

**NTID Department of Science and Mathematics**

**Proposal for  
Associate of Science (A.S.) Degree in Applied Science**

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## 1. PROGRAM DESCRIPTION AND PURPOSE

Provide a narrative overview of the proposed (or revised) program that includes the following:

**a. Provide a brief description of the program, as it will appear in the institution's catalog.**

The Associate of Science (A.S.) in Applied Science program is designed to prepare deaf and hard-of-hearing students who are close to, but not fully ready for, direct entry into a baccalaureate-level program in science with a pathway for completing the coursework taken during the first two years of a B.S. program in RIT's College of Science or College of Health Sciences and Technology. It is a bridge program for qualified students based on academic transcripts, scores on admissions tests, and other evidence that supports a reasonable expectation of success in baccalaureate coursework. By combining preparatory studies in math and English with baccalaureate-level science, math, and liberal arts courses, students can qualify to transfer as juniors into a bachelor's program in biochemistry, biology, biomedical sciences, chemistry, or environmental science depending on the coursework taken for the A.S. degree.

**b. List educational and (if appropriate) career outcomes. Describe any specific curricular features that incorporate rigorous academic and career preparation. Educational Outcomes must map directly to Program Assessment Plan (section 10a)**

The primary goal of the A.S. in Applied Science program is to provide an appropriate and effective pathway to prepare qualified deaf and hard-of-hearing students for admission into certain baccalaureate programs offered by RIT's College of Science (COS; biochemistry, biology, chemistry, and environmental science) and College of Health Sciences and Technology (CHST; biomedical sciences) as juniors. Students will acquire not only the foundational skills necessary for success in the scientific field of their choice, but they will also develop skills in communication, critical thinking, problem solving and mathematics necessary for success at the baccalaureate level. Students' technical and general education courses will provide a basis for their life-long learning by incorporating opportunities for gathering, organizing and presenting information. Personal integrity, ethical behavior and professionalism will be expected in all classes. Students will be encouraged to grow in civic and cultural awareness and social responsibility through participation in multiple living and learning offerings within NTID and across the university.

The educational goals (numbered points) and outcomes (lettered subpoints) for this program are:

- 1) Demonstrate foundational mathematical skills
  - a) Demonstrate competency in a college-level algebra course
- 2) Integrate and apply knowledge and laboratory skills in the chemical sciences

- a) Demonstrate competency in introductory general chemistry coursework
- 3) Develop and integrate scientific knowledge relevant to the chosen A.S. professional electives track
  - a) Demonstrate competency in the professional electives courses for the A.S. degree
- 4) Provide an effective pathway to qualified deaf and hard-of-hearing students for admission into RIT baccalaureate programs or scientific career opportunities.
  - a) Acquire foundational applied scientific knowledge for academic and career success

This program incorporates a number of features toward the goal of providing students with a rigorous academic preparation. RIT has a proven history of educating deaf and hard-of-hearing students on campus in either separate (NTID) or mainstream (other colleges of RIT) classrooms. Through this model, NTID faculty members use numerous strategies such as spoken English and direct in-class use of sign language for instruction and class sizes are small (generally 12 students or less). In the mainstream classroom, where courses are taken with students at the baccalaureate level, NTID's Department of Access Services provides interpreters and captionists. NTID faculty members serve as tutors for the deaf and hard-of-hearing students who are enrolled in these courses.

All of the science courses incorporated into this program are taught in a mainstream environment by the home college (COS or CHST). To ensure that students have a proper foundation in mathematics, some NTID math and statistics courses have been built into the A.S. in Applied Science program. Once these courses have been completed, a student continues with COS calculus and, if appropriate to the intended major, statistics. Baccalaureate-level English and liberal arts coursework is also required as part of this program. Such courses are either taught in the mainstream or by NTID instructors.

**c. Describe how the program fits with and advances the institution's mission, vision, values, and reputation.**

The program proposal addresses the following criteria in the Academic Portfolio Blueprint and these are expanded upon in subsequent sections of the proposal.

**1. Centrality**

The A.S. in Applied Science degree supports the goals of both the NTID Strategic Decisions 2020 (SD 2020) and the RIT Strategic Plan 2015-2025. SD 2020 calls for additional associate+bachelor ("A+B") programs in the NTID portfolio. This A.S. degree program clearly fits this goal by allowing students to take coursework that parallels the first two years of a bachelor degree program. Further, RIT's strategic plan has specific objectives for including increasing the number of deaf and hard-of-hearing STEM graduates (Difference Maker III.5 and Objectives III.5.1 and III.5.2). This program provides just such a pathway.

## **2. Marketability**

The number of students (three-year average of 8 students annually) in NTID's existing one-year non-degree-granting science pre-baccalaureate program demonstrates initial evidence of the need for a program to prepare students for entry into and success in RIT's science B.S. programs. It is anticipated that additional students will be attracted to RIT/NTID because academic coursework will lead to the awarding of an A.S. degree prior to entry to the B.S. program of choice.

## **3. Quality**

The A.S. in Applied Science will prepare students for entry into a baccalaureate program and will provide them with experiences based on RIT's published educational and access goals. Students will acquire not only foundation skills necessary for success in the scientific field of their choice, but they will also develop skills in communication, critical thinking, problem solving and mathematics necessary for success at the baccalaureate level. Students' technical and general education courses will provide a basis for their life-long learning by incorporating opportunities for gathering, organizing and presenting information.

## **4. Synergy and Interdisciplinarity**

This degree replaces and expands upon the existing one-year non-degree-granting science pre-baccalaureate program by creating a new degree-granting program that fosters integration between NTID and RIT's College of Science, College of Health Sciences and Technology, and (through supporting coursework in English and the liberal arts) the College of Liberal Arts. This program allows students to satisfy the first- and second-year requirements of one of five particular science-focused baccalaureate programs through the completion of any necessary preparatory coursework in math and English taught by NTID instructors as well as baccalaureate-level courses offered through the other colleges. Further, as part of their studies, students must satisfy the liberal arts requirements for the A.S. degree by completing Writing Seminar and four baccalaureate-level perspectives (artistic, ethical, global, and social) courses. Upon completion of the A.S. degree the vast majority of coursework can be applied toward the B.S. program, allowing for a smooth transition from A.S. to B.S. degree.

## **5. Inclusive Excellence**

Through Difference Maker I.3, RIT's Strategic Plan 2015-2025 calls for the university to "further enhance its position as the preeminent academic institution and model for professional and technical education for people who are deaf or hard of hearing around the world." Toward this goal, this A.S.

program will provide a path for deaf and hard-of-hearing students, not only through preparatory coursework but also through the availability of access and support services, to enroll and succeed in baccalaureate programs in RIT's College of Science and College of Health Sciences and Technology. This new degree program therefore will support the entry of this under-represented class of students in select STEM academic fields.

## **6. Financial Viability**

As summarized in the NTID cost model included in this proposal, the program will be financially viable with expenditures balancing revenue. This outcome is in keeping with NTID budgetary guidelines, which include the use of NTID tuition and federally appropriated funds. The A.S. in Applied Science program will be created, developed, and managed using the annual budget of the NTID Department of Science and Mathematics. The expectation is for minimal additional costs and no new faculty hires.

- d. Describe the justification and documented need for this program and how this program contributes to RIT's strategic plan priorities and key result areas. Document and discuss the sources used and evidence collected that a need for program exists.**

Currently, NTID-supported students whose qualifications are above those needed for entry to NTID's Laboratory Science Technology A.A.S. program but who are not accepted directly into programs in RIT's College of Science or College of Health Sciences and Technology enter the one-year non-degree-granting NTID science pre-baccalaureate ("pre-bacc") program. Students' placement in the pre-bacc program is confirmed by their performance on English and math placement exams during NTID's summer orientation program. While in this program, students generally complete one two-semester science course sequence in the College of Science and also liberal arts courses and any preparatory English and math that they need during their one year in the program. However, just like students who progress through RIT's University Studies, NTID's pre-bacc students do not earn a degree upon completion of the program. The proposed A.S. in Applied Science program therefore incorporates coursework and experiences that intentionally prepare students to succeed once they enter COS and CHST B.S. programs and it provides them with a degree-granting pathway to finish the first half of a true "A+B" program by completing courses that satisfy the freshman and sophomore course requirements in COS and CHST baccalaureate programs. As such, this A.S. program will provide a clearer and more structured path to a B.S. degree than does the pre-bacc program, thereby serving as a benefit to the recruitment of students.

The proposed A.S. program in Applied Science also has an important advantage over the current pre-baccalaureate program that can impact recruitment and retention. Community colleges already provide this kind of degree with a number of students transferring to RIT upon completion of the associate degree. The academic model is

therefore already proven elsewhere and also has already been established with success within NTID given the existing A+B programs in Applied Computer Technology, Applied Liberal Arts, Business, and Hospitality and Service Management. Further, students who transfer out of the existing science pre-baccalaureate program but do not complete a bachelor's program will likely leave RIT without any degree at all. Under this proposed program, students who complete the required coursework but do not complete the bachelor's program still will have earned an associate degree from RIT/NTID with a foundation in science.

**e. Describe curricular features that:**

- **Facilitate and support student and faculty scholarship, research, and creativity.**

Although this program does not explicitly include features that facilitate and support scholarship or research activities via the indicated curriculum, there will be numerous opportunities available to students to engage them in such work. Students will be enrolled in courses taught by faculty members from RIT's College of Science and will be taught and/or tutored by faculty in the NTID Department of Science and Mathematics. Many of these faculty members lead their own research projects and invite undergraduate students to participate. Students will also have the opportunity to participate in summer research opportunities at other universities or, through the assistance of the NTID Center on Employment, they may secure summer employment in their field. Opportunities to receive credit for on-campus research or a designation on the student's transcript noting the completion of a work-related internship are available either through the NTID Department of Science and Mathematics or the B.S. - granting department.

- **Address emerging disciplines.**

This program does not explicitly include features that address emerging disciplines, but such information can be (and often is) included in any of the courses included in the curriculum. Faculty members often use examples of new and emerging technologies and ideas in freshman- and sophomore-level courses to stimulate interest and to demonstrate the applicability of the coursework.

**f. With the exception of general education requirements, describe and list documented curricular interconnections and integration between this program and other disciplines, programs and colleges at the University (e.g., minors, concentrations, B.S. /M.S. options).**

This program requires strong interconnection and integration with B.S. programs in RIT's College of Science and College of Health Sciences and Technology to ensure that students are taking courses that will prepare them for these programs and that will apply toward the B.S. major once the transfer occurs. Articulation agreements for each



of the five Bachelor of Science programs with which this associate degree program is connected have been developed and these can be found starting on page 41.

**g. Describe the role of faculty in the program's design.**

The general design of this program is modeled not only after that of two-year A.S. degrees offered by community colleges to prepare students to transfer into a B.S. degree at a four-year institution but also on NTID's several existing A.S. degree programs, which prepare students to transfer into a B.S. program within RIT. Most notably, a number of course tracks have been built into NTID's A.S. in Applied Liberal Arts degree program such that students work toward entry into one of a number of baccalaureate programs within the College of Liberal Arts. In this vein, the courses (or their non-major equivalents) that currently comprise the first two years of the biochemistry, biology, biomedical sciences, chemistry, and environmental science B.S. programs have been built into this program. Discussions with the COS and CHST chairpersons in whose departments the baccalaureate programs are housed were used to confirm the selection of these courses and to develop the transfer articulation agreements that are included herein. Once the required courses for each of the five majors were determined, they were presented to and discussed by the faculty of NTID's Department of Science and Mathematics who then reviewed the proposal.

**h. Describe the input by external partners, if any (e.g., employers and institutions offering advanced educational programs). In your response, draw from the information you have solicited from external partners reported in Appendix D.**

Because the program that is being proposed is intended to prepare students for entry into a baccalaureate degree and not necessarily for entry into the workforce, the main input that has been provided in the development of this proposal has been from academic units that are within RIT. However, given the strong preference by employers to hire students who have completed a four-year degree, several letters of support have been solicited from corporate and university partners where students have previously been placed in internship positions. These letters indicate the desire by these institutions for a mechanism by which deaf and hard-of-hearing students can obtain a baccalaureate-level education in science.

**i. Provide enrollment projections for Year 1 *through* Year 5. In arriving at these projected enrollments, consult with Enrollment Management. Include other documentation and provide a formal certification of enrollment projections from VP for Enrollment Management and Career Services in Appendix B, which explains the underlying enrollment assumptions and projection model.**

According to projections prepared by NTID Enrollment Management Director Scott Hooker and endorsed by Senior Vice President for Enrollment Management & Career Services James Miller, the proposed A.S. in Applied Science program over the first five (5) years appears in the table below. The projection for eight students who are not incremental to NTID is consistent with the three-year average of eight students in the

one-year Pre-Baccalaureate Science program reported in the RIT 2015-16 Annual Program Analysis. The number of students new to RIT/NTID is projected to begin with two and is expected to stabilize at six by the fifth year.

Year	Internal Transfer	Would come to NTID without Program	New to NTID	Persisting	Total
1	1	7	2		10
2	1	7	3	9	20
3	1	7	4	10	22
4	1	7	5	11	24
5	1	7	6	12	26

**j. Describe what the annual retention rate target, graduation rate target, and job placement rate target are for this proposed program.**

Retention from the first year to the second, indicated in the table above as all but one student persisting to year two, should be approximately 86% by year five, which is consistent with what is experienced by other NTID two-year A+B programs, such as Applied Computer Technology, Business, and Applied Mechanical Technology.

The anticipated graduation rate for the A.S. in Applied Science program is expected to be 50% based on comparison with other NTID programs that have a similar academic profile. This projection was determined by Rich Dirmyer, NTID Director of Institutional Research and Assessment, as explained on p. 63.

There is no projected job placement rate since this is an A.S. degree intended to prepare students for enrollment in a B.S. program.

**2. PROGRAM COURSES AND SCHEDULE**

**a. Using Table 1a for undergraduate programs or Table 1b for graduate programs, list all required and elective courses in the program and show how a typical student would progress through the program.**

A generic undergraduate program mask (Table 1a) has been developed for this degree program and is presented on the following page. Lists of courses for each the five specified tracks follow.

**PROGRAM COURSES AND SCHEDULE**

**Table 1a: Undergraduate General Program Mask:**

Term: Fall 1						Term: Term: Spring 1					
Check course classification(s)						Check course classification(s)					
Course Number & Title	CR	LAS	Maj	New	Prerequisite(s)	Course Number & Title	CR	LAS	Maj	New	Prerequisite(s)
NCAR-010 Freshman Seminar	0					LAS Elective §	3	X			
LAS Perspective 6 (CHMG-141 General & Analytical Chemistry I or BIOL-101 General Biology I)*	3	X			Co-requisite CHMG-145 or BIOL-103	Professional Elective 1 (CHMG-142 General & Analytical Chemistry II or BIOL-102)*	3		X		CHMG-141 or BIOL-101 Co-requisite : CHMG-146 or BIOL-104
Professional Elective Lab (CHMG-145 General & Analytical Chemistry I Lab or BIOL-103 General Biology I Lab)	1		X		Co-requisite CHMG-141 or BIOL-101	Professional Elective 1 Lab (CHMG-146 General & Analytical Chemistry II Lab or BIOL-104 General Biology II Lab)*	1		X		CHMG-141 and 145 Co-requisite: CHMG-142 or BIOL-102
LAS First Year Elective (UWRT-100 Critical Reading and Writing if required based on placement test)	3	X				FYW UWRT-150 Writing Seminar (or other FYW course)	3	X			UWRT-100 or placement
LAS Elective 1 Math (NMTH-275 Advanced Mathematics)*	3	X			NTID Math Placement Score ≥ 40	LAS Elective 2 Math (NMTH-220 Trigonometry or NMTH 250 Elementary Statistics)*	3	X			NTID Math Placement Score ≥ 40
LAS Perspective 1 Wellness	3 0	X				LAS Perspective 2	3	X			
Term credit total:						Term credit total:					
13						16					
12		1						12		4	
Term: Fall 2						Term: Spring 2					
Check course classification(s)						Check course classification(s)					
Course Number & Title	CR	LAS	Maj	New	Prerequisite(s)	Course Number & Title	CR	LAS	Maj	New	Prerequisite(s)
Professional Elective 2	3		X			Professional Elective 4	3		X		
Professional Elective 2 Lab	1		X			Professional Elective 4 Lab	1		X		
Professional Elective 3	3		X			Professional Elective 5	3		X		
Professional Elective 3 Lab	1		X			Professional Elective 5 Lab	1		X		
LAS Elective 3 Math *‡	3	X			MATH-161: C- or better in NMTH-275 MATH-171: C- or better in NMTH-220 and NMTH-275	Professional Elective 6	3		X		
LAS Perspective 3	3	X				LAS Perspective 4	3	X			
LAS Elective §	3	X									
Term credit total:						Term credit total:					
17						14					
9		8						3		11	
<b>Program Totals:</b>						<b>Program Totals:</b>					
<b>Credits:</b>		<b>Liberal Arts &amp; Sciences: 36</b>				<b>Major: 24</b>					
<b>60</b>		<b>Elective &amp; Other: 0</b>									

\* The science course taken in the first semester of the first year satisfies the P-6 (Scientific Principles) requirement. The three math/statistics courses count as general education electives for the A.S. degree and as free electives or toward the P-7 (Mathematical) requirement for the B.S. degree depending on the program.

‡ Students take MATH-161 (Applied Calculus) or MATH-171 (Calculus A) depending on their focus area. Students may need to take additional math coursework upon entry to the B.S. program as required by the specific major.

§ This program includes two unspecified LAS Elective courses. Students may wish to take courses that will apply toward the required B.S. immersion and, if they do so, should be mindful to select an immersion that is compatible with the intended baccalaureate program. LAS Elective courses that do not apply toward an immersion may count toward the LAS Electives or Open Electives allotment in the B.S. degree.

As shown in Table 1a, the A.S. in Applied Science program consists of 60 credits taken over four semesters. Depending on the intended baccalaureate major, students take 36 of required and elective liberal arts general education coursework, 24 credits in the scientific focus area, and 0 credits of Freshman Seminar and a wellness course. The courses taken as part of the scientific focus area are referred to generally by the term "Professional Elective" in Table 1 although the science lecture course taken in the first semester of the freshman year actually satisfies the general education science (LAS P6) requirement. Liberal arts courses aside, during the freshman year students will take one science sequence as well as supporting math/statistics courses. During the second year, students will take two science sequences in addition to any necessary calculus and statistics coursework. The specific courses taken will depend on the baccalaureate major that the student intends to pursue and are outlined below.

During the first year of the program, students will take one two-semester freshman-level baccalaureate science lecture and laboratory sequence. Students who wish to enter the Biochemistry or Chemistry B.S. programs will take General & Analytical Chemistry I and II. Those who wish to enter Biology, Biomedical Sciences, or Environmental Science will take General Biology I and II. Assuming placement in math/statistics at the NTID level, all students will take Advanced Mathematics (NMTH-275) as well as one other course: students who must ultimately complete Calculus A will take Trigonometry (NMTH-220) during the first year whereas those who will eventually enroll in Introduction to Statistics I will take Elementary Statistics (NMTH-250).

In the second year of the program, students will take sophomore-level science courses that build upon the chemistry or biology coursework taken during the first year. The specific courses are indicated below by the student's intended baccalaureate major:

- Biochemistry and Chemistry: Organic Chemistry I/II
- Biology: Cellular and Molecular Biology and General Ecology or Evolutionary Biology
- Biomedical Sciences: Human Anatomy and Physiology I/II
- Environmental Science: Concepts of Environmental Science; General Ecology; and Science, Technology, and Values or Energy and the Environment.

Also during the second year of the program, students will take additional science and math courses as appropriate for the intended baccalaureate major:

- Biochemistry: General Biology I/II and Calculus A/B
- Biology and Biomedical Sciences: General & Analytical Chemistry I/II, Applied Calculus, and Introduction to Statistics I
- Chemistry: Quantitative Analysis, Analytical Methods Lab, University Physics IA, Calculus B
- Environmental Science: General & Analytical Chemistry I/II and Applied Calculus

In addition to taking the necessary math/statistics and science coursework, students will take courses in the liberal arts to satisfy the RIT general education perspectives and First Year Writing requirements. Students who do not place directly into UWRT-150 must take UWRT-100 in Fall Year 1 as their LAS First Year Elective. Those who do place into UWRT-150 may take any other LAS general education course to satisfy the LAS First Year Elective requirement. Also included are two unspecified three-credit LAS general education courses. Students may wish to satisfy this requirement by taking courses that will apply toward the required B.S. immersion and, if they do so, should be mindful to select an immersion that is compatible with the intended baccalaureate program. LAS Elective courses that do not apply toward an immersion may count toward the LAS Electives or Open Electives allotment in the B.S. degree depending on the amount of each allowed in the B.S. program.

A full tabulation of the LAS P6 (\*), LAS electives (‡) and professional electives (§) required for each of the five science focus areas is as follows.

<b>BIOCHEMISTRY FOCUS</b>	
<b>Course Number</b>	<b>Course Title</b>
CHMG-141 *	General & Analytical Chemistry I
NMTH-275 ‡	Advanced Mathematics
NMTH-220 ‡	Trigonometry
MATH-171 ‡	Calculus A
CHMG-142 §	General & Analytical Chemistry II
CHMG-145 §	General & Analytical Chemistry I Lab
CHMG-146 §	General & Analytical Chemistry II Lab
CHMO-231 §	Organic Chemistry I
CHMO-235§	Organic Chemistry I Lab
CHMO-232 §	Organic Chemistry II
CHMO-236 §	Organic Chemistry II Lab
BIOL-101 §	General Biology I
BIOL-102 §	General Biology II
BIOL-103 §	General Biology I Lab
BIOL-104 §	General Biology II Lab
MATH-172 §	Calculus B

<b>BIOLOGY FOCUS</b>	
<b>Course Number</b>	<b>Course Title</b>
BIOL-101*	General Biology I
NMTH-275 ‡	Advanced Mathematics
NMTH 250 ‡	Elementary Statistics
MATH 161 ‡	Applied Calculus
BIOL-102 §	General Biology II
BIOL-103 §	General Biology I Lab
BIOL-104 §	General Biology II Lab

BIOL-201 §	Cellular and Molecular Biology
BIOL-240 or BIOL-265 §	General Ecology or Evolutionary Biology
CHMG-141 §	General & Analytical Chemistry I
CHMG-142 §	General & Analytical Chemistry II
CHMG-145 §	General & Analytical Chemistry I Lab
CHMG-146 §	General & Analytical Chemistry II Lab
STAT-145 §	Introduction to Statistics I

<b>BIOMEDICAL SCIENCES FOCUS</b>	
<b>Course Number</b>	<b>Course Title</b>
BIOL-101*	General Biology I
NMTH-275 ‡	Advanced Mathematics
NMTH-250 ‡	Elementary Statistics
MATH-161 ‡	Applied Calculus
BIOL-102 §	General Biology II
BIOL-103 §	General Biology I Lab
BIOL-104 §	General Biology II Lab
MEDS-250 §	Human Anatomy and Physiology I
MEDS-251 §	Human Anatomy and Physiology II
CHMG-141 §	General & Analytical Chemistry I
CHMG-142 §	General & Analytical Chemistry II
CHMG-145 §	General & Analytical Chemistry I Lab
CHMG-146 §	General & Analytical Chemistry II Lab
STAT-145 §	Introduction to Statistics I

<b>CHEMISTRY FOCUS</b>	
<b>Course Number</b>	<b>Course Title</b>
CHMG-141*	General & Analytical Chemistry I
NMTH-275 ‡	Advanced Mathematics
NMTH-220 ‡	Trigonometry
MATH-171 ‡	Calculus A
MATH-172 §	Calculus B
CHMG-142 §	General & Analytical Chemistry II
CHMG-145 §	General & Analytical Chemistry I Lab
CHMG-146 §	General & Analytical Chemistry II Lab
CHMO-231 §	Organic Chemistry I
CHMO-235 §	Organic Chemistry I Lab
CHMO-232 §	Organic Chemistry II
CHMO-236 §	Organic Chemistry II Lab
CHMA-161 §	Quantitative Analysis
CHMA-165 §	Analytical Methods Lab
PHYS-211A §	University Physics IA

<b>ENVIRONMENTAL SCIENCE FOCUS</b>	
<b>Course Number</b>	<b>Course Title</b>
BIOL-101*	General Biology I
NMTH-275 ‡	Advanced Mathematics
NMTH-250 ‡	Elementary Statistics
MATH-161 ‡	Applied Calculus
BIOL-102 §	General Biology II
BIOL-103 §	General Biology I Lab
BIOL-104 §	General Biology II Lab
ENVS-101 §	Concepts of Environmental Science
BIOL-240 §	General Ecology
CHMG-141 §	General & Analytical Chemistry I
CHMG-142 §	General & Analytical Chemistry II
CHMG-145 §	General & Analytical Chemistry I Lab
CHMG-146 §	General & Analytical Chemistry II Lab
STAT-145 §	Introduction to Statistics I

**b. Identify courses on Table 1 that satisfy RIT's General Education Framework.**

The A.S. in Applied Science program includes 36 semester credit hours (SCH) of coursework to satisfy the various requirements of the RIT General Education Framework. The courses that students will take to satisfy each of the general education requirements are indicated below.

1. First Year Writing (3 SCH)

Students will take UWRT-150 Writing Seminar or an equivalent course.

2. First Year LAS Elective (3 SCH)

It is generally expected that students will satisfy this requirement by taking UWRT-100 Critical Reading & Writing. However, students who place directly into UWRT-150 Writing Seminar will instead need to take any other course that possesses a general education designation in order to satisfy this general education requirement.

3. Perspectives (15 SCH)

- a. LAS Perspective 1 (Ethical): student's choice
- b. LAS Perspective 2 (Artistic): student's choice
- c. LAS Perspective 3 (Global): student's choice
- d. LAS Perspective 4 (Social): student's choice
- e. LAS Perspective 6 (Scientific Principles): CHMG-141 General & Analytical Chemistry I

4. General Education Electives (15 SCH). Students will take three of the following math/statistics courses as appropriate for their intended baccalaureate major:

a. Biology, Biomedical Sciences, and Environmental Science

- i. NMTH-250 Elementary Statistics
- ii. NMTH-275 Advanced Mathematics
- iii. MATH-161 Applied Calculus

b. Biochemistry and Chemistry

- i. NMTH-220 Trigonometry
- ii. NMTH-275 Advanced Mathematics
- iii. MATH-171 Calculus A

Students who place directly into COS math will take three courses as appropriate for the intended B.S. major. However, such an outcome is not expected to be likely given that students who qualify for the A.S. in applied science program will be those who typically test into an upper-level NTID math course, not into COS math.

This program also includes two unspecified three-credit LAS general education courses. Students may wish to satisfy this requirement by taking courses that will apply toward the LAS immersion that is required for the B.S. degree and, if they do so, should be mindful to select an immersion that is compatible with the intended baccalaureate program. LAS Elective courses that do not apply toward an immersion may count toward the LAS Electives or Open Electives allotment in the B.S. degree depending on the amount of each allowed in the B.S. program.

5. Wellness Education: Students will take a wellness course of their own choosing.

**c. For every required course provided by a department other than the program's home department, provide a memo of support in Appendix C from that department, which includes an estimate of incremental costs for offering additional sections or new courses for the proposed program.**

The letters shown in Appendix C from the respective departments that will be impacted by the addition of the new program demonstrate that they are able to support the additional student enrollment into their courses.

**d. If the program will be offered through a non-traditional schedule (e.g., off-campus, on-line, etc.), provide a brief explanation of the schedule, including its impact on financial aid eligibility.**

This program will not necessarily be offered through a non-traditional schedule although students may opt to take any coursework through non-traditional means (e.g., online, during the summer, at another institution for transfer credit) as they see fit.



- e. **For existing courses that are part of the major, submit a copy of the current catalog description.**

**BIOL-101 General Biology I**

This course serves as an introduction to cellular, molecular, and evolutionary biology. Topics will include: a study of the basic principles of modern cellular biology, including cell structure and function; the chemical basis and functions of life, including enzyme systems and gene expression; and the origin of life and evolutionary patterns of organism development on Earth. **Lecture 3, Credits 3 (Fall, Summer)**

**BIOL-102 General Biology II**

This course serves as an introduction to animal and plant anatomy and physiology, in addition to the fundamentals of ecology. Topics will include: animal development; animal body systems; plant development; unique plant systems; Earth's terrestrial and aquatic environments; population and community ecology; animal behavior; and conservation biology. **Lecture 3, Credits 3 (Spring, Summer)**

**BIOL-103 General Biology I Lab**

This course provides laboratory work to complement the lecture material of General Biology I. The experiments are designed to illustrate concepts of basic cellular and molecular biology, develop laboratory skills and techniques for microscopy, and improve ability to make, record and interpret observations. (Co-requisites: BIOL-101 or equivalent course.) **Lab 3, Credits 1 (Fall, Summer)**

**BIOL-104 General Biology II Lab**

This course provides laboratory work to complement the material of General Biology II. The experiments are designed to illustrate concepts of animal and plant anatomy and physiology, develop laboratory skills and techniques for experimenting with live organisms, and improve ability to make, record, and interpret observations. (Co-requisites: BIOL-102 or equivalent course.) **Lab 3, Credits 1 (Spring, Summer)**

**BIOL-201 Cellular and Molecular Biology**

This course will address the fundamental concepts of Cellular and Molecular Biology. Lectures, assignments, and laboratory projects will explore the structure and function of molecules, organelles, and cells and the biological processes they are involved in. Students in this course will gain an understanding of various molecular mechanisms, structure/function relationships, and cellular processes as they relate to cellular and molecular biology. Students in this course will practice and carry out common laboratory techniques used by Cellular and Molecular Biologists including, recombinant DNA technology, cell trafficking, and cloning techniques. (Prerequisites: BIOL-102 or BIOL-122 or (1001-201, 1001-202 and 1001-203) or (1001-251, 1001-252 and 1001-253) or equivalent course.) **Lab 3, Lecture 3, Credits 4 (Fall, Spring, Summer)**

### **BIOL-240 General Ecology**

This course is an introduction to population, community and ecosystem ecology, stressing the dynamic interrelationships of plant and animal communities with their environments. The course includes such ecological concepts as energy flow and trophic levels in natural communities, population and community dynamics, biogeography and ecosystem ecology. (Prerequisites: BIOL-102 or BIOL-122 or (1001-201, 1001-202 and 1001-203) or (1001-251, 1001-252 and 1001-253) or equivalent course.) **Lab 3, Lecture 3, Credits 4 (Fall)**

### **BIOL-265 Evolutionary Biology**

This is a study of the historical framework of evolutionary biology, the meaning and nature of evidence pertinent to biological evolution, The topics include earth history, the evolution of proteins and the genetic code, cellular and metabolic evolution, molecular evolution, neutral theory vs. selection, genetic variation, natural selection, migration, mutation, genetic drift, fitness, population dynamics and genetics, species concepts and speciation, systematics and classification systems, molecular phylogenetics, the evolution of protozoans, plants, fungi, invertebrates and vertebrates, behavioral evolution, interactions among species, historical biogeography, human evolution and variation. (Prerequisites: BIOL-102 or BIOL-122 or (1001-201, 1001-202 and 1001-203) or (1001-251, 1001-252 and 1001-253) or equivalent course.) **Lab 3, Lecture 3, Credits 4 (Fall)**

### **CHMA-161 Quantitative Analysis**

This course will introduce students to quantitative methods. The course will cover gravimetric techniques, equilibria, statistical methods, and solution chemistry. In addition, equilibrium for polyprotic acids, electrochemistry and potentiometry will be discussed. (Prerequisites: CHEM-151 or CHMG-141 or equivalent course. Co-requisites: CHMA-165 or equivalent course.) **Lecture 3, Credits 3 (Fall)**

### **CHMA-165 Analytical Methods Lab**

This laboratory is designed for chemistry and biochemistry majors or those interested in pursuing a minor in chemistry. Experiments include statistics, calibration of equipment, spectroscopy, volumetric analyses, kinetics, Gran Plot, double endpoint titrations, potentiometric titration, photometric determination of copper, and water hardness. (Prerequisites: CHEM-155 or CHMG-145 or equivalent course. Co-requisites: CHMA-161 or equivalent course.) **Lab 6, Credits 1 (Fall)**

### **CHMG-141 General and Analytical Chemistry I**

This is a general chemistry course for students in the life and physical sciences. College chemistry is presented as a science based on empirical evidence that is placed into the context of conceptual, visual, and mathematical models. Students will learn the concepts, symbolism, and fundamental tools of chemistry necessary to carry on a discourse in the language of chemistry. Emphasis will be placed on the relationship between atomic structure, chemical bonds, and the transformation of these bonds through chemical reactions. The fundamentals of organic chemistry are introduced throughout the course to emphasize the connection between chemistry and the other sciences. (Co-requisites:

CHMG-145 or equivalent course.) **Lecture 3, Recitation 1, Credits 3 (Fall, Spring, Summer)**

### **CHMG-142 General and Analytical Chemistry II**

The course covers the thermodynamics and kinetics of chemical reactions. The relationship between energy and entropy change as the driving force of chemical processes is emphasized through the study of aqueous solutions. Specifically, the course takes a quantitative look at: 1) solubility equilibrium, 2) acid-base equilibrium, 3) oxidation-reduction reactions and 4) chemical kinetics. (Prerequisites: CHMG-141 or CHMG-131 or equivalent course. Co-requisites: CHMG-146 Lab.) **Lecture 3, Credits 3 (Fall, Spring, Summer)**

### **CHMG-145 General and Analytical Chemistry I Lab**

The course combines hands-on laboratory exercises with workshop-style problem sessions to complement the CHMG-141 lecture material. The course emphasizes laboratory techniques and data analysis skills. Topics include: gravimetric, volumetric, thermal, titration and spectrophotometric analyses, and the use of these techniques to analyze chemical reactions. (Co-requisite: CHMG-141 or equivalent course.) **Lab 3, Credits 1 (Fall, Spring, Summer)**

### **CHMG-146 General and Analytical Chemistry II Lab**

The course combines hands-on laboratory exercises with workshop-style problem sessions to complement the CHMG-142 lecture material. The course emphasizes the use of experiments as a tool for chemical analysis and the reporting of results in formal lab reports. Topics include the quantitative analysis of a multicomponent mixture using complexation and double endpoint titration, pH measurement, buffers and pH indicators, the kinetic study of a redox reaction, and the electrochemical analysis of oxidation reduction reactions. (Prerequisites: CHMG-141 and CHMG-145 or equivalent course Co-requisites: CHMG-142 or equivalent course.) **Lab 3, Credits 1 (Fall, Spring, Summer)**

### **CHMO-231 Organic Chemistry I**

This course is a study of the structure, nomenclature, reactions and synthesis of the following functional groups: alkanes, alkenes, alkynes. This course also introduces chemical bonding, IR and NMR spectroscopy, acid and base reactions, stereochemistry, nucleophilic substitution reactions, and alkene and alkyne reactions. In addition, the course provides an introduction to the use of mechanisms in describing and predicting organic reactions. (Prerequisites: CHMG- 142 or equivalent course Co-requisites: CHMO-235 or equivalent course.) **Lecture 3, Credits 3 (Fall, Spring, Summer)**

### **CHMO-232 Organic Chemistry II**

This course is a continuation of the study of the structure, nomenclature, reactions and synthesis of the following functional groups: aromatic systems, alcohols, ethers, epoxides, and carbonyls. This course will introduce the use of mechanisms in describing and predicting organic reactions. (Prerequisites: CHMO-231 or CHMO-331 or equivalent course Co-requisites: CHMO-236 or equivalent course.) **Lecture 3, Credits 3 (Fall, Spring)**

### **CHMO-235 Organic Chemistry Lab I**

This course trains students to perform techniques important in an organic chemistry lab. The course also covers reactions from the accompanying lecture CHMO-231. (Co-requisite: CHMO-231 or equivalent course.) **Lab 3, Credits 1 (Fall, Spring, Summer)**

### **CHMO-236 Organic Chemistry Lab II**

This course teaches students to apply basic lab techniques to organic synthetic experiments reactions covered in the accompanying lecture COS-CHMO-232. This course will also help students to solidify the concepts taught in lecture. The course will continue to instruct students in maintaining a professional lab notebook. (Prerequisites: CHMO-235 or equivalent course. Co-requisites: CHMO-232 or equivalent course.) **Lab 3, Credits 1 (Fall, Spring)**

### **ENVS-101 Concepts of Environmental Science**

This course is the foundation course for the Environmental Science major and presents an integrated approach to the interrelated, interdisciplinary principles of environmental science through lecture, case studies and active participation. In this course, the focus will be on sustainability as the foundation for problem solving while investigating a number of environmental issues and establishing environmental literacy. Topics may include biodiversity, ecosystems, pollution, energy, and global climate change. To demonstrate the interdisciplinary methodology of environmental science, elements of government/political science/policy, ethics, economics, sociology, history and engineering are embedded in the scientific matrix used to present this course. **Lecture 3, Credits 3 (Fall)**

### **MATH-161 Applied Calculus**

This course is an introduction to the study of differential and integral calculus, including the study of functions and graphs, limits, continuity, the derivative, derivative formulas, applications of derivatives, the definite integral, the fundamental theorem of calculus, basic techniques of integral approximation, exponential and logarithmic functions, basic techniques of integration, an introduction to differential equations, and geometric series. Applications in business, management sciences, and life sciences will be included with an emphasis on manipulative skills. (Prerequisite: C- or better in MATH-101, MATH-111 or MATH-131 or a math placement exam (MPE) score greater than or equal to 55.) **Lecture 4, Credits 4 (Fall, Spring)**

### **MATH-171 Calculus A**

This is the first course in a three-course sequence (MATH-171, MATH-172, MATH-173). This course includes a study of functions, continuity, and differentiability. The study of functions includes the definition, representations, and the trigonometric functions. Limits of functions are used to study continuity and differentiability. The study of the derivative includes the definition, the basic rules, and implicit differentiation. Applications of the derivative include problems in related rates and curve sketching. (Prerequisite: MATH-111 or NMTH-260 or NMTH-272 or NMTH-275 with a grade of C- or better or a math placement exam (MPE) score greater than or equal to 60) **Lecture 5, Credits 3 (Fall, Spring)**

### **MATH-172 Calculus B**

This is the second course in three-course sequence (MATH-171, MATH-172, MATH-173). This course includes Newton's method, optimization, Riemann sums, the Fundamental Theorem of Calculus, and techniques of integration including substitution, integration by parts, and partial fractions. Applications of the definite integral include the areas between curves, volumes, arc length, and average values of functions are also included.

(Prerequisite: MATH-171 or 1016-171T or 1016-281 or 1016-231 or equivalent course with a grade of C- or better) **Lecture 5, Credits 3, (Fall, Spring)**

### **MEDS-250 Human Anatomy and Physiology I**

This course is an integrated approach to the structure and function of the nervous, endocrine, integumentary, muscular and skeletal systems. Laboratory exercises include histological examination, actual and simulated anatomical dissections, and physiology experiments with human subjects. (Prerequisites: (BIOL-101 and BIOL-102) or (BIOL-121 and BIOL-122) or (1001-201 and 1001-202 and 1001-203) or (1001-251 and 1001-252 and 1001-253) or (MEDG-102 or 1026-213) or NUTR-BS equivalent courses. CHST Multiple Course Prereq 18) **Lab 3, Lecture 3, Credits 4 (Fall)**

### **MEDS-251 Human Anatomy and Physiology II**

This course is an integrated approach to the structure and function of the gastrointestinal, cardiovascular, immunological, respiratory, excretory, and reproductive systems with an emphasis on the maintenance of homeostasis. Laboratory exercises include histological examinations, anatomical dissections and physiological experiments using human subjects. (Prerequisites: (BIOL-101 and BIOL-102) or (BIOL-121 and BIOL-122) or (1001-201 and 1001-202 and 1001-203) or (1001-251 and 1001-252 and 1001-253) or (MEDG-102 or 1026-213) or NUTR-BS equivalent courses. CHST Multiple Course Pre-req 18) **Lab 3, Lecture 3, Credits 4 (Spring)**

### **NCAR-010 Freshman Seminar**

The course provides entering NTID students with opportunities to develop/enhance academic skills, personal awareness, and community involvement in order to maximize their college experience. Students have opportunities to explore and navigate the college environment, develop/reinforce academic skills and participate in service learning opportunities. Students are encouraged to establish meaningful connections with faculty, staff and peers. The course promotes the development of plans for ongoing growth and involvement in class and in the RIT/NTID and/or broader community. **Lecture 2, Credits 0 (Fall, Spring)**

### **NMTH-220 Trigonometry**

This course includes topics from trigonometry with an emphasis on the study of right and oblique triangles, rotational angles, and trigonometric functions and their graphs. An introduction to trigonometric identities is also provided. (Prerequisites: This class is restricted to NTID supported students that have completed NMTH-212 or equivalent course.) **Lecture/Lab 4, Credits 3 (Fall, Spring)**

### **NMTH-250 Elementary Statistics**

An introductory statistics course utilizing a lecture/lab format in which statistics concepts, probability, probability distributions, and bivariate data are studied. Statistical concepts that are essential for an understanding of social and political issues of contemporary life will be emphasized. Statistical software and applications will be introduced. (Prerequisites: This class is restricted to NTID supported students that have completed (UWRT-100 or 0502-111) or NMTH-210 or higher with a grade of C or better or equivalent courses.)

**Lecture/Lab 4, Credits 3 (Fall, Spring)**

### **NMTH-275 Advanced Mathematics**

Topics from pre-calculus mathematics are studied with an emphasis on functions and graphs. Topics include the algebra of functions and the study of inverse functions. Rational, exponential, logarithmic and piecewise-defined functions are among those studied. Students who earn credit for NMTH-275 cannot take NMTH-260 or NMTH-272.

(Prerequisites: This class is restricted to NTID supported students that have completed NMTH-212 or equivalent course with a grade of C- or better.) **Lecture 4, Credits 3 (Fall, Spring)**

### **PHYS-211A University Physics IA**

This is a course in calculus-based physics for science and engineering majors whose performance on the Math Placement Exam resulted in their placement in MATH-181A. Topics include kinematics, planar motion, Newton's Laws, gravitation, work and energy, momentum and impulse, conservation laws, systems of particles, rotational motion, static equilibrium, mechanical oscillations and waves, and data presentation/analysis. The course is taught in a workshop format that integrates the material traditionally found in separate lecture and laboratory courses. (Prerequisites: C- or better in MATH-181 or MATH-181A or MATH-172 or equivalent course. (Co-requisites: MATH-182 or MATH-182A or MATH-172 or equivalent course.) **Lecture/Lab 7.5, Credits 4 (Fall, Spring)**

### **STAT-145 Introduction to Statistics I**

This course will study the statistical methods of presenting and analyzing data. Topics covered include descriptive statistics and displays, random sampling, the normal distribution, confidence intervals, and hypothesis testing. The statistical software MINITAB is used to reinforce these principles and to introduce the use of technology in statistical analysis. This is a general introductory statistics course and is intended for a broad range of programs. Note: This course may not be taken for credit if credit is to be earned in STAT-205. (Prerequisite: MATH-101 or MATH-111 or NMTH-260 or NMTH-272 or NMTH-275 or a math placement exam (MPE) score of at least 55.) **Lecture 3, Credits 3**

**(Fall, Spring, Summer)**

- f. **For all new courses, provide course outlines in the major using [RIT's New or Revised Course Outline Form](#). (Form is available in [Appendix A](#)) Course outlines should include a course description, course credit, objectives, topics, student outcomes, texts/resources and basis for determining grades.**

No new courses are being proposed as part of this degree program.

### 3. FACULTY

- a. **Provide information on Full-time faculty, Part-time faculty and Faculty to be hired in the Program using [Tables 2, 3, and 4](#). Full faculty Curricula Vitae must be included in [Appendix F](#).**

The full-time departmental faculty members who will be teaching courses offered by the home department or who will initially be serving as the program coordinator are indicated in Table 2. The only courses that these faculty members will be teaching are those with the NMTH (NTID mathematics and statistics) designation. All other required science and mathematics courses will be taught in the College of Science or College of Health Sciences Technology by COS and CHST faculty members. Freshman Seminar will be taught by an NTID instructor although not necessarily one from the home department. First-Year Writing, LAS Perspectives and Immersion courses will primarily be taught by COLA although the instructor's home college may be NTID.

FTE faculty allocated for the program will be 1.10 FTE, which includes .10 FTE for the chair/program director, .25 FTE for the baccalaureate degree support coordinator, .50 FTE for instructional/support faculty who will provide tutoring for students taking courses in COS/CHST, and .25 for faculty to teach the two NTID mathematics courses required of each student. This tabulation does not include instructors to teach the First-Year Writing, LAS Perspectives or Immersion courses taught by COLA. See letter of support from James Winebrake in Appendix C and the footnote on Cost Model Table 1 regarding those courses. This FTE calculation also does not include the required COS/CHST courses. See letters of support from Larry Buckley, Paul Craig, and Dan Ornt-Rich in Appendix C and the footnote on Cost Model Table 1 regarding those courses.

No new faculty members will be hired as part of this program. Students admitted to this major will enroll in existing sections of all courses, whether offered by NTID or one of the other RIT colleges. As is currently practiced, should an additional section of an NMTH course be needed, the workload assignment of a given faculty member will be adjusted to add the teaching assignment and to reduce the amount of tutoring expected for the academic term.

Although the following tables request the names of instructors who will be *teaching* courses in the program, a number of departmental faculty members (including some of those who will serve as classroom instructors) will also serve as faculty *tutors* for the

courses offered by the College of Science and College of Health Sciences and Technology. The NTID Department of Science and Mathematics provides tutoring support for all of the COS and CHST courses listed above in Section 2a. The names of existing faculty members who provide this service are given in Section 7.



**Table 2: Current Faculty, Full-Time**

Provide information on faculty members who are full-time at the institution and who will be teaching each course in the major field or graduate program. \*Include and identify the Program Director.

Faculty Member Name and Title/Rank at Institution (include and identify Program Director)	Expected Program Course Assignments**	Percent of Teaching Time to Program	Highest and Other Applicable Earned Degrees and Disciplines (include College/University)	Additional Qualifications: list related certifications/ licenses; professional experience in field, scholarly contributions, other academic affiliations.
Matthew Lynn, Chairperson	n/a	10%	Ph.D. (Chemistry), University of Arizona	Member, American Chemical Society, Assessment Network of New York, and Council of American Instructors of the Deaf
Austin Gehret, Program Director	n/a	25%	Ph.D. (Biophysics), University of Rochester	Member, American Society for Biochemistry and Molecular Biology
Faculty Tutors (variable by semester, see list of current tutors in Section 7)	n/a	50%	Varies by faculty tutor and discipline	Varies by faculty tutor and discipline
Instructors of NMTH courses named in program (variable by semester, see below)	NMTH-220 NMTH-250 NMTH-275	25%^	See below	See below

Mitchell Bacot, Lecturer	NMTH-220 NMTH-250 NMTH-275	^	M.S. (Secondary Education of the Deaf), Rochester Institute of Technology	B.S., (Applied Mathematics), Rochester Institute of Technology
Gary Blatto-Vallee, Senior Lecturer	NMTH-220 NMTH-275	^	M.S. (Professional Studies), Rochester Institute of Technology	A.A.S. (Educational Interpreting), Rochester Institute of Technology
Bonnie Jacob, Assistant Professor	NMTH-220 NMTH-275	^	Ph.D. (Mathematical Sciences), Clemson University	Member, American Mathematical Society and Council of American Instructors of the Deaf
Jacqueline McClive, Lecturer	NMTH-220 NMTH-275	^	M.S. (Applied & Computational Mathematics), Rochester Institute of Technology	A.A.S. (ASL-English Interpretation), Rochester Institute of Technology
Keith Mousley, Associate Professor	NMTH-220 NMTH-275	^	M.A. (Deaf Education), Gallaudet University	B.S. (Computational Mathematics), Rochester Institute of Technology; Graduate specialization in mathematics and deafness
Miriam Santana Valadez, Lecturer	NMTH-220 NMTH-275	^	M.S. (Math, Science, and Technology Education), St. John Fisher College	B.S. (Electrical Engineering), Instituto Tecnológico de Estudios Superiores de Occidente; B.S. (Adolescence Education), Normal Superior Nueva Galicia; graduate bilingual extension
Matthew Stefano, Senior Lecturer	NMTH-220 NMTH-275	^	M.S. (Secondary Education of the Deaf), Rochester Institute of Technology	New York State Teaching Certification (Deaf/Hard of Hearing Endorsement)

Sharron Webster, Principal Lecturer	NMTH-220 NMTH-250 NMTH-275	^	M.S. (Applied Mathematics & Statistics), Rochester Institute of Technology	Math Coordinator, NTID Department of Science and Mathematics
Patricia Spiecker, Senior Lecturer	NMTH-220 NMTH-275	^	M.S. (Secondary Education of the Deaf), Rochester Institute of Technology	B.T. (Electrical Engineering Technology), Rochester Institute of Technology,

**^ Percentage shown represents the % of time teaching in the program if a lecturer were teaching two NMTH courses in a given academic term. This calculation was used to develop the NTID cost model. In reality any NMTH courses taught would be service courses for students in a variety of academic programs, not just those in the A.S. in Applied Science program. Faculty workload assignments vary by semester and can be a combination of teaching and tutoring as departmental needs require. The percentage of time spent teaching as part of the A.S. in Applied Science program is therefore variable and cannot be calculated in a straightforward manner.**

**\*\*Faculty will teach courses as needed. Not all faculty members will teach listed courses every semester.**

**Table 3: Current Faculty, Part-Time**

Provide information on faculty members who are part-time at the institution and who will be teaching each course in the major field or graduate program.

Faculty Member Name and Title/Rank at Institution (include and identify Program Director)	Program Courses which may be Taught	Highest and Other Applicable Earned Degrees and Disciplines (include College/University)	Additional Qualifications: list related certifications/ licenses; professional experience in field, scholarly contributions, other academic affiliations.
Not applicable			

**Table 4: Faculty to be hired**

- If faculty must be hired in the proposed program, specify the title/rank of each new position, the number of new positions, full-time or part-time status, a listing of the expected course assignments for each position, and the expected hiring date.
- Position descriptions and/or announcements may also be submitted.
- Prior to offering the assigned courses, the Department must be notified that a faculty meeting the requirements has been hired.
- These proposed faculty should be reflected in Task 5, Table 5, New Resources

**Full-time Faculty**

Title/Rank of Position	# of New Positions	Minimum Qualifications (including degree and Discipline area)	Expected course Assignments	Expected Hiring Date (mm/dd/yy)
Not applicable				

**Part-time Faculty**

Title/Rank of Position	# of New Positions	Minimum Qualifications (including degree and Discipline area)	Expected course Assignments	Expected Hiring Date (mm/dd/yy)
Not applicable				

#### **4. FINANCIAL RESOURCES AND INSTRUCTIONAL FACILITIES**

**a. Summarize the instructional facilities and equipment needed to ensure the success of the program including:**

- 1. Space – Summarize space needs and incremental costs. Please review Division of Academic Affairs Policy and Procedures for Allocation and Utilization of Space and complete Allocation for Space Request Form, Appendix E.**

In the spirit of the RIT Academic Program Blueprint section IV.a criteria on financial viability, there will be minimal to no incremental costs related to space needs that will be associated with the implementation of this program, which will use existing lab and classroom spaces within NTID, COS, and CHST.

Because this program will not require new space allocations and because it uses existing departmental labs and classrooms, the Allocation for Space Request Form is not necessary and has not been included in this proposal.

- 2. If this program will share lab or studio space/equipment with other programs, please note that here and provide documentation of agreement in Appendix C.**

Students admitted to this major will take seats in sections of courses offered by NTID, COS, and CHST. It is only in this sense that lab space and equipment will be shared with other programs.

- 3. Equipment (renewal / replacement costs and schedule)**

The program will follow the standard NTID 5-year equipment replacement cycle for computers used by faculty and in the NTID classroom computer laboratories. Equipment used in COS and CHST laboratory courses will be refreshed by the home colleges on their own replacement schedule.

- 4. Computer facilities**

The program will follow the standard NTID 5-year equipment replacement cycle for computers used in the classroom laboratories.

- 5. Other space and equipment**

Not applicable.

- b. Complete Table 5 after consultation with RIT Finance and Administration and the preparation by them of the new program financial projections in Appendix G (below). These projections include incremental resources needed including**

personnel (faculty and support personnel [administrative, secretarial, technical, teaching/research assistants]), General Education sections needed, library, equipment, laboratories, supplies and expenses; capital expenditures.

**Science and Mathematics Department**  
**Applied Science Associate of Science Degree Program**  
**Projected Expenditures For The Proposed Program**

**Table 5 – New Resources**

**CONFIDENTIAL**

<b>New Expenditures</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>
Personnel			
Library			
Equipment			
Laboratories			
Supplies & Expenses (Other Than Personal Service) **	\$18,300	\$33,500	\$37,500
Capital Expenditures			
Other ^	\$83,400	\$271,500	\$306,700
<b>Total all</b>	<b>\$101,700</b>	<b>\$305,000</b>	<b>\$344,200</b>

\*\* The amounts in this row represent RIT computer charges for students/faculty/staff involved in the program and minimal travel/conferences costs for faculty. A breakdown of these expenses may be found on Table 1 – Projected Expenditures for the Proposed Program.

^ The amounts in this row represent tuition payments for RIT credits and overhead (RIT indirect costs). A breakdown of these expenses may be found on Table 1 – Projected Expenditures for the Proposed Program.

12/13/16

## 5. LIBRARY RESOURCES

- a. **Summarize the analysis of library resources for this program by the collection librarian and program faculty. Include an assessment of existing library resources and their accessibility to students.**

In her letter of support, Joan Naturale (NTID librarian) provided the following analysis of current library resources that will be available to students in the A.S. in Applied Science program:

*Our current holdings (journals and databases) are at acceptable levels for associates' level programs. This is based on requests for books not published yet and new journal titles.*

*The Wallace library's Science and Health Sciences collection of journals, books, and databases supports the associate degree programs for this proposed program. There is a librarian content specialist for this content area (Dr. Adwoa Boateng) and she works closely with the College of Science and the College of Health Sciences and Technology, ensuring the collections are up-to-date. Her LibGuides on various science-related topics can be accessed [online].*

*The library subscribes to standard core collections of Science and Health Sciences databases and books by professional associations and publishers for example, Ebsco, Proquest, Science Direct, Springer Link, Ebrary, and other databases found [online].*

*There is a strong collection of both print and e-books in these subject areas particularly if one uses specific science and health related terms when searching the RIT Libraries Catalog [online].*

- b. **Describe the institution's response to identified needs and its plan for library development.**

After review of the A.S. in Applied Science program proposal, Joan Naturale stated in her letter of support the following:

*This program will have a minimal impact on the library's services and collection of books, journals, and databases.*

*RIT Libraries now use a demand/user-driven model of acquisition for the majority of its book purchases ensuring books purchased are those that users want.*

*The Wallace library is a member of the Rochester Regional Library Council (RRLC), which provides RIT students, researchers, and faculty access to materials at other Monroe County libraries, using free RRLC Library access cards. Requested journal articles and books not owned by the Wallace Library will be obtained on a timely basis*



*through the library's interlibrary loan and document delivery services (IDS) and ConnectNY.*

## **6. ADMISSIONS AND ENROLLMENT**

### **a. List all program admissions requirements for the proposed program**

**Undergraduate programs: SAT, ACT, high school GPA, transfer GPA, TOEFL score for international students, special requirements (e.g., portfolio).**

Admission to RIT is competitive although each applicant is reviewed holistically to determine their potential for success in their academic program. In general, students seeking admissions to this program are expected to submit records of previous academic performance (high school and/or college) and entrance exam scores, if required. In the case of international applicants, international students whose native language is not English must submit results of the Test of English as a Foreign Language (TOEFL) or International English Language Testing System (IELTS) examination along with demonstrating that other admissions requirements are met.

Specific guidelines for admission include:

The proposed admission requirements are the same as those already established for admitting students into the NTID science pre-baccalaureate program:

- **ACT:** Composite test score of 21 or above with no sub-scores less than 19; students who meet these criteria generally have also been found to satisfy the following criteria for math and English placement.
  - **English:** Placement into Critical Reading and Writing (UWRT-100) or a First Year Writing course, such as FYW: Writing Seminar (UWRT-150);
  - **Mathematics:** NTID Math Placement score greater than or equal to 40, which equates to placement into Advanced Mathematics (NMTH-275). Students will enroll in the mathematics courses required by the intended baccalaureate program. Typically, students entering this major will have completed at least three years of high school mathematics. Once in the program, students will take math courses that are appropriate for their intended focus area.
  - **Science:** Students will enroll in science courses that lead to their intended baccalaureate major. Typically, students entering this major will have completed at least three years of high school science.

### **b. Describe the process for evaluating exceptions to admission requirements**

Admission directly into an NTID academic program happens during the recruiting and admissions process if students meet criteria such as the minimum accepted ACT

scores as they are strong indicators that a student will indeed place into the appropriate math and English level. However, formal confirmation of student placement into the English and math courses indicated in the previous section generally does not happen until students take placement exams during the two-week NTID Summer Vestibule Program (SVP) orientation program immediately prior to the start of fall semester. In some rare instances, students who do not have the required ACT scores for this program during the admission process to NTID do place into the required math and English courses during SVP. When this happens, students meet with an academic advisor and the program director to determine which academic program is the best fit. It is therefore possible for a student to be admitted to the A.S. in Applied Science program via this route.

Students may also wish to transfer into this program from another major. Students who are in a position to enroll in at least Critical Reading & Writing (UWRT-100) and Advanced Mathematics (NMTH-275) in the term when they will start this program will be considered for acceptance as long as they are in good academic standing.

**c. How will institution encourage enrollment by persons from groups historically described as underrepresented in the discipline or occupation?**

NTID has a college-wide marketing effort, sponsored in part by a grant under the Carl D. Perkins Career and Technical Education Act of 2006, administered by the New York State Education Department. Mailings are sent out to identified groups historically described as underrepresented, and NTID has a website available at [www.rit.edu/ntid/options](http://www.rit.edu/ntid/options) that is available for students, parents, and vocational rehabilitation counselors.

## 7. ACADEMIC SUPPORT SERVICES

Personal and career counseling as well as academic advising are provided to NTID students enrolled in A.O.S., A.A.S., and A.S. degree programs. Upon entry, every associate-level NTID supported student is assigned to an NTID counselor/academic advisor who provides both advising and counseling services. Students admitted to the A.S. in applied science program will be no different.

Students who graduate from this A.S. program and are accepted into a B.S.-level major will be assigned an NTID counselor who provides personal and career counseling and will receive academic advising from a designated COS and CHST advisor. Counselors and advisors also work in collaboration with other service providers on campus to assess student-learning competencies and to develop educational interventions where appropriate.

The current professional counselors and advisors who are assigned to students in academic programs offered by the NTID Department of Science and Mathematics are:

- TJ Sanger, Counselor/Academic Advisor, Associate and Baccalaureate levels
- Shyrl Scalice, Career Counselor, Associate level
- Mary Ellen Tait, Career Counselor, Baccalaureate level

Departmental faculty members who provide academic tutoring support for deaf and hard-of-hearing students enrolled in COS and CHST courses are:

- Stacey Davis, M.S. (astronomy and physics)
- Austin Gehret, Ph.D. (chemistry and biochemistry)
- Jane Jackson, M.S. (mathematics and statistics)
- Bonnie Jacob, Ph.D. (mathematics)
- Viet Le, Ph.D. (chemistry and biochemistry)
- Jacqueline McClive, M.S. (mathematics)
- Jason Nordhaus, Ph.D. (astronomy, mathematics, and physics)
- Camille Ouellette, M.S. (biological and health sciences)
- Victoria Robinson, M.S. (physics)
- Sarah Sarchet, M.S. (biological and health sciences)
- Melissa Skyer, M.S. (biological and health sciences)
- Jennifer Swartzenberg, M.S. (chemistry)
- Tyler Swob, M.Eng. (mathematics and statistics)
- Karen Tobin, B.S. (chemistry)
- Sharron Webster, M.S. (statistics)
- Patricia Wink, M.S. (mathematics)

## **8. EXTERNAL REVIEW OF GRADUATE PROGRAMS**

Not applicable to this proposal.

## **9. CREDIT FOR EXPERIENCE**

Not applicable to this proposal.

## **10. PROGRAM ASSESSMENT AND IMPROVEMENT**

- a. Program Level Outcomes Assessment: Provide the program's outcomes assessment plan, displaying program objectives, anticipated program outcomes, and (for each program level outcome) assessment method / measure to be used, criteria, achievement level, benchmark, assessment schedule data collection, plan for reviewing, disseminating, and acting upon results to inform program improvement.**

Please refer to the following pages for the Program Level Outcomes Assessment plan (PLOAP) document. The PLOAP was reviewed and approved by Dr. Laurie Clayton, RIT's Director of Educational Effectiveness Assessment, and incorporates her feedback in the current version of the document.

The items in the PLOAP address section III. j of the Academic Portfolio Blueprint criteria by establishing an evaluation and improvement plan that aligns with the existing RIT guiding documents.

- b. Indicate on program Level Assessment Plan how program outcomes map to RIT's Academic Program Profile**

Refer to the PLOAP presented below.

- c. Accreditation and program review**

- 1. List any external organizations (with the exception of NYSED and Middle States that will evaluate/accredit the program (e.g., accrediting agency, professional society)**

This A.S. program will not be evaluated or accredited by an external organization.

- 2. How frequently will the accreditation evaluation occur?**

Not applicable.

- 3. Indicate how the program has been designed to meet the criteria of that**

**accrediting agency by providing a comparison of the requirements of the accrediting agency and those of the program.**

Not applicable.

**4. Indicate plan for ongoing and formal periodic program review.**

Program information will be gathered and reviewed in a number of ways:

1. PLOAP results will be collected and submitted for review on a yearly basis via RIT's formal outcomes assessment process.
2. The chair and program director of the A.S. program will maintain regular contact with the chairs/heads of the B.S. programs to ensure that the coursework included in this program is appropriate for students who wish to enter the baccalaureate program. Should any changes be warranted, the list of courses for a given track will be modified and approval from the state will be sought if the changes are significant enough.
3. Faculty will undergo a yearly performance review to include the results of RIT's SmartEvals surveys for classroom instructors and NTID's SRS surveys for faculty tutors, counselors/advisors, and employment advisors. The SmartEvals and SRS information collected from students will be used as one measure of gauging the sufficiency and efficacy of the support services provided to them.

### Program Level Outcomes Assessment Plan

Program Name/College: Applied Science /NTID

College Contact for Program Assessment: Matthew A. Lynn, Chair

Program Goals	Student Learning Outcomes	Academic Program Profile	Data Source/Measure Curriculum Mapping	Benchmark	Timeline	Data Analysis Key Findings	Use of Results Action Items and Dissemination
<i>Please List program-level goals</i>	<i>Students will be able to: (task, capability, knowledge, skills, and dispositions) Use measurable verbs.</i>	<i>Alignment to the five RIT essential outcomes - check all that apply</i>	<i>Assessment opportunity (course or experience) method/measures, assignment/rubric</i>	<i>Standard, target, or achievement level (usually a %) Statement of student Success</i>	<i>Identify when and how data are collected, aggregated, and analyzed</i>	<i>Identify who is responsible and list key findings</i>	<i>Identify how results are used and shared. List any recommendations or action items</i>
Acquire foundational mathematical skills to support academic success at the baccalaureate level	Demonstrate competency in college-level algebra	<input checked="" type="checkbox"/> Critical Thinking <input type="checkbox"/> Ethical Reasoning <input checked="" type="checkbox"/> Integrative Literacies <input type="checkbox"/> Global Interconnectedness <input type="checkbox"/> Creative/Innovative Thinking	NMTH-275 Advanced Mathematics (final exam grade)	80% of students will earn a grade of C or better on the Advanced Mathematics final exam.	Data will be collected annually by the program coordinator using a bi-annual cohort-based cycle starting at the end of Year 2.	Program chair and program coordinator will analyze the data.	Annual report to the department head. Results disseminated to program faculty annually for curriculum review, submitted as part of yearly outcomes assessment report, and considered for inclusion in NTID Annual Report and any RIT reports as needed.
Integrate and apply knowledge and laboratory skills in the chemical sciences	Demonstrate competency in introductory general chemistry	<input checked="" type="checkbox"/> Critical Thinking <input type="checkbox"/> Ethical Reasoning <input checked="" type="checkbox"/> Integrative Literacies <input type="checkbox"/> Global Interconnectedness <input checked="" type="checkbox"/> Creative/Innovative Thinking	CHMG-141 General & Analytical Chemistry I (final exam grade)	80% of students will earn grades of C or better in the two-semester general chemistry lecture (final exam grad) and laboratory sequence (final course grade).	Data will be collected annually by the program coordinator using a bi-annual cohort-based cycle starting at the end of Year 2.	Program chair and program coordinator will analyze the data.	Annual report to the department head. Results disseminated to program faculty annually for curriculum review, submitted as part of yearly outcomes assessment report, and considered for inclusion in NTID Annual Report and any RIT reports as needed.
			CHMG-142 General & Analytical Chemistry II (final exam grade)				
			CHMG-146 General & Analytical Chemistry II Lab (final course grade)				

			CHMG-145 General & Analytical Chemistry I Lab (final course grade)				
Develop and integrate scientific knowledge necessary for success in the field of their choice	Demonstrate competency in the professional elective courses for the A.S. degree	<input checked="" type="checkbox"/> Critical Thinking <input type="checkbox"/> Ethical Reasoning <input checked="" type="checkbox"/> Integrative Literacies <input type="checkbox"/> Global Interconnectedness <input checked="" type="checkbox"/> Creative/Innovative Thinking	Sophomore level professional elective science/math courses within the Biochemistry, Biology, Biomedical Sciences, Chemistry and Environmental Sciences disciplines (final course grades)	80% of students will receive final grades of C or better in the professional elective courses	Data will be collected annually by the program coordinator using a bi-annual cohort-based cycle starting at the end of Year 2.	Program chair and program coordinator will analyze the data.	Annual report to the department head. Results disseminated to program faculty annually for curriculum review, submitted as part of yearly outcomes assessment report, and considered for inclusion in NTID Annual Report and any RIT reports as needed.
Provide an effective pathway to qualified deaf and hard-of-hearing students for admission into RIT baccalaureate programs or scientific career opportunities	Acquire foundational applied scientific knowledge for academic and career success	<input checked="" type="checkbox"/> Critical Thinking <input type="checkbox"/> Ethical Reasoning <input checked="" type="checkbox"/> Integrative Literacies <input type="checkbox"/> Global Interconnectedness <input checked="" type="checkbox"/> Creative/Innovative Thinking	Annual graduation rates for AS Applied Science Degree (NTID Institutional Research Office)	50% of AS Applied Science students will graduate annually	Data collected annually by program coordinator using a bi-annual cohort-based cycle starting at the end of Year 2.	Program chair and program coordinator will analyze the data.	Annual report to the department head. Results disseminated to program faculty annually for curriculum review, submitted as part of yearly outcomes assessment report, and considered for inclusion in NTID Annual Report and any RIT reports as needed.
			COS and CHST program acceptance rates (RIT Admissions)	50% of graduates are accepted into a COS/CHST B.S. program or obtain employment in a scientific field			
			Job/Placement (NTID Center for Employment)				

**11. NEW/EMERGING FIELD AND ALLIED HEALTH AREAS**

Not applicable to this proposal.



## **12. TRANSFER TO BACCALAUREATE PROGRAMS**

**If the program will be promoted as preparing students for transfer to a baccalaureate program, provide a copy of an articulation agreement with at least one institution.**

Articulation documents that outline the requirements and course-transfer alignments between the A.S. in Applied Science program and the various B.S. programs into which the A.S. graduates can matriculate as part of this agreement are provided on the following pages.

**Transfer Articulation Agreement  
Between the Thomas H. Gosnell School of Life Sciences, College of Science  
*B.S. in Biology and B.S. in Environmental Science*  
and the National Technical Institute for the Deaf  
*A.S. in Applied Science***

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**Purpose**

This articulation agreement is established between the NTID Department of Science and Mathematics and the COS Thomas H. Gosnell School of Life Sciences to assist in facilitating timely student progress from the A.S. degree level into a B.S. program. Students enrolled in the A.S. in Applied Science program will work toward admission into the B.S. programs in Biology or Environmental Science by successfully completing freshman- and sophomore-level science and mathematics coursework required for the baccalaureate program and by taking any necessary preparatory coursework in English and mathematics to prepare them for such courses. Students will also take liberal arts coursework to satisfy the requirements of the Associate of Science degree. Transfer credit will be awarded and applied to the baccalaureate degree requirements for all courses completed with a grade of C or better.

**Student Qualifications for Transfer from the A.S. in Applied Science to the B.S. in Biology or Environmental Science**

**Qualified students will:**

- Be a graduate of the NTID A.S. in Applied Science program.
  - Students who wish to enter the B.S. in Biology degree must have completed the biology track of the A.S. in Applied Science program.
  - Students who wish to enter the B.S. in Environmental Science degree must have completed the environmental science track of the A.S. in Applied Science program.
- Be a student in good standing at the National Technical Institute for the Deaf.
- Have earned a cumulative GPA of at least 2.50 while in the A.S. in Applied Science program.

## **Terms of the Agreement**

### **I. Admissions process**

a. The process for admission to the B.S. in Biology or B.S. in Environmental Science program can begin as early as the student's fourth term in the A.S. in Applied Science program although paperwork will not be submitted to the University Admissions Office until all requirements of the A.S. program have been officially completed.

#### **b. The steps in the process will be:**

- i. Student indicates to the NTID A.S. in Applied Science program coordinator during the student's final term in the program an interest in entering the B.S. program in Biology or Environmental Science.
- ii. The A.S. program coordinator will review the student's academic qualifications based on items listed in the "*Student Qualifications for Transfer from the A.S. in Applied Science to the B.S. in Biology or Environmental Science*" listed above.
- iii. If the student meets the qualifications listed, the A.S. program coordinator will contact the head of the Thomas H. Gosnell School of Life Sciences for review of the student's qualifications.
  1. If necessary, the head will call a meeting with the student and the A.S. program coordinator to review the student's record and to discuss the B.S. program in which the student is interested in entering.
- iv. Upon review of the student's qualifications, the head of the Thomas H. Gosnell School of Life Sciences will inform the student and the A.S. program coordinator of the tentative acceptance decision.
- v. The A.S. program coordinator and the School head will complete an Intent to Enroll form and submit it to the NTID and RIT admissions offices for review and final approval.
  1. If the Intent to Enroll form receives all required approvals, the NTID department chair will inform the student, the A.S. program coordinator, and the School head of the decision.

### **II. Year Level**

a. Students who transfer from the A.S. in Applied Science program will do so at the third-year level into the B.S. in Biology or B.S. in Environmental Science program, with the placement decision being made based on the requirements listed in the "*Student Qualifications for Transfer from the A.S. in Applied Science to the B.S. in Biology or Environmental Science*" section above.

- b. Upon transfer into the B.S. program, students will be responsible for completing all remaining degree requirements in order to earn the baccalaureate degree.

### **III. Program and Course changes**

- a. The A.S. in Applied Science program and the B.S. in Biology and B.S. in Environmental Science programs will communicate any changes to their respective curricula and make any changes to this document to ensure continuation of the articulation agreement.

### **IV. Time limits**

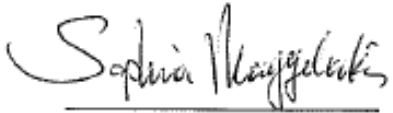
- a. This agreement will be formally reviewed every five years from the date of signing, or at the time of any major curriculum change.

### **V. Autonomy**

- a. The A.S. in Applied Science program will be free to admit qualified non-matriculated, NTID-supported students who apply to the program through the normal RIT freshman admissions process. If students are deemed “underprepared” then a recommendation should be made to NTID for admissions opportunities.

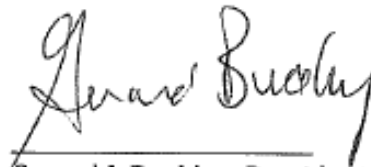
<b>A.S. DEGREE IN APPLIED SCIENCE - BIOLOGY TRACK</b>					
<b>TRANSFER OF COURSES TO BACHELOR OF SCIENCE DEGREE IN BIOLOGY</b>					
<b>COURSES IN A.S. DEGREE</b>			<b>COURSES ACCEPTED TOWARD B.S. DEGREE</b>		
<b>Course Number</b>	<b>Course Title (A.S. Degree Requirement)</b>	<b>SCH</b>	<b>Course Number</b>	<b>Course Title (B.S. Degree Requirement)</b>	<b>SCH</b>
NCAR-010	Freshman Seminar	0	ACSC-010	YearOne	0
xxxx-xxx	LAS First Year Elective (UWRT-100 Critical Reading and Writing if required based on placement)	3	xxxx-xxx	LAS First Year Elective	3
NMTH-250	Elementary Statistics (LAS Elective 1)	3	NMTH-250	Elementary Statistics (Free Elective)	3
NMTH-275	Advanced Mathematics (LAS Elective 2)	3	NMTH-275	Advanced Mathematics (Free Elective)	3
CHMG-141	General & Analytical Chemistry I (LAS-P6)	3	CHMG-141	General & Analytical Chemistry I (Chemistry Core)	3
CHMG-142	General & Analytical Chemistry II (Professional Elective)	3	CHMG-142	General & Analytical Chemistry II (Chemistry Core)	3
CHMG-145	General & Analytical Chemistry I Lab (Professional Elective)	1	CHMG-145	General & Analytical Chemistry I Lab (Chemistry Core)	1
CHMG-146	General & Analytical Chemistry II Lab (Professional Elective)	1	CHMG-146	General & Analytical Chemistry II Lab (Chemistry Core)	1
BIOL-101	General Biology I (Professional Elective)	3	BIOL-101	General Biology I (Biology Core I)	3
BIOL-102	General Biology II (Professional Elective)	3	BIOL-102	General Biology II (Biology Core I)	3
BIOL-103	General Biology I Lab (Professional Elective)	1	BIOL-103	General Biology I Lab (Biology Core I)	1
BIOL-104	General Biology II Lab (Professional Elective)	1	BIOL-104	General Biology II Lab (Biology Core I)	1
MATH-161	Applied Calculus (LAS Elective 3)	4	MATH-161	Applied Calculus (LAS-P7A)	4
BIOL-201	Cellular and Molecular Biology (Professional Elective)	4	BIOL-201	Cellular and Molecular Biology (Biology Core I)	4
BIOL-240 or BIOL-265	General Ecology or Evolutionary Biology (Professional Elective)	4	BIOL-240 or BIOL-265	General Ecology or Evolutionary Biology (Biology Core II)	4
STAT-145	Introduction to Statistics I (Professional Elective)	3	STAT-145	Introduction to Statistics I (LAS-P7B)	3
UWRT-150	FYW: Writing Seminar (General Education – First Year Writing)	3	UWRT-150	FYW: Writing Seminar (General Education - First Year Writing)	3
xxxx-xxx	Ethical Perspective (LAS-P1)	3	xxxx-xxx	Ethical Perspective (LAS-P1)	3
xxxx-xxx	Artistic Perspective (LAS-P2)	3	xxxx-xxx	Artistic Perspective (LAS-P2)	3
xxxx-xxx	Global Perspective (LAS-P3)	3	xxxx-xxx	Global Perspective (LAS-P3)	3
xxxx-xxx	Social Perspective (LAS-P4)	3	xxxx-xxx	Social Perspective (LAS-P4)	3
xxxx-xxx	LAS Electives (courses must apply toward the LAS Immersion requirement for the B.S. degree)	6	xxxx-xxx	LAS Immersion	6
xxxx-xxx	Wellness course	0	xxxx-xxx	Wellness course	0
				Total Transfer Credits	61
				Percent of A.S. Credits Transferred	100%

<b>A.S. DEGREE IN APPLIED SCIENCE - ENVIRONMENTAL SCIENCE TRACK</b>					
<b>TRANSFER OF COURSES TO BACHELOR OF SCIENCE DEGREE IN ENVIRONMENTAL SCIENCE</b>					
<b>COURSES IN A.S. DEGREE</b>			<b>COURSES ACCEPTED TOWARD B.S. DEGREE</b>		
<b>Course Number</b>	<b>Course Title (A.S. Degree Requirement)</b>	<b>SCH</b>	<b>Course Number</b>	<b>Course Title (B.S. Degree Requirement)</b>	<b>SCH</b>
NCAR-010	Freshman Seminar	0	ACSC-010	YearOne	0
xxxx-xxx	LAS First Year Elective (UWRT-100 Critical Reading and Writing if required based on placement)	3	xxxx-xxx	LAS First Year Elective	3
NMTH-250	Elementary Statistics (LAS Elective 1)	3	NMTH-250	Elementary Statistics (Free Elective)	3
NMTH-275	Advanced Mathematics (LAS Elective 2)	3	NMTH-275	Advanced Mathematics (Free Elective)	3
ENVS-101	Concepts of Environmental Science (Professional Elective)	3	ENVS-101	Concepts of Environmental Science (General Education Math/Science)	3
CHMG-141	General & Analytical Chemistry I (LAS-P6)	3	CHMG-141	General & Analytical Chemistry I (LAS-P5)	3
CHMG-142	General & Analytical Chemistry II (Professional Elective)	3	CHMG-142	General & Analytical Chemistry II (LAS-P6)	3
CHMG-145	General & Analytical Chemistry I Lab (Professional Elective)	1	CHMG-145	General & Analytical Chemistry I Lab (LAS-P5)	1
CHMG-146	General & Analytical Chemistry II Lab (Professional Elective)	1	CHMG-146	General & Analytical Chemistry II Lab (LAS-P6)	1
BIOL-101	General Biology I (Professional Elective)	3	BIOL-101	General Biology I (Core)	3
BIOL-102	General Biology II (Professional Elective)	3	BIOL-102	General Biology II (Core)	3
BIOL-103	General Biology I Lab (Professional Elective)	1	BIOL-103	General Biology I Lab (Core)	1
BIOL-104	General Biology II Lab (Professional Elective)	1	BIOL-104	General Biology II Lab (Core)	1
MATH-161	Applied Calculus (LAS Elective 3)	4	MATH-161	Applied Calculus (LAS-P7A)	4
BIOL-240	General Ecology (Professional Elective)	4	BIOL-240	General Ecology (Core)	4
STAT-145	Introduction to Statistics I (Professional Elective)	3	STAT-145	Introduction to Statistics I (LAS-P7B)	3
UWRT-150	FYW: Writing Seminar (General Education – First Year Writing)	3	UWRT-150	FYW: Writing Seminar (General Education - First Year Writing)	3
xxxx-xxx	Ethical Perspective (LAS-P1)	3	xxxx-xxx	Ethical Perspective (LAS-P1)	3
xxxx-xxx	Artistic Perspective (LAS-P2)	3	xxxx-xxx	Artistic Perspective (LAS-P2)	3
xxxx-xxx	Global Perspective (LAS-P3)	3	xxxx-xxx	Global Perspective (LAS-P3)	3
xxxx-xxx	Social Perspective (LAS-P4)	3	xxxx-xxx	Social Perspective (LAS-P4)	3
xxxx-xxx	LAS Electives (courses must apply toward the LAS Immersion requirement for the B.S. degree)	6	xxxx-xxx	LAS Immersion	6
xxxx-xxx	Wellness course	0	xxxx-xxx	Wellness course	0
				Total Transfer Credits	60
				Percent of A.S. Credits Transferred	100%



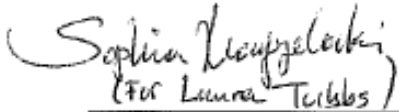
Sophia Maggelakis  
Dean  
College of Science

Dated: 6/14/17



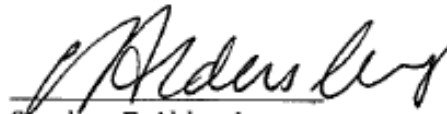
Gerard J. Buckley, President  
RIT Vice President and Dean  
National Technical Institute for the Deaf

Dated: 6/13/17

  
(For Laura Tubbs)

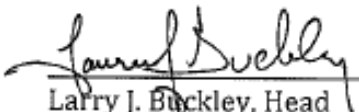
Laura Tubbs  
Associate Dean for  
Undergraduate Education  
College of Science

Dated: 6/14/17



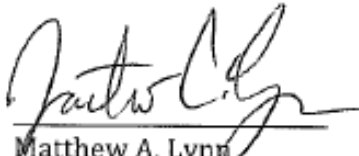
Stephen F. Aldersley  
Associate Vice President for Academic  
Affairs  
National Technical Institute for the Deaf

Dated: 6/13/17



Larry J. Buckley, Head  
Thomas H. Gosnell School of  
Life Sciences  
College of Science

Dated: 6-13-17



Matthew A. Lynn  
Chair  
Department of Science and Mathematics  
National Technical Institute for the Deaf

Dated: 6/9/17

**Transfer Articulation Agreement  
Between the College of Health Sciences and Technology  
*B.S. in Biomedical Sciences*  
and the National Technical Institute for the Deaf  
*A.S. in Applied Science***

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**Purpose**

This articulation agreement is established between the NTID Department of Science and Mathematics and the College of Health Sciences and Technology to assist in facilitating timely student progress from the A.S. degree level into a B.S. program. Students enrolled in the A.S. in applied science program will work toward admission into the B.S. program in biomedical sciences by successfully completing freshman- and sophomore-level science and mathematics coursework required for the baccalaureate program and by taking any necessary preparatory coursework in English and mathematics to prepare them for such courses. Students will also take liberal arts coursework to satisfy the requirements of the Associate of Science degree. Transfer credit will be awarded and applied to the baccalaureate degree requirements for all courses completed with a grade of C or better.

**Student Qualifications for Transfer from the A.S. in Applied Science to the B.S. in Biomedical Sciences**

**Qualified students will:**

- Be a graduate of the NTID A.S. in Applied Science program.
  - Students who wish to enter the B.S. in Biomedical Sciences degree must have completed the biomedical sciences track of the A.S. in Applied Science program.
- Be a student in good standing at the National Technical Institute for the Deaf.
- Have earned a cumulative GPA of at least 2.80 while in the A.S. in Applied Science program.

**Terms of the Agreement**

**I. Admissions process**

- a. The process for admission to the B.S. in Biomedical Sciences program can begin as early as the student's fourth term in the A.S. in Applied Science program although paperwork will not be submitted to the University Admissions Office until all requirements of the A.S. program have been officially completed.
- b. The steps in the process will be:**



- i. Student indicates to the NTID A.S. in Applied Science program coordinator during the student's final term in the program an interest in entering the B.S. program in Biomedical Sciences.
- ii. The A.S. program coordinator will review the student's academic qualifications based on items listed in the "*Student Qualifications for Transfer from the A.S. in Applied Science to the B.S. in Biomedical Sciences*" listed above.
- iii. If the student meets the qualifications listed, the A.S. program coordinator will contact the director of the Biomedical Sciences program for review of the student's qualifications.
  1. If necessary, the program director will call a meeting with the student and the A.S. program coordinator to review the student's record and to discuss the Biomedical Sciences program.
- iv. Upon review of the student's qualifications, the director of the Biomedical Sciences program will inform the student and the A.S. program coordinator of the tentative acceptance decision.
- v. The A.S. program coordinator and the program director will complete an Intent to Enroll form and submit it to the NTID and RIT admissions offices for review and final approval.
  1. If the Intent to Enroll form receives all required approvals, the NTID department chair will inform the student, the A.S. program coordinator, and the Biomedical Sciences program director of the decision.

## **II. Year Level**

- a. Students who transfer from the A.S. in Applied Science program will do so at the third-year level into the B.S. in Biomedical Sciences program, with the placement decision being made based on the requirements listed in the "*Student Qualifications for Transfer from the A.S. in Applied Science to the B.S. in Biomedical Sciences*" section above.

## **III. Program and Course changes**

- a. The A.S. in Applied Science program and the B.S. in Biomedical Sciences programs will communicate any changes to their respective curricula and make any changes to this document to ensure continuation of the articulation agreement.

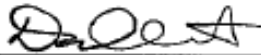
## **IV. Time limits**

- a. This agreement will be formally reviewed every five years from the date of signing, or at the time of any major curriculum change.

## **V. Autonomy**

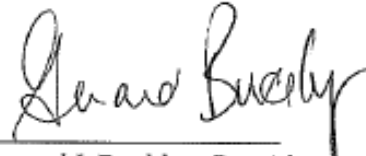
- a. The A.S. in Applied Science program will be free to admit qualified non-matriculated, NTID-supported students who apply to the program through the normal RIT freshman admissions process. If students are deemed “underprepared” then a recommendation should be made to NTID for admissions opportunities.

<b>A.S. DEGREE IN APPLIED SCIENCE - BIOMEDICAL SCIENCES TRACK</b>					
<b>TRANSFER OF COURSES TO BACHELOR OF SCIENCE DEGREE IN BIOMEDICAL SCIENCES</b>					
<b>COURSES IN A.S. DEGREE</b>			<b>COURSES ACCEPTED TOWARD B.S. DEGREE</b>		
<b>Course Number</b>	<b>Course Title (A.S. Degree Requirement)</b>	<b>SCH</b>	<b>Course Number</b>	<b>Course Title (B.S. Degree Requirement)</b>	<b>SCH</b>
NCAR-010	Freshman Seminar	0	ACSC-010	YearOne	0
xxxx-xxx	LAS First Year Elective (UWRT-100 Critical Reading and Writing if required based on placement)	3	xxxx-xxx	LAS First Year Elective	3
NMTH-250	Elementary Statistics (LAS Elective 1)	3	NMTH-250	Elementary Statistics (Free Elective)	3
NMTH-275	Advanced Mathematics (LAS Elective 2)	3	NMTH-275	Advanced Mathematics (Free Elective)	3
CHMG-141	General & Analytical Chemistry I (LAS-P6)	3	CHMG-141	General & Analytical Chemistry I (LAS-P5)	3
CHMG-142	General & Analytical Chemistry II (Professional Elective)	3	CHMG-142	General & Analytical Chemistry II (LAS-P6)	3
CHMG-145	General & Analytical Chemistry I Lab (Professional Elective)	1	CHMG-145	General & Analytical Chemistry I Lab (LAS-P5)	1
CHMG-146	General & Analytical Chemistry II Lab (Professional Elective)	1	CHMG-146	General & Analytical Chemistry II Lab (LAS-P6)	1
BIOL-101	General Biology I (Professional Elective)	3	BIOL-101	General Biology I (General Education Elective)	3
BIOL-102	General Biology II (Professional Elective)	3	BIOL-102	General Biology II (General Education Elective)	3
BIOL-103	General Biology I Lab (Professional Elective)	1	BIOL-103	General Biology I Lab (General Education Elective)	1
BIOL-104	General Biology II Lab (Professional Elective)	1	BIOL-104	General Biology II Lab (General Education Elective)	1
MATH-161	Applied Calculus (LAS Elective 3)	4	MATH-161	Applied Calculus (LAS-P7B)	4
MEDS-250	Human Anatomy and Physiology I (Professional Elective)	4	MEDS-250	Human Anatomy and Physiology I (Core)	4
MEDS-251	Human Anatomy and Physiology II (Professional Elective)	4	MEDS-251	Human Anatomy and Physiology II (Core)	4
STAT-145	Introduction to Statistics I (Professional Elective)	3	STAT-145	Introduction to Statistics I (LAS-P7A)	3
UWRT-150	FYW: Writing Seminar (General Education - First Year Writing)	3	UWRT-150	FYW: Writing Seminar (General Education - First Year Writing)	3
xxxx-xxx	Ethical Perspective (LAS-P1)	3	xxxx-xxx	Ethical Perspective (LAS-P1)	3
xxxx-xxx	Artistic Perspective (LAS-P2)	3	xxxx-xxx	Artistic Perspective (LAS-P2)	3
xxxx-xxx	Global Perspective (LAS-P3)	3	xxxx-xxx	Global Perspective (LAS-P3)	3
xxxx-xxx	Social Perspective (LAS-P4)	3	xxxx-xxx	Social Perspective (LAS-P4)	3
xxxx-xxx	LAS Electives	6	xxxx-xxx	LAS Immersion or Open Electives	6
xxxx-xxx	Wellness course	0	xxxx-xxx	Wellness course	0
		65		Total Transfer Credits	61
				Percent of AS Credits Transferred	100%



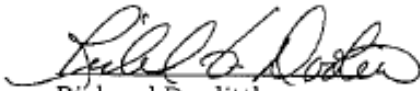
Daniel Ornt, MD, FACP  
Vice President, Institute of  
Health Sciences & Technology  
Dean & Professor  
College of Health Sciences  
and Technology

Dated: 6/13/17



Gerard J. Buckley, President  
RIT Vice President and Dean  
National Technical Institute for the Deaf

Dated: 6/13/17



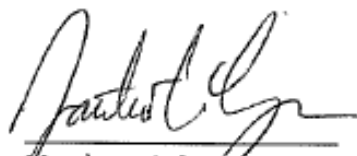
Vice ~~Associate~~ Dean  
Richard Doolittle  
College of Health Sciences  
and Technology

Dated: 6/13/17



Stephen F. Aldersley  
Associate Vice President for Academic  
Affairs  
National Technical Institute for the Deaf

Dated: 6/13/17



Matthew A. Lynn  
Chair  
Department of Science and Mathematics  
National Technical Institute for the Deaf

Dated: 6/9/17

**Transfer Articulation Agreement  
Between the School of Chemistry and Material Science, College of Science  
*B.S. in Chemistry and B.S. in Biochemistry*  
and the National Technical Institute for the Deaf  
*A.S. in Applied Science***

---

**Purpose**

This articulation agreement is established between the NTID Department of Science and Mathematics and the COS School of Chemistry and Materials Science to assist in facilitating timely student progress from the A.S. degree level into a B.S. program. Students enrolled in the A.S. in applied science program will work toward admission into the B.S. programs in chemistry or biochemistry by successfully completing freshman- and sophomore-level science and mathematics coursework required for the baccalaureate program and by taking any necessary preparatory coursework in English and mathematics to prepare them for such courses. Students will also take liberal arts coursework to satisfy the requirements of the Associate of Science degree. Transfer credit will be awarded and applied to the baccalaureate degree requirements for all courses completed with a grade of C or better.

**Student Qualifications for Transfer from the A.S. in Applied Science to the B.S. in Chemistry or Biochemistry**

**Qualified students will:**

- Be a graduate of the NTID A.S. in Applied Science program.
  - Students who wish to enter the B.S. in Chemistry degree must have completed the chemistry track of the A.S. in Applied Science program.
  - Students who wish to enter the B.S. in Biochemistry degree must have completed the biochemistry track of the A.S. in Applied Science program.
- Be a student in good standing at the National Technical Institute for the Deaf.
- Have earned a cumulative GPA of at least 2.80 while in the A.S. in Applied Science program.

## Terms of the Agreement

### I. Admissions process

a. The process for admission to the B.S. in Chemistry or B.S. in Biochemistry program can begin as early as the student's fourth term in the A.S. in Applied Science program although paperwork will not be submitted to the University Admissions Office until all requirements of the A.S. program have been officially completed.

#### b. The steps in the process will be:

- i. Student indicates to the NTID A.S. in Applied Science program coordinator during the student's final term in the program an interest in entering the B.S. program in Chemistry or Biochemistry.
- ii. The A.S. program coordinator will review the student's academic qualifications based on items listed in the "*Student Qualifications for Transfer from the A.S. in Applied Science to the B.S. in Chemistry or Biochemistry*" listed above.

iii. If the student meets the qualifications listed, the A.S. program coordinator will contact the head of the School of Chemistry and Materials Science for review of the student's qualifications.

1. If necessary, the head will call a meeting with the student and the A.S. program coordinator to review the student's record and to discuss the B.S. program in which the student is interested in entering.

iv. Upon review of the student's qualifications, the head of the School of Chemistry and Materials Science will inform the student and the A.S. program coordinator of the tentative acceptance decision.

v. The A.S. program coordinator and the School head will complete an Intent to Enroll form and submit it to the NTID and RIT admissions offices for review and final approval.

1. If the Intent to Enroll form receives all required approvals, the NTID department chair will inform the student, the A.S. program coordinator, and the School head of the decision.

### II. Year Level

a. Students who transfer from the A.S. in Applied Science program will do so at the third-year level into the B.S. in Chemistry or B.S. in Biochemistry program, with the placement decision being made based on the requirements listed in the "*Student Qualifications for Transfer from the A.S. in Applied Science to the B.S. in Chemistry or Biochemistry*" section above.

- b. Upon transfer into the B.S. program, students will be responsible for completing all remaining degree requirements in order to earn the baccalaureate degree.

**III. Program and Course changes**

- a. The A.S. in Applied Science program and the B.S. in Chemistry and B.S. in Biochemistry programs will communicate any changes to their respective curricula and make any changes to this document to ensure continuation of the articulation agreement.

**IV. Time limits**

- a. This agreement will be formally reviewed every five years from the date of signing, or at the time of any major curriculum change.

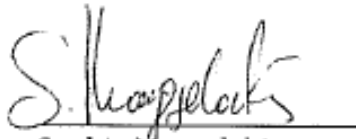
**V. Autonomy**

- a. The A.S. in Applied Science program will be free to admit qualified non-matriculated, NTID-supported students who apply to the program through the normal RIT freshman admissions process. If students are deemed “underprepared” then a recommendation should be made to NTID for admissions opportunities.

A.S. DEGREE IN APPLIED SCIENCE - BIOCHEMISTRY TRACK					
TRANSFER OF COURSES TO BACHELOR OF SCIENCE DEGREE IN BIOCHEMISTRY					
COURSES IN A.S. DEGREE			COURSES ACCEPTED TOWARD B.S. DEGREE		
Course Number	Course Title (A.S. Degree Requirement)	SCH	Course Number	Course Title (B.S. Degree Requirement)	SCH
NCAR-010	Freshman Seminar	0	ACSC-010	YearOne	0
xxxx-xxx	LAS First Year Elective (UWRT-100 Critical Reading and Writing if required based on placement)	3	xxxx-xxx	LAS First Year Elective	3
NMTH-220	Trigonometry (LAS Elective 1)	3	NMTH-220	Trigonometry (Free Elective)	3
NMTH-275	Advanced Mathematics (LAS Elective 2)	3	NMTH-275	Advanced Mathematics (Free Elective)	3
CHMG-141	General & Analytical Chemistry I (LAS-P6)	3	CHMG-141	General & Analytical Chemistry I (General Education Math/Science)	3
CHMG-142	General & Analytical Chemistry II (Professional Elective)	3	CHMG-142	General & Analytical Chemistry II (General Education Math/Science)	3
CHMG-145	General & Analytical Chemistry I Lab (Professional Elective)	1	CHMG-145	General & Analytical Chemistry I Lab (General Education Math/Science)	1
CHMG-146	General & Analytical Chemistry II Lab (Professional Elective)	1	CHMG-146	General & Analytical Chemistry II Lab (General Education Math/Science)	1
CHMO-231	Organic Chemistry I (Professional Elective)	3	CHMO-231	Organic Chemistry I (Core)	3
CHMO-232	Organic Chemistry II (Professional Elective)	3	CHMO-232	Organic Chemistry II (Core)	3
CHMO-235	Organic Chemistry I Lab (Professional Elective)	1	CHMO-235	Organic Chemistry I Lab (Core)	1
CHMO-236	Organic Chemistry II Lab (Professional Elective)	1	CHMO-236	Organic Chemistry II Lab (Core)	1
BIOL-101	General Biology I (Professional Elective)	3	BIOL-101	General Biology I (General Education Elective)	3
BIOL-102	General Biology II (Professional Elective)	3	BIOL-102	General Biology II (General Education Elective)	3
BIOL-103	General Biology I Lab (Professional Elective)	1	BIOL-103	General Biology I Lab (General Education Elective)	1
BIOL-104	General Biology II Lab (Professional Elective)	1	BIOL-104	General Biology II Lab (General Education Elective)	1
MATH-171	Calculus A (LAS Elective 3)	3	MATH-171	Calculus A (LAS-P7A)	3
MATH-172	Calculus B (Professional Elective)	3	MATH-172	Calculus B (LAS-P7A)	3
UWRT-150	FYW: Writing Seminar (General Education – First Year Writing)	3	UWRT-150	FYW: Writing Seminar (General Education - First Year Writing)	3
xxxx-xxx	Ethical Perspective (LAS-P1)	3	xxxx-xxx	Ethical Perspective (LAS-P1)	3
xxxx-xxx	Artistic Perspective (LAS-P2)	3	xxxx-xxx	Artistic Perspective (LAS-P2)	3
xxxx-xxx	Global Perspective (LAS-P3)	3	xxxx-xxx	Global Perspective (LAS-P3)	3
xxxx-xxx	Social Perspective (LAS-P4)	3	xxxx-xxx	Social Perspective (LAS-P4)	3
xxxx-xxx	LAS Electives	6	xxxx-xxx	LAS Immersion, LAS Electives, or Open Electives	6
xxxx-xxx	Wellness course	0	xxxx-xxx	Wellness course	0
				Total Transfer Credits	60
				Percent of AS Credits Transferred	100%

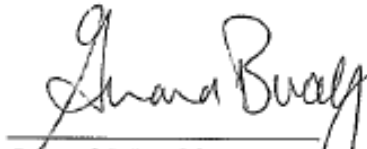


<b>A.S. DEGREE IN APPLIED SCIENCE - CHEMISTRY TRACK</b>					
<b>TRANSFER OF COURSES TO BACHELOR OF SCIENCE DEGREE IN CHEMISTRY</b>					
<b>COURSES IN A.S. DEGREE</b>			<b>COURSES ACCEPTED TOWARD B.S. DEGREE</b>		
<b>Course Number</b>	<b>Course Title (A.S. Degree Requirement)</b>	<b>SCH</b>	<b>Course Number</b>	<b>Course Title (B.S. Degree Requirement)</b>	<b>SCH</b>
NCAR-010	Freshman Seminar	0	ACSC-010	YearOne	0
xxxx-xxx	LAS First Year Elective (UWRT-100 Critical Reading and Writing if required based on placement)	3	xxxx-xxx	LAS First Year Elective	3
NMTH-220	Trigonometry (LAS Elective 1)	3	NMTH-220	Trigonometry (General Education Elective)	3
NMTH-275	Advanced Mathematics (LAS Elective 2)	3	NMTH-275	Advanced Mathematics (General Education Elective)	3
CHMG-141	General & Analytical Chemistry I (LAS-P6)	3	CHMG-141	General & Analytical Chemistry I (General Education Math/Science)	3
CHMG-142	General & Analytical Chemistry II (Professional Elective)	3	CHMG-142	General & Analytical Chemistry II (General Education Elective)	3
CHMG-145	General & Analytical Chemistry I Lab (Professional Elective)	1	CHMG-145	General & Analytical Chemistry I Lab (General Education Math/Science)	1
CHMG-146	General & Analytical Chemistry II Lab (Professional Elective)	1	CHMG-146	General & Analytical Chemistry II Lab (General Education Elective)	1
CHMO-231	Organic Chemistry I (Professional Elective)	3	CHMO-231	Organic Chemistry I (Core)	3
CHMO-232	Organic Chemistry II (Professional Elective)	3	CHMO-232	Organic Chemistry II (Core)	3
CHMO-235	Organic Chemistry I Lab (Professional Elective)	1	CHMO-235	Organic Chemistry I Lab (Core)	1
CHMO-236	Organic Chemistry II Lab (Professional Elective)	1	CHMO-236	Organic Chemistry II Lab (Core)	1
CHMA-161	Quantitative Analysis (Professional Elective)	3	CHMA-161	Quantitative Analysis (Core)	3
CHMA-165	Analytical Methods Lab (Professional Elective)	1	CHMA-165	Analytical Methods Lab (Core)	1
MATH-171	Calculus A (LAS Elective 3)	3	MATH-171	Calculus A (LAS-P7A)	3
MATH-172	Calculus B (Professional Elective)	3	MATH-172	Calculus B (LAS-P7A)	3
PHYS-211A	University Physics IA (Professional Elective)	4	PHYS-211A	University Physics IA (LAS-P5)	4
UWRT-150	FYW: Writing Seminar (General Education - Foundation)	3	UWRT-150	FYW: Writing Seminar (General Education - First Year Writing)	3
xxxx-xxx	Ethical Perspective (LAS-P1)	3	xxxx-xxx	Ethical Perspective (LAS-P1)	3
xxxx-xxx	Artistic Perspective (LAS-P2)	3	xxxx-xxx	Artistic Perspective (LAS-P2)	3
xxxx-xxx	Global Perspective (LAS-P3)	3	xxxx-xxx	Global Perspective (LAS-P3)	3
xxxx-xxx	Social Perspective (LAS-P4)	3	xxxx-xxx	Social Perspective (LAS-P4)	3
xxxx-xxx	LAS Electives	6	xxxx-xxx	LAS Immersion, LAS Electives, or Open Electives	6
xxxx-xxx	Wellness course	0	xxxx-xxx	Wellness course	0
				Total Transfer Credits	60
				Percent of AS Credits Transferred	100%




Sophia Maggelakis  
Dean  
College of Science

Dated: 6/20/17



Gerard J. Buckley, President  
RIT Vice President and Dean  
National Technical Institute for the Deaf

Dated: 6/13/17

  
(For Laura Tubbs)

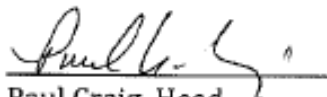
Laura Tubbs  
Associate Dean for  
Undergraduate Education  
College of Science

Dated: 6-16-17



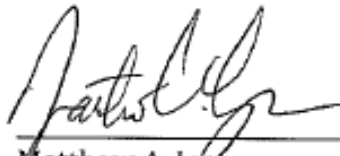
Stephen F. Aldersley  
Associate Vice President for Academic  
Affairs  
National Technical Institute for the Deaf

Dated: 6/13/17



Paul Craig, Head  
School of Chemistry and  
Material Sciences  
College of Science

Dated: 6/16/17



Matthew A. Lynn  
Chair  
Department of Science and Mathematics  
National Technical Institute for the Deaf

Dated: 6/9/17

### **13. APPLICATION FOR DISTANCE EDUCATION**

Not applicable to this proposal.

## **Appendix A - New or Revised Course Outline Forms**

New courses are not being developed as part of this proposal.

## Appendix B - Enrollment and Market Analysis

**Describe and elaborate in Appendix B on the following information:**

- **Detailed enrollment projections for the next five years, including as applicable, new students, transfer students, internal transfer students. These projections are to be developed by Enrollment Management and Career Services (EMCS) with an explanation of methodology used. The Vice President for Enrollment Management must formally certify projections in the Concept Paper and Final Program Proposal.**

The projected enrollment for the first year of the program is expected to be 10 students, growing to a maximum enrollment of 14 students in the first year and 12 in the second year in the program for a maximum total of 28 students annually in the program.

Please refer to page 10 for a chart that details the enrollment projections for the first five years and the formal rationale and projection statements. The IPEDS reporting methodology was used in formulating graduation projections. Dr. James Miller, Vice President of Enrollment Management and Career Services, has formally certified the projections developed by Scott Hooker, NTID Director of Admissions, and Richard Dirmyer, NTID Director of Institutional Research and Assessment.

- **Anticipated graduation rate (based upon college target and similar RIT programs)**

The anticipated graduation rate for the A.S. in Applied Science program is projected to be 50% based on comparison with other NTID programs that have a similar academic profile.

- **Competing programs (regional and national) and what RIT's competitive advantage over these programs is.**

Numerous community colleges have similar two-year Associate of Science programs that provide students with a mechanism for completing the freshman- and sophomore-level courses for a given major and prepare them for transfer at the junior level into a Bachelor of Science program at a four-year institution. The competitive advantage that the proposed A.S. in Applied Science program holds is that RIT, through the on-campus presence of the National Technical Institute for the Deaf, has decades of demonstrated experience in the delivery of courses for deaf and hard-of-hearing students and in the providing of access (interpreting and real-time captioning) and support (faculty tutoring) services for such students. Further, much of the coursework in this program will be provided by the academic departments into which students will be matriculating upon completion of the A.S. program, meaning that students will be able to transfer degree levels within

the same university with no concern for loss of transfer credit or interruption in academic advising.

- **Anticipated geographic draw (regional, national and international)**

The anticipated geographic draw for the A.S. in Applied Science program will be on a national basis. Further, because it is an international leader in the field of deaf education, NTID also has some enrollment of students from outside of the country.

- **Program delivery format (full-time, part-time, on-site, off-site, distance learning, weekend learning)**

Students will be able to take courses as they are offered by RIT, which can include on-site, distance-learning (i.e., online), and weekend options. The intent of this program is that students will matriculate on a full-time basis, but the program is flexible enough for part-time students, including those students who wish to take some of the courses elsewhere and transfer the credit back to RIT.

**Projected Graduation Rate and Rationale prepared by Rich Dirmyer, Director, Institutional Research and Assessment.**

As part of the proposed NTID Applied Science (AS) degree program, expected graduation rates were developed considering the following deaf and hard-of-hearing cohorts:

- NTID Applied Liberal Arts (AS) degree program students
- NTID Applied Computer Technology (AS) degree program students
- NTID Hospitality & Service Management (AS) degree program students
- NTID Pre-Baccalaureate Science (UND) program students

These four cohorts combine to cover the unique aspects about the proposed program, justifying the expected graduation rates proposed. Each of the three cohorts categorizes a relatively small number of students, especially when using the IPEDS methodological approach of defining cohorts of first-time, full-time degree seeking freshmen. The three A.S. programs each contain track options, resulting in the potential for very unique curricula experiences by the students within these programs. The Science Pre-Baccalaureate program adheres to a prescribed set of courses that expose students to their potential landing within the College of Science. In an effort to moderate the observed variation in graduation rates, three-year averages were calculated. Three time intervals were further considered, staggered, specifically six years, seven years, and seven and a half years. These intervals are entirely a function of allowing any student who transfers, prior to completing the associate degree, to five-year programs, a complete 150% of their program’s designed length of time to graduate. Otherwise, students remaining in this associate degree program for the academic career will be counted as graduated or not, at six semesters, given the program’s designed length of four semesters.

Graduation Rates (Three Year Weighted Average)

	Six Year	Seven Year	Seven and a Half Year
NTID Applied Computer Technology (AS)	44.44%	53.85%	46.67%
NTID Pre-Baccalaureate Science (UND)	58.33%	57.14%	54.55%

The NTID Applied Liberal Arts (AS) and NTID Hospitality & Service Management (AS) degree programs are too new to be included, comprehensively, in the chart above, however we can use these degree programs as evidence in support of the expected graduation rate of the NTID Applied Science (AS) degree program. Based on the three year weighted averages above, it would seem reasonable to expect a graduation rate of approximately 50%, to be evaluated on an annual basis beginning with the third cohort of incoming students. Further supporting this expected graduation rate are the four-year graduation rates for the two absent programs NTID Applied Liberal Arts (AS) and NTID Hospitality & Service Management (AS), at 47.40% and 50.00%, respectively. The expected graduation rates for the first five cohorts of incoming students in the A.S. in Applied Science program follows as:

Fall Cohort                      7.5 Year Graduation Rate

Fall Cohort	7.5 Year Graduation Rate
2017	50%
2018	50%
2019	50%*
2020	50%*
2021	50%*

\*To be reviewed annually



**Appendix C - Internal Letters of Support**

College of Science  
Office of the Dean  
84 Lomb Memorial Drive  
Rochester, New York 14623-5603  
(585)-475-2483 Fax: (585)-475-2398

April 17, 2017

Dr. Gerald Buckley  
President of National Institute for the Deaf  
Vice President and Dean for RIT  
52 Lomb Memorial Drive  
Rochester, NY 14623

Dear Dr. Buckley,

This letter serves to state my enthusiastic support and endorsement as Dean of the College of Science of the proposed A.S. in Applied Science from the National Institute for the Deaf per the *Proposal for Associate of Science (A.S.) Degree in Applied Science* dated March 8, 2017.

The School Heads and faculty of both the College of Science School of Chemistry and Materials Science and the Thomas H. Gosnell School of Life Sciences have worked closely with Dr. Matthew Lynn in designing the program and I am confident in their assessments. Therefore, I support their recommendations and believe this collaboration will bring an increased richness of diversity and inclusion to the College of Science. In addition, I appreciate that the cost model anticipates the possible need for faculty resources in the College of Science.

We look forward to welcoming students from the A.S. in Applied Science into our B.S. Chemistry and B.S. Biochemistry programs in the School of Chemistry and Material Science, and our B.S. Biology and B.S. Environmental Science programs in the Thomas H. Gosnell School of Life Sciences. We anticipate a very positive collaboration as this proposal moves forward and are committed to a successful partnership.

Regards,



Sophia A. Maggelakis, Ph.D.  
Dean of the College of Science  
Professor of Mathematics

School of Chemistry and Materials Science  
College of Science  
85 Lomb Memorial Drive  
Rochester, NY 14623-5603  
585-475-2497

November 18, 2016

Dr. Matthew Lynn  
Chairperson  
Department of Science & Mathematics  
National Technical Institute for the Deaf

Dear Dr. Lynn,

As Head of the School of Chemistry & Materials Science, I fully support the proposed A.S. in Applied Science and the articulation agreements for graduates of this program to transition into the B.S. Biochemistry and B.S. Chemistry programs at RIT, as you have outlined in the articulation agreement and accompanying documents. We are willing and able to provide seats for those students from the A.S. in Applied Science program with a focus on Biochemistry, Biology, Biomedical Sciences, Chemistry and Environmental Science in the required courses offered in our academic unit:

- CHMG 141/145 General & Analytical Chemistry I/Lab
- CHMG 142/146 General & Analytical Chemistry II/Lab

We are willing and able to provide seats for those students from the A.S. in Applied Science program with a focus on Biochemistry and Chemistry in the required courses offered in our academic unit:

- CHMO 231/235 Organic Chemistry I/Lab
- CHMO 232/236 Organic Chemistry II/Lab

The proposed numbers for the program should not necessitate opening new sections of General & Analytical Chemistry or Organic Chemistry lecture courses given that we currently serve approximately 8 science pre-baccalaureate students per year and the projected increase in enrollment described in this proposal is for a total of only 2-6 additional students per year.

We look forward to welcoming the students from the A.S. Applied Science degree program into our B.S. Chemistry and B.S. Biochemistry programs in the School of Chemistry & Materials Science.

Sincerely,



Paul A. Craig  
Head and Professor  
School of Chemistry & Materials Science  
Rochester Institute of Technology

Thomas H. Gosnell School of Life Sciences  
College of Science  
85 Lomb Memorial Drive  
Rochester, NY 14623-5603  
585-475-7507

July 28, 2016

Dr. Matthew Lynn  
Chairperson  
Department of Science & Mathematics  
National Technical Institute for the Deaf

Dear Dr. Lynn,

As Head of the Thomas H. Gosnell School of Life Sciences, I support the proposed A.S. in Applied Science degree program as described in this proposal. I approve of the articulation agreements for graduates of this associate degree program allowing them to transition into the B.S. Biology and B.S. Environmental Science programs should they follow the appropriate track in the A.S. program. Furthermore, my academic unit can provide seats in the following freshman-level courses for students in the Biochemistry, Biology, Biomedical Sciences, and Environmental Science tracks:

- BIOL 101 General Biology I
- BIOL 102 General Biology I Lab
- BIOL 103 General Biology II
- BIOL 104 General Biology II Lab

For students who enter the biology and environmental science tracks of this A.S. program, we can also accommodate them in any of the following courses as appropriate for their intended B.S. major:

- BIOL-201 Cellular and Molecular Biology
- BIOL-240 General Ecology
- BIOL-265 Evolutionary Biology
- ENVS-101 Concepts of Environmental Science

The proposed numbers for the program should not necessitate opening new sections of any of these courses given that we currently serve approximately 8 science pre-baccalaureate students per year and the projected increase in enrollment described in this proposal is for a total of only 2-6 additional students per year.

I look forward to welcoming students from the A.S. Applied Science degree program into our B.S. Biology and B.S. Environmental Science programs in the Thomas H. Gosnell School of Life Sciences.

Sincerely,



Larry J. Buckley  
Head and Professor  
Thomas H. Gosnell School of Life Sciences  
Rochester Institute of Technology

College of Health Sciences and Technology  
153 Lomb Memorial Drive  
Rochester, New York 14623-5603

November 29, 2016

Dr. Matthew Lynn  
Chairperson  
Department of Science & Mathematics  
National Technical Institute for the Deaf

Dear Dr. Lynn,

As Vice President of the Institute of Health Sciences & Technology and Dean of the College of Health Sciences & Technology, I fully support the proposed A.S. in Applied Science and the attached guidelines for graduates of this program to transition into the B.S. program in Biomedical Sciences (BMS) at RIT. Attached you will find the Biomedical Sciences Transfer Policy for students. In addition, the BMS Program will communicate to you any changes to its curricula. At the present time you have the current curriculum and the revised curriculum for which we are awaiting NYSED approval. You will be notified when the approval is received.

Availability of seats within particular courses varies each term, but we are willing and able to provide seats for those students from the A.S. in Applied Science program with a focus on Biomedical Sciences, so that the required number of credit hours for graduation may be earned in a timely fashion. The proposed numbers for the program should not necessitate opening new sections of most of the CHST lecture courses required for graduation. However, if the projected numbers are met and if all students in the A.S. program were following the biomedical sciences track, it would mean that there would be approximately 10 students in the MEDS-250 Human Anatomy and Physiology I and MEDS-251 Human Anatomy and Physiology II labs beginning in the second year of the A.S. Applied Science program. We already currently serve some of these students, namely those who were in the NTID science pre-baccalaureate program during their first year on campus and who have been admitted to the B.S. in Biomedical Sciences program for their sophomore year. The extra 2-6 students who might be in these laboratory courses each year as part of the A.S. in Applied Science program will likely not require us to run additional sections of these courses.

We look forward to the success of this AS/BS partnership and welcoming the students from NTID's Applied Science degree program into the CHST Biomedical Sciences Program.

Sincerely,



Daniel Ornt, MD, FACP  
Vice President, Institute of Health Sciences & Technology  
Dean & Professor, College of Health Sciences & Technology



Memorandum

TO: Matthew Lynn, Chair, NTID Science and Math

CC: Shirley Bower, Director, RIT Libraries  
Sheila Smokey, Manager, Acquisitions & Serials

FROM: Joan Naturale, NTID Librarian, RIT Libraries

DATE: 6 June 2016

RE: Library support for proposed NTID A.S. in Applied Science Program

The following outlines the impact of NTID's Science and Math Department on the Associate's degree program in Applied Science.

This program will have a minimal impact on the library's services and collection of books, journals, and databases.

RIT Libraries now use a demand/user-driven model of acquisition for the majority of its book purchases, ensuring books purchased are those that users want.

Our current holdings (journals and databases) are at acceptable levels for associates' level programs. This is based on requests for books not published yet and new journal titles.

The Wallace library's **Science and Health Sciences collection of journals, books, and databases** supports the associate degree programs for this proposed program. There is a librarian content specialist for this content area (Dr. Adwoa Boateng) and she works closely with the College of Science and the College of Health Sciences and Technology, ensuring the collections are up-to-date. Her LibGuides on various science-related topics can be accessed via this link: [http://infoguides.rit.edu/prf.php?account\\_id=43305](http://infoguides.rit.edu/prf.php?account_id=43305)

The library subscribes to **standard core collections of Science and Health Sciences databases and books** by professional associations and publishers for example, Ebsco, Proquest, Science Direct, Springer Link, Ebrary, and other databases found at this link: [http://library.rit.edu/dbfinder/index.php?query=%3A\\*&fq\[\]=subject:%22Sciences%22](http://library.rit.edu/dbfinder/index.php?query=%3A*&fq[]=subject:%22Sciences%22)

There is a strong collection of both print and e-books in these subject areas particularly if one uses specific science and health related terms when searching the RIT Libraries Catalog via <http://albert.rit.edu/>

The Wallace library is a member of the Rochester Regional Library Council (RRLC), which provides RIT students, researchers, and faculty access to materials at other Monroe County libraries, using free **RRLC Library access cards**. Requested journal articles and books not owned by the Wallace Library will be obtained on a timely basis through the library's **interlibrary loan and document delivery services (IDS)** and **ConnectNY**.

Department of Access Services  
National Technical Institute for the Deaf  
97 Lomb Memorial Drive  
Rochester, NY 14623  
(585) 475-6455

November 23, 2016

Dr. Matthew Lynn  
Chairperson  
Department of Science & Mathematics  
National Technical Institute for the Deaf

Dr. Lynn,

The proposed Associate of Science in Applied Science degree program will be very efficiently served by NTID's Department of Access Services (DAS). Many of the courses in this proposal are taught within RIT's College of Science, College of Health Sciences and Technology, and College of Liberal Arts. DAS already provides interpreting and captioning services for many sections of the courses indicated in the proposal and there are also sections of some English and liberal arts courses that are regularly taught by NTID faculty without the use of access services. Added students would most often be served within existing supported sections of these classes. Lower division courses are generally larger and hold higher numbers of deaf students, making them a relatively good bargain for service efficiency.

With increasing enrollments in sections of baccalaureate-level courses, DAS will see a small increase in resource requirements but this is impossible to quantify. We have been seeing slow, consistent growth over our entire history mapped to the increasing success of NTID-supported students in RIT majors. This proposal would fit comfortably within that trend.

We certainly support increased opportunities for deaf students to undertake studies in new areas, especially when the curriculum design does not place extraordinary burdens on Access Services. The proposed AS in Applied Science degree program certainly fits this ideal.

Sincerely,



Stephen A. Nelson  
Director of Operations, Access Services

Office of the Dean  
College of Liberal Arts  
92 Lomb Memorial Drive  
Rochester, NY 14623

November 18, 2016

Dr. Matthew Lynn  
Chair, Department of Science & Mathematics  
National Technical Institute for the Deaf

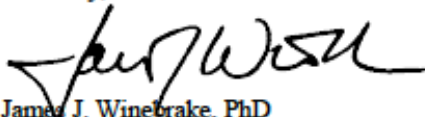
Dear Dr. Lynn,

As Dean of the College of Liberal Arts, I support the proposal for the A.S. in Applied Science degree program. Our college is happy to provide seats for students in any of a number of courses that have the RIT LAS Perspectives designation.

The proposed enrollment numbers for this degree program (2-6 students per year) should not necessitate opening new sections of liberal arts courses. However, if the program grows substantially, we will need to revisit whether additional sections are required. I would also like to highlight the fact that quite a few sections of these liberal arts courses are taught by NTID faculty members, allowing for small class sizes and direct communication between instructor and students.

We look forward to welcoming the students from the A.S. Applied Science degree program into courses offered by my college.

Sincerely,



James J. Winebrake, PhD  
Dean, College of Liberal Arts



University Writing Program  
92 Lomb Memorial Drive  
Rochester, NY 14623-5604  
585-475-6376

November 22, 2016

Dr. Matthew Lynn  
Chairperson  
Department of Science & Mathematics  
National Technical Institute for the Deaf

Dear Dr. Lynn,

As director of RIT's University Writing Program, I support the development of the A.S. in Applied Science degree program. We can provide seats for students in the Critical Reading & Writing (UWRT-100) and Writing Seminar (UWRT-150) courses that are required by this major. The proposed enrollment numbers for this degree program should not necessitate opening new sections of these English courses because we currently already serve approximately 8 science pre-baccalaureate students each year, because this proposal anticipates an increase in enrollment of only 2-6 students per year, and because students will have the flexibility to take these courses as they are able to fit them into their academic schedules. I would also like to highlight the fact that some sections of these English courses are taught by NTID faculty members, allowing for small class sizes and direct communication between instructor and students. Such is a unique feature not only of this program but also of the relationship between NTID and the University Writing Program.

I look forward to welcoming the students from the A.S. Applied Science degree program into courses offered by my program.

Sincerely,



David S. Martins, Ph.D.  
University Writing Program Director and Associate Professor

December 6, 2016

December 6, 2016

Dr. Matthew Lynn  
Chairperson  
Department of Science & Mathematics  
National Technical Institute for the Deaf

RE: Letter of Support for the NTID A.S. in Applied Science program

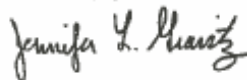
Dear Dr. Lynn:

It is my honor and pleasure to write a letter of recommendation for the proposed NTID Associate of Science in Applied Science program. For the reasons outlined below, I believe this program will join the long list of NTID degree programs that prepares our students to transfer to RIT baccalaureate programs.

The course mask reflects solid grounding in science skills as well as the required English, perspectives, math and science courses. The anticipated number of students in this major will be welcomed into the NTID Department of Liberal Studies (DLS) developmental and baccalaureate English course sequences. Our course offerings will easily accommodate these prospective A.S in Science students. We also have plenty of room in our general education perspective courses to support these students.

Congratulations on this proposal! The proposed NTID Associate of Science in Applied Science program will be a great addition to the many degree opportunities that NTID provides to our students. On behalf of DLS, I look forward to seating your new students in our classes and unconditionally supporting the proposed degree!

Very truly yours,



Jennifer L. Gravitz, J.D.  
Associate Professor and Department Chair  
NTID Department of Liberal Studies

21 September 2016

School of Mathematical Sciences  
 College of Science  
 85 Lomb Memorial Drive  
 Rochester, New York 14623-5603  
 (585) 475-2498

Letter of Support for the NTID AS in Applied Science Degree

Dear Dr. Lynn,

I am writing in support of developing the NTID AS in Applied Science Degree. By preparing graduates with skills in nutrition, exercise science, health behavior and management, this degree addresses a growing need for such experts by healthcare, government, and industrial entities as well as in the community at large.

I would add that our flexibility inherent to our courses within the School of Mathematical Sciences (SMS) will provide these students with a broad mathematical and statistical background which will help them succeed in the subsequent science courses within this program.

Those course that have been identified as ones that the students will likely take are the following:

- MATH 161 – Applied Calculus
- MATH 171 – Calculus A
- STAT 145 – Introduction to Statistics I

Even though the number of additional students in this program is relatively low (5 or 10), there will be a cost to the SMS in terms of the number of FTEs needed based on the number of students. The following table lists the number of open seats in these courses for the last two semesters (including this current semester).

Course	# of open seats for Spring 2016 (2155)	# of open seats for Fall 2016 (2161)
MATH 161	1 open seat across 6 sections (213 enrolled)	4 open seats across 5 sections (173 enrolled)
MATH 171	15 open seats across 8 sections (275 enrolled)	2 open seats across 7 sections (244 enrolled)
STAT 145	3 open seats across 12 sections (418 enrolled)	1 open seat across 12 sections (413 enrolled)

In particular, an extra 5 or 10 extra students will likely have an impact on the number of sections that we will need to offer. I do not expect that the SMS would need six extra sections to offer per year, but I can take an experienced estimate that it may force us to offer one extra section per year (which one would depend on which course and when the students take it).

The following table lists the number of credits each course is worth along with the number of contact hours (MATH 171 has two additional workshop hours per week).

Course	# of credits	# of contact hours
MATH 161	4	4
MATH 171	3	5
STAT 145	3	3

Within the College of Science, all course assignments use contact hours to assign to faculty. Taking the average of 4 contact hours for the extra section we will need to offer per year, one extra section per year would translate to 0.133 FTE (using the formula # of contact hours / 30 contact hours per year for a lecturer =  $4 / 30$ ). This is not very significant, but it is certainly worth mentioning.

We welcome this collaboration opportunity to enhance the educational experience for RIT students.

Sincerely,

A handwritten signature in black ink, appearing to read "Matthew E. Coppenbarger". The signature is fluid and cursive, with the first name being the most prominent.

Matthew E. Coppenbarger, Ph.D.  
Associate Professor and Interim Head  
School of Mathematical Sciences  
Rochester Institute of Technology

August 3, 2016

Dr. Matthew Lynn  
Department of Science and Mathematics  
National Technical Institute for the Deaf

Dear Dr. Lynn:

The NTID Center on Employment (NCE) is in full agreement with the proposed establishment of a new Associate of Science (AS) degree in Applied Science. This is allowing qualified students to receive their AS degree and matriculate into a BS program in either to the College of Science (COS) or College of Health Sciences and Technology.

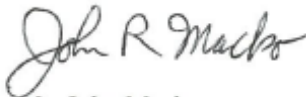
The establishment of this AS degree program is consistent with the demands of today's workplace, i.e. many positions in the science world require a bachelor's degree and many employers are seeking employees with skills and experiences in Biochemistry, Biology, Biomedical Sciences, Chemistry, or Environment Science.

In addition, we are finding that more students considering NTID for their college degree are expecting to initially graduate with a BS degree. With a certain percentage of these students not fully academically ready for the BS level, the AS degree program will allow them to strengthen their skills and knowledge in areas to improve and be better prepared in two years to move into the BS degree programs.

NCE has continuously developed good working relationships with faculty from the Department of Science and Mathematics, so we are fully prepared to help the students as they complete the AS degree and work with them as they enter their BS program.

We look forward to working with the Department of Science and Mathematics and this new Associate of Science degree in Applied Science!

Sincerely,



Mr. John Macko  
Director, NCE

NTID Office of Admissions  
Lyndon Baines Johnson Hall  
52 Lomb Memorial Drive  
Rochester, NY 14623-5604  
585-475-6700  
585-743-1366 (videophone)  
866-644-6843 (toll free)  
585-475-2696 (fax)

June 15, 2016

To Whom It May Concern:

I am writing to offer my full support for the development of a new AS degree program in Applied Science. I have read the proposal and description of the program, and agree completely that the creation of such a major is an excellent idea, and one that is essential for us to implement.

As is stated in the program goals, the AS in Applied Science is an associate's degree program that prepares students for advanced study in one of five bachelor's degree programs: four in the College of Science and one in the College of Health Sciences and Technology. The ability for students to articulate from an NTID program to either the College of Science or the College of Health Science and Technology is a needed option for current students, and from a marketing and recruitment perspective, it is an important option for prospective students, one that could help influence their decision to enroll.

Based on marketing research, application trends, and admissions anecdotal information, this program will meet the needs and be of interest to many of our prospective and current students.

Please contact me if you have any questions regarding this letter of support.

Sincerely yours,



Scott C. Hooker, Director  
NTID Office of Admissions  
Rochester Institute of Technology

## Appendix D - Program Need and Marketability

**Provide documentation from potential feeder schools, employers and directors of advanced educational programs in Appendix D to demonstrate the need and marketability of this program. In particular:**

- **Include analysis from RIT's office of Cooperative Education and Career Services that addresses the opportunity for CO-OP placement, permanent job placement and graduate school admission.**

The NTID Center on Employment director, John Macko, wrote in his letter of support for the A.S. in Applied Science program that the NCE is in agreement with the program proposal. In justifying his approval he wrote “The establishment of this AS degree program is consistent with the demands of today’s workplace, i.e. many positions in the science world require a bachelor’s degree and many employers are seeking employees with skills and experiences in Biochemistry, Biology, Biomedical Sciences, Chemistry, or Environmental Science.”

- **Indicate the basis upon which individuals were selected to prepare external letters of support. Important qualifications include academic background, subject matter expertise, relevant hiring responsibility, involvement in acceptance of students to advanced programs, etc.**

Although this proposal does not include the requirement that a student complete a co-op experience in order to obtain the A.S. degree, letters of support have been sought from Scott Wills of Dow Chemical Company and Professor Gladys Alexandre from the University of Tennessee – Knoxville as both of them have hired NTID students for summer research experiences and both understand the need for providing pathways to baccalaureate STEM degrees for underrepresented groups, such as deaf and hard-of-hearing persons. Mr. Wills noted that “[in] the R&D organization at Dow, we have a large and strong base of technologists, many of whom have Bachelor of Science degrees in chemistry or related fields. ... The proposed Associate of Science in Applied Science degree program will prepare students for careers in the chemical industry, and help Dow to fulfill its goal of increasing workforce diversity in all dimensions.” In a similar vein, Dr. Alexandre commented that “... [a student] could receive an AS degree when she transfers into the BS program, providing her with more opportunities for careers at different levels. I believe this aligns with goals of diversifying and promoting inclusion of traditionally underrepresented groups in STEM fields.”



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Department of Biochemistry, Cellular and Molecular Biology  
The University of Tennessee  
1414 Cumberland Avenue  
Knoxville, TN 37996  
Phone: 865-974-5148  
Fax: 865-974-6306

June 24, 2016

Dear Matthew,

Thank you for sharing the proposal for a new Associate of Science (AS) in Applied Science degree program at NTID. I was pleased to learn of this initiative. As you know, I am providing NTID students with summer research internships in research laboratories in the department of Biochemistry, Cellular and Molecular Biology at the University of Tennessee, Knoxville. As I have learned from my interactions with students and with a few faculty at NTID, many deaf and hard of hearing students do not directly enroll into undergraduate (baccalaureate) programs because they fail to meet minimum requirements in certain disciplines including (but not limited to) Mathematics and English which are required for entering BS programs at RIT. In this case, they then enroll in the non-granting pre-baccalaureate program offered by NTID where they take "bridge" courses in these disciplines until they meet the minimum requirement to transfer into the BS programs at RIT.

I am enthusiastic about the proposed AS program because of two major characteristics it would offer. First, this would be a degree-granting program replacing the existing non-degree-granting science pre-baccalaureate program. In this sense, it will be much the same as two-year programs offered at community colleges that allow for students to transfer into a Bachelor of Science program as a junior at a university. A second added benefit of the proposed AS program at NTID is that the deaf and hard-of-hearing students enrolled would benefit from the numerous services (faculty tutors, interpreters, captionists, and a job placement office) available at RIT/NTID to support deaf and hard-of-hearing students in their educations and career-search efforts. Leveraging the unique resources of NTID should be particularly attractive to deaf and hard-of-hearing students interested in science-related careers across the country.

I feel particularly excited about offering such programs to deaf and hard of hearing students because one of the deaf students from NTID we are hosting this summer is currently enrolled into the pre-baccalaureate program because she couldn't enroll directly into the BS in Chemistry. As it stands, she will not earn a degree from RIT until she completes her BS program. However, under this new proposal, she could receive an AS degree when she transfers into the BS program, providing her with more opportunities for careers at different levels. I believe this aligns with goals of diversifying and promoting inclusion of traditionally underrepresented groups in STEM fields.

Gladys Alexandre, Ph. D.  
Professor and Associate Head  
Department of Biochemistry, Cellular and Molecular Biology  
The University of Tennessee, Knoxville





bxegsl@rit.edu

The Dow Chemical Company  
400 Arcola Road  
Collegeville, PA 19426  
U.S.A.

7-31-2016

Dear Professor Lynn,

I am writing this letter in support of the proposal for the new Associate of Science in Applied Science degree program at NTID. As lead recruiter for Dow at NTID, I believe that this program will position NTID/RIT students to be fully competitive with students from any other college for roles in our R&D organization.

Over the past five years I have met and interviewed many excellent NTID students, and worked alongside several in various laboratory settings. We recruit at NTID because of the quality of talent we find there, and we are motivated by Dow's stated corporate diversity goal to build and sustain a diverse and inclusive culture:

Our employees are the very source and catalyst for Dow's innovation, value creation and sustainability. We are keenly focused on fostering an environment where every individual is included and contributing his or her personal best. People living with disabilities are a unique source of talent who can deliver substantial value to our company, our customers and our communities. Dow is committed to the recruitment and development of top talent, including individuals who happen to live with a disability. We believe that qualified candidates and employees living with disabilities add value to our organization through diversity of thought and culture - which contributes substantively to our ability to operate as an innovative and sustainable organization.

Dow has several NTID alumni currently in our workforce, although at present none are in the R&D organization. Each summer since 2010 we have had NTID students working as summer R&D interns in our product area and core analytical labs, and have experienced firsthand the value these students bring to their workgroups. Their work quality and commitment to successfully making an impact has been excellent.

In the R&D organization at Dow, we have a large and strong base of technologists, many of whom have Bachelor of Science degrees in chemistry or related fields. As we expand this base and replace natural attrition, it is our hope that graduates from NTID/RIT will be among the applicants for open lab positions. Through the proposed AS program, students would take freshman-level and sophomore-level coursework in the College of Science and the College of Health Science and Technology from the beginning of their college careers. This should serve as an excellent base for their education, and help them to compete on an even playing field for these roles.

The proposed Associate of Science in Applied Science degree program will prepare students for careers in the chemical industry, and help Dow to fulfill its goal of increasing





[bxegsl@rit.edu](mailto:bxegsl@rit.edu)

---

**The Dow Chemical Company**  
400 Arcola Road  
Collegetown, PA 19426  
U.S.A.

workforce diversity in all dimensions. I fully support this proposal, and look forward to working with these students in the coming years.

Sincerely,

**Scott Wills**  
**Research Scientist**  
**Dow Chemical**  
**Company**



WORLDWIDE PARTNER

**Appendix E - Space Allocation Request Form**

Not applicable to this proposal.

## **Appendix F - Full Faculty Curriculum Vitae**

Curricula vitae for faculty members in the NTID Department of Science and Mathematics who teach the NTID mathematics (NMTH) courses included in this degree program or who serve as department chair and program coordinator are included on the following pages.

**Mitchell Bacot**  
Email: [mrbntm@rit.edu](mailto:mrbntm@rit.edu)

**Education**

Rochester Institute of Technology, Rochester, NY Master of Science in Secondary Education	2007
Rochester Institute of Technology, Rochester, NY Bachelor of Science in Applied Mathematics Minor Concentration – Business	2005
Drexel University, Philadelphia, PA Courses in Mathematics	2001-2003
Gallaudet University, Washington, DC General Courses	1999-2000

**Work Experience**

<b>Rochester Institute of Technology, Rochester, NY</b> Teaching Mathematics to college students	2007-Present
<ul style="list-style-type: none"><li>• Preparation for Algebra</li><li>• Foundations of Algebra</li><li>• Mathematics in Society</li><li>• Math Applications in Business Technology</li><li>• Concepts of Measurement</li><li>• Intro to College Math</li><li>• Integrated Algebra</li><li>• Applications of Algebra</li><li>• Elements of Trigonometry</li><li>• Advanced Mathematics</li><li>• Elementary Statistics</li></ul>	
Tutoring Mathematics to college students	2003-Present
<ul style="list-style-type: none"><li>• Preparation for Algebra</li><li>• Foundations of Algebra</li><li>• Mathematics in Society</li><li>• Integrated Algebra</li><li>• Applications of Algebra</li><li>• Elements of Trigonometry</li><li>• Advanced Mathematics</li><li>• Elementary Statistics</li><li>• Trig for Coordinate Analysis</li><li>• College Algebra</li><li>• Precalculus</li><li>• Calculus A</li></ul>	

<b>Rochester After School Academy</b> , Rochester, NY Tutoring Mathematics to middle school and high school students	2006-2009
<b>Private Tutor</b> , Rochester, NY One-On-One Tutoring to high school student	2007
<b>Rochester School for the Deaf</b> , Rochester, NY Substitute Teacher for middle school and high school	2005-2007
<b>Rochester School for the Deaf</b> , Rochester, NY Mathematics Internship	2007
<b>Rochester School for the Deaf</b> , Rochester, NY Long-Term Substitute Teacher: Modified Class	2006
<b>Leadership Development Camp: Rochester After School Academy</b> , Rochester, NY Camp Staff	2006
<b>California School for the Deaf</b> , Fremont, CA Long-Term Substitute Teacher to high school students	2006
<b>Rochester Institute of Technology</b> , Rochester, NY Adjunct Professor	2005-2006
<b>Rochester School for the Deaf</b> , Rochester, NY One-On-One Long-Term Substitute Teacher to elementary student	2005
<b>Drexel University</b> , Philadelphia, PA SAT Preparation Assistant of Mathematics	2002-2003

### Awards

- Dean's List: Rochester Institute of Technology
- Dean's List: Gallaudet University
- Leon Auerbach Freshman Mathematics Award: Gallaudet University

**GARY C. BLATTO-VALLEE**

216 Circle Lane • Webster, NY 14580 • (585) 754 – 7185 • gcbntm@rit.edu

**EDUCATION**

Rochester Institute of Technology MS in Professional Studies Concentrations in Psychology and Mathematics	Rochester, NY August 2009 GPA 4.00
SUNY Brockport BS in Mathematics Minor in Computer Science	Brockport, NY December 1998 Math GPA 3.66
National Technical Institute for the Deaf Rochester Institute of Technology AAS in Educational Interpreting	Rochester, NY May 1995

**CAREER EXPERIENCE**

**Research Associate** National Technical Institute for the Deaf, Rochester, NY  
Creator of the on-line mathematics video resources for DeafTEC: Technological Education Center for Deaf and Hard of Hearing Students. A National Science Foundation Advanced Technological Education Center of Excellence. Create and disseminate video resources designed specifically for Deaf and hard of hearing students across the country. Provide training for mathematics educators, support faculty and industry professionals related to proper use and integration of the video resources into the classroom and workplace. (December 2012 –present)

**Senior Math Lecturer** National Technical Institute for the Deaf, Rochester, NY  
Provide instruction in the area of mathematics ranging from Pre-Algebra to Pre-Calculus classes. Special content classes include: Trigonometry for Precision Machining and Concepts of Measurement. Pedagogical methods include classroom lecture, “flipped classroom” style utilizing self generated video materials, lab experiences as well as technological tools to aid in mathematics comprehension. Previous experience in assessment of faculty and staff American Sign Language skill as well as curriculum evaluation at the multi-departmental level. (October 2000 – present)

**Freelance Interpreter** Rochester, NY  
Provide interpreting for various settings such as medical, educational, psychiatric, and professional development seminars. Proficient in serving a wide range of language preferences from ASL to Manually Coded English. (January 1993 – Present)

**Video Relay Service Interpreter** Sorenson VRS, Rochester, NY  
Interpreted video relay calls between deaf and hearing people in a local call center. (October 2012 – present)

**Medical Sign Language Interpreter** University of Rochester Medical Center, Rochester, NY  
Provided interpreting services for deaf patients, deaf providers and hearing providers both in and out of the hospital setting. (June 2010 – December 2012)

**Video Relay Service Interpreter** Interpretex, Rochester, NY  
Interpreted video relay calls between deaf and hearing people in a local call center. (May 2005 – Aug 2012)

**Research Associate** National Technical Institute for the Deaf, Rochester, NY  
Worked on a National Institutes of Health grant focusing on the mathematical disparities between deaf and hearing peers. Responsibilities included design and development of research protocols and testing procedures. Tested subjects and prepared data for future analysis.  
(June 2008 – June 2009)

**Staff Interpreter** John L. Norris Alcoholism Treatment Center, Rochester, NY  
Provided interpreting for various 12-step meetings, faculty meetings and lecture groups. Served as a group facilitator, and fulfilled various staff member responsibilities. (May 1994 - August 1998)

**Math Tutor** SUNY Brockport, Brockport, NY  
Provided tutoring and aided students in college-level mathematics within the setting of SUNY Brockport's Center for Academic Improvement. Courses included were Algebra, Calculus (all levels), Discrete Mathematics, Real Analysis and College Geometry. (January 1998 – May 1998)

### **CONFERENCE PRESENTATIONS**

**Blatto-Vallee, G.** (2014, July). On-line Mathematics Video Resources for Deaf and Hard of Hearing Students. Workshop to be presented at the PEPNET 2 Training Institute/Annual AHEAD Conference, Sacramento, CA

Kidd, D., **Blatto-Vallee, G.**, Marchetti, C. (2014, April). Various Best Practices for Mathematics Instruction. Will be presented at the Annual Meeting of the National Council of Teachers of Mathematics, New Orleans, LA

**Blatto-Vallee, G.** (2013, June). Online instructional modules for individual tutoring of deaf and hard-of-hearing students. Pre-Conference workshop presented at the National Conference of the Council of American Instructors for the Deaf, Rochester, NY

**Blatto-Vallee, G.**, Foxsmith, L., Hopper, M. (2013, June). The Flipped Classroom: Deaf College Students' Experiences. Presentation at the National Conference of the Council of American Instructors for the Deaf June 2013 in Rochester, NY

Kidd, D., **Blatto-Vallee, G.**, Marchetti, C. (2013, June). Various Best Practices for Mathematics Instruction. Presentation at the National Conference of the Council of American Instructors for the Deaf, Rochester, NY

**Blatto-Vallee, G.**, Kelly, R., Gaustad, M., Porter, J., (2006, April) Deaf and Hearing Students' Use of Relational, Pictorial, or Non-Visual Representation in Solving Mathematical Problems. Paper presented at the Annual American Educational Research Association Conference, San Francisco

Bull, R., **Blatto-Vallee, G.**, & Fabich, M. (2006, September) Basic numerical processing skills in deaf adults. Symposium paper presented at the British Psychological Society (BPS) Developmental Section Conference, Royal Holloway London.

Kelly, R. R., Berent, G. P., **Blatto-Vallee, G.**, Gaustad, M. G., Porter, J., & Fonzi, J., (2006, October). Two Studies of Deaf and Hearing Learners: Knowledge of English Universal and Numeral Quantifiers and Visual-spatial Representation in Mathematical Problem Solving. Poster Session presented at the National Science Foundation's Science of Learning Centers Awardee Meeting 2006 in Washington, D.C.

Marschark, M., **Blatto-Vallee, G.**, Bull, R. & Cornoldi, C. (2003). Relative magnitude judgements by deaf and hearing individuals: Surprising Similarities and Surprising Differences. Paper presented at the *European Society of Cognitive Psychology*. September 2003.



## **PUBLICATIONS**

- Blatto-Vallee, G.**, Kelly, R.R, Gaustad, M.G., Porter, J., & Fonzi, J. (2007). Visual-Spatial Representation in Mathematical Problem Solving by Deaf and Hearing Students. *Journal of Deaf Studies and Deaf Education*, 12(4), 432 – 448.
- Bull, R., **Blatto-Vallee, G.**, & Fabich, M. (2006). Subitizing, magnitude representation, and magnitude retrieval in deaf and hearing adults. *Journal of Deaf Studies and Deaf Education*, 11, 289-302.
- Bull, R, Marschark, M. & **Blatto-Vallee, G.** (2005) SNARC hunting: Examining number representation in deaf students. *Learning and Individual Differences*, 15, 223-236.
- Blatto-Vallee, G.** (2004). One of a Kind. Book review, Nunes, T. (2004). Teaching mathematics to deaf children. *Journal of Deaf Studies and Deaf Education* 10(3):317-317

## Curriculum vitae

Austin U. Gehret  
27 Crimson Way  
Webster, NY 14580

Cell: 585-755-4633  
Work: 585-475-3971  
augnts@rit.edu

### EDUCATION

**Ph.D. Biophysics** 2006  
University of Rochester  
School of Medicine and Dentistry  
Rochester, New York 14642.

**Dissertation:** Understanding the Mechanisms of Dominant Negative Effects on Pheromone Signaling by Mutant Ste2p Receptors in *Saccharomyces cerevisiae*.

**M.S. Biophysics** 2003  
University of Rochester  
School of Medicine and Dentistry  
Rochester, New York 14642.

**B.S. Biochemistry** 2000  
Union College  
Schenectady, New York 12308.

**Thesis:** Structural studies of *Bacillus subtilis* thymidylate synthase mutants Y108F and R141E.

### TEACHING EXPERIENCE

**Assistant Professor** 2011-Present  
*National Technical Institute for the Deaf, Rochester Institute of Technology*

**Courses Taught**  
Biotechnology I (NLST-240) 2014-present  
Biotechnology II (NLST-245) 2014-present

**Courses Tutored**  
Physical Chemistry (CHMG-441) 2016  
Biochemistry I (CHMB-402) 2013-2015  
Biochemistry II (CHMB-403) 2013-present  
Biochemistry of Infectious Diseases (CHMB-450) 2014  
Biochemistry for Health Sciences (CHMB-240) 2013-2014  
General & Analytical Chemistry I, II (CHMG-141,142) 2013  
General & Analytical Chemistry I Lab (CHMG-145) 2013  
General-Organic-Biochemistry I (CHMB-111) 2013

General & Analytical Chemistry I (1011-215) 2011-2012  
General & Analytical Chemistry II (1011-216) 2011-2013  
General & Analytical Chemistry III (1011-217) 2012-2013  
Chemistry Principles Lab I (1011-205) 2011-2012  
Chemistry Principles Lab II (1011-206) 2011-2013  
General & Analytical Chemistry III Lab (1011-227) 2012-2013  
Chemistry of Water and Waste Water (1011-272) 2011-2012

Biochemistry: Conformation & Dynamics (1009-502)	2011-2013
Biochemistry: Metabolism (1009-503)	2011-2013
Biochemistry: Nucleic Acids (1009-504)	2012-2013
Fundamentals of Biochemistry (1011-203)	2012-2013
Bioinformatics (1001-493)	2012-2013

**Lecturer** **2010-2011**  
*National Technical Institute for the Deaf, Rochester Institute of Technology*

**Course Tutored**

Biochemistry: Conformation & Dynamics (1009-502)	2010
College Physics II (1017-212)	2010-2011
Fundamentals of Biochemistry (1011-203)	2011

**Adjunct Assistant Professor** **2010**  
*Wegmans School of Pharmacy, St. John Fisher College*  
 Biosystems II (PHAR 3240)

**Teaching Assistant** **2001**  
*School of Medicine and Dentistry, University of Rochester*  
 Biochemistry (BIO 250)

### RESEARCH EXPERIENCE

**Assistant Professor, Research Advisor** **6/12-Present**  
*National Technical Institute for the Deaf, Rochester Institute of Technology*  
 Advisee: Courtney Kellogg M.S. Chemistry  
 Thesis: "Phenotypic studies of *pho13Δ* in *Saccharomyces cerevisiae*" **10/14-06/16**

**Adjunct Assistant Professor** **11/10-11/13**  
*University of Rochester, Department of Pharmacology and Physiology,*  
 Techniques used: Tissue Culture, ELISA, Epifluorescence Microscopy, Western Blotting, RT-PCR, Cell Transfection, Molecular Cloning

**Post-doctoral Fellow** **8/07-08/10**  
*University of Rochester, Department of Pharmacology and Physiology,*  
 Techniques used: Tissue Culture, ELISA, Epifluorescence Microscopy, Western Blotting, RT-PCR, Cell Transfection, Molecular Cloning, Radioligand Binding

**Post-doctoral Fellow** **7/06-7/07**  
*University of Rochester, Department of Biochemistry and Biophysics,*  
 Techniques used: Bioluminescence Resonance Energy Transfer, Flow Cytometry, Yeast Cell Culture, Western Blotting, Molecular Cloning, Yeast Genetics

**Ph.D. Candidate** **5/01-6/06**  
*University of Rochester, Department of Biochemistry and Biophysics,*  
 Techniques used: Bioluminescence Resonance Energy Transfer, Flow Cytometry, Yeast Cell Culture, Western Blotting, Molecular Cloning, Yeast Genetics

### PUBLICATIONS

**Gehret AU, Elliot LB, MacDonald J** (2016) Active Collaborative Learning Through Remote Tutoring: A Case Study with Students who are Deaf or Hard of Hearing *Journal of Special Education Technology*. Accepted for publication (8/12/16)

Austin U. Gehret *Curriculum vitae* 2

**Gehret AU** (2016) Pop-It Beads to Introduce Catalysis of Reaction Rate and Substrate Depletion Effects *Biochemistry and Molecular Biology Education*. Accepted for publication (6/27/16)

**Gehret AU** and Hinkle PM (2013) siRNA Screen Identifies the Phosphatase Acting on the G Protein-Coupled Thyrotropin-Releasing Hormone Receptor. *ACS Chemical Biology*. Mar 15; 8(3): 588-598.

Hinkle PM, **Gehret AU** and Jones BW (2012) Desensitization, trafficking, and resensitization of the pituitary thyrotropin-releasing hormone receptor. *Front. Neurosci.* 6:180. doi: 10.3389/fnins.2012.00180

**Gehret AU**, Connelly SM, Dumont ME (2012) Functional and Physical Interactions among *Saccharomyces cerevisiae*  $\alpha$ -Factor Receptors. *Eukaryot. Cell*. Oct; 11(10):1276-88.

**Gehret AU** and Hinkle PM (2010) Importance of regions outside the cytoplasmic tail of G protein-coupled receptors for phosphorylation and dephosphorylation. *Biochem. Journal*. May 13; 428(2): 235-245.

**Gehret AU**, Jones BW, Greuber EK, Cook LB, Tran P, Hinkle PM (2010) Role of helix 8 of the thyrotropin-releasing hormone receptor in phosphorylation by G protein-coupled receptor kinase. *Mol Pharmacol*. Feb; 77(2):288-97.

Bajaj A, Connelly SM, **Gehret AU**, Naider F, Dumont ME (2007) Role of extracellular charged amino acids in the yeast  $\alpha$ -factor receptor. *Biochimica et Biophysica Acta*. 1773(6): 707-17.

**Gehret AU**, Bajaj A, Naider F, Dumont ME (2006) Oligomerization of the yeast  $\alpha$ -factor receptor: Implications for dominant negative effects of mutant receptors. *J Biol Chem*. 281(30): 20698-714.

Knauf PA, Law FY, Leung TW, **Gehret AU**, Perez ML (2002) Substrate-dependent reversal of anion transport site orientation in the human red blood cell anion-exchange protein, AE1. *PNAS* 99(16): 10861-4.

#### **MANUSCRIPTS IN PREPARATION**

**Gehret AU**, Trussell JW, Michel LV (2016) Quiet Science: Training Students who are Deaf and Hard of Hearing in Bioscience Research. *Journal of Science Education for Students with Disabilities*. Submitted for review (Oct. 2016)

**Gehret AU**, Mills KB, Kellogg C, Strassner AS, Whaler B, Walling M, Filkins L, Lof A, Puts R, Patron AR, O'Handley SF (2016) The *PHO13* *p*-Nitrophenyl phosphatase gene from the HAD superfamily in *Saccharomyces cerevisiae* demonstrates 2-phosphoglycolate phosphatase activity. *In preparation*

#### **PRESENTATIONS**

**Gehret, A.U.** A classroom-based activity designed to enhance student comprehension of enzyme catalysis. ACS NERM 2015, Ithaca College, Ithaca, NY June 11, 2015.

**Gehret, A.U.** A classroom-based activity designed to enhance student comprehension of enzyme catalysis. NTID Research Symposium, National Technical Institute for the Deaf, Rochester, NY May 28, 2015.

**Gehret, A.U.** and Elliot, L.B. *Providing Remote STEM Tutoring to Deaf/Hard-of-Hearing Students using Google+ Hangouts*. NTID Brown Bag Seminar, National Technical Institute for the Deaf, Rochester, NY April 30, 2015.

Elliot, L.B., **Gehret, A.U.**, Davis, S., Kushalnagar, R., & Goldmann, W. *Best practices in online tutoring in STEM with the Deaf STEM Community Alliance Virtual Academic Community (VAC)*. 2013 Convention of American Instructors of the Deaf National Conference, Rochester, NY. June 27, 2013.

**Gehret, AU** and Hinkle PM. The Thyrotropin-releasing Hormone (TRH) Receptor Maintains Agonist-mediated Phosphorylation Properties Independent of its C-terminus. Fairport, NY May 14, 2009.

### **MEETING ABSTRACTS**

**Austin U. Gehret.** Using Pop-It Beads in the Classroom to Enhance Student Comprehension of Enzyme Catalysis and Reaction Rate. Experimental Biology 2016. San Diego, CA *FASEB J.* 30 (Meeting Abstracts): 662.2

Courtney Kellogg, Kimbria Blake, Suzanne O'Handley, **Austin U. Gehret.** Phenotypic studies of *PHO13Δ* in *Saccharomyces cerevisiae*. Experimental Biology 2016. San Diego, CA *FASEB J.* 30 (Meeting Abstracts): 1083.10

Courtney Kellogg, Kimbria Blake, Suzanne O'Handley, **Austin U. Gehret.** Phenotypic and complementation studies of *PHO13* activity in *Saccharomyces cerevisiae*. 250th ACS National Meeting and Exposition Boston, MA, August 2015.

Courtney Kellogg, Kimbria Mills, Suzanne O'Handley and **Austin U. Gehret.** Phenotypic and complementation studies of *PHO13* activity in *Saccharomyces cerevisiae*. ACS NERM 2015 Ithaca, NY, June 2015

**Austin U. Gehret**, Kimbria Mills, Courtney Kellogg, and Suzanne O'Handley. Characterization and Complementation of a Potential Novel Phenotype for *Saccharomyces cerevisiae* *PHO13*. Experimental Biology 2015. Boston, MA *FASEB J.* 29 (Meeting Abstracts): 573.34

Jasmine Edwards, **Austin U. Gehret**, and Suzanne O'Handley. A Phosphoglycolate Phosphatase Virulence Factor from *Staphylococcus aureus*. Experimental Biology 2015. Boston, MA *FASEB J.* 29 (Meeting Abstracts): 721.11

**Austin U. Gehret**, Kimbria Blake, Jasmine Edwards, and Suzanne F. O'Handley. Characterization and complementation of a potential novel phenotype for *Saccharomyces cerevisiae* *PHO13*. Experimental Biology 2014. San Diego, CA *FASEB J.* 28 (Meeting Abstracts): 976.5

Kimbria Justine Blake, **Austin U. Gehret**, Regina Puts, Alejandra Rizo Patron, Sebastian Ramirez, Amanda Strassner, Alessandra Lof, Brandon Wahler, Megan Walling, and Suzanne F. O'Handley. A Phosphoglycolate Phosphatase from *Saccharomyces cerevisiae*. Experimental Biology 2013. Boston, MA *FASEB J.* 27 (Meeting Abstracts): 806.6

**Gehret, AU** and Hinkle, PM. Protein Phosphatase 1-alpha is Involved in the Regulation of the Thyrotropin-Releasing Hormone Receptor. Experimental Biology 2012. San Diego, CA *FASEB J.* 26 (Meeting Abstracts): 1b180

Hinkle, PM, Travers JG, **Gehret AU**. Recycling of Internalized TRH Receptors Requires Receptor Dephosphorylation. ENDO 2011. Boston, MA June 4-7, 2011 *Endocr Rev* 32: P1-167

**Gehret, AU** and Hinkle PM. Regulation of the TRH Receptor Is Dictated by Regions of the Receptor Outside the Phosphorylated C-Terminal Domain. ENDO 2010. San Diego, CA June 19-22, 2010 *Endocr Rev* 31: P2-577

**Gehret, AU** and Hinkle PM. Role of Helix 8 of the Thyrotropin-releasing hormone receptor in activation of G protein-coupled receptor kinases. 10<sup>th</sup> Annual Great Lakes GPCR Retreat. Rochester, NY Oct. 15-17, 2009.

**Gehret, AU**, Connelly SM, Dumont ME. Interactions among yeast  $\alpha$ -factor receptors in G protein signaling. 8th Annual Great Lakes GPCR Retreat. London, ON Sept. 27-29, 2007.

**Gehret, AU**, Bajaj A, Dumont ME. Ste2p dimerization in *Saccharomyces cerevisiae* and its role in dominant negative effects of mutant receptors. Gordon Conference Second Messengers and Protein Phosphorylation. Biddeford, ME Jun 12-17, 2005.

### HONORS AND AWARDS

NTID Pre-tenure Teaching/Tutoring Award	2016
NTID Pre-tenure Scholarship Award (Nominated)	2016
Faculty Evaluation and Development (FEAD) grant <i>National Technical Institute for the Deaf, RIT, Rochester, NY</i>	2015
ASBMB Annual Meeting Undergraduate Faculty Travel Award	2014
Faculty Evaluation and Development (FEAD) grant <i>National Technical Institute for the Deaf, RIT, Rochester, NY</i>	2014
Provosts Innovative Teaching with Technology Award (Nominated)	2014
Faculty Evaluation and Development (FEAD) grant <i>National Technical Institute for the Deaf, RIT, Rochester, NY</i>	2013
Leon L. Miller Graduate Fellowship <i>University of Rochester, Rochester, NY</i>	2000

### PROFESSIONAL SOCIETIES

Convention of American Instructors of the Deaf (CAID)	2013-present
The American Society for Biochemistry and Molecular Biology (ASBMB)	2011-present
The Endocrine Society	2010-2012
Sigma XI	1999-2000

### PROFESSIONAL SERVICE

61 <sup>st</sup> Annual ACS Undergraduate Research Symposium (Rochester Section) Moderator/Judge	April, 2016
Ad hoc reviewer, <i>Journal of Special Education Technology</i>	April, 2016
ASBMB 20 <sup>th</sup> Annual Undergraduate Student Research Poster Competition Judge	April, 2016
ASBMB 19 <sup>th</sup> Annual Undergraduate Student Research Poster Competition Judge	March, 2015
ASBMB 18 <sup>th</sup> Annual Undergraduate Student Research Poster Competition Judge	April, 2014
Ad hoc reviewer, <i>Endocrinology</i>	March, 2014
Ad hoc reviewer, <i>Endocrinology</i>	September, 2013
Ad hoc reviewer, <i>Endocrinology</i>	February, 2012
Ad hoc reviewer, <i>Endocrinology</i>	September, 2011

### INSTITUTE SERVICE

NTID Faculty Congress	2016-present
RIT Long Range Planning and Environment Committee	2014-2016
NTID Classroom Communication Committee (Chair)	2014-2015
NTID Science & Math Search Committee (Co-Chair)	2013-2015
NTID Classroom Communication Committee (Co-Chair)	2013-2014
NTID Science & Math Chair Interview Committee	2013
RIT College of Health Science & Technology Curriculum Committee	2012-2014
RIT Long Range Planning Committee	2012-2014

### SKILLS

American Sign Language (**Advanced** – Sign Language Proficiency Interview (SLPI) rating)

**Bonnie C. Jacob (nee McAdoo)**

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Science and Mathematics Department  
National Technical Institute for the Deaf  
Rochester Institute of Technology  
52 Lomb Memorial Drive  
Rochester, NY 14623

Phone: (585) 475-2275  
Email: bcjntm@rit.edu  
<http://people.rit.edu/bcjntm/>

**PROFESSIONAL POSITIONS**

1. Assistant Professor, Science and Mathematics Department, National Technical Institute for the Deaf at Rochester Institute of Technology, Rochester, NY, 2012-present.
2. Lecturer, Science and Mathematics Department, National Technical Institute for the Deaf at Rochester Institute of Technology, Rochester, NY, 2010-2012.
3. Research Assistant, Department of Mathematical Sciences, Clemson University, Clemson, SC, 2009-2010.
4. Graduate Teacher of Record, Department of Mathematical Sciences, Clemson University, Clemson, SC, 2005-2009.
5. Visiting Graduate Student, Sparsity concepts and applications in optical tomography research collaboration, Universität Bremen Zentrum für Technomathematik, Germany, Fall 2007.
6. Research Intern, Air Force Research Laboratory, San Antonio, TX, Summer 2007.

**EDUCATION:**

Ph.D. in Mathematical Sciences Clemson University  
Advisor: Taufiqur Khan May 2010  
Department of Mathematical Sciences  
Thesis: *Source Optimization in Abstract Function Spaces for Maximizing Distinguishability: Applications to the Optical Tomography Inverse Problem*

M.S. in Mathematical Sciences Clemson University  
Department of Mathematical Sciences May 2006

A.B. in Music, cum laude Smith College  
May 2000

**PROFESSIONAL GRANTS AND FUNDING:**

1. Council for Undergraduate Research in Mathematics (CURM) Mini-grant Extension, PI, June 2014-May 2015.
2. Rochester Institute of Technology Grant Writer's Bootcamp Seed Funding, June 2014-May 2015.



3. National Technical Institute for the Deaf Grant Writers' Support Program Grant, January-May 2014.
4. Council for Undergraduate Research in Mathematics (CURM) Mini-grant, PI, June 2013-May 2014.
5. TURMS Conference Travel Grant, October 2012.
6. REUF Workshop Travel Grant, June 2012.
7. NTID Professional Development Mini-grant, March 2012.

**PEER-REVIEWED PUBLICATIONS:**

*The symbol \* indicates that the author was an undergraduate student at the time of research.*

1. T. Ansill\*, B. Jacob, B. Podlisny\*, D. Saavedra\*, and P. Yeung\*. Three-state zero forcing on graphs. *To appear in Congressus Numerantium.*
2. K. Fetcie\*, B. Jacob and D. Saavedra\*. The failed zero forcing number of a graph. *Involve: a journal of mathematics*, 2015.
3. C. Grood, J. Harmse, L. Hogben, T. Hunter, B. Jacob, A. Klimas and S. McCathern. Minimum rank with zero diagonal. *The Electronic Journal of Linear Algebra*, 2014.
4. H. Adler, B. Jacob, K. Kurz and R. Kushalnagar. Undergraduate research in mathematics with deaf and hard-of-hearing students: four perspectives. *Involve: a journal of mathematics*, 2014.
5. B. Jacob and J. Jacob. Infinite graphs with finite  $l_p$ -rank number: a characterization. *Congressus Numerantium*, 2012.
6. B. Jacob, B. Jin, T. Khan and P. Maass. Optimal source in optical tomography for maximum distinguishability, *Journal of Applied Functional Analysis*, 2012.
7. J. Zohner, C. Clark, T. Khan, B. McAdoo and R. Thomas. Incorporation of refractive index gradients in the solution of the radiative transport equation. *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, March 2008.
8. R. Laskar and B. McAdoo, Varieties of centers in trees. *Congressus Numerantium*, December 2006.

**OTHER PUBLICATIONS:**

1. T. Ansill\*, B. Jacob, J. Penzellna\* and D. Saavedra\*. Failed skew zero forcing and two-set orderability of graphs. *In preparation.*
2. B. Jacob and J. Jacob. From zero to max optimal:  $l_p$  optimality of graph rankings for  $p \geq 0$ . *In preparation.*
3. B. McAdoo, T. Khan, C. Clark, L. Irvin, I. Noojin, D. Burrows, D. Wooddell, R. Thomas and J. Zohner. 2-dimensional B-spline algorithms with applications to ray tracing in media of spatially-varying refractive index. *Air Force Research Laboratory Technical Report. AFRL-RH-BR-TR-2007-0075*, August 2007.

4. F. Krahmer, Y. Lin, B. McAdoo, K. Ott, J. Wang, D. Widemann and B. Wohlberg. Blind image deconvolution: motion blur estimation. Team Report, Mathematical Modeling in Industry X Workshop, Institute of Mathematics and its Applications, August 2006.

**INVITED TALKS:**

1. Failed and n-state zero forcing on graphs. Houghton College Colloquium, March 2015.
2. Failed zero forcing sets in graphs. Hobart and William Smith Colleges Mathematics Colloquium, April 2013.
3. Choice of an optimal source in optical tomography: a special case and alternative formulation. Mini-symposium on Inverse Problems and Nonsmooth Optimization. American Mathematical Society (AMS) Fall Eastern Sectional Meeting, Rochester, NY, September 2012.
4. A network model of optical tomography. Alfred University, February 2012.
5. Selection of an optimal source to make the optical tomography problem less ill-posed, AMS Special Session on Set-Valued Optimization and Variational Problems, Joint Mathematics Meetings, Boston, MA, January 2012.
6. Classification of nodes based on signal behavior in a network. AMS Spring Western Section Meeting, April 2011.
7. A discrete challenge based on optical imaging. SUNY Geneseo Mathematics Colloquium, April 2011.
8. Toward improving distinguishability in optical tomography. Center for Applied and Computational Mathematics, Rochester Institute of Technology, October 2009.

**CONFERENCE PRESENTATIONS AND POSTERS:**

1. Three-state zero forcing on graphs, Forty-Sixth Southeastern International Conference on Combinatorics, Graph Theory, and Computing, Boca Raton, FL, March 2015.
2. The minimum rank of the set of symmetric zero-diagonal matrices associated with a graph, AMS Special Session on Trends in Graph Theory, Baltimore, MD, January 2014.
3. Identifying vertex types in a graph, 44th Southeastern International Conference on Combinatorics, Graph Theory, and Computing, Boca Raton, FL, March 2013.
4. Optimality of Vertex Rankings on Infinite Graphs, 43rd Southeastern International Conference on Combinatorics, Graph Theory, and Computing, March 2012.
5. The effect of changing the norm on the optimality of a graph ranking, 42nd Southeastern International Conference on Combinatorics, Graph Theory, and Computing, March 2011.
6. Identification of nodes in a network: a discrete analogue of optical tomography, Joint Mathematics Meetings, New Orleans, LA, January 2011.
7. Some mathematical excursions from optical tomography, SMATH 2010, Smith College, September 2010.

8. Maximizing distinguishability in optical tomography through selection of an optimal source: function spaces and inner products. Joint Mathematics Meetings, San Francisco, CA, January 2010.
9. Optimal source and inner product space selection in optical tomography. New York Conference on Applied Mathematics, Rochester Institute of Technology, October 2009.
10. Using distinguishability criteria to optimally design sources in optical tomography. Joint Mathematics Meetings, Washington, DC, January 2009.
11. With T. Khan and P. Maass. Source design for the optical tomography inverse problem. Network Meeting of the Humboldt Foundation, Magdeburg, Germany, October 2007. (Poster).
12. Spline approximation of refractive index with applications to raytracing. Computational Biophysics Workshop, San Antonio, TX, July 2007.
13. Varieties of centers in trees. 37th Southeastern International Conference on Combinatorics, Graph Theory and Computing, Boca Raton, FL, March 2006.

**OTHER WORKSHOPS AND PROFESSIONAL MEETINGS:**

1. Summer School on Network Science, Columbia, SC, May 2013.
2. 2012 Trends in Undergraduate Research in Mathematical Sciences (TURMS) Conference, Chicago, IL, October 2012.
3. Research Experience for Undergraduate Faculty (REUF 4), ICERM, Providence, RI, June 2012.
4. Mathematical Biology: Beyond Calculus Mathematical Association of America (MAA) Prep Workshop, June 2011.
5. Summer Program in Analysis and Geometry, Princeton University, July - August 2008.
6. Special Semester on Quantitative Biology analyzed by Mathematical Methods Bioimaging I Workshop, Johann Radon Institute for Computational and Applied Mathematics, Linz, Austria, November 2007.
7. Institute for Mathematics and its Applications Mathematical Modeling in Industry X, Team Project: Blind Deconvolution of Images with Linear Motion Blur, August 2006.
8. Symmetries and Overdetermined Systems of Partial Differential Equations Summer Program, Institute for Mathematics and its Applications, July 2006.
9. AMS-MAA Joint Mathematics Meetings, Atlanta, GA, January 2005.

**HONORS:**

1. RIT Faculty Scholarship Featured Faculty, 2014.
2. Dolciani MAA Project NExT Fellow, 2011.

3. Clemson University Department of Mathematical Sciences Outstanding PhD Student, May 2010.
4. Clemson University Distinguished Graduate Achievement Fellowship, 2008-2009.
5. Clemson University Distinguished Graduate Recruitment Fellowship, 2006-2007.
6. Clemson University Mathematical Sciences Department Graduate Teacher of Record Award for Excellence in Teaching, 2006-2007.
7. Clemson University Mathematical Sciences Department Graduate Teacher of Record Award for Excellence in Teaching, 2005-2006.
8. Clemson University Mathematical Sciences Department Outstanding Masters Student, 2005-2006.
9. National Science Foundation GK-12 Fellow, 2004-2005.

**SERVICE:**

- Epsilon Pi Tau Honor Society, NTID Chapter Selection Committee Member, 2015-present
- Reviewer for American Mathematical Society Math Reviews, November 2014-present
- Key faculty for Applied Inverse Problems Track of Ph.D. in Mathematical Modeling, School of Mathematical Sciences, College of Science, RIT, 2014-present
- NTID Science and Math Department Mathematics Positions Search Committee Co-chair, 2013-2014
- RIT College of Science Curriculum Committee Member, September 2013-August 2015
- NTID Middle School Mathematics Competition Scorer, April 2013 and April 2015
- NTID Science and Math Department Interim Chair Search Committee Member, Spring 2013
- NTID Advisory Board for PI Professional Development, Member, September 2012-present.
- Undergraduate Research Contributed Paper Session Chair, Joint Mathematics Meetings, January 2012.
- Undergraduate Poster Session Judge, Joint Mathematics Meetings, January 2012.
- NTID Learning Consortium Committee, September 2011-present.
- Young Mathematicians Conference Abstract Judge, August 2011.
- AMS Session on Calculus of Variations, Optimal Control, and Optimization Session Chair, Joint Mathematics Meetings, January 2011.
- Society for Industrial and Applied Mathematics Clemson Chapter Treasurer, 2005-2006.

**PROFESSIONAL MEMBERSHIPS:**

- American Mathematical Society
- Council of American Instructors of the Deaf

**COURSE AND CURRICULUM DEVELOPMENT:**

- Introduction to Discrete Mathematics (designed a new course for Mobile Apps Development majors)
- Laboratory Mathematics (significantly redesigned the curriculum and course materials)

**COURSES TAUGHT AT NTID/RIT:**

- Laboratory Mathematics (currently)
- Integrated Algebra

**COURSES TAUGHT AT CLEMSON UNIVERSITY:**

- Calculus for Scientists and Engineers I
- Business Calculus I
- Elementary Statistics

**COURSES TAUGHT AT THE COLLEGE OF SCIENCE AT RIT:**

- Undergraduate Research (as mentor)
- Independent Study (as mentor)

**COURSES SUPPORTED AT THE COLLEGE OF SCIENCE AT RIT:**

- Abstract Algebra I and II
- Real Variables I and II
- Graph Theory
- Combinatorics
- Number Theory
- Differential Equations
- Linear Algebra
- Vector Calculus
- Multivariable Calculus
- Discrete Mathematics with Proof
- Discrete Mathematics for Computing
- Discrete Mathematics I and II

- Discrete Mathematics for Technologists I and II
- Project-Based Calculus I and II
- Calculus A, B and C
- Precalculus
- College Algebra
- Algebra
- College Physics I

**THESIS ADVISOR:**

- Krishna Ammanabrolu, MS expected May 2016

**GRADUATE COMMITTEE MEMBER:**

- Oludayo Eluyefa, BS/MS 2015
- Nathaniel Bush, MS 2013
- Daniel Short, BS/MS 2011

**NTID-SUPPORTED RESEARCH AND INDEPENDENT STUDY STUDENTS:**

- Michelle Mailhot (Summer 2015)
- Brian Podlisny (CURM 2014-2015)
- Peter Yeung (CURM 2014-2015)
- Thomas Ansill (CURM 2013-2015)
- Daniel Saavedra (Grant Writer's Bootcamp 2014, CURM 2013-2014)
- Jaime Penzellina (CURM 2013-2014)
- Katherine Fetcie (2012-2013)
- Tyler Swob (2011-2012)

**SKILLS:**

- $\text{\LaTeX}$ , MATLAB, Maple
- Japanese Proficiency Exam, Level 1 Pass (highest level).
- American Sign Language, SLPI Rating Advanced.

## Matthew Allen Lynn

Department of Science and Mathematics  
National Technical Institute for the Deaf  
Rochester Institute of Technology  
Rochester, NY 14623

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(585) 286-4571 (videophone)  
malntm@rit.edu

### Education

**Ph.D.**, May 2000. The University of Arizona, Tucson, AZ. Performed graduate research in physical inorganic chemistry under Professor Dennis Lichtenberger using computations and photoelectron spectroscopy to elucidate the electronic structure of symmetric paddle-wheel metal-metal bond-containing species. Dissertation Title: *Metal, Ligand, and Symmetry Influences on Metal-Metal Bonds: Photoelectron Spectroscopy and Theory*.

**M.S.**, May 1997. Indiana University, Bloomington, IN. Performed graduate research under Professor Malcolm Chisholm. Thesis Title: *The Electronic Structures of Multiple Metal Atom-Containing Complexes of Molybdenum and Tungsten*.

**B.S. summa cum laude, with distinction in chemistry, with honors in the liberal arts**, June 1994. The Ohio State University, Columbus, OH.

### Teaching, Research, and Leadership Experience

#### Chairperson

Department of Science and Mathematics, National Technical Institute for the Deaf (NTID), Rochester Institute of Technology (RIT), July 2015-present.

- Provided supervisory and budgetary oversight, including hiring and evaluation authority, of approximately 25 instructional/support faculty and staff members in biology, chemistry, mathematics, and physics.
- Provided supervisory oversight of the associate-level Laboratory Science Technology (LST) degree program, the non-degree-granting Science Pre-Baccalaureate program, tutoring support services for students enrolled in baccalaureate math and science coursework, and service courses in mathematics and science for students enrolled in associate-level degree programs at NTID.
- Provided supervisory oversight of departmental course curriculum, including development of new courses and coordination of faculty review of course proposals, and evaluated transfer credit for students in departmental programs.
- Partnered with NTID advising and counseling staff regarding student progress in the LST and science pre-baccalaureate programs, including determination of academic honors and actions (probations and suspensions), certification of LST internship and program completion, and coordinating student transition into baccalaureate-level programs.
- Negotiated and implemented articulation agreements between LST program and

various baccalaureate programs.

- Represented department to college administration and provided input and feedback on various department and college initiatives, including classroom and laboratory renovations, faculty research/scholarship and workload expectations, faculty mentorship, class scheduling, and admission of students into departmental programs.
- Networked with NTID Center on Employment and external organizations (companies and universities) regarding student internship experiences.

### **Interim Chairperson**

Department of Science and Mathematics, National Technical Institute for the Deaf (NTID), Rochester Institute of Technology (RIT), July 2013-June 2015.

### **Associate Chairperson**

Department of Science and Mathematics, National Technical Institute for the Deaf (NTID), Rochester Institute of Technology (RIT), August 2012-June 2013.

**Associate Professor of Chemistry (Instructional/Support Faculty)** Department of Science and Mathematics, National Technical Institute for the Deaf (NTID), Rochester Institute of Technology (RIT), August 2013-present.

**Assistant Professor of Chemistry (Instructional/Support Faculty)** Department of Science and Mathematics, National Technical Institute for the Deaf (NTID), Rochester Institute of Technology (RIT), August 2007-July 2013.

- Developed and provided direct instruction in voice and American Sign Language (ASL) for NTID and RIT College of Science undergraduate lecture, laboratory, and research courses in chemistry and related areas:
  - Principles of Biochemistry (NLST-235; Academic Terms: 2135)
  - Principles of Organic Chemistry (NLST-230; Academic Terms: 2131, 2141, 2151)
  - Principles of Organic Chemistry (0885-292; Academic Terms: 20072, 20073, 20092, 20102, 20112, 20122)
  - LST Laboratory Applications VI (0879-206; Academic Terms: 20081, 20091)
  - LST Laboratory Applications V (0879-205; Academic Term: 20093)
  - Chemical Research (1010-541; Academic Terms: 20112, 20113, and 20114)
  - Introduction to Organic Chemistry (1011-213; Academic Term: 20073)
  - Inorganic Chemistry I (1012-562; Academic Term: 20112)
  - Inorganic Chemistry II (1012-563; Academic Term 20113)
- Served as a faculty tutor for deaf and hard-of-hearing students enrolled in NTID and RIT College of Science chemistry lecture and laboratory courses and various other computer- and chemistry-related courses (ordered by RIT course number):
  - Solid and Hazardous Waste Management (0630-713)
  - Air Emissions Management (0630-715)



- Fundamentals of Chemistry II (0885-206)
  - UNIX Under the Hood (1001-259)
  - Analytical Chemistry - Separations (1008-213 and -319)
  - Quantitative Analysis I and II (1008-261, -262, -265, and -266)
  - Analytical Chemistry / Instrumental Analysis (1008-311 and -318)
  - Instrumental Analysis (1008-621 and -711)
  - Biochemistry: Conformation and Dynamics (1009-502)
  - Biochemistry: Metabolism (1009-503)
  - Chemistry Safety (1010-200)
  - Introduction to Co-op Seminar (1010-230)
  - General Chemistry 1 and II (1010-251, -252, and -255)
  - Chemical Literature (1010-401)
  - Fundamentals of General Chemistry (1011-201)
  - Fundamentals of Organic Chemistry (1011-202)
  - Chemical Principles Laboratory (1011-205 and -206)
  - Introduction to Organic Chemistry Laboratory (1011-207)
  - College Chemistry (1011-208)
  - General and Analytical Chemistry I, II, and III (1011-215, -216, and -217)
  - General and Analytical Chemistry III Lab (1011-227)
  - Fundamentals of Chemistry I (1011-271)
  - Chemistry of Water and Wastewater (1011-272)
  - Introduction to the Chemistry of Materials (1011-273 and -277)
  - Inorganic Chemistry I and II (1012-562 and -563)
  - Organic Chemistry I, II, and III (courses for non-chemistry majors; 1013-231, -232, -233, -235, -236, and -237)
  - Organic Chemistry I, II, and III (courses for chemistry majors; 1013-431, -432, -433, -435, and -436)
  - Systematic Identification of Organic Compounds (1013-437)
  - Chemical Thermodynamics (1014-441 and -445)
  - Quantum Mechanics (1014-442 and -446)
  - Chemical Kinetics (1014-443 and -447)
  - Environmental Chemistry (1015-520)
  - Introduction to Polymer Chemistry (1029-301)
- Served as secondary academic advisor for deaf and hard-of-hearing students majoring in B.S.-level chemistry, biochemistry, biology, and multidisciplinary studies programs.
  - Met with students on a quarterly basis to discuss current academic performance and to plan course registration for the following term.
  - Liaised with College of Science department personnel regarding student degree requirements and progress.
  - Supported and represented students during meetings with College of Science personnel regarding student-faculty conflict and matters of student academic and behavioral conduct.
  - Kept abreast of remaining degree requirements for NTID degrees for students in the process of transferring to a B.S. degree outside of NTID and reminded students

to complete these requirements.

- Assisted students with graduation, change of program applications, and use of a new university registration system.
- Provided letters of recommendation for student applications to internships and positions of permanent employment.
- Visited students at locations of summer internships and provided reports of these trips to the NTID Center for Employment.
- Performed research in the area of computational chemistry of inorganic (including transition metal) systems.
- Published research articles in peer-reviewed and disseminated scientific journals and presented research results at national meetings of the American Chemical Society.
- Mentored a deaf RIT student majoring in chemistry and co-authored a presentation and a peer-reviewed and disseminated research article with him.
- Collaborated with synthetic chemists at several undergraduate institutions.

**Assistant Staff Scientist**, Department of Chemistry, The University of Arizona, June 2000 - July 2007.

- Managed and secured UNIX (AIX, IRIX, Solaris) and Linux (RedHat Enterprise) compute workstations, instrument control workstations, and compute servers; designed, purchased, installed, and managed two research group-owned Beowulf clusters for research computing.
- Designed, implemented, and administered dynamic relational database-driven websites (PHP and ColdFusion webpages driven by MySQL and SQL databases). Projects included online graduate student progress tracking (including student, graduate advisor, faculty, and teaching services interfaces designed with attention to FERPA requirements), graduate student recruiting and admissions, chemical safety management, departmental news, seminar, and directory management systems.
- Instructed and assisted graduate students and faculty in the use of UNIX/Linux systems for performing research computations (Gaussian 03, ADF, MacroModel, Spartan); instruction was performed one-on-one, in small groups, and as part of a faculty-taught computational chemistry course.
- Served as departmental webmaster, including administration of several course content management systems (Courseweb and WebWork).

**Research Assistant**, Department of Chemistry, The University of Arizona, August 1996 - May 2000.

- Synthesized and characterized air-sensitive metal-metal bond-containing compounds, collected ultraviolet photoelectron spectra, and interpreted data based on spectroscopic, computational (Gaussian 98 and ADF), and other methods.
- Maintained standard synthesis laboratory equipment, including solvent stills and a dry box.

**Teaching Assistant**, Department of Chemistry, The University of Arizona, Fall 1997.  
*Course:* Inorganic chemistry for undergraduate and graduate students.

**Teaching Assistant**, Department of Chemistry, The University of Arizona, Fall 1996.  
*Course:* Computational chemistry for graduate chemistry students.

**Research Assistant**, Department of Chemistry, Indiana University, October 1994-August 1996.

**Associate Instructor**, Department of Chemistry, Indiana University, August 1995-December 1995. *Course:* General chemistry laboratory for undergraduate majors and non-majors.

### **Selected Grants, Honors, and Awards**

2015-2017	Co-PI: <i>Materials, Application and Development for Organic Photovoltaic Devices (REU Site)</i> , NSF Award Number 1461063
2013	Faculty Evaluation and Development Grant for Computational Chemistry Proposal (\$1,250), NTID/RIT
2012	Seed Funding for Proposal <i>Investigation of Strategies to Improve the Success of Deaf and Hard-of-Hearing Students Transitioning into Baccalaureate Studies in STEM Disciplines</i> (\$9,125), Research Center for Teaching and Learning, NTID/RIT
2008	Faculty Evaluation and Development Grant for Computational Chemistry Proposal (\$1,250), NTID/RIT
2004	College of Science Staff Advisory Council UA Star Award
2002	Volunteer Resources Award, Southern Arizona AIDS Foundation
1997	Teaching Assistantship Promotion
1996	Teaching Assistantship Promotion
1994-1997	National Science Foundation Predoctoral Fellow
1994	Phi Beta Kappa

### **Departmental, University, and Other Professional Service**

2016	Chair, Research Assistant Professor (ASL Proficiency Development) Search Committee, NTID
2016	Member, Biomedical Equipment Technology AOS/AAS Program Proposal Committee
2015-present	Fellow, School of Individualized Study, RIT
2015-2016	Member, RIT's Middle States Commission on Higher Education Decennial Evaluation Taskforce (Governance, Leadership, and Administration Subgroup)
2015-2016	Member, Academic Advisor Search Committee, NTID
2015-2016	Co-Chair, Associate Dean for Research Search Committee, NTID
2015	Chair, Academic Advisor Search Committee, NTID

2014-2015 Member, Provost's Faculty Awards Taskforce, RIT

2014-present Member, Health Care Implementation Commission, NTID

2014-present Member, Strategic Research Coordinating Committee, NTID

2013-2014 Member, Preliminary Oral Exam and Thesis Committees for Brandon Milliken and Jose Montero, Candidates for Master of Science degree in chemistry, Department of Chemistry, Rochester Institute of Technology

2012-2013 Member, RIT Awards Policies Revision Task Force

2011-2012 Participant, NTID Homegrown Emerging Leaders Program

2011-2014 Consultant and Contributor, NTID MSSE Science Signs Lexicon Project

2010-2011 Member, Preliminary Oral Exam and Thesis Committee for Gregory Horrocks, Candidate for Master of Science degree in chemistry, Department of Chemistry, Rochester Institute of Technology

2010, 2012 Poster Judge, National Science Fair for Deaf and Hard-of-Hearing Students, Rochester Institute of Technology

2010 Presenter, PEN-International Vietnam Teacher Education Institute

2009-2014 Member, Academic Advising Committee, National Technical Institute for the Deaf, Rochester Institute of Technology

2008-present Peer Reviewer for American Chemical Society Journals *Organometallics* and *Inorganic Chemistry*

2008-present Member, President's Commission on Pluralism and Inclusion (including leadership of Isaac L. Jordan Sr. Faculty/Staff Pluralism Award and Community Outreach Committees), Rochester Institute of Technology

2008, 2009 Proctor, NTID-sponsored MathCounts event

2008 Math and Chemistry Faculty Hiring Committee, Department of Science and Mathematics, National Technical Institute for the Deaf, Rochester Institute of Technology

2008-2011 Member, Nathaniel Rochester Society, Rochester Institute of Technology

2007 NTID Representative, Curriculum Committee, College of Science, Rochester Institute of Technology

2007 Poster Judge, Department of Chemistry Undergraduate Research Poster Fair

2006 Poster Judge, Rocky Mountain Regional Meeting of the American Chemical Society

2006 Graduate Student Advisor Hiring Committee, Department of Chemistry, The University of Arizona

2006-2007 High Performance Computing Taskforce, The University of Arizona

2006-2007 Graduate Student Admissions Committee - Technical Advisor

2006-2007 Chemical Education Committee - Technical Advisor

2005-2007 University Chemical Safety Committee - Technical Advisor

2005 Staff Crystallographer Hiring Committee

2003-present RIT and University of Arizona SafeZone Contact Person

## Community Service and Professional Affiliations

2014-present	Member, Assessment Network of New York
2008-present	Member, American Chemical Society (including affiliation with Rochester Local Section of the ACS)
2008-present	Member, Convention of American Instructors of the Deaf
2008	Volunteer, National Chemistry Week, American Chemical Society – Rochester Section
2006	Wingspan Community Center Awards Nomination Committee
2005-2007	Volunteer, Reveille Tucson Men's Chorus (provided website design and maintenance)
2003-2005	Volunteer, Wingspan Community Center (provided technical support for community computer center and created dynamic database-driven webpages for client referral information), Tucson, AZ
2000-2002	Volunteer, Southern Arizona AIDS Foundation

## Acquisition, Development, and Dissemination of American Sign Language

2012	Successfully completed <i>Vocabulary Development</i> course (FSSLEP 365-01)
2011	Successfully completed <i>ASL Group Instruction</i> course (FSSLEP 571-06)
2010-2011	Successfully completed <i>ASL Classroom Observation</i> (FSSLEP 500-03)
2010	Successfully completed <i>ASL Role Shifting</i> course (FSSLEP 840-01)
2009	Successfully completed <i>Special Group Instruction</i> course (FSSLEP 570-03)
2009	Earned “Advanced” rating on NTID Sign Language Proficiency Interview (SLPI)
2008-2009	Co-led in-service training course for RIT interpreters regarding the communication of chemistry topics in ASL
2008	Successfully completed <i>Demonstrating and Explaining in ASL</i> course (FSSLEP 702-01)
2007	Earned “Intermediate” rating on NTID SLPI upon hire
2007	Successfully completed <i>ASL Receptive Practice</i> course (FSSLEP 240-01)
2006-2007	Successfully completed <i>American Sign Language I and II</i> courses, Pima Community College, Tucson, AZ

## Peer-Reviewed and Disseminated Publications

**M. A. Lynn**, E. Ballard, P. C. Hauser, S. Barnett, P. J. Simpson-Haidaris, C. A. Martina, J. A. Cuculick, S. Smith, R. Pollard, “Diversifying Academic Medicine: Mentoring Deaf Scholars,” *Academic Medicine*, in preparation (2017).

**M. A. Lynn**, S. Schley, K. M. Tobin, D. M. Lengyel, A. Ross, S. J. Connelly, “Deaf, Hard-of-Hearing, and Hearing Students in an Introductory Biology Course: College Readiness, Social Learning Styles, and Success,” *J. Dev. Phys. Disabil.*, **29**, 173-201 (2017).

- J. R. Miecznikowski, **M. A. Lynn**, J. P. Jasinski, W. Lo, D. W. Bak, M. Pati, E. E. Butrick, A. E. R. Drozdowski, K. A. Archer, C. E. Villa, E. G. Lemons, E. Powers, M. Siu, C. D. Gomes, N. A. Bernier, K. N. Morio, "Syntheses and Characterization of Three- and Five-Coordinate Copper(II) Complexes Based on Tridentate SNS Pincer Ligand Precursors," *Polyhedron*, **80**, 157-165 (2014).
- J. R. Miecznikowski, **M. A. Lynn**, J. P. Jasinski, E. Reinheimer, D. W. Bak, M. Pati, E. E. Butrick, A. E. R. Drozdowski, K. A. Archer, C. E. Villa, E. G. Lemons, E. Powers, M. Siu, C. D. Gomes, K. M. Morio, "Synthesis, Characterization, and Computational Study of Three-Coordinate SNS-Copper(I) Complexes Based on Bis-Thione Precursors," *J. Coord. Chem.*, **67**, 29-44 (2014).
- J. R. Miecznikowski, J. P. Jasinski, **M. A. Lynn**, S. Jain, E. E. Butrick, A. E. R. Drozdowski, K. A. Archer, J. T. Panarra, "Synthesis, Characterization, Density Functional Theory Calculations, and Activity of a Thione-Containing Tridentate NNN Zinc Pincer Complex Based on a Bis-Triazole Precursor," *Inorg. Chim. Acta*, **394**, 310-321 (2013).
- J. R. Miecznikowski, W. Lo, **M. A. Lynn**, S. Jain, L. C. Keilich, N. F. Kloczko, B. E. O'Loughlin, A. O. DiMarzio, K. M. Foley, G. P. Lisi, D. J. Kwiecien, E. E. Butrick, E. Powers, R. Al-Abbasee, "Synthesis, Characterization, Density Functional Theory Calculations, Biochemical Assays, and Activity of Tridentate SNS Zinc Pincer Complexes Based on Bis-Imidazole or Bis-Triazole Precursors," *Inorg. Chim. Acta*, **387**, 25-36 (2012).
- M. A. Lynn**, L. J. Carlson, H. Hwangbo, J. M. Tanski, L. A. Tyler, "Ground state factors that influence the oxidation of a series of 2-benzothiazoline analogues," *J. Mol. Struct.*, **1011**, 81-93 (2012).
- J. R. Miecznikowski, W. Lo, **M. A. Lynn**, B. E. O'Loughlin, A. P. DiMarzio, A. M. Martinez, L. Lampe, K. M. Foley, L. C. Keilich, G. P. Lisi, D. J. Kwiecien, C. M. Pires, W. J. Kelly, "Synthesis, Characterization, Density Functional Theory Calculations, and Activity of Tridentate SNS Zinc Pincer Complexes," *Inorg. Chim. Acta*, **376**, 515-524 (2011).
- I. W. Jones, **M. A. Lynn**, E. A. Mash, "Conformational Analysis of Bridgehead-Substituted Bicyclo[m.m.m]alkanes and Bicyclo[8.8.n]alkanes," *Tetrahedron*, **65**, 10317-10322 (2009).
- M. A. Lynn**, H. D. Selby, M. D. Carducci, M. A. Bruck, C. Grittini, and D. L. Lichtenberger, "Tetrakis[ $\mu$ -N,N'-bis(4-chlorophenyl)formamidinato-N:N']dimolybdenum(II)," *Acta Cryst., Section E: Structure Reports Online*, **E57**, m57-m58 (2001).
- M. A. Lynn**, H. D. Selby, M. D. Carducci, M. A. Bruck, C. Grittini, and D. L. Lichtenberger, "Tetrakis[ $\mu$ -N,N'-bis(4-bromophenyl)formamidinato-N:N']dimolybdenum(II)," *Acta Cryst., Section E: Structure Reports Online*, **E57**, m70-m71 (2001).
- M. H. Chisholm and **M. A. Lynn**, "The Electronic Structure and Bonding in  $W_2(\mu-H_2)(O^iPr)_4(DMPE)_2$  and a Comparison with  $Mo_2(O^iPr)_4(DMPE)_2$ ," *J. Organomet. Chem.* **621**, 66-69 (2001).

D. L. Lichtenberger, J. R. Pollard, **M. A. Lynn**, F. A. Cotton, and X. Feng, "Metal-Metal Bonding in  $\text{Rh}_2(\text{O}_2\text{CCF}_3)_4$ : Extensive Metal-Ligand Orbital Mixing Promoted by Filled Fluorine Orbitals," *J. Am. Chem. Soc.*, **122**, 3182-3190 (2000).

**M. A. Lynn** and D. L. Lichtenberger, "Comparison of the Bonding of Benzene and  $\text{C}_{60}$  to a Metal Cluster:  $\text{Ru}_3(\text{CO})_9(\mu\text{-}\eta^2, \eta^2, \eta^2\text{-C}_6\text{H}_6)$  and  $\text{Ru}_3(\text{CO})_9(\mu_3\text{-}\eta^2, \eta^2, \eta^2\text{-C}_{60})$ ," *J. Cluster Sci.*, **11**, 169-188 (2000).

D. L. Lichtenberger, **M. A. Lynn**, and M. H. Chisholm, "Quadruple Metal-Metal Bonds with Strong Donor Ligands. Ultraviolet Photoelectron Spectroscopy of  $\text{M}_2(\text{form})_4$  (M = Cr, Mo, W; form = N,N'-diphenylformamidinate)," *J. Am. Chem. Soc.*, **121**, 12167-12176 (1999).

D. V. Baxter, M. H. Chisholm, **M. A. Lynn**, E. F. Putilina, S. T. Trzaska, and T. Swager, "Studies of Thermotropic Properties and the Mesophase of Mixtures of n-Alkanoates and Perfluoro-n-alkanoates of Dimolybdenum," *Chem. Mater.*, **10**, 1758-1763 (1998).

M. H. Chisholm and **M. A. Lynn**, "The Non-Perpendicular and Non-Parallel Alkyne Bridge in  $\text{W}_2(\mu\text{-C}_2\text{H}_2)(\text{OCH}_2^t\text{Bu})_8$ ," *J. Organomet. Chem.* **550**, 141-150 (1998).

M. H. Chisholm, K. Folting, **M. A. Lynn**, W. E. Streib, and D. B. Tiedtke, "Organometallic Chemistry of  $[\text{W}_2(\text{OCH}_2^t\text{Bu})_8]$ ," *Angew. Chem. Int. Ed. Engl.*, **36**, 52-54 (1997).

M. H. Chisholm, J. D. Huffman, S. S. Iyer, and **M. A. Lynn**, "Nitro-Substituted Benzoates of Dimolybdenum: The  $\text{Mo}_2^{4+}$   $\delta$ -to-Ligand Charge Transfer Band," *Inorg. Chim. Acta*, **243**, 283-293 (1996).

**M. A. Lynn** and B. E. Bursten "An Analysis of the Bonding in Some Nonclassical  $d^0$  and  $d^{10}$  Metal Carbonyl Complexes," *Inorg. Chim. Acta.*, **229**, 437-443 (1995).

R. M. Butler, **M. A. Lynn**, and T. L. Gustafson, "Solvent-Solute Interactions Probed by Picosecond Transient Raman Spectroscopy - Band Assignments and Vibrational Dynamics of  $\text{S}_1$  *Trans*-4,4'-Diphenylstilbene," *J. Phys. Chem.*, **97**, 2609-2617 (1993).

### Published Abstracts and Proceedings from Presentations

J. Heinlein, **M. A. Lynn**, "TD-DFT Investigation of the Electronic Structure of Aggregated Squaraines," Presented at the 25th Annual Undergraduate Research Symposium, Rochester, NY, August 2016.

M. Korleski, **M. A. Lynn**, "Computational Study of Squaraines in the Gas and Solid Phases," Presented at the 24th Annual Undergraduate Research Symposium, Rochester, NY, August 2015; poster 162.

J. R. Miecznikowski, **M. A. Lynn**, J. P. Jasinski, W. Lo, S. Jain, "Toward a better understanding of liver alcohol dehydrogenase: Synthesis, spectroscopic, and electrochemical

characterization, density functional theory calculations, and activity of trident ate SNS and NNN zinc(II) pincer complexes based on bis-triazole and bis-imidazole precursors,” Presented at the 248th National Meeting of the American Chemical Society, San Francisco, CA, August 2014; paper INOR-839.

**M. A. Lynn**, S. J. Connelly, A. D. Ross, D. M. Lengyel, K. M. Tobin, “A Quantitative and Qualitative Assessment of the Experiences of Deaf and Hard-of-Hearing Students Transitioning into Baccalaureate Studies in STEM Disciplines,” Presented at the Second Annual Effective Access Technology Conference, Rochester, NY, June 2014.

**M. A. Lynn**, S. J. Connelly, A. D. Ross, “A Quantitative and Qualitative Assessment of the Experiences of Deaf and Hard-of-Hearing Students Transitioning into Baccalaureate Studies in STEM Disciplines,” Presented at the Second Annual Spring Conference of the Assessment Network of New York (ANNY), Rochester, NY, April 2014.

J. R. Miecznikowski, **M. A. Lynn**, J. P. Jasinski, W. Lo, E. Reinheimer, M. Pati, D. Bak, “Syntheses, characterization, density functional theory calculations, and reactivity of three- and five-coordinate SNS copper(I) and copper(II) pincer complexes,” Presented at the 247th National Meeting of the American Chemical Society, Dallas, TX, March 2014; paper INOR-12.

J. R. Miecznikowski, **M. A. Lynn**, J. P. Jasinski, W. Lo, E. Reinheimer, D. Bak, E. E. Butrick, A. E. R. Drozdowski, K. A. Archer, C. E. Villa, E. G. Lemons, E. Powers, “Syntheses, characterization, and density functional theory calculations of three- and five-coordinate SNS copper complexes: Effect of pincer ligand on coordination geometry,” Presented at the 245th National Meeting of the American Chemical Society, New Orleans LA, April 2013; paper INOR-597.

**M. A. Lynn**, J. R. Miecznikowski, J. P. Jasinski, W. Lo, E. Reinheimer, J. T. Panarra, E. E. Butrick, C. E. Villa, K. A. Archer, A. E. R. Drozdowski, B. E. O’Loughlin, A. P. DiMarzio, L. C. Keilich, E. Powers, “Computational study of tridentate SNS and NNN zinc(II) and copper(II) pincer complexes: Understanding steric and electronic influences,” Presented at the 244th National Meeting of the American Chemical Society, Philadelphia PA, August 2012; paper INOR-728.

J. R. Miecznikowski, W. Lo, J. P. Jasinski, **M. A. Lynn**, E. E. Butrick, A. E. R. Drozdowski, K. A. Archer, B. E. O’Loughlin, A. P. DiMarzio, L. C. Keilich, E. A. Powers, J. T. Panarra, “Syntheses, characterization, DFT calculations and activity of tridentate SNS or NNN zinc pincer complexes based on bis-imidazole or bis-triazole precursors.” Presented at the 244th National Meeting of the American Chemical Society, Philadelphia PA, August 2012; paper CHED-231.

J. R. Miecznikowski, **M. A. Lynn**, W. Lo, J. P. Jasinski, E. Reinheimer, S. Jain, “Synthesis, spectroscopic and electrochemical characterization, density functional theory calculations, and activity of tridentate SNS and NNN zinc(II) and copper(II) pincer complexes based on a bis-triazole and bis-imidazole precursors,” Presented at the 244th National Meeting of the



American Chemical Society, Philadelphia PA, August 2012; paper INOR-026.

J. R. Miecznikowski, W. Lo, **M. A. Lynn**, N. F. Kloczko, B. E. O'Loughlin, A. P. DiMarzio, L. C. Keilich, K. M. Foley, "Synthesis, Spectroscopic and Electrochemical Characterization, Density Functional Theory Calculations, and Activity Screening of Tridentate SNS Zinc Pincer Complexes," Presented at the 240th National Meeting of the American Chemical Society, Boston MA, August 2010; paper INOR-598.

**M. A. Lynn**, J. R. Miecznikowski, W. Lo, M. A. Lynn, B. E. O'Loughlin, A. P. DiMarzio, L. C. Keilich, K. M. Foley, "Computational Study of Tridentate SNS-pincer Complexes: Toward an Understanding of the Liver Alcohol Dehydrogenase Active Site," Presented at the 240th National Meeting of the American Chemical Society, Boston MA, August 2010; paper INOR-526.

J. R. Miecznikowski, K. M. Foley, B. E. O'Loughlin, A. P. Di Marzio, L. C. Keilich, W. Lo, **M. A. Lynn**, "Development of Zinc Pincer Model Complexes for the Liver Alcohol Dehydrogenase Active Site," Presented at the 239th National Meeting of the American Chemical Society, San Francisco CA, March 2010; paper INOR-425.

L. A. Tyler, **M. A. Lynn**, L. Carlson, J. Welby, J. M. Tanski, "Dependence of the Thiazoline to Thiazole Oxidation Based on the Adjacent Ring System and a Structural Comparison of the Co and Cu Benzothiazole Complexes," Presented at the 238th National Meeting of the American Chemical Society, Washington DC, August 2009; paper INOR-569.

**M. A. Lynn**, L. A. Tyler, J. M. Tanski, "A Computational Study of the Benzothiazoline-Benzothiazole Oxidation Reaction," Presented at the 238th National Meeting of the American Chemical Society, Washington DC, August 2009; paper INOR-568.

**M. A. Lynn** and L. Braggiotti, "Interpreter Support in University Chemistry Education Via Faculty-Interpreter Collaboration," Presented at the 2009 National Conference of the Convention of American Instructors of the Deaf, Washington DC, June 2009.

**M. A. Lynn** and L. Braggiotti, "Interpreter Support in University Chemistry Education Via Faculty-Interpreter Collaboration," Presented at the 2009 Faculty Institute for Teaching and Learning, Rochester Institute of Technology, Rochester NY, May 2009.

**M. A. Lynn** and D. L. Lichtenberger, "Application of Density Functional Theory to Photoelectron Spectroscopy: Using ADF to Understand Periodic Trends in Metal-Metal Bonded Systems," Presented at the 220th National Meeting of the American Chemical Society, Washington DC, August 2000; paper INOR-412.

D. L. Lichtenberger, J. R. Pollard, **M. A. Lynn**, F. A. Cotton, and X. Feng, "Metal-Metal Bonding in  $\text{Rh}_2(\text{O}_2\text{CCF}_3)_4$ : Extensive Metal-Ligand Orbital Mixing Promoted by Filled Fluorine Orbitals," Presented at the 219th National Meeting of the American Chemical Society, San Francisco CA, March 2000; paper INOR-280.

D. L. Lichtenberger, **M. A. Lynn**, and M. H. Chisholm, "Gas-Phase Ultraviolet Photoelectron Spectroscopy of  $M_2(\text{form})_4$  ( $M = \text{Mo, Ru, Rh, Pd}$ ;  $\text{form} = \text{N,N}'\text{-diphenylformamidinate}$ ) Systems: Understanding the Metal-Metal Bonding Manifold from  $\sigma$  to  $\sigma^*$ ," Presented at the 217th National Meeting of the American Chemical Society, Anaheim CA, March 1999; paper INOR-253.

D. L. Lichtenberger, **M. A. Lynn**, and M. H. Chisholm, "Ultraviolet Photoelectron Spectroscopy of Substituted  $\text{Mo}_2(\text{form})_4$  Systems: Correlation of Electronic and Overlap Effects in Solution and Gas Phases," Presented at the 217th ACS National Meeting, Anaheim CA, March 1999; paper INOR-027.

D. L. Lichtenberger, **M. A. Lynn**, and J. R. Pollard, "The Rich Diversity of Metal-Metal Bonds. Factors that Influence Configurations from  $\sigma^2\pi^4$  to  $\sigma^2\pi^4\delta^2\delta^*2\pi^*4$  as Determined by Photoelectron Spectroscopy," Presented at the 215th National Meeting of the American Chemical Society, Dallas TX, March 1998; paper INOR-445.

D. L. Lichtenberger and **M. A. Lynn**, "The Binding of the  $\text{Ru}_3(\text{CO})_9$  Fragment to Benzene, Fullerenes, and Graphite: The Interaction of a Metal-Containing Moiety with Aromatic  $\text{C}_6$ -Containing Surfaces," Presented at the 213th National Meeting of the American Chemical Society, San Francisco CA, April 1997; paper INOR-133.

D. L. Lichtenberger, **M. A. Lynn**, and M. H. Chisholm, "Photoelectron Spectroscopy of Dimetal Tetraformamidates," Presented at the 213th National Meeting of the American Chemical Society, San Francisco CA, April 1997; paper INOR-101.

M. H. Chisholm, **M. A. Lynn**, and O. Eisenstein, "The Electronic Structures of Several Tungsten Complexes Bearing Unusual Molecular Structures," Presented at the 212th National Meeting of the American Chemical Society, Orlando FL, August 1996; paper INOR-432.

D. V. Baxter, M. H. Chisholm, **M. A. Lynn**, M. Mackley, R. T. Marshall, E. F. Putilina, and T. M. Swager, "Quadruple Bonds in the Mesomorphic State. Studies of Mixtures of Dimolybdenum Octanoates, Perfluorooctanoates and Nonanoates and a Rheological Profile of  $M_2(\text{O}_2\text{C}(\text{CH}_2)_6\text{CH}_3)_4$ , where  $M = \text{Mo}$  and  $\text{Cu}$ ," Presented at the 211th National Meeting of the American Chemical Society, New Orleans LA, March 1996; paper INOR-040.

M. H. Chisholm, **M. A. Lynn**, and D. B. Tiedtke, "Biscarbonyl Uptake by Ditungsten Hexaalkoxides: The Importance of Occupied Metal-Ligand Antibonding Orbitals in Observed Molecular Configurations," Presented at the 210th National Meeting of the American Chemical Society, Chicago IL, August 1995; paper INOR-204.

## Jacqueline N. McClive

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Scottsville, New York 14546  
Phone (585) 354-3480  
jnmcclive@gmail.com

**EDUCATION**     *Master of Science, Applied and Computational Mathematics* – 2011  
Rochester Institute of Technology, Rochester, NY  
Dr. Darren Narayan, thesis advisor  
Thesis Title: *Rank numbers for graphs with paths and cycles*

*Bachelor of Science, Applied Mathematics* – 2010  
Rochester Institute of Technology, Rochester, NY  
Cumulative GPA 3.8, Highest Honors

*Associate of Applied Science, ASL-English Interpretation* – 2005  
National Technical Institute for the Deaf  
Rochester Institute of Technology, Rochester, NY  
Cumulative GPA 3.8, Dean's List – all quarters, Highest Honors

## **TEACHING AND TUTORING**

*Lecturer, Department of Science and Mathematics  
National Technical Institute for the Deaf  
Rochester Institute of Technology, Rochester, NY*  
Teach algebra and pre-calculus courses for deaf and hard-of-hearing students at the associate's degree level at NTID. Provide tutoring support for baccalaureate-level deaf and hard-of-hearing students taking math and other science courses in the College of Science at RIT.  
*Courses taught include:* Applications of Algebra (2015, 2016), Integrated Algebra (2015), Advanced Mathematics (2014)  
*Courses tutored include:* College Algebra, Precalculus, Applied Calculus, Calculus A,B, C, I, II, Project-based Calculus I, II, Discrete Mathematics, Discrete Mathematics for Computing, Discrete Mathematics and Intro to Proofs, Mathematics for Graphical Simulation I, Multi-variable Calculus, Differential Equations, Intro to Statistics I, Probability and Statistics I, College Physics I, University Physics I (2014 to present)

*Volunteer/Independent Contractor:* Work with students from elementary school through graduate level. Provide tutoring services to deaf, hard-of-hearing, and hearing consumers as needed. Assist students in preparation for standardized tests and common core examinations. Math content areas include (but are not limited to): geometry, trigonometry, pre-algebra, algebra, ACT math, SAT math, pre-calculus, calculus, statistics, probability, linear algebra, discrete math (specialty area), differential equations, graph theory, combinatorics, and abstract algebra. Other content areas include: physics, chemistry, genetics, writing, grammar, French language, ASL, and SAT English. (2002 to present)

**WORK EXPERIENCE** *Rochester Institute of Technology* – March 2010 to July 2014  
*Department of Access Services* – September 2006 to July 2009  
*Rochester, NY*  
 Apprentice Interpreter, Associate Interpreter, Interpreter: Interpret and transliterate for a variety of hearing and deaf clients at various regularly scheduled and on-call classroom assignments, engage in professional development, participate in a variety of department committee work, mentor new hires to help them improve skills and successfully pass promotion test, and assist team and department members in understanding of advanced mathematical and scientific concepts. This period includes a promotion from Apprentice Interpreter to Associate Interpreter in December of 2007 and a promotion from Associate Interpreter to Interpreter in January of 2012.  
 Ms. Marie Case, Supervisor  
 Ms. Kathy Gillies, Supervisor

*Rochester Institute of Technology* – August 2009 to March 2010  
*Office of the President, NTID*  
*Center for Education Research Partnerships*  
*Rochester, NY*  
 Research Associate: Work on a variety of on-going human subjects research projects with strong relationships and impact on the progress of the education of Deaf and hard-of-hearing students of all ages. Test and interact with Deaf, hard-of-hearing and hearing research subjects. Create and monitor the use of testing material related to advanced scientific and mathematical topics.

*Sign Language Connection* – August 2005 to August 2006  
*Rochester, NY*  
 Freelance Interpreter: Interpret and transliterate for a variety of hearing and deaf clients at various regularly scheduled and on-call classroom assignments.

**SKILLS** Fluent in American Sign Language, proficient with Microsoft Office suite, working knowledge of Minitab and Java and Matlab programming languages

**AFFILIATIONS** *American Mensa, Ltd.*  
*Convention of American Instructors of the Deaf*  
*Association of Women in Mathematics*

Curriculum Vitae  
**Keith Mousley**

Work Address

NTID/RIT  
52 Lomb Memorial Drive  
Rochester, NY 14623  
Email: kxmntm@rit.edu

Home Address

77 Cattaragus Drive  
Rochester, NY 14623  
(585) 359 -3698 (TTY)

**I. ACADEMIC AND PROFESSIONAL QUALIFICATIONS**

**A. Education**

Gallaudet University, 1982. Master of Arts degree in Deaf Education with a specialization in Deafness and Mathematics.

Rochester Institute of Technology, 1980. Bachelor of Science degree in Mathematics with a minor in Computer Science.

**B. Certification**

Pennsylvania Permanent Teaching Certificate, K-12, (1982).

**k. Honors/Awards**

Awarded Tenure at NTID- 1995  
NAG Award- SCPI team- 1995  
Promoted to Assistant Professor- 1992

**D. Communication Skills**

Sign Communication Proficiency Interview - October 1989  
Rating - Superior

**E. Professional Employment**

National Technical Institute for the Deaf at Rochester Institute of Technology, Rochester, NY 1989-present.

Associate Professor: Teaching mathematics to college students.

Scranton State School for the Deaf, Scranton, PA 1983-1989

Teacher: taught mathematics/science to high school students.

Pennsylvania School for the Deaf, Philadelphia, PA 1982-1983

Teacher: taught mathematics/science to high school students.

**F. Course Taught**

Prealgebra  
Foundations of Algebra  
Applications of Algebra  
Integrated Algebra  
Explorations of College Algebra  
Advanced Mathematics  
Trigonometry  
Trigonometry for Coordinate Analysis

**II. PROFESSIONAL ACTIVITIES**

**A. Publications:**

Mousley, K. & Kurz, C. Pre-College Deaf Students' Understanding of Fractional Concepts: What We Know and What We Do Not Know. This article will be published in *Journal of Science Education for Students with Disabilities*.

Lang, H.G., Biser, E., Mousley, K., Orlando, R., & Porter, J. (2004) Tutoring deaf student in higher education: a comparison of baccalaureate and sub-baccalaureate student perceptions. *Journal of Deaf Studies and Deaf Education*, 9(2):189-201

Kelly, R. R., Lang, H. G., Mousley, K., & Davis, S. (2003). Deaf college students' comprehension of relational language in arithmetic compare problems. *Journal of Deaf Studies and Deaf Education*, 8(2), 120-132.

Kelly, R. R., & Mousley, K. (2001). Solving word problems: More than reading issues for deaf students. *American Annals of the Deaf*, 146(3), 253-264.

Kelly, R & Mousley, K. (1999). Solving math problems-what is the performance of deaf college students, NTID Research Bulletin, Vol. 4, No 3, Fall.

Mousley, K., & Kelly, R. R. (1998). Problem-solving strategies for teaching mathematics to deaf students. *American Annals of the Deaf*, 143(4), 325-336.

Mousley, K., & Kelly, R. R. (1995). Problem-solving in mathematics:

Searching for alternative teaching strategies. *Deaf Life*, October, 23-25.

Mousley, K. (1991). Encouraging critical thinking in the classroom using modified teaching strategies. Proceedings of the Conference of American Instructors of the Deaf (CAID), New Orleans, LA, June 1991.

## **B. Presentations**

Mousley, K., Marchetti, C. (2015, November). "Increasing Success in Foundational STEM Courses: focusing improvement efforts"- STEMTech Conference, Phoenix, AZ.

Mousley, K., Blatto-Vallee, G. (2015, July). "Our Experience in a Fully "Flipped" Developmental Math Course"- 2015 Hi-Tech Conference, Portland, OR.

Mousley, K., Kelly, R. (2015, May). "Magnitude and Long-Division of Whole Numbers Is Crucial to Development of Fraction Skills"- NTID Scholarship Symposia, Rochester, NY.

Marchetti, C., Foster, S., Mousley, K., and Blatto-Vallee, G. (2015, May). "Project Thinking CAP: Communication, Access, & Persistence Among Deaf And Hard Of Hearing Students In Foundational Statistics Courses"- NTID Scholarship Symposia, Rochester, NY.

Kelly, R., Mousley, K. (2015, January). "Replicating Methodologies of Other Studies to Extend Findings to New Populations as a Viable Scholarly Strategy: Conducting Publishable Research Without Grant Support"-RIT/NTID Intersession, Rochester, NY.

Mousley, K., Blatto-Vallee, G. (2014, November). "Implementing Tools to Improve Engagement and Access for All Students"-NTID Professional Development, Rochester, NY.

Mousley, K. (2014, July). "Understanding Deaf College Students' Development of Fraction Knowledge"- SWCED Conference, San Antonio, TX.

Mousley, K., Lee, ChongMin. (2013, June). "Fraction Knowledge and an Attitude toward Fraction by Deaf College Students"- CAID Conference, Rochester, NY.

Mousley, K., Lee, ChongMin. (2013, June). "College Deaf Students' Fractional Knowledge and Self-Efficacy"- CAID Conference, Rochester, NY.

Mousley, K., Kurz, C. (2012, July). Difficulty of Fraction Learning: Dilemma in Mathematical Teaching. Paper presented at the SWCED, Houston, TX.

- Mousley, K., Kurz, C. (2012, October). Difficulty of Fraction Learning: Dilemma in Mathematical Teaching Paper presented at the SERID, Chattanooga, TN.
- Mousley, K., Kurz, C. (2011, March). Difficulty of Fraction Learning: Dilemma in Mathematical Teaching. Paper presented at the CAL-ED, Norwalk, CA.
- Mousley, K., Quinsland, L.K. (2010, March). Networking Within the Village. Paper presented at the CAL-ED Conference, Sacramento, CA.
- Mousley, K. (2009, October). Conceptual Understanding of Multi-representational Fractional Number Optimally. Paper presented at the National Teachers Council of Mathematics (NTCM), Boston, MA.
- Mousley, K., Quinsland, L.K. (2009, March). You'd Be Surprised & Most Likely Shocked! Fixing Math & Science Education. Paper presented at the CAL-ED Conference, San Diego, CA.
- Mousley, K., Quinsland, L.K. (2008, March). Served as A panel for a workshop: **Defining and Nurturing the Successful Student** . Paper presented at the CAL-ED Conference, San Ramon, CA.
- Mousley, K, Kurz, C. (2007, June). Assessing Deaf Students Conceptual Understanding of Multi-representational Fractional Number Optimally. Paper presented at the CAID Conference in Reno, NV.
- Mousley, K., Quinsland, L.K. Van Ginkel, A. (2005, October). The Deaf Student in College: Teaching Techniques & Technology. Paper presented at Professional and Organization Development Network in Higher Education (POD) conference, Milwaukee, WI.
- Mousley, K. & Mittelman, L. (2005, March). The effects of English skills on solving math problems. Paper presented at the California Education for the Deaf (CAL-ED) Conference, Irvine, CA.
- Mousley, K. & Quinsland, L.K. (2004, October). The Deaf Student in College: Teaching Techniques & Technology. Paper presented at Professional and Organization Development Network in Higher Education (POD) conference, Denver, CO.
- Mousley, K. & Mittelman, L. (2003, April). The effects of English skills on solving math problems. Presentation to the NTID faculty as part of English Across the Curriculum Series, Rochester, NY.
- Mousley, K., Kelly, R. R., Lang, H.G. & Davis, S. (2002, November). How deaf students comprehend relational statements in arithmetic compare word problems.



Presentation to the National Council of Teachers of Mathematics (NCTM) Annual Regional Conference (and Math Special Interest Group of CAID), Boston, MA.

- Mousley, K., Kelly, R. R., Lang, H. G., Davis, S. M., & Kelly, M. J., (2002, April). PROJECT SOLVE: Web-based guided practice to improve math word problem solving. Presentation at the Postsecondary Education Programs Network (PEPNet) 2002 Biennial Conference on Postsecondary Education for Persons who are Deaf or Hard of Hearing, Kansas City, KS
- Kelly, R. R., Lang, H. G., Mousley, K., & Davis, S. M. (2002, February). Deaf college students' ability to solve arithmetic word problems. Presentation at the Association of College Educators – Deaf and Hard of Hearing (ACE-DHH) 2002 Conference: The Challenge of Curriculum and Consistency, Charleston, SC.
- Mousley, K, Kelly, R. R., & Lang, H. G., (2001, October). PROJECT SOLVE: Web-based guided practice to improve math word problem solving. Presentation at the NCTM Annual Regional Conference and (Math Special Interest Group of CAID), Somerset, NJ.
- Kelly, R. R., Lang, H. G., & Mousley, K. (2001, June) PROJECT SOLVE: Web-based guided practice to improve math word problem solving. Paper at the Instructional Technology and Education of the Deaf Symposium, Rochester, NY.
- Kelly, R. R., Lang, H. G., Gaustad, M. G., & Mousley, K. (2001, February). Developing a web resource to improve deaf students' problem solving skills. Presentation at the ACE-DHH 2001 Conference: Best Practices in Deaf Education, San Diego, CA.
- Kelly, R. R., Lang, H. G., & Mousley, K. (2001, February). An examination of deaf college students' comprehension of consistent and inconsistent relational statements in arithmetic word problems. Presentation at the ACE-DHH 2001 Conference: Best Practices in Deaf Education, San Diego, CA.
- Mousley, K. & Basile, M. (2000, June). Three-days workshop to provide insights of Deaf Education and Deaf Culture. Mt. Holyoke College. North Hampton, MA
- Mousley, K. (2000, April). Alternative assessments in mathematics. Paper presented at PEPNet Conference, Denver, CO.
- Kelly, R. R., & Mousley, K. (1999, February/March). Deaf and hearing students' transfer and application of skill in math problem solving. Paper presented at the 25th Annual Conference of ACE-DHH, Rochester NY
- Kelly, R. R., & Mousley, K. (1998, March). Problem solving and deaf college students: Issues and strategies. Presentation at the 24th Annual Conference of ACE-DHH, Lexington, KY.

Mousley, K., & Kelly, R. R. (1997, May). Alternative techniques of teaching problem solving to deaf and hard-of-hearing students. Presentation at the NCTM Eastern Regional Conference, Rochester, NY.

Mousley, K., & Raman, M. L. (1999, April). Alternative assessments in mathematics. Paper presented at Northeast Technical Assistance Center, (NETAC), Rochester, NY

Mousley, K. (1999, April). Problem solving and thinking skills in mathematics. Paper presented at NETAC, Rochester, NY

Mousley, K. (1998, October). Hands-on experience in mathematics. Paper presented at Access to English and Science Outreach Project (AESOP) workshop, Baton Rouge, LA

Mousley, K. (1998, October). Hands-on experience in mathematics. Paper presented at AESOP Workshop. Fort Worth, TX

Mousley, K. & Quinsland, L.K. (1998, October). Faculty consultants program at NTID. Paper presented at Professional and Organization Development Network in Higher Education (POD) conference, Orlando, FL.

Mousley, K. (1998, April). Problem solving and thinking skills in mathematics. Paper presented at PEPNet conference, Knoxville, TN.

Mousley, K. (1998, March). Discovering classroom dynamics through action research. Keynote Presentation at ACE-DHH, Lexington, KY

Mousley, K., & Raman, M.L. (1997, June). Alternative assessments in mathematics. Presentation at NCTM annual regional conference, Rochester, NY

Mousley, K. (1997, June). Problem solving and thinking skills in mathematics. Presentation at the NCTM annual regional conference in Rochester, NY

Mousley, K. (1997, May). Hands-on experience in mathematics. Paper presented at AESOP Workshop at Rochester School for the Deaf, Rochester, NY

Mousley, K., & Kelly, R. R. (1996, April). Alternative techniques in teaching problem solving skills to deaf students. Paper presented at PEPNet Seventh Biennial Conference on Post secondary Education for Persons Who are Deaf or Hard of Hearing, Knoxville, TN.

- Mousley, K., & Kelly, R. R. (1995, June). Problem solving, deaf college students, and math instruction. Paper presented at the 57th Biennial Meeting of CAID, Minneapolis, MN.
- Mousley, K. & Darroch, K. G. (1994, October) ADA in the classroom: A future chaos. Paper presented at POD Conference, Portland, OR.
- Mousley, K. & Quinsland, L.K. (1994, October). Faculty consultant forum: A consideration of cases. Co-Facilitated discussion at POD Conference, Portland, OR
- Mousley, K. (1994, July). Technical signs for mathematics. Paper presented at NTID Outreach Math Summer Project, Rochester, NY.
- Mousley, K. & Senior, G. J. (1994, July). Problem solving and thinking skills: a follow up. Paper presented at NTID Outreach Math Summer Project, Rochester, NY.
- Mousley, K. (1994, June). Cooperative learning in math classroom. Paper presented at NTID Outreach Math/Science Offsite Project, Baton Rouge, LA.
- Mousley, K. & Quinsland, L.K. (1993, October). Faculty consultant forum: A consideration of cases. Co-facilitated discussion at POD Conference, Rochester, MN.
- Mousley, K. (1993, July). Alternative ideas for cooperative learning, Part 1. Paper presented at NTID Outreach Math/Science Summer Project, Rochester, NY.
- Mousley, K., Quinsland, L.K., and Victoria, M. (1993, June). Techniques for improving teaching. Co-facilitated discussion at CAID / CEASD (Conference of Educational Administrators Serving the Deaf), Baltimore, MD
- Mousley, K. (1993, June). Cooperative learning in math classroom, Paper presented at NTID Outreach Math/Science OffsiteProject, Dallas, TX.
- Mousley, K. (1993, January). My experience with interpreters. Paper presented in Aspects and Issues of Deafness II course at NTID, Rochester, NY.
- Mousley, K. (1992, July). Critical thinking and cooperative learning. Paper presented at NTID Outreach Math/Science Summer Project, Rochester, NY.
- Mousley, K. (1992, February). Critical thinking in math classroom. Paper presented at NTID Outreach Math/Science Offsite Project,

Los Angeles, CA.

Mousley, K. (1991, November). Encouraging critical thinking in the classroom using modified teaching strategies. Paper presented at South Carolina Association of Developmental Education, Hilton Head Island, SC.

Mousley, K. & Kirsh, J. (1991, October-November). A Contextualist Perspective of Language Processing by Prelingually Deaf Students. Co-Facilitated discussion for Thinking/Learning Special Interest Group Series Topic. Rochester, NY.

### **C. Professional Supervision**

Supervised/mentored student teacher, Stacey Davis, NTID MSSE Program, December 2001 - February 2002.

#### **1. Committee Membership/Service**

Convention American Instructors for the Deaf, President, 2011- 2015

RIT Academic Senate, 2012 - 2015

Tenure and Promotion 2009- 2011

NFC committee, Co-Chairperson, 2005 - 2015

DPG committee, 2005- 2011

Tenure Committee, 2005 - 2007

Sign Communication Proficiency Interview (SCPI) Team, 1992 - present

Award of Excellence (AoE) Committee 2002- 2007

SCC Subcommittee Deaf Faculty/ Staff Perspective, 2001-2003

DPG Working Group, 2001-2002

Tutor-Research Committee, 1998-2002

CAS Classroom Committee 2001

Search Committee for Science Instructor, 2001

Search Committee for Director of Admissions, 2001

NTID's Outstanding Students Scholarship Committee, 1999-2001

Assistant Professor Promotion Committee-Chairperson, 1997-2001

Search Committee for two Mathematics positions- Chairperson, 1997

Deaf Professionals Group Steering Committee - Liaison, 1996 - 2001

Tenure Committee- Co-chairperson, 1997-1999

Learning Consortium Committee 1994 -1995

Search Committee for Coordinator for NTID Learning Center,  
Chairperson, 1995

Admissions Review Board 1993-1997

Promotion Committee (Assistant Rank) 1993 -1995

Faculty and Staff Development Advisory Group- 1993 -1996

Faculty Development Advisory Group, 1992-1996

Task Force on Fostering Collaboration on Research, 1993

School of Science and Engineering (SSEC) Silent Week Committee,  
Co-Chairperson, 1992-1993.

Deaf Professional Group (DPG) Steering Committee, 1989-1993

Academic Conduct Committee, 1990-1992

Student Retention Committee/SSEC, 1990-1991.

Steering Committee for SSEC/DPG. 1990-1991.

Strategic Issues Task Force; subcommittee of NTID SPC, 1991

Answering Machine Task Force, 1991

#### **E. Curriculum Development**

Fundamental Geometry Working Group, 2002-2006

Advanced Mathematics Working Group, 1995 -1997

Statistics Working Group, Fall 1993-1997

Developed Technical Signs for Fundamentals of College Mathematics I, (Videotape), 1992-1993.

#### **F. Faculty/Staff Development**

Faculty Consultant for New Faculty, 1990 -1996

Microteaching Instructor (New Faculty Training Program), 1990-1996

Mentor for new faculty member (1990-1991)

#### **G. Professional Organizations**

National Council of Teachers of Mathematics (1982- present)

Convention of American Instructors of the Deaf (1982-present)

- Board of Directors, 1995 - 2002

- Special Interest Group- Mathematics

- Planning Regional Conference Committee, 2001-present

- Organization Restructure Committee, 2000

National Association of the Deaf (1982-present)

Professional and Organizational Developmental Network in Higher Education (1989-1997)

- Conference Planning Committee 1994, Portland, OR

- Conference Planning Committee 1995, Cape Cod, MA

#### **H. Other Pertinent Experiences**

Rochester School for the Deaf SCPI Rater/interviewer 2002-present

Mentor for Heather Rowley, MSSE capstone project, "Teaching Strategies in Mathematics: Differences in Sign Language Use". (Spring, 2001)

Reviewer -book, "Benedictine Roots in the Development of Deaf Education

Listening with the Heart" by Marilyn Daniels, Review published in *Disability Studies Quarterly* (Spring, 1999)

**Jason T. Nordhaus** (U.S. Citizen)

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CONTACT INFORMATION	Rochester Institute of Technology National Technical Institute for the Deaf Rochester, NY 14623	Phone: +1 585.475.4202 nordhaus@astro.rit.edu <a href="http://ccrg.rit.edu/~nordhaus">http://ccrg.rit.edu/~nordhaus</a>
PROFESSIONAL PREPARATION	<b>University of Rochester</b> B.S., Physics and Astronomy, May 2003 B.A., Mathematics, May 2003 M.S., Physics, May 2004 Ph.D., Physics and Astronomy, May 2008  <b>Princeton University</b> Astrophysics, Post-doctoral Research Fellow 2008-2011  <b>Rochester Institute of Technology</b> Astrophysics, NSF Astronomy & Astrophysics Post-doctoral Fellow 2011-2014	
APPOINTMENTS	<b>Rochester Institute of Technology</b> Assistant Professor, NTID Dept. of Science and Mathematics, 2014-present	
PRODUCTS FIVE MOST RELATED:	<b>Dimension as a Key to the Neutrino Mechanism of Core-Collapse Supernova Explosions</b> Nordhaus, J., Burrows, A., Almgren, A., Bell, J. 2010 ApJ, 720, 694  <b>Theoretical Support for the Hydrodynamic Mechanism of Pulsar Kicks</b> Nordhaus, J., Brandt, T., Burrows, A., Livne, E., Ott, C. D. 2010 Physical Review D, 82, 103016.  <b>The Hydrodynamic Origin of Neutron Star Kicks</b> Nordhaus, J., Brandt, T., Burrows, A., Almgren, A. 2012, MNRAS, 423, 1805.  <b>Induced Rotation in Three-Dimensional Simulations of Core-Collapse Supernovae: Implications for Pulsar Spins</b> Rantsiou, E., Burrows, A., Nordhaus, J., Almgren, A. 2011 ApJ, 732, 57.  <b>A Call for a Paradigm Shift From Neutrino-driven to Jet-driven Core-collapse Supernova Mechanisms</b> Papish, O., Nordhaus, J., Soker, N., 2015, MNRAS, 448, 2362.	
PRODUCTS FIVE OTHERS:	<b>Low-mass Binary-Induced Outflows from Asymptotic Giant Branch Stars</b> Nordhaus, J., Blackman, E. G. 2006 MNRAS, 370, 2004.  <b>Magnetic Mixing in Red Giant and Asymptotic Giant Branch Stars</b> Nordhaus, J., Busso, M., Wasserburg, G., Blackman, E. G., Palmerini, S. 2008 ApJ Letters, 684, L29  <b>Tides and Tidal Engulfment in post-Main Sequence Binaries: Period Gaps for Planets and Brown Dwarfs Around White Dwarfs</b> Nordhaus, J., Spiegel, D. S., Ibgui, L., Goodman, J., Burrows, A. 2010 MNRAS, 408, 631.	

### Isolated versus Common Envelope Dynamos in Planetary Nebula Progenitors

Nordhaus, J., Blackman, E. G., Frank, A. 2007 MNRAS, 376, 599.

### The Formation of High-Field Magnetic White Dwarfs from Common Envelopes

Nordhaus, J., Wellons, S., Spiegel, D. S., Metzger, B. D., Blackman, E. G. 2011 Proceedings of the National Academy of Sciences, 108, 3135.

#### SYNERGISTIC ACTIVITIES

#### **Instructor** **September, 2011 - present**

Developed, and taught an American Sign Language introductory astronomy course for RIT's National Technical Institute for the Deaf.

- Principles of Modern Astronomy, NSCI 284, Fall 2013, 2014 and 2015.

#### **Participant** **September, 2011 - present**

Developed and participated in the AstroDance Project – an NSF-funded outreach program which partnered CCRG scientists with NTID theatre faculty and students to develop a dance program which details the hunt for gravitational waves with LIGO.

#### **Instructor** **March, 2005**

Organized, taught and developed an introductory high school course held at the University of Rochester on the NASA Origins program.

- Rochester Scholars, NASA Origins, Spring 2005.

#### **Instructor** **January, 2009 - present**

Taught and aided in the development of three accredited mathematics courses taught at Edna Mahan Women's Correctional Facility through Mercer County Community College and Prison Teaching Initiative (formerly known as Princeton Project Inside).

#### COLLABORATORS

##### **(i) Collaborators and Co-Editors (43):**

Ann Almgren (LBNL), Bruce Balick (Washington), Brian Babler (Wisconsin), Ehud Behar (Technion), John Bell (LBNL), Eric Blackman (Thesis Advisor; Rochester), Tim Brandt (Princeton), Stacey Bright (Macquarie), Adam Burrows (Post-doctoral Advisor; Princeton), Valentine Bujarrabal (Madrid), Jonathan Carroll-Nellenback (Rochester), You-Hu Chu (Illinois), Geoff Clayton (LSU), Olivier Chesneau (Observatoire de la Cote d'Azur), Roman Corradi (Tenerife), Ivan Di Lernia (RIT), Orsola De Marco (Macquarie), Josh Dolence (Princeton), Conrad Dahn (US Naval Observatory), Adam Frank (Rochester), David Frew (Macquarie), Jay Farihi (Cambridge), Bill Freeman (LSU), Joe Gallagher (LSU), Martin Huarte-Espinosa (Rochester), Hugh Harris (US Naval Observatory), Joel Kastner (RIT), I. Leao (Rio Grande), Niku Madhusudhan (Yale), Jeremiah Murphy (Princeton), Rudy Montez (Vanderbilt), Brent Miszalski (South Africa), Niyas Maddapatt (Macquarie), Brian Metzger (Columbia), Ed Nelan (STScI), Manou Rantsiou (Berlin), Dave Spiegel (IAS), Raghendra Sahai (JPL), John Subsavage (US Naval Observatory), Angela Speck (Missouri), Barbara Whitney (STScI), Mark Wardle (Macquarie), Sarah Wellons (Harvard)

**(ii) Graduate Advisors (1) and Postdoctoral Sponsors (1):** Eric Blackman (University of Rochester, PhD advisor), Adam Burrows (Princeton, Postdoctoral sponsor)

**(iii) Thesis Advisor (1) and Postgraduate-Scholar Sponsor (0):** Zhou Chen (Univ. of Rochester)

**Undergrad Students Supervised (7):** Sarah Wellons (Princeton class of 2011), Lauren Weiss (Harvard class of 2010), Dale Mack (Princeton class of 2013), I. Di Lineria (RIT class of 2014), Brianne Zins (Allegheny College class of 2015), Asher Kirschbaum (RIT class of 2017), David Spiecker (RIT class of 2017)



**Miriam E. Santana-Valadez**  
**Curriculum Vitae**

**Work**  
**52 Lomb Memorial Drive**  
**Rochester, NY 14623**

**Home**  
**7 Falcon Trail**  
**Pittsford, NY 14534**

**I. ACADEMIC AND PROFESSIONAL QUALIFICATIONS**

**A. Education**

Nazareth College, Rochester, NY 2006  
Bilingual Extension  
(Four Master Degree Program courses focused on teaching English Language Learners)

St. John Fisher College, Rochester, NY 2005  
Masters of Science, with specialization in Math, Science and Technology Education

Normal Superior Nueva Galicia, Guadalajara, Jalisco, MEXICO  
Bachelors in Adolescence Education 1999

Instituto Tecnológico de Estudios Superiores de Occidente, Guadalajara, Jalisco, MEXICO.  
Bachelors of Science in Electrical Engineering 1989

**B. Certifications**

National Board Certification, Mathematics 2008  
New York Permanent Teaching Certification, Mathematics 7<sup>th</sup>-12<sup>th</sup> 2006

**C. Grants/Awards**

Finalist for the Provost's Innovative Teaching with Technology Award, RIT 2012  
Texas Instruments Grant (\$5000), 30 TI-Nspire graphing calculators 2008

**D. Effective Communication**

Sign Language Proficiency Interview (SLPI) 2012  
Rating: Intermediate Plus

**E. Professional Experience**

National Technical Institute for the Deaf at RIT, Rochester, NY  
Adjunt: Teaching Spanish to college students 2012  
Lecturer: Teaching Mathematics to college students 2007-Present  
Rochester City School District, Rochester, NY 2003-2007

Teacher: Taught Algebra, Advanced Algebra, and Geometry to English-speaking and bilingual students at Monroe High School

BOCES I, Fairport, NY 2002-2003  
Tutor: Tutored Mathematics, Science, and Spanish through Home and Hospital Program

BERLITZ, School of Languages, Rochester NY 2001-2002  
Teacher: Taught Spanish to adults doing business in Hispanic countries

Instituto Aguascalientes, Aguascalientes, Ags. MEXICO 1994-1997  
Teacher: Taught High School Algebra, Trigonometry and Pre-Calculus

Centro Escolar Los Altos, Guadalajara, Jal. MEXICO 1989-1994  
Teacher: Taught High School Computer Lab, Mathematics and Physics

Centro Escolar Torreblanca, Guadalajara, Jal. MEXICO 1988-1989  
Teacher: Taught Middle School Mathematics, Chemistry and Physics

## II. PROFESSIONAL ACTIVITIES

### A. Publications

Santana, M. (2010, May). Exploring trigonometric ratios.

<http://education.ti.com/calculators/downloads/US/Activities/Search/Subject?s=5022&sa=5025&t=5075&d=1008&g=author#author-17>

Santana, M. (2010, May). Law of sines.

<http://education.ti.com/calculators/downloads/US/Activities/Search/Subject?s=5022&sa=5025&t=5075&d=1008&g=author#author-17>

Santana, M. (2010, May). Sine and cosine identities.

<http://education.ti.com/calculators/downloads/US/Activities/Search/Subject?s=5022&sa=5025&t=5075&d=1008&g=author#author-17>

Santana, M. (2010, May). Unit circle.

<http://education.ti.com/calculators/downloads/US/Activities/Search/Subject?s=5022&sa=5025&t=5075&d=1008&g=author#author-17>

### B. Presentations

Santana, M. (2016, February). *From variables to functions: problem solving using the TI-30XS MultiView calculator*. Presented at the T<sup>3</sup> (Teachers Teaching with Technology) International Conference, Orlando, FL.

- Santana, M. (2015, March). *Learning Cycle Lesson Plan using TI-Technology*. Presented at the T<sup>3</sup> (Teachers Teaching with Technology) International Conference, Fort Worth, TX.
- Santana, M. (2013, June) Poster/Presentation, Presented at the Council of American Instructors of the Deaf (CAID) Conference, Rochester, NY.
- Santana, M. (2012, March). *Teaching functions using technology*. Presented at the T<sup>3</sup> (Teachers Teaching with Technology) International Conference, Chicago, IL.
- Santana, M. (2011, April). *Teaching mathematics using technology*. Presented at the Association of Mathematics Teachers of New York State Conference, Rochester, NY.
- Santana, M. (2011, June). *Teaching mathematics with technology*. Presented at the Council of American Instructors of the Deaf (CAID) Conference, Dallas/Fort Worth, TX.
- Santana, M. (2011, June). *Use of clickers in math classes for deaf and hard-of-hearing students*. Poster presented at the Council of American Instructors of the Deaf (CAID) Conference, Dallas/Fort Worth, TX.
- Santana, M. (2011, February). *Teaching linear and quadratic functions using technology*. Presented at the T<sup>3</sup> (Teachers Teaching with Technology) International Conference, San Antonio, TX.
- Santana, M. (2010, October). *How to use the new TI-84 operative system*. Presented at the Association of Mathematics Teachers of the Rochester Area (AMTRA) Fall Conference, Rochester, NY.
- Santana, M. (2010, June). *Checking for students' understanding in the math classroom*. Presented at the NTID Technology Symposium, Rochester, NY.
- Santana, M. (2010, June). *Checking for students' understanding in the math classroom*. Presented at the Annual Clickers in the Classroom: Innovation and Best Practices Conference, Louisville, KY.
- Nelsen, B., & Santana, M. (2010, March). *Overcoming resistance to technological change*. Paper presented at the Midwest Business Administration Association (MBBA) Conference, Chicago, IL.
- Santana, M. (2010, March). *Algebraic manipulations with your TI-84 graphing calculator*. Presented at the Association of Mathematics Teachers of the Rochester Area (AMTRA) Spring Conference, Rochester, NY.

- Santana, M. (2010, March). *TI-Technology, Clickers, and Smart Boards to improve the teaching of linear functions*. Presented at the Association of Mathematics Teachers of the Rochester Area (AMTRA) Spring Conference, Rochester, NY
- Santana, M. (2010, March). *How I became National Board Certified thanks to the use of technology*. Presented at the T<sup>3</sup> (Teachers Teaching with Technology) International Conference, Atlanta, GA.
- Santana, M. (2009, October). *Teaching functions using technology*. Presented at the National Council of Teachers of Mathematics (NCTM) Regional Conference, Boston, MA.
- Santana, M. (2009, June). *TI-84 and Zoom Math activities*. Presented at the T<sup>3</sup> (Teachers Teaching with Technology) Regional Conference, Buffalo, NY.
- Santana, M. (2009, May). *Using Clickers with deaf and hard-of-hearing students*. Poster presented at the Faculty Institute on Teaching and Learning (FITL) Conference, Rochester, NY.
- Santana, M. (2009, May). *Faculty Learning Community (FLC) project: Using Clickers with deaf and hard-of-hearing students*. Presented at the Faculty Institute on Teaching and Learning (FITL) Conference, Rochester, NY.
- Santana, M. (2009, March). *Who said that the TI-84 plus calculator can't do algebraic manipulations?* Presented at the Association of Mathematics Teachers of the Rochester Area (AMTRA) Spring Conference, Rochester, NY.
- Santana, M. (2009, January). *Use of clickers in the classroom*. Presented at the Innovative Classroom Technologies in Support of Deaf, Hard-of-Hearing and Hearing Students Throughout RIT Conference, Rochester, NY.
- Car, J., Daniele, V., Santana, M., Webster, S., & Wink, P. (2008, June). *Using current technology to support and improve mathematics*. Presented at the NTID Technology Symposium, Rochester, NY.
- Santana, M. (2008, March). *TI-Nspire, working with multiple representations*. Presented at the Association of Mathematics Teachers of the Rochester Area (AMTRA) Spring Conference, Rochester, NY.
- Santana, M. (2008, March). *Exploring linear and quadratic functions*. Presented at the Association of Mathematics Teachers of the Rochester Area (AMTRA) Spring Conference, Rochester, NY.
- Santana, M. (2008, March). *Exploring linear and quadratic functions using technology*. Presented at the T<sup>3</sup> (Teachers Teaching with Technology) International Conference, Dallas, TX.

Santana, M. (2008, March). *Exploring linear and quadratic functions*. Presented at the Association of Mathematics Teachers of the Rochester Area (AMTRA) Spring Conference, Rochester, NY.

Santana, M. (2008, January). *Get inspired with TI-Nspire: Applications in the classroom*. Presented at the Association of Mathematics Teachers of the Rochester Area (AMTRA) Winter Conference, Rochester, NY.

Santana, M. (2008, January). *Introduction to the new TI-Nspire calculator*. Presented to Members of the NTID Math Department, Rochester, NY

Santana, M. (2007, October). *Introduction to the new TI-Nspire technology*. Presented at the Association of Mathematics Teachers of New York State Texas Instruments Event, Rochester, NY.

### C. Research Projects

- Clickers in the Classroom 2009
- MyMathLab Tools (with Carol De Filippo) 2009-2012

### D. Service

- Steps to Success, presenter 2008-Present
- Hispanic Deaf Club, mentor 2009-Present
- SVP, test proctor 2010-Present
- Math Competition for Deaf and Hard of Hearing Students, Scoring team 2010-Present
- NTID Diversity Group (NDG) Leadership Team, member 2011-Present
- Thomas Jefferson H.S. Career Conference, student mentor 2008
- Imagine RIT, volunteer 2008
- Partners in Pluralism, participant 2008-2011
- Community/Church (Lourdes-Saint Anne Cluster): Clustering Committee member, Parish Council member, "Hispanics in Rochester" parish coordinator 1998-Present

### E. Curriculum Development

Mathematics in Society (new math course to be offered in 2013)

### F. Professional Organizations (membership)

Teachers Teaching with Technology (T <sup>3</sup> )	2005-Present
Association of Mathematics Teachers of New York State (AMTNYS)	2007-Present
Association of Mathematics Teachers of the Rochester Area (AMTRA)	2007-Present
National Council of Teachers of Mathematics (NCTM)	2009-Present
Council of American Instructors of the Deaf (CAID)	2011-Present

88 ATLANTIC AVE  
ROCHESTER, NY 14607

**PATRICIA SPIECKER**  
pswntm@rit.edu

585-236-4253 WORK  
585-444-1010 HOME

### EDUCATION

Rochester Institute of Technology  
National Technical Institute for the Deaf  
Rochester, NY

- Master of Science in Secondary Education of Deaf/Hard of Hearing in Mathematics 2000
- Bachelor of Technology in Electrical Engineering Technology 1984
- Associate of Applied Science in Electromechanical Technology 1982
- Associate of Applied Science in Data Processing 1978

### PROFESSIONAL EXPERIENCE

*Senior Lecturer* 2007-Present

National Technical Institute for the Deaf Rochester, NY  
Provide instruction; participate in related department activities, curriculum development, professional development, and campus/community activities.

*High School Math Teacher* 1999-2007

Rochester School for the Deaf Rochester, NY  
Taught and developed a variety of courses in adherence to New York State Regents. Courses include Algebra I, Algebra II, Geometry, Trigonometry, Pre-Calculus, Real-Life Math Application, and Math, Science, and Technology (MST) I & II.

*Adjunct Instructor – Department of Mathematics & Science* 1998-Winter

National Technical Institute for the Deaf Rochester, NY  
Taught Applications of Algebra course. Prepared lecture and technical materials for classroom instruction. Developed assignments and test materials.

*Math Tutor* 1998-1999

National Technical Institute for the Deaf Rochester, NY  
Tutored a variety of mathematics course offered through NTID Department of Mathematics & Science to students requiring assistance to complete their assignments successfully.

*Substitute Teacher – High School* 1997-1998

Rochester School for the Deaf Rochester, NY  
Taught classes according to the prepared lesson plan, involving all subjects to High School students.

*Adjunct Instructor – Electromechanical Department* 1985-Spring  
National Technical Institute for the Deaf Rochester, NY  
Taught DC Circuits course. Prepared lecture and technical materials for classroom instruction and laboratory. Developed assignments and test materials.

*Software Engineer* 1984-1987  
Eastman Kodak Company Rochester, NY  
Developed software for lamphouse in color printer. Project teamwork with electrical and mechanical engineers.

### COMMUNICATION

Sign Communication Proficiency Interview Rating:  
**Advanced Plus to Superior Plus Level Range**, October 2007

### COURSES TAUGHT

Courses taught at the National Technical Institute for the Deaf

#### **Mathematics**

##### **Level A**

Introduction to College Algebra

##### **Level B**

Foundations of Algebra

Mathematics in Society

##### **Level C**

Integrated Algebra

Elements of Trigonometry

Trigonometry for Coordinate Analysis I & II

##### **Level D**

Explorations in College Algebra

Advanced Mathematics

Preparation for Statistics

Accelerated Algebra II

#### **Engineering**

Introduction to Robotics

### PRESENTATIONS

Wink, P., and Webster, S., (2011), *Doing Math On-Line*. Co-presented at the Council of American Instructors of the Deaf (CAID) Conference, Fort Worth, TX.

Wink, P., and Webster, S., (2009), *Enhancing Deaf Learners' Access to Mathematics Through Technology Tools: MathXL, Math Gallery & SmartView*. Co-presented at the National Council of Teachers of Mathematics (NTCM) Regional Conference and Exposition, Boston, MA.

Wink, P., Daniele, V., Carr J., Webster, S., and Santana, M. (2008), *Using Current Technology to Support and Improve Mathematics Instruction*. Coordinated and co-presented at the NTID Symposium PEN-International on Technology & Deaf Education, Rochester, NY.

Wink, P., (2007), *Using the SmartView*. Presented to the Math & Science Department at National Technical Institute for the Deaf, Rochester Institute of Technology, Rochester, NY.

### RIT COMMITTEES

- SVP Math Placement Test –proctor, scorer, and interviewer, 2010 - present
- Math Competition Outreach Program, 2008 - present
- NTID committee to develop video on direct instruction in action at NTID classrooms, Fall Semester 2015
- Served on NTID Teaching /Tutoring Award Committee, Fall Semester 2014 and Spring Semester 2015
- Served on NTID Search Committee for Math Lecturer and Tenure- Track Positions, November 2014 – May 2015
- Outreach Program: Tech Girlz, 2009 – 2015
- Lecturer Promotion Committee, 2011
- Sign Communication Proficiency Interview Team, 2008-2009



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## Matthew J. Stefano

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63 Elmore Road  
Rochester, NY 14618  
Email: mjsntm@rit.edu

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### EDUCATION:

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Master of Science in Secondary Education for the Deaf and Hard of Hearing, May 2005  
Thesis: A Study of Multimedia in an Environmental Science Course.  
Rochester Institute of Technology, Rochester, NY

Bachelor of Science in Environmental Science, June 2003  
Concentrations: Mathematics, Great Lakes, History  
Rochester Institute of Technology, Rochester, NY

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### PROFESSIONAL EXPERIENCE:

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#### **Rochester Institute of Technology**

Rochester, NY

Senior Lecturer for National Technical Institute for the Deaf (NTID)	7/15-present
Lecturer for National Technical Institute for the Deaf (NTID)	8/08-6/15
Instruct and optimize curriculum for Mathematics and Science courses. Created course outlines for semester courses such as Environmental Studies, Laboratory Mathematics, and Accelerated Algebra (three courses with a team of faculty). Participate in professional development and campus/outreach activities.	

#### **Washington School for the Deaf**

Vancouver, WA

Teacher for the Deaf	8/05-6/08
Taught High School math, science, and elective courses. Courses included College Preparatory Mathematics, Geometry, Algebra II, Chemistry, Biology, General Science, Earth Science, Physical Education, and Video-Editing. Developed and maintained K-12 math and science curriculum.	

#### **Rochester Institute of Technology**

Rochester, NY

Adjunct Lecturer for NTID	9/04-11/04
Taught two Environmental Studies courses.	
Teaching Assistant for NTID Department of Science and Math	9/03-5/05
Tutored and assisted with teaching Environmental Studies and Astronomy Lab.	

## **COMMUNICATION:**

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Sign Communication Proficiency Interview Rating  
Advanced Plus to Superior Plus Level Range, October 2008.

## **CERTIFICATION:**

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Washington State Teaching Certification: Endorsement in Earth Science, Biology,  
Chemistry, Mathematics, General Science, and Special Education, 2005 – 2010.

NY State Teaching Certification: Endorsement in Deaf and Hard of Hearing, 2005 – 2010.

Council on Education of the Deaf, provisional certification, secondary classes, 2005.

## **COURSES TAUGHT AT NTID**

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### **Mathematics**

Introduction to College Math (0884-100)  
Math Applications in Business Technology (0884-155)  
Foundations of Algebra (NMTH-180)  
Applications of Algebra (NMTH-210)  
Advanced Mathematics (NMTH-275)  
Integrated Algebra (NMTH-212)  
Mathematics in Society (NMTH-140)

### **Science**

Environmental Studies (NSCI-153)

### **Laboratory Science Technology**

Laboratory Mathematics (NLST-232)

## **PRESENTATIONS:**

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Behm G, Schwenger E, Simpson T, & Stefano M, (2013). Writing in the Disciplines at NTID. Presented during DeafTEC Summer Workshop. (unable to participate due to illness: prepared PPT slides on Writing in Environmental Studies.)

Stefano M & Gentzke S, (2011). Growing Up Deaf in the Mainstream. Presented at Monroe #1 Board of Cooperative Educational Service.

Stefano M, Miller J, Malone A, Howard A, & Born R, (2006). Math Curriculum Adoption. Presented at the Board of Trustee Meeting at Washington School for the Deaf.

Stefano Matthew (2005). A Study of Multimedia in an Environmental Science Course. Paper presented at Rochester Institute of Technology.

## **SERVICE:**

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### **RIT/NTID Committees**

- Senior Lecturer Promotion Committee, 2016 – present
- SVP Math Remote Testing Committee, 2015 – 2016
- Math Search Committee, 2013 – 2014
- Pre Acceptance Committee, 2013
- MSSE Advisory Group, 2008

### **RIT/NTID Outreach**

- Math Competition for Deaf and Hard of Hearing Students
  - Math Competition Committee, 2012 – present
  - Scorer, 2010 – 2013
- SVP Math Placement Test – scorer, interviewer, and proctor, 2010 – present
- TechGirlz & TechBoyz – Math Jeopardy, 2014
- RIT National Science Fair for Deaf and Hard of Hearing Students, 2009 – 2011
- NTID Foundation Website: Interview for video, 2010

### **RIT/NTID DeafTEC**

- Project Fast Forward – Processes of Science: Environmental Science, 2014 – present
  - Western Pennsylvania School for the Deaf
  - Plano Senior High School

### **Washington School for the Deaf**

- Math Committee to propose a new spiral curriculum for K-12, 2006
- Science Committee to propose a new spiral curriculum for K-12, 2006
- Deaf Academic Bowl Coach, 2005 – 2008
- Sponsor for Class of 2008, 2006 – 2008
- Special Olympic Basketball & Soccer Team Assistant Coach, 2005 – 2008

## **HONORS & AWARDS:**

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- NTID Teaching/Tutoring Award for Non-Tenure-Track Faculty, nominated 2015
- NTID Teaching/Tutoring Award for Non-Tenure-Track Faculty, nominated 2014
- RIT Outstanding Teaching Award for Non-Tenure-Track Faculty, nominated 2013
- Outstanding Graduate Award, Rochester Institute of Technology, 2005

## Sharron M. Webster

### CONTACT INFORMATION

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- **Home**  
19 Church Street Honeoye Falls, NY 14472  
Honeoye Falls, NY 14472  
Phone: 585-444-1625
- **Work**  
52 Lomb Memorial Drive  
LBJ-2275  
Rochester, NY 14623  
Phone: 585-286-3550
- **Email:** smwsdo@rit.edu

### EDUCATION

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- **Rochester Institute of Technology**, Rochester, New York, Master of Science, Applied Mathematics & Statistics, Concentration: Industrial Statistics
- **Rochester Institute of Technology**, Rochester, New York, Bachelor of Science, Business Administration, Concentration: Mathematics & Computer Science
- **Rochester Institute of Technology**, Rochester, New York, Associate of Science, Business Administration

### EXPERIENCE

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- **Mathematics Coordinator, Department of Science & Mathematics**  
*National Technical Institute for the Deaf (NTID), Rochester Institute of Technology (RIT)*  
*Rochester, New York*

March 2011-present

Provide leadership for tasks related to presenting and maintaining the NTID mathematics curriculum. Assist and report to the Department Chairperson.

- **Assistant Professor (tenure track), Department of Science & Mathematics**  
*National Technical Institute for the Deaf (NTID), Rochester Institute of Technology (RIT)*  
*Rochester, New York*

August 2007-present

- **80% Visiting Assistant Professor, Department of Science & Mathematics**  
*National Technical Institute for the Deaf (NTID), Rochester Institute of Technology (RIT)*  
*Rochester, New York*

September 1998-June 2007

- **Visiting Instructor, Department of Science & Mathematics**

*NTID at RIT*

December 1996-June 1998

- **50% Visiting Instructor, Department of Science & Mathematics**

*NTID at RIT*

September 1993-June 1995

Provide Mathematics and Statistics instruction to deaf and hard-of-hearing postsecondary students enrolled in courses offered by the NTID's Science & Mathematics Department.

Provide tutoring in the NTID Learning Center.

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Participate in related department activities, curriculum development, professional development, and campus/community activities.

Proctor Mathematics placement tests for incoming students and interview students each August (since 2004) during Summer Vestibule Program (SVP).

- **Interim NTID Director of Alumni Relations**  
*NTID at RIT* January 2004 – August 2004

- **Systems Analyst, Department of Systems Development & Operation**  
*NTID at RIT* July 1995 - November 1996  
June 1990 – August 1993

Designed and re-designed projects. Updated and modified programs. Documented user and program manuals. Supervised co-op students. Developed and assigned specifications to programmers and co-op students.

- **Senior Programmer** July 1987 - June 1990
  - **Programmer** July 1984 - June 1987
  - **Junior Programmer** April 1983 - June 1984
- NTID at RIT*

Provided major program development support for departments within NTID: graduation process, congratulatory letter process, NTID Center of Employment database & user documentation, Media Service system design, and the Affirmative Action Recruiting & Advertising system, Personnel system, Student Record system.

Developed and modified computer programs. Tested programs and analyzed results. Interacted with program development team and requesters to develop system projects.

- **Adjunct Faculty, Department of Physics & Mathematics**  
*NTID at RIT* Fall 1991, Winter 1992, Fall 1995

Provided Mathematics instruction to deaf and hard-of-hearing postsecondary students here at NTID: Fundamentals of Mathematics I, II and III

- **Adjunct Faculty, Department of Data Processing**  
*NTID at RIT* September 1985 – May 1987

Provided instruction to deaf and hard-of-hearing postsecondary students here at NTID: Introduction to VAX System, COBOL I and II.

- **Programming Trainee (co-op), Department of System Development & Operation**  
*NTID at RIT* September 1982 – March 1983

- **Accounting Trainee (co-op)**

Hewlett Packard, Rockville, MD

April 1981 – August 1981

■ **Tutor (Student Assistant)**

Math Learning Center at NTID

September 1980 – May 1982

■ **Financial Analyst Trainee (co-op)**

Whirlpool Corporation, Benton Harbor, MI

June 1980 – August 1980

**COMMUNICATION**

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Sign Communication Proficiency Interview rating:

**Advanced Plus**, April 1997

**Advanced Plus to Superior Plus Level Range**, April 2007

**COURSES TAUGHT**

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**Courses taught at the National Technical Institute for the Deaf**

**Level A**

Introduction to College Mathematics  
Preparation for Algebra

**Level B**

Foundations of Algebra  
Math Applications on Business Technology

**Level C**

Laboratory Mathematics I, II  
Applications of Algebra  
Integrated Algebra  
Elements of Trigonometry

**Level D**

Preparation for Statistics  
Explorations in College Algebra  
Advanced Mathematics

**PRESENTATIONS**

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Baker, S. and Webster, S. (1987), *How to Communicate with Deaf and Hard of Hearing People*. Co-presented to the Deputies, Rochester, NY.

Johnstone, C. and Webster, S (1987, 1988 & 1989), *TTDs: Using Them Effectively*. Co-presented workshop at National Technical Institute for the Deaf, Rochester Institute of Technology, Rochester, NY.

Adams, R. and Webster, S. (1988), *Attitudes Toward Deafness*. Co-facilitated core group of the Convocation at National Technical Institute for the Deaf, Rochester Institute of Technology, Rochester, NY.

Carr, J. and Webster, S (1999), *Preparation of Statistics*. Co-presented workshop (sponsored by NETAC) at National Technical Institute for the Deaf, Rochester Institute of Technology, Rochester, NY.

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- Webster, S. (April 2004), *What's News at NTID?* Presented at the alumni chapter, Pittsburgh, PA.
- Webster, S. (May 2004), *Congratulations! You are Now Alumni* . Presented to a group of graduating students at National Technical Institute for the Deaf, Rochester Institute of Technology, Rochester, NY.
- Johnstone, C. and Webster, S. (2008), *What's So Smart about Smart Boards? How to Use Them Effectively*. Co-presented at National Technical Institute for the Deaf, Rochester Institute of Technology, Rochester, NY.
- Webster, S., Daniele, V., Carr, J., Wink, P., and Santana, M. (2008), *Using Current Technology to Support and Improve Mathematics Instruction*. Coordinated and co-presented at the NTID Symposium PEN-International on Technology & Deaf Education, Rochester, NY.
- Webster, S. (2009), *Enhancing Deaf Learners' Access to Mathematics through Technology Tools: MathXL & Math Gallery*. Presented at the Council of American Instructors of the Deaf (CAID) Conference, Washington D.C.
- Webster, S. and Wink, P. (2009), *Enhancing Deaf Learners' Access to Mathematics through Technology Tools: MathXL, Math Gallery & SmartView*. Co-presented at the National Council of Teachers of Mathematics (NCTM) Regional Conference and Exposition, Boston, MA.
- Webster, S. (2009), *Math Gallery as a Tool*. Presented at the NTID Learning Center at National Technical Institute of the Deaf, Rochester Institute of Technology.
- Webster, S. (2011), *Clickers: A Tool to Improve Student Engagement and Assessment*. Presented at the Council of American Instructors of the Deaf (CAID) Conference, Fort Worth, TX.
- Webster, S. and Wink, P. (2011), *Doing Math On-Line*. Co-presented at the Council of American Instructors of the Deaf (CAID) Conference, Fort Worth, TX.
- Webster, S., Kurz C. and Wink, P. (2013), *Immediate Feedback and Mathematical Learning*. Co-presented at the Council of American Instructors of the Deaf (CAID) Conference, Rochester, NY.

## **PUBLICATIONS**

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Webster, S., Kurz, C. and Wink P. (to be submitted), Online Math Homework: Immediate Feedback and Its Impact on Learning, *Journal of Research in Mathematics Education*

## **COMMITTEES**

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- Faculty Advisor for SVP students in Residence Hall (Summer 1987, 1988 & 1989)
- NTID Answering Machine Task Force, 1988

S. Webster

Page 4 of 5

- NTID Affirmative Action Advisory Committee, 1987-1989
- Deaf Professional Group Steering Committee, 1986-1991
- Deaf Professional Group, Liaison, 1989-1990
- NTID Strategic Planning Committee, 1991 – 1992
- ASL Literature Conference Registration Committee, Co-chair, 1995 – 1996
- Search Committee, NTID Vice President, 1995-1996
- NTID Mathematics & Science Curriculum Development Team (S-Strand), 1995-1996
- NTID Space Committee, 1995 – 1997
- Staff Communication Sub-Committee (SCS) of Steering Communication Committee (SCC) – developed & recommended communication plan for General/Professional & EDF faculty, 1996-1997
- Search Committee, NITD Admission Recruiter, 1997
- NTID Reunion 1998 Nomination Committee, 1997-1998
- Group A Curriculum Committee – with focus on Level A courses, 1997-1998
- NTID Reunion 1998, Chair of Workshop Committee, 1997-1998
- RIT Margaret’s House Advisory Board, 1997-2003
- NTID Reunion 2003, Chair of Program Committee, 2001-2003  
Co-Chair of Reunion Planning, 2002-2003
- Sign Communication Proficiency Interview Team, 2001-present
- Deaf Professional Group, Steering Committee, 2002-2005
- Search Committee, NTID Alumni Relations Director, 2002
- Math Competition Outreach Program,  
Scorer 2007, Lead Scorer 2008-2013,  
Coordinated with C. Kurz 2009-2011,  
Coordinated with C. Kurz and M. Stefano 2011-2013  
Led Math Jeopardy Game 2011 & 2012,  
Led Team Challenge 2013
- BOCES #1 MathCount Team, co-chaired with J. Stanislow 2008-2009
- Learning Center Consortium (LCC) Committee 2007-2010, Project “Exercise for the Mind” with K. Varone
- RIT Partnerships in Pluralism Program 2006-2007
- Student Retention Committee 2009 – 2011
- NTID Curriculum Committee (NCC), Member 2010-2012  
Chair 2012 – 2013



**Appendix G - Cost model: revenue/cost projections/expenses**

**Department of Science and Mathematics  
Applied Science Associate of Science Degree Program  
Projected Expenditures For The Proposed Program**

**Table 1**

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	Year 1 AY18-19	Year 2 AY19-20	Year 3 AY20-21	Year 4 AY21-22	Year 5 AY22-23
Faculty Positions (1.10 FTE) - Salary	\$ 80,900	\$ 82,900	\$ 85,000	\$ 87,100	\$ 89,300
Staff Assistant (0.10 FTE) - Salary	\$ 2,500	\$ 2,600	\$ 2,700	\$ 2,800	\$ 2,900
Benefits	\$ 33,000	\$ 34,000	\$ 35,000	\$ 36,000	\$ 37,000
<b>Total Salary and Benefits</b>	<b>\$ 116,400</b>	<b>\$ 119,500</b>	<b>\$ 122,700</b>	<b>\$ 125,900</b>	<b>\$ 129,200</b>
	\$ -	\$ -	\$ -	\$ -	\$ -
Computer Charges	\$ 16,600	\$ 31,800	\$ 35,800	\$ 40,000	\$ 44,500
Instructional Supplies (Office, computer, etc.)	\$ -	\$ -	\$ -	\$ -	\$ -
Telephone	\$ -	\$ -	\$ -	\$ -	\$ -
Software Licenses and periodic software upgrades	\$ -	\$ -	\$ -	\$ -	\$ -
Travel-Conferences	\$ 1,700	\$ 1,700	\$ 1,700	\$ 1,700	\$ 1,700
Tuition Payments for RIT Credits *	\$ 51,700	\$ 209,800	\$ 238,900	\$ 269,500	\$ 301,800
Overhead (RIT Indirect Costs)	\$ 31,700	\$ 61,700	\$ 67,800	\$ 74,300	\$ 81,100
Other	\$ 101,700	\$ 305,000	\$ 344,200	\$ 385,500	\$ 429,100
<b>New Program Total Costs</b>	<b>\$ 218,100</b>	<b>\$ 424,500</b>	<b>\$ 466,900</b>	<b>\$ 511,400</b>	<b>\$ 558,300</b>
<b>New Program Total Incremental Costs</b>	<b>\$ 136,400</b>	<b>\$ 211,200</b>	<b>\$ 271,500</b>	<b>\$ 312,600</b>	<b>\$ 349,600</b>

\* This dollar amount represents the charge for NTID students taking classes in other RIT Colleges. The College of Liberal Arts classes (taught by CLA faculty) yield a faculty requirement of 0.15 FTE in Year 3 and forward provided that no seats are available in existing class sections. Year 1 and Year 2 require a lesser faculty FTE requirement based on the years in which these classes occur and the number of incremental students projected. The 0.15 FTE is calculated as follows (7 incremental students x 5 courses = 35 seats and 35 seats / 30 seat average class size = 1.17 classes; 1.17 class / 8 courses per year for lecturer faculty member = 0.15 FTE). CLA courses taught by NTID faculty are not included in this calculation. The College of Science courses (taught by COS faculty) yield a faculty FTE requirement as follows: 0.02 in Year 1; 0.12 in Year 2; 0.18 in Year 3; 0.23 in Year 4; 0.29 in Year 5; and 0.33 in Year 6 and forward provided that no seats are available in existing class sections. The FTE calculations include the following assumptions: average class sizes of 150 for first year lab courses and 25 for labs, average class sizes of 75 for second year course lectures (both lab and non-lab courses) and 22 for labs, 8 courses taught per year by lecturers for first year courses and 6 courses taught per year by tenured and tenure-track faculty for second year courses. FTE's are calculated as follows: (# of incremental students x # of courses or labs = # of seats and # of seats / average class size = # of classes, # of classes / X classes per year for a lecturer or tenured/tenure-track faculty member = # of FTEs).

**Department of Science and Mathematics  
Applied Science Associate of Science Degree Program  
Projected Revenue For The Proposed Program**

**Table 2**

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Year 1 AY18-19	Year 2 AY19-20	Year 3 AY20-21	Year 4 AY21-22	Year 5 AY22-23
10	20	22	24	26

Total Enrollment

Total Students' Annual Enrollment *	10	20	22	24	26
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Incremental Students' Annual Enrollment \*

2	5	7	9	11
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Annual Tuition Rate \$ 16,218 \$ 16,786 \$ 17,373 \$ 17,982 \$ 18,611

Total Student NTID Tuition Revenue *	\$ 162,183	\$ 335,720	\$ 382,217	\$ 431,558	\$ 483,884
Incremental Student NTID Tuition Revenue *	\$ 32,437	\$ 83,930	\$ 121,614	\$ 161,834	\$ 204,720
State Revenue	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
Federal Appropriation ^	\$ 55,917	\$ 88,760	\$ 84,683	\$ 79,842	\$ 74,416
Federal Appropriation - Incremental ^	\$ 123,963	\$ 127,270	\$ 155,886	\$ 150,766	\$ 144,880
Grand Total Revenue	\$ 218,100	\$ 424,500	\$ 466,900	\$ 511,400	\$ 558,300
Incremental Grand Total Revenue	\$ 156,400	\$ 211,200	\$ 277,500	\$ 312,600	\$ 349,600

\* Total students are all NTID students who are projected to participate in this new program; this includes existing NTID students who would have attended NTID without this specific program and incremental students. Incremental students are students who will attend NTID specifically to participate in this new program. Therefore, total student enrollment and tuition revenue are projected to be greater than incremental student enrollment and tuition revenue.

^ The positive Federal Appropriation amounts indicate the amount required to bridge the financial gap between tuition revenue and the total cost of the program.

**Department of Science and Mathematics  
Applied Science Associate of Science Degree Program  
Projected Capital Expenditures**

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**Table 3**

	<b>Year 1 AY18-19</b>	<b>Year 2 AY19-20</b>	<b>Year 3 AY20-21</b>	<b>Year 4 AY21-22</b>	<b>Year 5 AY22-23</b>
<b>Capital Facilities</b>	\$0	\$0	\$0	\$0	\$0
<b>Equipment</b>	\$0	\$0	\$0	\$0	\$0
<b>Total Capital Expenditures</b>	\$0	\$0	\$0	\$0	\$0

Additional equipment to support this program is not required. As with all programs there will be needs for existing equipment to be upgraded as technology develops. This expense will be supported through existing NTID policies and funded through current operating budgets.

New facilities, such as laboratories, will not be required for this program.

**Department of Science and Mathematics  
Applied Science Associate of Science Degree Program  
Summary of Program Expenditures, Revenue, and Resource Requirements  
Table 4**

	Year 1 AY 2018-2019	Year 2 AY 2019-2020	Year 3 AY 2020-2021	Year 4 AY 2021-2022	Year 5 AY 2022-2023	5 Year Total
Personnel	\$ 83,400	\$ 85,500	\$ 87,700	\$ 89,900	\$ 92,200	\$ 438,700
Benefits	\$ 33,000	\$ 34,000	\$ 35,000	\$ 36,000	\$ 37,000	\$ 175,000
Computer Charges	\$ 16,600	\$ 31,800	\$ 35,800	\$ 40,000	\$ 44,500	\$ 168,700
Instructional Supplies	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Telephone	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Software Licenses	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Travel-Conferences	\$ 1,744	\$ 1,700	\$ 1,700	\$ 1,700	\$ 1,700	\$ 8,500
Tuition Payments for RIT	\$ -	\$ 209,800	\$ -	\$ -	\$ -	\$ -
Credits	\$ 51,766	\$ -	\$ 238,900	\$ 269,500	\$ 301,800	\$ 1,071,700
<b>Expense</b>	\$ 166,400	\$ 362,800	\$ 359,100	\$ 437,100	\$ 477,200	\$ 1,862,600
Overhead (RIT Indirect Costs)	\$ 31,700	\$ 61,700	\$ 67,800	\$ 74,300	\$ 81,100	\$ 316,600
<b>Total Expense</b>	\$ 216,100	\$ 424,500	\$ 466,900	\$ 511,400	\$ 558,300	\$ 2,179,200
Enrollment <sup>^</sup>	10	20	22	24	26	102
Tuition <sup>^</sup>	\$ 162,183	\$ 335,720	\$ 382,217	\$ 431,558	\$ 483,884	\$ 1,795,562
Federal Appropriation <sup>^</sup>	\$ 55,517	\$ 88,780	\$ 84,683	\$ 79,842	\$ 74,410	\$ 383,633
<b>Total Revenue</b>	\$ 218,100	\$ 424,500	\$ 466,900	\$ 511,400	\$ 558,300	\$ 2,179,200
<b>Total Rev. - Total Exp.</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

<sup>\*</sup> Reviewed by RIT Enrollment Management & Career Services

<sup>^</sup> These numbers and amounts are based on total projected students for this program (which is shown here on the enrollment list). As shown on Table 2, Projected Revenue for the Proposed Program: incremental student enrollment and related tuition revenue is much less than total student enrollment and related tuition revenue.

**Science and Mathematics Department**  
**Applied Science Associate of Science Degree Program**  
**Projected Expenditures For The Proposed Program**

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**Table 5 – New Resources**

<b>New Expenditures</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>
Personnel			
Library			
Equipment			
Laboratories			
Supplies & Expenses (Other Than Personal Service) **	\$18,300	\$33,500	\$37,500
Capital Expenditures			
Other ^	\$83,400	\$271,500	\$306,700
<b>Total all</b>	<b>\$101,700</b>	<b>\$305,000</b>	<b>\$344,200</b>

\*\* The amounts in this row represent RIT computer charges for students/faculty/staff involved in the program and minimal travel/conferences costs for faculty. A breakdown of these expenses may be found on Table 1 – Projected Expenditures for the Proposed Program.

^ The amounts in this row represent tuition payments for RIT credits and overhead (RIT indirect costs). A breakdown of these expenses may be found on Table 1 – Projected Expenditures for the Proposed Program.

12/13/16