



M.S.Ed. (Physics)
Masters' of Science in Education
and the
PTP Summer Physics Academy
Courses and Programs
for Physics Teachers
at SUNY - Buffalo State College



At BSC we offer two M.S.Ed. (Physics) degree programs: one designed for currently certified professional teachers who wish to add physics teaching as a second certification area, and a second program for career changing science and engineering professionals who wish to become NY physics teachers through a 2 year alternative certification process involving 2 years of full-time work as a transitionally certified HS physics teacher.

Our M.S.Ed. (Physics) program course requirements are described at

<<http://physicsed.buffalostate.edu/programs/MSEDPgms.html>>.

Alternative Certification program sequence and administration is further described at

<<http://physicsed.buffalostate.edu/programs/pgmdox/>>. A published paper describing our programs:

<[macisaacetalp10-16jpteo2\(2\)nov04.pdf](http://macisaacetalp10-16jpteo2(2)nov04.pdf)>.

All of our PHY5xx and PHY6xx courses are offered in evenings and summers or online, so working professionals can enroll and keep their day jobs. Application information is found at

<<http://www.buffalostate.edu/graduateadmissions/applying/index.asp?sub=how>>, and [Associate Professor Dan MacIsaac](#) would be pleased to correspond with you regarding program details by email.

Course registration is ONLY possible via the online SABRE system. Summer 2006 registration commences 12 April, 2006. Waiting lists are maintained for all courses by SABRE. SABRE access is opened to admitted nondegree visiting or regular degree program students after the graduate college has processed an admissions application available from

<<http://www.buffalostate.edu/graduateadmissions/applying/index.asp?sub=how>>.

Please note that non-degree visiting students (code 7000) are NOT eligible to receive federal student loans; admission into a degree program such as the MEd (Physics), code 6634 is required for federal loan eligibility. Teachers working at "high-needs" LEAs may be eligible for federal Stafford Loan forgiveness, details of such forgiveness and specific school eligibility are found at

<<http://www.ifap.ed.gov/dpcletters/GEN0414.html>>.

In **SUMMER 2006**, Buffalo State Physics will offer a number of graduate course-workshops in our Physics Teaching Pathways summer physics academy suitable for K-20 physics and physical science teachers. Partial scholarship support will be available and registration is through the online [BSC SABRE system](#) starting 12 April 2006. On-campus dorm room housing will be available for Summer 2006 course participants at the rate of \$28/day including linen.

PHY510 (6cr) Process Skills in Physics Teaching for New Physics Teachers. 2 weeks: 9-21Jul06 8am-5pm MTWRF plus select eves. Taught by Dr. David Henry, Dr. Joe Zawicki and colleagues, content and pedagogy designed for new physics teachers. Previously known as the institute for new physics teachers, this acclaimed workshop presents an introduction to the physics, activities and curricular issues faced by newly assigned physics teachers. For more information about PHY 510 workshop course contact Dave Henry, (716) 878-5619 or henryd@buffalostate.edu.
[Flyer](#), [Scholarship and Registration Information](#), henryd@buffalostate.edu

PHY596 (2cr) AAPT National Conference in Syracuse NY. 7 days: 22-28Jul06 8am-4pm SaSuMTWR plus select eves. LISTED UNDER SUMMER SESSION 2. Conference course associated with attendance at the 133rd National Meeting of the American Association of Physics Teachers (and/or the associated Physics Education Research Conference or PERC) in Syracuse NY. Students must register for the conference as graduate students through registration at <http://www.aapt.org>; registration for Buffalo State credit is separate through SABRE. For credit, students must document

their attendance at 20 hours of AAPT events, and develop a 15 page plan for classroom innovation based upon their conference experiences, insights and reflections. [Syllabus Scholarship and Registration Information](#), <macisadl@buffalostate.edu>

PHY620 (6cr) Powerful Ideas & Quantitative Modeling in Mechanics. 14 days: 30Jul-17Aug06 8am-4pm MTWRF plus select eves. Taught by Dr. Dan MacIsaac, Dr. Dewayne Beery and colleagues, designed for MS/HS physics teachers interested in teaching force, motion and energy using a modeling curriculum. Teachers in this course will work through the renowned Modeling Physics curriculum as modified to meet NYS Core Curriculum needs as both students and teachers, learning modeling pedagogy and the use of modeling methods such as whiteboarding, system schema and energy pie charts and more. Taught via reformed teaching methods. [Scholarship and Registration Information](#), <macisadl@buffalostate.edu>

PHY507 (3cr) Teaching Mechanics for K-8 Teachers July 24-Aug 11 8am-12 noon, Taught by Dr. Marie Plumb & colleagues. Designed for elementary teachers interested in gaining confidence in their understanding of physics and the nature of science. The focus is on interactions and energy. Specific topics include energy, force, friction, gravity, magnetic fields, light, and electricity. [Scholarship and Registration Information](#), <henryd@buffalostate.edu>

EDU 671 (3cr) Constructing Science Understanding July 24-Aug 11, 12:30-4:30pm MTWRF. Taught by Dr. David Henry & colleagues. Construction of science ideas in informal and formal social settings; demonstration and evaluation of exemplary science teaching methods; research focusing on elementary students' formal and naive science understanding. [Scholarship and Registration Information](#), <henryd@buffalostate.edu>

Summer 2006 semester MEd Courses: <<http://www.buffalostate.edu/summer/>>

In **SPRING 2006**, we will offer the following graduate courses suitable for physics and physical science teachers:

PHY500 (3cr) Physics Education Research Seminar. ONLINE Jan-May 2006 BSC BlackBoard Conferencing System. Taught by Dr. Dan MacIsaac, a practical introductory guide to PER for MS/HS physics teachers. <[2004 Syllabus](#)>.

PHY507 (3cr) Teaching Mechanics for K-8 Teachers + (blocked; you must take both courses)
EDU 671 (3cr) Constructing Science Understanding Arr Sat and Tues eves, BSC Campus. Taught by Dr. David Henry, content with pedagogical methods and Science education research for K-8 science teachers. <henryd@buffalostate.edu>.

PHY518 (3cr) Waves and Optics for HS Teachers. Jan-May 2006 Tues evenings 5:00-8:00pm, BSC Campus. Taught by Dr. Mike DeMarco, content review for the NYSED physics CST exam with pedagogical methods for MS/HS physics teachers. <macisadl@buffalostate.edu>.

PHY690 (3cr) MEd Masters Project. ONLINE Jan-May 2006, BSC BlackBoard Conferencing System. Conducted by Dr. Dan MacIsaac, penultimate scholarly activity for the MEd (Phys) degree. <macisadl@buffalostate.edu>.

SCI685 (3cr) Eval in Sci Educ. Weds eves *OR ONLINE* Jan-May 2006, BSC BlackBoard Conferencing System. Conducted by Dr. Joe Zawicki, includes standardized test analyses appropriate for PHY690 projects. <zawickil@buffalostate.edu>.

Spring 2006 semester MEd Courses:

<<http://www.buffalostate.edu/registrar/x473.xml>>

In **Fall 2005**, we currently offer the following graduate courses suitable for physics and physical science teachers:

PHY503 (3cr) Alt Cert Tchg Supervision. Sep-Dec05. Staff & Dr. Dan MacIsaac, alternative certification teacher supervision for MS/HS physics teachers.

PHY507 (3cr) Teaching Mechanics for K-8 Teachers + (blocked; you must take both courses)

EDU 671 (3cr) Constructing Science Understanding Arr Sat and Tues eves, BSC Campus. Taught by Dr. David Henry, content with pedagogical methods and Science education research for K-8 science teachers. <henryd@buffalostate.edu>.

PHY525 (3cr) Nuclear & Particle Physics for HS Teachers. Sep-Dec05, Tues evenings 5:00-8:00pm, BSC Campus. Taught by Dr. Dewayne Beery, content review for the NYSED physics CST exam with pedagogical methods for MS/HS physics teachers.

PHY690 (3cr) MEd Masters Project. ONLINE Sep-Dec05, BSC BlackBoard Conferencing System. Conducted by Dr. Dan MacIsaac, penultimate scholarly activity for the MEd (Phys) degree. <macisadl@buffalostate.edu>.

Fall 2005 semester MEd

Courses: <<http://www.buffalostate.edu/registrar/x473.xml>>

Historical Offerings (reverse chronological order)

In **SUMMER 2005**, we offered a number of graduate course-workshops in our Physics Teaching Pathways summer physics academy suitable for K-20 physics and physical science teachers. Partial scholarship support will be available and registration is through the online [BSC SABRE system](#).

PHY507 (3cr) Teaching Mechanics for K-8 Teachers + (blocked together; you must take both courses)

EDU 671 (3cr) Constructing Science Understanding 11-22July05, 8am-5pm MTWRF plus select evenings, BSC Campus. Taught by Kathleen Falconer, MS and colleagues. This course is specifically designed for elementary and middle school teachers interested in gaining confidence in their understanding of the nature of force. This course will focus on a few major understandings, including socially constructed definitions of force, gravity, balancing forces, buoyancy and flying, density, and simple machines. Taught via reformed teaching methods so as to teach both content and pedagogy. For more information about PHY 507/EDU671 contact Kathleen Falconer, (716) 878-4530 or <falconka@buffalostate.edu>. [Summer Session B](#). <[Registration](#), [Flyer & Schedule](#), [Scholarships](#)>.

PHY622 (6cr) Powerful Ideas & Quantitative Modeling in Electricity and magnetism. 13 days: 6-22Jul05 8am-5pm MTWRF plus select eves. Taught by Dr. Dan MacIsaac and colleagues, designed for MS/HS physics teachers interested in teaching electricity and magnetism using a modeling curriculum. Teachers in this course will work through the renowned Modeling Physics curriculum as modified to meet NYS Core Curriculum needs as both students and teachers, learning modeling pedagogy and the use of modeling methods such as whiteboarding, system schema and energy pie charts and more. Taught via reformed teaching methods. For more information about PHY 622 contact Dan MacIsaac, (716) 878-3802 or

<macisadl@buffalostate.edu>.
[Summer Session B](#), <[Registration](#)>, [Flyer& Schedule](#), [Scholarships](#)>.

PHY510 (6cr) Process Skills in Physics Teaching for New Physics Teachers. 2 weeks: 25Jul05-5Aug05 8am-5pm MTWRF plus select eves. Taught by Dr. David Henry, Dr. Joe Zawicki and colleagues, content and pedagogy designed for new physics teachers. Previously known as the institute for new physics teachers, this acclaimed workshop presents an introduction to the physics, activities and curricular issues faced by newly assigned physics teachers. For more information about PHY 510 workshop course contact Dave Henry, (716) 878-5619 or <henryd@buffalostate.edu>.
[Summer Session C](#), <[Registration](#)>, [Flyer & Schedules](#), [Scholarships](#)>.

In **SPRING 2005**, we offered the following graduate courses suitable for physics and physical science teachers:

PHY500 (3cr) Physics Education Research Seminar. ONLINE 24Jan05-13May05 BSC BlackBoard Conferencing System. Taught by Dr. Dan MacIsaac, a practical introductory guide to PER for MS/HS physics teachers. <[2004 Syllabus](#)>.

PHY507 (3cr) Teaching Mechanics for K-8 Teachers + (blocked; you must take both courses)
EDU 671 (3cr) Constructing Science Understanding Arr Sat and Tues eves, BSC Campus. Taught by Dr. David Henry, content with pedagogical methods and Science education research for K-8 science teachers. <henryd@buffalostate.edu>.

PHY520 (3cr) Modern Physics for HS Teachers. 24Jan05-13May05 Weds evenings 5:00-8:00pm, BSC Campus. Taught by Dr. Mike DeMarco, content review for the NYSED physics CST exam with pedagogical methods for MS/HS physics teachers. <[2003 Syllabus](#)>.

PHY690 (3cr) MEd Masters Project. ONLINE 24Jan05-13May05, BSC BlackBoard Conferencing System. Conducted by Dr. Dan MacIsaac, penultimate scholarly activity for the MEd (Phys) degree.
 <macisadl@buffalostate.edu>.

SCI685 (3cr) Eval in Sci Educ. Weds eves *OR ONLINE* 24Jan05-13May05, BSC BlackBoard Conferencing System. Conducted by Dr. Joe Zawicki, includes standardized test analyses appropriate for PHY690 projects. <zawickijl@buffalostate.edu>.

In **Fall 2004**, we offered the following graduate courses suitable for physics and physical science teachers:

PHY518 (3cr) Waves and Optics for HS Teachers. 30Aug04-10Dec04 Weds evenings 5:00-8:00pm, BSC Campus. Taught by Dr. Dan MacIsaac, content review for the NYSED physics CST exam with pedagogical methods for MS/HS physics teachers.
 <macisadl@buffalostate.edu>.

PHY690 (3cr) MEd Masters Project. ONLINE 30Aug04-10Dec04, BSC BlackBoard Conferencing System. Conducted by Dr. Dan MacIsaac, penultimate scholarly activity for the MEd (Phys) degree.
 <macisadl@buffalostate.edu>

Summer 2004. Physics Teaching Pathways summer physics academy 2004 courses were:

PHY594A (3cr) Pushing Pulling Flying and Floating for NYS K-8 Teachers. 1 week: 28Jun04-2Jul04 8am-4:30pm MTWRF at SUNY-Jamestown Community College. Taught by Prof. Marie Plumb, Dr. Mike Jabot and colleagues. This course is specifically designed for elementary and middle school teachers interested in gaining confidence in their understanding of the nature of force. This course will focus on a few major understandings, including socially constructed definitions of force, gravity, balancing forces, buoyancy and flying, density, and simple machines. Taught via reformed teaching methods so as to teach both content and pedagogy. [Summer Session A](#). <[Registration](#), [Flyer & Schedule](#), [Scholarships](#)>.

PHY620 (6cr) Powerful Ideas & Quantitative Modeling in Mechanics. 13 days: 7-23Jul04 8am-4pm MTWRF. Taught by Dr. Dan MacIsaac, Dr. Dewayne Beery and colleagues, designed for MS/HS physics teachers interested in teaching force, motion and energy using a modeling curriculum. Teachers in this course will work through the renowned Modeling Physics curriculum as modified to meet NYS Core Curriculum needs as both students and teachers, learning modeling pedagogy and the use of modeling methods such as whiteboarding, system schema and energy pie charts and more. Taught via reformed teaching methods. [Summer Session B](#). <[Registration](#), [Flyer & Schedule](#), [Scholarships](#)>.

PHY510 (6cr) Process Skills in Physics Teaching for New Physics Teachers. 2 weeks: 9-20Aug04 8am-5pm MTWRF. Taught by Dr. David Henry, Dr. Joe Zawicki and colleagues, content and pedagogy designed for new physics teachers. Previously known as the institute for new physics teachers, this acclaimed workshop presents an introduction to the physics, activities and curricular issues faced by newly assigned physics teachers. [Summer Session C](#). <[Registration](#), [Flyer & Schedules](#), [Scholarships](#)>.

In Spring 2004, we offered the following graduate courses suitable for physics and physical science teachers:

PHY500 (3cr) Physics Education Research Seminar. ONLINE 26Jan04-13May04 BSC BlackBoard Conferencing System. Taught by Dr. Dan MacIsaac, a practical introductory guide to PER for MS/HS physics teachers. <[2003 Syllabus](#)>.

PHY525 (3cr) Nuclear & Particle Physics for HS Teachers. 26Jan04-13May04 Weds evenings 5:00-8:00pm, BSC Campus. Taught by Dr. Dewayne Beery, content review for the NYSED physics CST exam with pedagogical methods for MS/HS physics teachers. <[2003 Syllabus](#)>.

PHY594 (3cr) Teaching Mechanics for K-8 Teachers. 4-8pmT+9am-2pmSat; ends 3/24, BSC Campus. Taught by Dr. David Henry, content with pedagogical methods for K-8 science teachers. <henryd@buffalostate.edu>.

PHY690 (3cr) MEd Masters Project. ONLINE 26Jan04-13May04, BSC BlackBoard Conferencing System. Conducted by Dr. Dan MacIsaac, penultimate scholarly activity for the MEd (Phys) degree. <macisadl@buffalostate.edu>.

This page is <<http://physicsed.buffalostate.edu/programs/>>.
Dan MacIsaac