CRITICAL AND CREATIVE THINKING (MA, GRADUATE CERTIFICATE)

Faculty

Lawrence Blum (Philosophy Department), PhD, *Harvard University* • Ethics and Moral Philosophy

Nina Greenwald, PhD, *Boston College* • Educational Psychology • Creative Thinking and Problem Solving • Problem-Based Learning • Gifted Education • Multiple Intelligences

Arthur Millman (Philosophy Department), PhD, *University of Chicago* • Philosophy of Science • Philosophy of Technology • Environmental Ethics

Steven Schwartz (Psychology Department), PhD, *University of Illinois at Urbana-Champaign* • Creativity • Problem Solving • Statistics and Research Methods

Carol Smith (Psychology Department), PhD, *Harvard University* • Children and Science • Conceptual Change • Cognitive Development

Janet Farrell Smith, (Philosophy Department), PhD, *Columbia University* • Biomedical Ethics • Political Philosophy • Philosophy of Language

Peter Taylor, PhD, *Harvard University* • Science, Technology, and Society • Social Analysis of Environmental and Health Research • Reflective Practice

Brian White (Biology Department), PhD, *Stanford University* • Biology Education • Educational Software and Multimedia

The Program

The Graduate Program in Critical and Creative Thinking (CCT) is a unique interdisciplinary program that provides its students with knowledge, tools, experience, and support to become constructive, reflective agents of change in education, work, social movements, science, and creative arts.

Critical thinking, creative thinking, and reflective practice are valued in all fields. In critical thinking one seeks to scrutinize the assumptions, reasoning, and evidence brought to bear on an issue—by others and by oneself; such scrutiny is enhanced by placing ideas and practices in tension with alternatives. Key functions of creative thinking include generating alternative ideas, practices, and solutions that are unique and effective, and exploring ways to confront complex, messy, ambiguous problems, make new connections, and see how things could be otherwise. In reflective practice one takes risks and experiments with putting ideas into practice, then takes stock of the outcomes and revises his/her approaches accordingly.

An explicit and sustained focus on mastering and applying tools of critical thinking, creative thinking, and reflective practice allows students involved in a wide array of professions and endeavors to develop the clarity and confidence to make deep changes in their learning, teaching, work, activism, research, and artistry.

Although each CCT course is self-contained and is open to students from other graduate programs, students matriculated in the program benefit from extended relationships with core CCT faculty and fellow students that support their process-learning. Students learn to experiment and take risks in applying what they are learning, reflecting on the outcomes and revising accordingly, and building up a set of tools, practices, and perspectives that work in their specific professional or personal endeavors.

The foundational knowledge emphasized in the field of critical and creative thinking includes psychological studies of the scope, limits, and techniques of critical and creative thought, information processing, and conceptual learning in children and young adults; philosophical studies of reasoning, argument, logical thinking, valuing, and judging; and work with cognitive structures and metacognitive techniques for stimulating creativity and critical thought. This knowledge base is expanded through elective courses that take students into areas of specialization and through required courses in research, implementation, evaluation, and communication. The program further stresses inter- and intra-personal dimensions of critical and creative thinking and reflective practice (such as empathy, listening, dialogue, and facilitation of group processes) and contribution to constructive social change through anti-racist and multicultural education and involvement of teachers and other citizens in debates about science in its social context.

The CCT Program appeals to students looking for professional and personal development and interested in learning from and with others of diverse backgrounds and interests. Many are mid-career educators: teachers and college professors, curriculum specialists, teacher educators, museum educators, or school administrators. Others are policy makers or personnel trainers in government, corporate, or non-profit settings. Some are artists, musicians, or writers.

Graduates leave CCT well equipped for ongoing learning, addressing the needs of their schools, workplaces, and communities, adapting and contributing to social changes, and collaborating with others to these ends.

CCT courses are open to non-degree students and students from other graduate programs seeking to fulfill requirements, particularly in teacher-education programs.

To accommodate the schedules of teachers and other working professionals, courses are offered after 4 pm, as well as in intensive sessions during the summer. While it is possible for a full-time student to complete the master's program in one calendar year, most students combine the program with their ongoing careers and therefore take two or three years.

Degree Requirements

The Master of Arts Program

Thirty graduate credits are required for completion of the MA degree:

Foundation courses: A sequence of two core courses, CRCRTH 601 and 602 (Critical Thinking and Creative Thinking), to be taken at the beginning of the program (6 credits).

Two advanced core courses in the philosophy and the psychology of thinking, PHIL 501 and Psych 550L / CRCRTH 651L, to be taken as soon as possible after CRCRTH 601 and 602 (6 credits).

Electives: Three electives within a specialty area, chosen from offerings in CCT or, with permission of the CCT Graduate Program Director, from other academic programs and departments (9 credits).

By petition to the CCT Graduate Program Director, up to two upper-level undergraduate courses may be counted toward this requirement.

The program offers four specialty areas:

Literature and Arts

Mathematics, Science, and Technology, including subspecialties in:

Science in Society

Environment, Science, and Society

Moral Education and Ethical Issues

Workplace and Organizational Change

Additional areas of specialization may be constructed in consultation with the CCT Graduate Program Director. These areas may involve interdisciplinary cooperation with other graduate programs on campus, such as Instructional Design, Special Education,

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Educational Administration, and Dispute Resolution.

Note: CCT MA students need permission of their advisors to take on-line sections and may count no more than four on-line courses from UMass Boston toward their degree.

Pre-Capstone Experience: A practicum course (CRCRTH 698) and an evaluation seminar (CRCRTH 693), in which critical and creative thinking interventions are developed, implemented, evaluated, and modified (6 credits).

Capstone: A supervised capstone experience composed of either a synthesis project or a thesis (3 credits):

A. The Synthesis Project: Students choosing this capstone experience enroll in CRCRTH 694: Synthesis of Theory and Practice Seminar, through which participants review and reflect on the integration into their professional lives of critical and creative thinking skills and strategies. It offers each participant the opportunity to demonstrate mastery of competencies and skills appropriate and relevant to his/her discipline. For each student, this demonstration has two parts: a written essay and an oral presentation.

The synthesis project essay follows the Office of Graduate Studies Guidelines for the Preparation of Theses & Dissertations and is expected to incorporate an appropriate theoretical framework and references to relevant scholarly work in its field. The 30- to 60-minute oral presentation is given before members of the CCT faculty. Both the essay and the oral presentation are evaluated by at least two members of the CCT faculty.

B   The Thesis: The Thesis provides an opportunity for the student to integrate and synthesize the knowledge and skills gained in the program into a significant work. Details about different options for the thesis are available from the Program Coordinator.

The Graduate Certificate

The objective of the fifteen-credit graduate certificate program is to provide a coherent and substantial course of study resulting in an understanding of the skills needed in teaching, training, or designing curriculum for critical and creative thinking and an enhanced ability to use and communicate these skills in professional practice.

Students seeking the certificate take a total of five courses: a sequence of two foundation courses, Critical Thinking (CRCRTH 601) and Creative Thinking (CRCRTH 602); and three other CCT courses. Customarily, these include either Foundations of Philosophical Thought (PHIL 501) or Cognitive Psychology (CRCRTH 651L/PSYCH 550L), an elective course, and Practicum: Processes of Research and Engagement (CRCRTH 694). Alternatively, students may, after consultation with their faculty advisor and with the approval of the Program Director, take up to three electives in one specialty area. Each certificate student also gives an exit performance, usually as part of CRCRTH 698, which demonstrates competence in implementing critical and creative thinking. This exit performance is reviewed and evaluated by a faculty committee.

Online sections, available for several courses, make it possible for the certificate to be undertaken by non-resident students.

Certificate students may count CCT courses that they have taken toward completion of their MEd or another UMass Boston Master's degree toward the certificate.

CCT Certificate with a Special Focus

For each of the following foci, CCT graduate certificate students take CRCRTH 601, CRCRTH 602, and three other courses from a recommended list of electives and complete an exit performance as part of one of the courses taken. Online sections are available for several courses. For more information, please contact the Program Office, tel 617.287.6520 or email cct@umb.edu.

*   Creative Thinking at Work

*   Science in a Changing World

*   Gifted and Talented Education

Admission Requirements

Please see the general statement of admission requirements for all graduate programs in the "Admissions" section of this publication.

The Critical and Creative Thinking Program will recommend for admission those applicants who present evidence of their ability to do graduate work with distinction. Such evidence will normally include:

1. A distinguished undergraduate transcript with a grade point average of at least 3.0.

2. For MA applicants, at least three positive and informed letters of recommendation submitted by persons with whom the

applicant has worked closely and who have direct knowledge of their abilities. Recommenders should be able to comment in detail about an applicant's academic strengths, work, and/or life experience. For Graduate Certificate applicants, at least two such letters.

Optionally, applicants may submit results of the Graduate Record Examination (GRE) or the Miller Analogies Test (MAT) and/or evidence of teaching or other examples of workplace competence, such as curriculum projects and lessons or business plans, to strengthen their application.

Special Opportunities and Resources

The CCT Program and the CCT Forum, a club run by graduate students, organize regular presentations by students, faculty, and graduates which are open to the wider University community. In these settings students can receive support from their peers and from graduates who provide mentoring, information on employment opportunities, and access to new directions in putting CCT into practice. The CCT Community Directory also facilitates exchange among current and past CCT students. Outside the regular academic year, CCT hosts workshops and other activities designed to promote outreach beyond the University. Information is available from the CCT website at http://www.cct.umb.edu and through an email listserv.

The CCT Handbook provides additional information about joining and moving through the CCT program and about the wider CCT community. This handbook can be viewed on the CCT website or downloaded as a PDF file.

Departmental Course (Required)

PHIL 501
Foundations of Philosophical Thought
By discussing four or five traditional substantive problems in philosophy, such as morality, the nature of knowledge, freedom of the will, the nature of mind, and social organization, the course attempts to derive a common approach that philosophers bring to these problems when developing their own solutions and criticizing the solutions of other philosophers. It also considers some of the ways that substantive issues and debates in philosophy relate to contemporary non-philosophical issues in our society and can be introduced into a broad range of educational environments outside standard philosophy courses.
3 Lect Hrs, 3 Credits

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CCT Courses

CRCRTH 601
Critical Thinking
This course explores issues about the nature and techniques of critical thought, viewed as a way to establish a reliable basis for our claims, beliefs, and attitudes about the world. It explores multiple perspectives, placing established facts, theories, and practices in tension with alternatives to see how things could be otherwise. Views about observation and interpretation, reasoning and inference, valuing and judging, and the production of knowledge in its social context are considered. Special attention is given to translating what is learned into strategies, materials, and interventions for use in students' own educational and professional settings.
3 Lect Hrs, 3 Credits

CRCRTH 602
Creative Thinking
This course seeks to increase the participants' understanding of creativity, to improve their creative problem-solving skills, and to enhance their ability to promote these skills in others, in a variety of educational settings. Students participate in activities designed to help develop their own creativity and discuss the creative process from various theoretical perspectives. Readings are on such topics as creative individuals, environments that tend to enhance creative functioning, and related educational issues. Discussions with artists, scientists, and others particularly involved in the creative process focus on their techniques and on ways in which creativity can be nurtured.
3 Lect Hrs, 3 Credits

CRCRTH 611
Seminar in Critical Thinking
This course involves research on and discussion of important issues of current concern about critical thinking. Issues include critical thinking; logic and knowledge; critical thinking about facts and about values; knowledge in its social context; teaching to be critical; and evaluating critical thinking skills. The course addresses these issues through cases of topical interest. (Note: The specific thematic emphasis of this course is described on the program website: www.cct.umb.edu.)
3 Lect Hrs, 3 Credits

CRCRTH 612
Seminar in Creativity
This course involves research on and discussion of important issues of current concern in the field of creativity. The seminar analyzes writings on the creative person, the creative process, and the development of creative performance in both art and science. It draws on materials from a variety of sources, including biography, intellectual histories, psychological studies, and educational research. Topics include perspectives on the creative process, from logical extension to intuitive leap; distinguishing scientific and artistic creativity; the person; the role of insight; demythologizing creativity; social context and creative productivity; evaluating creativity; educating for creativity. (Note: The specific thematic emphasis of this course is described on the program website: www.cct.umb.edu.)
3 Lect Hrs, 3 Credits

CRCRTH 616
Dialogue Processes
Genuine dialogue provides a creative space in which entirely new ways of thinking, acting, and relating to others may emerge. At the heart of such dialogue is holding respect for oneself, for one another, and for a commonly created pool of meaning. Course participants learn and experience approaches to listening and dialogue derived from Buber, Bohm, Isaacs, Jackins, Weissglass, and others, that allow us to become more aware of the underlying beliefs, assumptions, and emotions that limit our thinking and our responses to the world. Discussions explore applications of dialogue processes in educational, organizational, social, and personal change.
3 Lect Hrs, 3 Credits

CRCRTH 618
Creative Thinking, Collaboration, and Organizational Change
Through interactive, experiential sessions and structured assignments, students learn critical and creative approaches to working in organizations. Skills addressed include: communication and team-building; facilitation of participation and collaboration in groups; promotion of learning from a diversity of perspectives; problem-finding and solving; and reflective practice. Students apply these skills to situations that arise in business, schools, social change groups, and other organizations with a view to taking initiative and generating constructive change.
3 Lect Hrs, 3 Credits

CRCRTH 619
Biomedical Ethics
This course develops students' critical thinking about dilemmas in medicine and health care policy, such as those that arise around allocation of scarce resources, criteria for organ transplants, informed consent, experimentation on human subjects, AIDS research, embryo research and selective termination of pregnancy, euthanasia, and physician-assisted suicide. Through such cases the course introduces methods in moral reasoning, including principle-based reasoning, rights-based reasoning, decision-making under uncertainty, and utilitarianism in classic and contemporary normative reasoning.
3 Lect Hrs, 3 Credits

CRCRTH 620
Moral Education
This course involves a comprehensive analysis of the basic issues in moral education from an interdisciplinary perspective. Philosophical studies of the nature of morality and the moral life are integrated with psychological studies of moral development and human motivation and brought to bear on issues in teaching morality, especially in elementary and secondary schools, in a democratic society. Topics include rationality, emotion, and motivation in moral action; the moral life and the aims of moral education; the moral development of children; moral education versus indoctrination; socialization; and the "hidden curriculum." Throughout this course theoretical insights are applied to an examination of materials, programs, and practices in moral education, both in schools and in the wider community.
3 Lect Hrs, 3 Credits

CRCRTH 627
Issues and Controversies in Antiracist and Multicultural Education
This course explores two related forms of education—antiracist education and multicultural education—approaching them as issues in moral and value education and exploring controversies in the theories and practices of antiracist and multicultural education. The course deals with both practical and theoretical issues but concentrates more on theory. Specific topics include racism, race, and school achievement; ethnic identity and self-esteem; Afrocentrism; religious pluralism; multiculturalism as a unifying or divisive force.
3 Lect Hrs, 3 Credits

CRCRTH 630
Criticism and Creativity in Literature and the Arts
Expression and evaluation, freedom and discipline, creative production and its critique—how do these dualities relate to visual and verbal imagination as they are demonstrated in literature and the arts? Specific strategies for eliciting imaginative work in these areas are demonstrated, as

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are specific strategies for evaluating imaginative works. Finally, this course focuses on ways of helping others (including children) to develop these skills and utilize these strategies effectively.
3 Lect Hrs, 3 Credits

CRCRTH 640
Environment, Science, and Society: Critical Thinking
Through current and historical cases, this course explores the diverse influences that shape environmental science and politics and their pedagogical, professional, social, and moral implications for educators, environmental professionals, and concerned citizens.
3 Lect Hrs, 3 Credits

CRCRTH 645L / BIOL 545L
Biology in Society: Critical Thinking
Current and historical cases are used to examine the political, ethical, and other social dimensions of the life sciences. Close examination of developments in the life sciences can lead to questions about the social influences shaping scientists' work or its application, and, in turn, to new questions and alternative approaches for educators, biologists, health professionals, and concerned citizens.
3 Lect Hrs, 3 Credits

CRCRTH 646L / SPE G 646L
The Gifted and Talented Student
This course provides students with an overview of the gifted and talented student. Topics include definitions of "gifted," identification of the gifted and talented, and methods and programs geared to these students. Special areas to be addressed are the gifted and talented minority student, as well as the gifted and talented underachiever.
3 Credits

CRCRTH 649L / PPOL 749L
Science, Technology, and Public Policy
Although relatively few Americans have backgrounds in science or engineering, they are increasingly confronted with issues that are technically complex. This course explores the resulting tensions and asks how the needs for scientific expertise and democratic control of science and technology are reconciled. The first half of the course traces the historical development of American science policy and situates this development comparatively. The second half focuses on contemporary controversies, including those over the nature of university/industry relations, patent policy, and cases of expert/lay disagreements over risk.
3 Lect Hrs, 3 Credits

CRCRTH 650
Mathematics Thinking Skills
This course explores several types of mathematical thinking in the context of number theory, algebra, geometry, and introductory calculus, and relates them to critical and creative thinking skills. Developmental and experiential factors in learning and teaching mathematics are considered, as well as techniques for determining a learner's mathematical abilities and learning styles. Readings, discussion, research, and problem-solving are used to provide a historical context and to suggest connections with other disciplines. Individual and small-group projects are adapted to student interests. No formal mathematical background beyond high school algebra and geometry is required.
3 Lect Hrs, 3 Credits

CRCRTH 651L / PSYCH 550L
Cognitive Psychology
This course gives a survey of the field of cognitive psychology from an information-processing viewpoint. The course considers how people encode, organize, transform, and output information. Emphasis is given to such topics as concept formation, problem-solving, and creative thinking.
3 Lect Hrs, 3 Credits

CRCRTH 652
Children and Science
This course explores the ways children think about their natural and social world and how this thinking affects their learning of science. It is particularly concerned with identifying and describing the organized conceptual frameworks children have prior to instruction (which typically are different from the scientists' conceptualizations) and with understanding the general processes by which conceptual frameworks can be changed. One important question concerns the ways in which children are fundamentally different learners and thinkers from adults and the ways in which they are fundamentally similar.
3 Lect Hrs, 3 Credits

CRCRTH 670
Thinking, Learning, and Computers
This course considers the consequences of using computers to aid our thinking, learning, communication, and action in classrooms, organizations, and social interactions. Class activities acquaint students with specific computer-based tools, the ideas and research behind them, and themes for critical thinking about these ideas and tools.
3 Lect Hrs, 3 Credits

CRCRTH 693
Seminar on Evaluation of Educational Change
This course covers techniques for and critical thinking about the evaluation of changes in educational practices and policies in schools, organizations, and informal contexts. Topics include quantitative and qualitative methods for design and analysis; participatory design of practices and policies; institutional learning; the wider reception or discounting of evaluations; and selected case studies, including those arising from semester-long student projects.
3 Lect Hrs, 3 Credits

CRCRTH 694
Synthesis of Theory and Practice Seminar
This seminar provides participants with an opportunity to review and reflect on their work in the program and its impact on their current and future professional and personal lives, through a final project that demonstrates knowledge and integration of critical and creative thinking skills, processes, and strategies. To facilitate the synthesis of ideas and the identification of a final project option, the seminar begins with group experiences. Students choosing the same final project option meet in small groups weekly to present their plans and progress notes for support and critique. A three-page final project description is presented early in the course, and all projects are presented during the last four weeks.
3 Lect Hrs, 3 Credits

CRCRTH 696
Independent Study
This course involves the comprehensive study of a particular topic or area of literature determined by the student's need; the study is pursued under the guidance, and subject to the examination, of the instructor. An application or outline of study should be submitted to the instructor by the end of the semester previous to that in which this course is to be taken.
1-6 Credits

CRCRTH 697
Special Topics in Critical and Creative Thinking
This advanced course offers intensive study of selected topics in the field of critical and creative thinking. Course content and credit vary according to the topic and will be announced during the advance registration period.
3 Lect Hrs, 1-6 Credits

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CRCRTH 698
Practicum: Processes of Research and Engagement
In this course, students identify issues in educational or other professional settings on which to focus their critical and creative thinking skills. Each student works through the different stages of research and action – from defining a manageable project to communicating findings and plans for further work. Supervision is provided when the student's research centers on new teaching practices, workshops in the community, or other kinds of engagement as an intern or volunteer. The classes run as workshops in which students are introduced to and then practice using tools for research, writing, communicating, and supporting the work of others.
3 Lect Hrs, 3 Credits