation (two of the following)

        ___ Serve as a graduate student host to an invited speaker
        ___ Present research at LEARNLAB events (all-hands, thrust meeting, or present poster at AB / Site visit)

_____ Attend an SLC event (conference or annual meeting)
_____ Serve as a member on the grad student body (President, Vice President, Wiki Master, iSLC organizer, Speaker organizer, Recruitment Officer, EC rep)

Field-based Experience

In order to gain experience working in the "real-world" of education, the student will complete a field-based requirement that consists of working with educators, administrators, or others in applied educational settings. This experience could be relevant to education at any age level (K – 12, college, etc.) and in any subject, but the student must document how their experiences working on this experience both a) assist in developing a broader understanding of the challenges and issues faced by educators, and b) how the experience can inform the students' future program of research. The student is encouraged to submit a one-page proposal to the EC outlining their field-based experience idea, and upon approval and successful implementation of the field-based experience, they will write up a short reflection that will accompany the students' Learning Sciences Summary (see section 5). The proposal should include a plan for at least 25 hours of time working directly with and on educationally-relevant activities (i.e., meeting with stakeholders, not analyzing data you get from an in-vivo study).

If a student is unsure of what sorts of field-based experiences are available (e.g., how they would get to observe a classroom, or do research in vivo, etc.), they should contact Michael Bett (mbett@cs.cmu.edu).

N.B. If a student wants to go into real schools, clearances are necessary. These can take some time to get, so students should plan accordingly. For additional information, contact Judith Hallinen (jh4p@andrew.cmu.edu).

4) Research[1]

In order to satisfy the research requirement, the student's dissertation must address a question relevant to education and the learning sciences. Additionally, the student's dissertation committee must include one member who is learning science faculty member, as defined as any faculty that is currently a member of LearnLab, the Learning Research and Development Center (LRDC), or the Program in Interdisciplinary Education Research (PIER) Steering Committee.

5) Experiences in the Learning Sciences Summary

The student will complete a short report summarizing all his/her learning science experiences. The report will include a short (max. 1,000 words) section on how his/her research is relevant to - and can inform - the field of the learning sciences, as well as a short reflection on the significance of his/her field-based experience (max. 1,000 words) – this latter reflection should detail how the student will use their field-based experiences to inform their future research. Finally, included in this report should be a

listing of all the relevant coursework, teaching, and professional development activities the student has completed to fulfill the LearnLab Certificate requirements. This report will be submitted to the EC for final approval of the Certificate.