




NSF-Noyce Scholars Partnership of Western NY

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National and NYS Demand

- Teacher shortages exist in specific content areas, under certain salaries and working conditions (rural and urban settings).
(Darling-Hammond, 2000)
- Teacher shortages, ranked by national demand, exist in special education, mathematics, *physics*, chemistry, and Spanish
(AAEE, 2003)
- During the 2001-2002 School Year:
 - Only 70% of NYS Physics teachers were permanently certified
 - 40% were over 50 years of age or older
(New York State Education Department, 2002)

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Table 3 Relative Demand by Field			
Fields with Considerable Shortage (3.00 - 4.21)			
Emotional/Behavior Disorders	4.42	Business Manager	3.38
Severe/Profound Disabilities	4.26	Shooting	3.37
Mathematics Education	4.20	Counselor	3.36
Physics	4.20	Occupational Therapist	3.36
Mental Retardation	4.20	Elementary - Middle	3.35
Mild/Moderate Disabilities	4.20	Agriculture	3.34
Learning Disability	4.20	Civil/General Education	3.33
Fields with Some Shortage (1.20 - 3.41)			
Chemistry	4.20	Languages - Classics	3.32
Multi-sensory	4.20	Languages - French	3.31
Visually Impaired	4.19	Music - Instrumental	3.29
Hearing Impaired	4.17	School Social Worker	3.26
Bilingual Education	4.10	Music - Vocal	3.23
Technology Education	4.09	Music - General	3.21
Languages - Spanish	3.96	Human Resources Director	3.21
Early Childhood	3.96	Languages - German	3.22
Dual Certificate (Gen/Spe.)	3.92	Speech Education	3.19
English as a Second Language	3.92	Classroom Director	3.18
Speech Pathologist	3.91	English Language Arts	3.19
Biology	3.89	Business Education	3.07
Audiologist	3.88	Elementary - Intermediate	3.03
Early Childhood Special Education	3.87	Journalism Education	2.97
General Science	3.81	Elementary - Pre-Kindergarten	2.95
High School Principal	3.77	Driver Education/Traffic Safety	2.94
Science/Health	3.67	Art/Vocal Education	2.90
Computer Science Education	3.65	Elementary - Primary	2.88
Middle School Principal	3.65	Theater/Drama	2.87
Library Science/Media Technology	3.60	Elementary - Kindergarten	2.85
Elementary Principal	3.59	Health Education	2.83
Special Psychology	3.52	Social Studies Education	2.83
Physical Therapist	3.48	Fields with Some Surplus (2.00 - 1.81)	
School Nurse	3.44	Physical Education	2.55
Languages - Japanese	3.44	Driver Education	2.54
Home Economics/Consumer Science	3.42	None	1.80 - 1.00
<small>From data supplied by survey respondents. In some instances, the average # of total open filled spots and total waiting is not provided.</small>			

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Addressing the Demand

Noyce – supports transition of STEM professionals and content majors into teaching

- BSC Pathways
 - Alternative certification
 - Differs from traditional certification pathways
 - Usually avoids student teaching

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Buffalo State College

- Students:
 - - 740 evening-only students
 - - 450 disabled students
- Undergraduate students
 - 28% major in education
 - many are first in family to attend college
- SUNY BSC
 - Classes are typically small
 - First and largest SUNY Institution with NCATE Accreditation
 - Carnegie Master's I institution specializing in Bachelors and Masters -level students

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The WNY Noyce Partnership

- STEM and education faculty of SUNY Buffalo State College (BSC)
- 99 Western New York school districts (5 BOCES)
- BSC Center for Excellence in Urban and Rural Education (CEURE)
- Other SUNY colleges
- High-needs LEAs

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NSF-Noyce WNY Partnership for New Science and Math Scholars

- Undergraduate Scholarships or Graduate Stipends for students entering STEM Certification programs.
- The NSF Grant provides ~500 K for four years (Fall '04-Spring '08)



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Funding Overview

- Maximum award of \$8500 per year
 - Enrollment in STEM Certification program (Undergraduate or Graduate)
 - Up to two years of support (junior and senior years)
- Award Recipients
 - teach two years (high needs districts) for every year of support
 - participate in seminars

The screenshot shows a complex document with multiple overlapping windows. One window displays a table with columns for 'Academic Year', 'BSED Physics', 'BSED Mathematics', and 'Total STEM Teachers'. Another window shows a list of bullet points under the heading 'STEM Certification Program'. A third window shows a list of bullet points under the heading 'Award Recipients'. The document appears to be a detailed report or manual related to the funding overview.

Impact on STEM Production

Table 2. Recent BSC physics, mathematics and STEM teacher production (1998-2003).

Academic Year	BSED Physics	BSED Mathematics	Total STEM Teachers
1998-1999	2	21	59
1999-2000	3	17	58
2000-2001	-	20	51
2001-2002	3	16	59
2002-2003	5	20	60

* This number includes 15 majors certified for Fall 2002 and 5 potentially for Spring 2003.

Projected numbers, certification

Table 4. Projected numbers of individuals pursuing alternate & secondary certification 2003-2008.

Academic Year	Physics ¹ Alt. & Sec. Certification	Mathematics Secondary Certification	Total STEM Teachers
2003-2004	0	3	37
2004-2005	1	6	47
2005-2006	2	6	53
2006-2007	3	10	64
2007-2008	3	10	69

¹ began Spring 2003

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M.S.Ed. Physics – Enrollment & Growth

Candidates	Sept '02	Sept '03	May '04	May '05
Active	3	17	22	26
seeking certification	2	9	20	23
hold certification	1	8	12	6
Underrepresented and women	0	3	5	8

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Alt Cert Program Activity & growth:

Candidates	May '03	May '04	May '05
Admitted	2	12	19
Active	2	10	13
In mentored teaching positions	0	2	5
Moving into mentored teaching positions	2	5	5
Completed program	0	0	1

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Candidates to date...

	<i>Spring 2005</i>
Applications	11
Supported	10
Funding	\$42,500
Completed	1
Mathematics	9
Physics	1
Females	5
Minorities	6

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The bottom line...

- Participants must complete their certification program within two years; they must meet their teaching commitment within six years of completion of the program.
- Participants who fail to meet the teaching requirement will be expected to repay the NSF the amount of their Noyce support plus 5% (fixed annual interest).

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Issues

- Movement of candidates
- Identification of high needs districts
- Support cycles (\$8500 per year vs. \$4250 per semester vs. costs in summer programs)

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In Conclusion

- There is a substantial need for new physics & math teachers in New York State
- Alternative certification programs, such as the PTP project at BSC, lead to retention in teaching beyond the third year
- The NSF-Noyce WNY Partnership for New Science and Math Scholars supports teacher candidates as they move toward certification

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American Association for Employment in Education, Inc. (2003). *2003 Executive Summary: Educator Supply and Demand in the United States*. Columbus, OH: AAE. Available from <http://www.aee.org>.

Darling-Hammond, L. (2000). *Solving the dilemmas of teacher supply, demand and standard: How we can ensure a competent, caring and qualified teacher for every child*. Washington: National Commission on Teaching & America's Future. ED463337

MacIsaac, D.L., Henry, D., Zawicki, J.L., Beery, D. & Falconer, K. (2004). A new model alternative certification program for high school physics teachers: New pathways to physics teacher certification at SUNY-Buffalo State College. *Journal of Physics Teacher Education Online*, 2(2), 10-16.

Willie-Schiff, N. (2003). Private communication of NYSED physics teacher data 1970-present. NYSED, Albany.

Resources:

This talk –

<http://physicsed.buffalostate.edu/pubs/NJSTA/Fal105>

Alt Cert at SUNY-BSC -

<http://physicsed.buffalostate.edu/pubs/JPTEO>

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