NTID Department of Science and Mathematics

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

Matthew A. Lynn, Author and Department Chairperson

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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
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.

<table>
<thead>
<tr>
<th>Year</th>
<th>Internal Transfer</th>
<th>Would come to NTID without Program</th>
<th>New to NTID</th>
<th>Persisting</th>
<th>Total</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>7</td>
<td>2</td>
<td>9</td>
<td>20</td>
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</tr>
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<td>5</td>
<td>1</td>
<td>7</td>
<td>6</td>
<td>12</td>
<td>26</td>
</tr>
</tbody>
</table>

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.
### Table 1a: Undergraduate General Program Mask:

#### Term: Fall 1

<table>
<thead>
<tr>
<th>Course Number &amp; Title</th>
<th>CR</th>
<th>LAS</th>
<th>Maj</th>
<th>New</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCAR-100 Freshman Seminar</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAS Perspective 6 (CHMG 141 General &amp; Analytical Chemistry I or BIOL 101 General Biology I)*</td>
<td>3</td>
<td>X</td>
<td></td>
<td></td>
<td>Co-requisite CHMG 141 or BIOL 101</td>
</tr>
<tr>
<td>Professional Elective Lab (CHMG 145 General &amp; Analytical Chemistry I Lab or BIOL 103 General Biology I Lab)</td>
<td>1</td>
<td>X</td>
<td></td>
<td></td>
<td>Co-requisite CHMG-141 or BIOL-101</td>
</tr>
<tr>
<td>LAS First Year Elective (UWRT-100 Critical Reading and Writing if required based on placement test)</td>
<td>3</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAS Elective 1 (NMTH 275 Advanced Mathematics)</td>
<td>3</td>
<td>X</td>
<td></td>
<td></td>
<td>NTID Math Placement Score ≥ 40</td>
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<td>LAS Perspective 1</td>
<td>3</td>
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<tr>
<td>Wellness</td>
<td>0</td>
<td></td>
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**Term credit total:** 14 12 1

#### Term: Spring 1

<table>
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<tr>
<th>Course Number &amp; Title</th>
<th>CR</th>
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<th>Maj</th>
<th>New</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAS Immersion 1</td>
<td>3</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional Elective 1 (CHMG 142 General &amp; Analytical Chemistry II or BIOL 102)*</td>
<td>3</td>
<td>X</td>
<td></td>
<td></td>
<td>CHMG-141 or BIOL 101 Co-requisite: CHMG-146 or BIOL-104</td>
</tr>
<tr>
<td>Professional Elective 1 Lab (CHMG 146 General &amp; Analytical Chemistry II Lab or BIOL 104 General Biology II Lab)*</td>
<td>1</td>
<td>X</td>
<td></td>
<td></td>
<td>CHMG-141 and 145 Co-requisite: CHMG-142 or BIOL-102</td>
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<tr>
<td>FYW UWRT-150 Writing Seminar (or other FYW course)</td>
<td>3</td>
<td>X</td>
<td></td>
<td></td>
<td>UWRT-100 or placement</td>
</tr>
<tr>
<td>LAS Elective 2 (NMTH 220 Trigonometry or NMTH 250 Elementary Statistics)*</td>
<td>3</td>
<td>X</td>
<td></td>
<td></td>
<td>NTID Math Placement Score ≥ 40</td>
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<tr>
<td>LAS Perspective 2</td>
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**Term credit total:** 16 12 4

#### Term: Fall 2

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<tr>
<th>Course Number &amp; Title</th>
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<th>Maj</th>
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<th>Prerequisite(s)</th>
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</thead>
<tbody>
<tr>
<td>Professional Elective 2</td>
<td>3</td>
<td>X</td>
<td></td>
<td></td>
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<td>Professional Elective 2 Lab</td>
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<tr>
<td>LAS-Elective 3 Math *†</td>
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<td></td>
<td>MATH-161: NMTH-275 MATH-171: NMTH-220 and NMTH-275</td>
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**Term credit total:** 17-9-10 8 18

#### Term: Spring 2

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<tr>
<th>Course Number &amp; Title</th>
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<th>LAS</th>
<th>Maj</th>
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<th>Prerequisite(s)</th>
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**Term credit total:** 17-9-10 8 18 6 11-12

**Program Totals:**

<table>
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<tr>
<th>Credits:</th>
<th>Liberal Arts &amp; Sciences: 39-40</th>
<th>Major: 24-25</th>
<th>Elective &amp; Other: 0</th>
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</thead>
<tbody>
<tr>
<td>63-65</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

* 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.
As shown in Table 1a, the A.S. in Applied Science program consists of 63-65 credits taken over four semesters. Depending on the intended baccalaureate major, students take 39-40 credits to satisfy liberal arts general education requirements, 24-25 credits across the scientific focus area and a three-course immersion, and 0 credits of Freshman Seminar. 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 in general 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: University Physics IA, Calculus B/C
- 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. They must also take three courses that will satisfy the nine-credit LAS Immersion requirement once they enter a BS program. Students are free to choose the order and academic term in which they undertake such coursework as long as they abide by any necessary course prerequisite requirements. Students must also complete a wellness course as they are able to do so.

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

<table>
<thead>
<tr>
<th>BIOCHEMISTRY FOCUS</th>
<th>Course Number</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CHMG-141 *</td>
<td>General &amp; Analytical Chemistry I</td>
<td></td>
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<tr>
<td>NMTH-275 ‡</td>
<td>Advanced Mathematics</td>
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<td>NMTH-220 ‡</td>
<td>Trigonometry</td>
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<tr>
<td>MATH-171 ‡</td>
<td>Calculus A</td>
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<td>CHMG-142 §</td>
<td>General &amp; Analytical Chemistry II</td>
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<tr>
<td>CHMG-145 §</td>
<td>General &amp; Analytical Chemistry I Lab</td>
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<td>CHMG-146 §</td>
<td>General &amp; Analytical Chemistry II Lab</td>
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<tr>
<td>CHMO-231 §</td>
<td>Organic Chemistry I</td>
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<td>CHMO-235 $</td>
<td>Organic Chemistry I Lab</td>
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<tr>
<td>CHMO-232 $</td>
<td>Organic Chemistry II</td>
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<tr>
<td>CHMO-236 $</td>
<td>Organic Chemistry II Lab</td>
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<tr>
<td>BIOL-101 $</td>
<td>General Biology I</td>
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<tr>
<td>BIOL-102 $</td>
<td>General Biology II</td>
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<td>BIOL-103 $</td>
<td>General Biology I Lab</td>
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<td>BIOL-104 $</td>
<td>General Biology II Lab</td>
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<tr>
<td>MATH-172 $</td>
<td>Calculus B</td>
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<th>BIOLOGY FOCUS</th>
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<td>NMTH-275 ‡</td>
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<td>NMTH 250 ‡</td>
<td>Elementary Statistics</td>
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<td>MATH 161 ‡</td>
<td>Applied Calculus</td>
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<td>BIOL-102 $</td>
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<td>BIOL-103 $</td>
<td>General Biology I Lab</td>
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<td>BIOL-104 $</td>
<td>General Biology II Lab</td>
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<tr>
<td>BIOL-201 $</td>
<td>Cellular and Molecular Biology</td>
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<tr>
<td>BIOL-240 or BIOL-265 $</td>
<td>General Ecology or Evolutionary Biology</td>
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<td>CHMG-141 §</td>
<td>General &amp; Analytical Chemistry I</td>
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<td>CHMG-142 §</td>
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<td>CHMG-145 §</td>
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<td>CHMG-146 §</td>
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<tr>
<td>STAT-145 §</td>
<td>Introduction to Statistics I</td>
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### BIOMEDICAL SCIENCES FOCUS

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<tr>
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<td>NMTH-250 ‡</td>
<td>Elementary Statistics</td>
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<tr>
<td>MATH-161 ‡</td>
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<td>BIOL-102 §</td>
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<td>BIOL-103 §</td>
<td>General Biology I Lab</td>
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<td>BIOL-104 §</td>
<td>General Biology II Lab</td>
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<td>MEDS-250 §</td>
<td>Human Anatomy and Physiology I</td>
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<td>CHMG-145 §</td>
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<td>CHMG-146 §</td>
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### CHEMISTRY FOCUS

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<td>Calculus A</td>
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<td>MATH-172 §</td>
<td>Calculus B</td>
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<td>MATH-173 §</td>
<td>Calculus C</td>
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<td>PHYS-211A §</td>
<td>University Physics IA</td>
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<td>ENVIRONMENTAL SCIENCE FOCUS</td>
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<td>BIOL-101*</td>
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<td>General Biology II Lab</td>
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<tr>
<td>ENVS-101 §</td>
<td>Concepts of Environmental Science</td>
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<tr>
<td>BIOL-240 §</td>
<td>General Ecology</td>
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<td>CHMG-141 §</td>
<td>General &amp; Analytical Chemistry I</td>
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</table>

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

The A.S. in Applied Science program includes 30-31 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. LAS Immersion (9 SCH)

Students will complete a three-course LAS immersion of their own choosing.

5. General Education Electives (9-10 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 (3 SCH)
      ii. NMTH-275 Advanced Mathematics (3 SCH)
      iii. MATH-161 Applied Calculus (4 SCH)

   b. Biochemistry and Chemistry
      i. NMTH-220 Trigonometry (3 SCH)
      ii. NMTH-275 Advanced Mathematics (3 SCH)
      iii. MATH-171 Calculus A (3 SCH)

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.

6. 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.

   Please refer to Appendix C for memos of support and impact statements from departments that will be offering courses used by students in the A.S in Applied Science program. These letters demonstrate that we have received confirmation from the respective departments that will be impacted by the addition of the new program 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)

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)

MATH-173 Calculus C
This is the third course in three-course sequence (MATH-171, MATH-172, MATH-173). This course includes representations of functions by infinite series, convergence and
divergence of series, curves defined by parametric equations, polar coordinates.
(Prerequisites: C- or better in MATH-172 or equivalent course.) **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, excreatory, 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-100 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.

<table>
<thead>
<tr>
<th>Faculty Member Name and Title/Rank at Institution (include and identify Program Director)</th>
<th>Expected Program Course Assignments**</th>
<th>Percent of Teaching Time to Program</th>
<th>Highest and Other Applicable Earned Degrees and Disciplines (include College/University)</th>
<th>Additional Qualifications: list related certifications/licenses; professional experience in field, scholarly contributions, other academic affiliations.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matthew Lynn, Chairperson</td>
<td>n/a</td>
<td>.10%</td>
<td>Ph.D. (Chemistry), University of Arizona</td>
<td>Member, Assessment Network of New York and Council of American Instructors of the Deaf</td>
</tr>
<tr>
<td>Austin Gehret, Program Director</td>
<td>n/a</td>
<td>.25%</td>
<td>Ph.D. (Biophysics), University of Rochester</td>
<td>Member, American Society for Biochemistry and Molecular Biology</td>
</tr>
<tr>
<td>Faculty Tutors (variable by semester, see list of current tutors in Section 7)</td>
<td>n/a</td>
<td>.50%</td>
<td>Varies by faculty tutor and discipline</td>
<td>Varies by faculty tutor and discipline</td>
</tr>
<tr>
<td>Instructors of NMTH courses named in program (variable by semester, see below)</td>
<td>NMTH-220 NMTH-250 NMTH-275</td>
<td>.25%^</td>
<td>See below</td>
<td>See below</td>
</tr>
<tr>
<td>Name</td>
<td>Courses</td>
<td>Degree Details</td>
<td>Institution</td>
<td></td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Mitchell Bacot, Lecturer</td>
<td>NMTH-220 NMTH-250</td>
<td>M.S. (Secondary Education of the Deaf), Rochester Institute of Technology</td>
<td>B.S., (Applied Mathematics), Rochester Institute of Technology</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NMTH-275</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gary Blatto-Vallee,</td>
<td>NMTH-220 NMTH-275</td>
<td>M.S. (Professional Studies), Rochester Institute of Technology</td>
<td>A.A.S. (Educational Interpreting), Rochester Institute of Technology</td>
<td></td>
</tr>
<tr>
<td>Senior Lecturer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bonnie Jacob, Assistant</td>
<td>NMTH-220 NMTH-275</td>
<td>Ph.D. (Mathematical Sciences), Clemson University</td>
<td>Member, American Mathematical Society and Council of American Instructors of the Deaf</td>
<td></td>
</tr>
<tr>
<td>Professor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lecturer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keith Mousley, Associate</td>
<td>NMTH-220 NMTH-275</td>
<td>M.A. (Deaf Education), Gallaudet University</td>
<td>B.S. (Computational Mathematics), Rochester Institute of Technology; Graduate specialization in mathematics and deafness</td>
<td></td>
</tr>
<tr>
<td>Professor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miriam Santana Valadez,</td>
<td>NMTH-220 NMTH-275</td>
<td>M.S. (Math, Science, and Technology Education), St. John Fisher College</td>
<td>B.S. (Electrical Engineering), Instituto Tecnológico de Estudios Superiores de Occidente; B.S. (Adolescence Education), Normal Superior Nueva Galicia; graduate bilingual extension</td>
<td></td>
</tr>
<tr>
<td>Lecturer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matthew Stefano, Senior</td>
<td>NMTH-220 NMTH-275</td>
<td>M.S. (Secondary Education of the Deaf), Rochester Institute of Technology</td>
<td>New York State Teaching Certification (Deaf/Hard of Hearing Endorsement)</td>
<td></td>
</tr>
<tr>
<td>Lecturer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Courses</td>
<td>Degree</td>
<td>Position</td>
<td></td>
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<tr>
<td>-----------------------------</td>
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<td>-----------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Sharron Webster, Principal Lecturer</td>
<td>NMTH-220, NMTH-250, NMTH-275</td>
<td>M.S. (Applied Mathematics &amp; Statistics), Rochester Institute of Technology</td>
<td>Math Coordinator, NTID Department of Science and Mathematics</td>
<td></td>
</tr>
<tr>
<td>Patricia Spiecker, Senior Lecturer</td>
<td>NMTH-220, NMTH-275</td>
<td>M.S. (Secondary Education of the Deaf), Rochester Institute of Technology</td>
<td>B.T. (Electrical Engineering Technology), Rochester Institute of Technology</td>
<td></td>
</tr>
</tbody>
</table>

^ 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.

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

28
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

<table>
<thead>
<tr>
<th>Title/Rank of Position</th>
<th># of New Positions</th>
<th>Minimum Qualifications (including degree and Discipline area)</th>
<th>Expected course Assignments</th>
<th>Expected Hiring Date (mm/dd/yy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

### Part-time Faculty

<table>
<thead>
<tr>
<th>Title/Rank of Position</th>
<th># of New Positions</th>
<th>Minimum Qualifications (including degree and Discipline area)</th>
<th>Expected course Assignments</th>
<th>Expected Hiring Date (mm/dd/yy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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.

### Table 5 – New Resources

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

** 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.
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 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 McElvee, 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.
<table>
<thead>
<tr>
<th>Program Goals</th>
<th>Student Learning Outcomes</th>
<th>Academic Program Profile</th>
<th>Data Source/Measure</th>
<th>Benchmark</th>
<th>Timeline</th>
<th>Data Analysis Key Findings</th>
<th>Use of Results Action Items and Dissemination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquire foundational mathematical skills to support academic success at the baccalaureate level</td>
<td>Students will be able to: (task, capability, knowledge, skills, and dispositions) Use measurable verbs.</td>
<td>Alignment to the five RIT essential outcomes - check all that apply</td>
<td>Assessment</td>
<td>opportunity (course or experience) method/measures, assignment/rubric</td>
<td>Identify when and how data are collected, aggregated, and analyzed</td>
<td>Identify who is responsible and list key findings</td>
<td>Identify how results are used and shared. List any recommendations or action items</td>
</tr>
<tr>
<td>Integrate and apply knowledge and laboratory skills in the chemical sciences</td>
<td>Demonstrate competency in introductory general chemistry</td>
<td>✗ Critical Thinking □ Ethical Reasoning □ Integrative Literacies □ Global Interconnectedness □ Creative/Innovative Thinking</td>
<td>NMTH-275 Advanced Mathematics (final exam grade)</td>
<td>80% of students will earn a grade of C or better on the Advanced Mathematics final exam.</td>
<td>Data will be collected annually by the program coordinator using a bi-annual cohort-based cycle starting at the end of Year 2.</td>
<td>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.</td>
<td></td>
</tr>
</tbody>
</table>

- **Academic Program Profile:**
  - NMTH-275 Advanced Mathematics (final exam grade)
  - CHMG-142 General & Analytical Chemistry II (final exam grade)
  - CHMG-146 General & Analytical Chemistry II Lab (final course grade)

- **Data Analysis Key Findings:**
  - Program chair and program coordinator will analyze the data.
- **Use of Results Action Items and Dissemination:**
  - 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.
<table>
<thead>
<tr>
<th>Goal</th>
<th>Outcome</th>
<th>Data Collection</th>
<th>Analysis and Reporting</th>
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<tr>
<td>Develop and integrate scientific knowledge necessary for success in the field of their choice</td>
<td>CHMG-145 General &amp; Analytical Chemistry I Lab (final course grade)</td>
<td>80% of students will receive final grades of C or better in the professional elective courses</td>
<td>Program chair and program coordinator will analyze the data. Program chair and program coordinator will analyze the data. Program chair and program coordinator will analyze the data. Program chair and program coordinator will analyze the data.</td>
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<tr>
<td>Provide an effective pathway to qualified deaf and hard-of-hearing students for admission into RIT baccalaureate programs or scientific career opportunities</td>
<td>Acquire foundational applied scientific knowledge for academic and career success</td>
<td>50% of AS Applied Science students will graduate annually</td>
<td>Program chair and program coordinator will analyze the data. Program chair and program coordinator will analyze the data. Program chair and program coordinator will analyze the data. Program chair and program coordinator will analyze the data.</td>
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<tr>
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<td>Critical Thinking</td>
<td>Annual graduation rates for AS Applied Science Degree (NTID Institutional Research Office)</td>
<td>Data collected annually by program coordinator using a bi-annual cohort-based cycle starting at the end of Year 2. Data collected annually by program coordinator using a bi-annual cohort-based cycle starting at the end of Year 2. Data collected annually by program coordinator using a bi-annual cohort-based cycle starting at the end of Year 2. Data collected annually by program coordinator using a bi-annual cohort-based cycle starting at the end of Year 2.</td>
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<td>COS and CHST program acceptance rates (RIT Admissions)</td>
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<tr>
<td></td>
<td>Year 1 and Year 2</td>
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<td></td>
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<tr>
<td></td>
<td>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.</td>
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<tr>
<td>Annual graduation rates for AS Applied Science Degree (NTID Institutional Research Office)</td>
<td>Year 1 and Year 2</td>
<td></td>
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<td>Data collected annually by program coordinator using a bi-annual cohort-based cycle starting at the end of Year 2. Data collected annually by program coordinator using a bi-annual cohort-based cycle starting at the end of Year 2. Data collected annually by program coordinator using a bi-annual cohort-based cycle starting at the end of Year 2. Data collected annually by program coordinator using a bi-annual cohort-based cycle starting at the end of Year 2.</td>
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</table>
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

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.
## A.S. DEGREE IN APPLIED SCIENCE - BIOLOGY TRACK

**TRANSFER OF COURSES TO BACHELOR OF SCIENCE DEGREE IN BIOLOGY**

### COURSES IN A.S. DEGREE

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title (A.S. Degree Requirement)</th>
<th>SCH</th>
<th>Course Number</th>
<th>Course Title (B.S. Degree Requirement)</th>
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**Notes:**
- SCH: Semester Hours Credit
- Course Title requirements are based on the specified Professor or Program.
- Credits Transferred are based on the specified Degree Requirement.
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<td>Percent of A.S. Credits Transferred</td>
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**A.S. DEGREE IN APPLIED SCIENCE - ENVIRONMENTAL SCIENCE TRACK**

**TRANSFER OF COURSES TO BACHELOR OF SCIENCE DEGREE IN ENVIRONMENTAL SCIENCE**

**COURSES IN A.S. DEGREE**

**COURSES ACCEPTED TOWARD B.S. DEGREE**
Sophia Maggelakis  
Dean  
College of Science  
Dated: 1/4/17

Gerard J. Buckley, President  
RIT Vice President and Dean  
National Technical Institute for the Deaf  
Dated: 11/6/17

Laura Ellen Tubbs  
Associate Dean for  
Undergraduate Education  
College of Science  
Dated: 12-23-16

Stephen F. Aldersley  
Associate Vice President for Academic Affairs  
National Technical Institute for the Deaf  
Dated: 11/1/17

Larry J. Buckley, Head  
Thomas H. Gosnell School of Life Sciences  
College of Science  
Dated: 12-23-16

Matthew A. Lynn  
Chair  
Department of Science and Mathematics  
National Technical Institute for the Deaf  
Dated: 11/1/17
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

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.
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|                | Total Transfer Credits                  | 64  |
|                | 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: 12-9-16

Gerald J. Buckley, President
RIT Vice President and Dean
National Technical Institute for the Deaf
Dated: 1/8/19

Kristen Waterstram-Rich
Interim Associate Dean and Professor
College of Health Sciences & Technology
Dated: 12-9-16

Stephen F. Aldersley
Associate Vice President for Academic Affairs
National Technical Institute for the Deaf
Dated: 11/4/17

Matthew A. Lynn
Chair
Department of Science and Mathematics
National Technical Institute for the Deaf
Dated: 1/24/17
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

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<td>1</td>
</tr>
<tr>
<td>CHMO-236</td>
<td>Organic Chemistry II Lab (Professional Elective)</td>
<td>1</td>
<td>CHMO-236</td>
<td>Organic Chemistry II Lab (Core)</td>
<td>1</td>
</tr>
<tr>
<td>MATH-171</td>
<td>Calculus A (LAS Elective 3)</td>
<td>3</td>
<td>MATH-171</td>
<td>Calculus A (LAS-P7A)</td>
<td>3</td>
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<tr>
<td>MATH-172</td>
<td>Calculus B (Professional Elective)</td>
<td>3</td>
<td>MATH-172</td>
<td>Calculus B (LAS-P7A)</td>
<td>3</td>
</tr>
<tr>
<td>MATH-173</td>
<td>Calculus C (Professional Elective)</td>
<td>3</td>
<td>MATH-173</td>
<td>Calculus C (LAS-P7B)</td>
<td>3</td>
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<tr>
<td>PHYS-211A</td>
<td>University Physics IA (Professional Elective)</td>
<td>4</td>
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<td>University Physics IA (LAS-P5)</td>
<td>4</td>
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<tr>
<td>UWRT-150</td>
<td>FYW: Writing Seminar (General Education - Foundation)</td>
<td>3</td>
<td>UWRT-150</td>
<td>FYW: Writing Seminar (General Education - First Year Writing)</td>
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<tr>
<td>xxxx-xxx</td>
<td>Ethical Perspective (LAS-P1)</td>
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<td>Artistic Perspective (LAS-P2)</td>
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<td>Artistic Perspective (LAS-P2)</td>
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<tr>
<td>xxxx-xxx</td>
<td>Global Perspective (LAS-P3)</td>
<td>3</td>
<td>xxxx-xxx</td>
<td>Global Perspective (LAS-P3)</td>
<td>3</td>
</tr>
<tr>
<td>xxxx-xxx</td>
<td>Social Perspective (LAS-P4)</td>
<td>3</td>
<td>xxxx-xxx</td>
<td>Social Perspective (LAS-P4)</td>
<td>3</td>
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<tr>
<td>xxxx-xxx</td>
<td>Immersion (LAS-I1, LAS-I2, LAS-I3)</td>
<td>9</td>
<td>xxxx-xxx</td>
<td>Immersion (LAS-I1, LAS-I2, LAS-I3)</td>
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</tr>
<tr>
<td>xxxx-xxx</td>
<td>Wellness course</td>
<td>0</td>
<td>xxxx-xxx</td>
<td>Wellness course</td>
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</tr>
</tbody>
</table>

Total Transfer Credits: 63
Percent of AS Credits Transferred: 100%
Sophia Maggelakis  
Dean  
College of Science  
Dated: 1/4/17

Gerard J. Buckley, President  
RIT Vice President and Dean  
National Technical Institute for the Deaf  
Dated: 1/6/17

Laura Ellen Tubbs  
Associate Dean for Undergraduate Education  
College of Science  
Dated: 12/23/16

Stephen F. Aldersley  
Associate Vice President for Academic Affairs  
National Technical Institute for the Deaf  
Dated: 1/11/17

Paul Craig, Head  
School of Chemistry and Material Sciences  
College of Science  
Dated: 12/23/16

Matthew A. Lynn  
Chair  
Department of Science and Mathematics  
National Technical Institute for the Deaf  
Dated: 1/11/17
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.

<table>
<thead>
<tr>
<th>Graduation Rates (Three Year Weighted Average)</th>
<th>Six Year</th>
<th>Seven Year</th>
<th>Seven and a Half Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTID Applied Computer Technology (AS)</td>
<td>44.44%</td>
<td>53.85%</td>
<td>46.67%</td>
</tr>
<tr>
<td>NTID Pre-Baccalaureate Science (UND)</td>
<td>58.33%</td>
<td>57.14%</td>
<td>54.55%</td>
</tr>
</tbody>
</table>

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:
<table>
<thead>
<tr>
<th>Fall Cohort</th>
<th>7.5 Year Graduation Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>50%</td>
</tr>
<tr>
<td>2018</td>
<td>50%</td>
</tr>
<tr>
<td>2019</td>
<td>50%*</td>
</tr>
<tr>
<td>2020</td>
<td>50%*</td>
</tr>
<tr>
<td>2021</td>
<td>50%*</td>
</tr>
</tbody>
</table>

*To be reviewed annually*
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
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
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

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

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.
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
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,

[Signature]

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

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,

[Signature]

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

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

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).

<table>
<thead>
<tr>
<th>Course</th>
<th># of credits</th>
<th># of contact hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 161</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>MATH 171</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>STAT 145</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>
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,

Matthew E. Coppenbarger, Ph.D.
Associate Professor and Interim Head
School of Mathematical Sciences
Rochester Institute of Technology
August 3, 2016

Dr. Mathew 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
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,

[Signature]
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.”
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 in 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
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 or increasing
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
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

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 2005
Minor Concentration – Business

Drexel University, Philadelphia, PA
Courses in Mathematics 2001-2003

Gallaudet University, Washington, DC
General Courses 1999-2000

Work Experience

Rochester Institute of Technology, Rochester, NY
Teaching Mathematics to college students 2007-Present
- Preparation for Algebra
- Foundations of Algebra
- Mathematics in Society
- Math Applications in Business Technology
- Concepts of Measurement
- Intro to College Math
- Integrated Algebra
- Applications of Algebra
- Elements of Trigonometry
- Advanced Mathematics
- Elementary Statistics

Tutoring Mathematics to college students 2003-Present
- Preparation for Algebra
- Foundations of Algebra
- Mathematics in Society
- Integrated Algebra
- Applications of Algebra
- Elements of Trigonometry
- Advanced Mathematics
- Elementary Statistics
- Trig for Coordinate Analysis
- College Algebra
- Precalculus
- Calculus A
Rochester After School Academy, Rochester, NY
Tutoring Mathematics to middle school and high school students 2006-2009

Private Tutor, Rochester, NY
One-On-One Tutoring to high school student 2007

Rochester School for the Deaf, Rochester, NY
Substitute Teacher for middle school and high school 2005-2007

Rochester School for the Deaf, Rochester, NY
Mathematics Internship 2007

Rochester School for the Deaf, Rochester, NY
Long-Term Substitute Teacher: Modified Class 2006

Leadership Development Camp: Rochester After School Academy, Rochester, NY
Camp Staff 2006

California School for the Deaf, Fremont, CA
Long-Term Substitute Teacher to high school students 2006

Rochester Institute of Technology, Rochester, NY
Adjunct Professor 2005-2006

Rochester School for the Deaf, Rochester, NY
One-On-One Long-Term Substitute Teacher to elementary student 2005

Drexel University, 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 • gcbltnm@rit.edu

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

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 Interpretek, 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


PUBLICATIONS


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
University of Rochester
School of Medicine and Dentistry
Rochester, New York 14642.


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

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

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

TEACHING EXPERIENCE

Assistant Professor
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
National Technical Institute for the Deaf, Rochester Institute of Technology  2010-2011

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

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

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

RESEARCH EXPERIENCE

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

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
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)


MANUSCRIPTS IN PREPARATION


PRESENTATIONS


Austin U. Gehret

Curriculum vitae


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


Gehret, A.U 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): lb180


Austin U. Gehret

Curriculum vitae


HONORS AND AWARDS

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

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

Austin U. Gehret Curriculum vitae 5
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)

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.


EDUCATION:

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

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

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

PROFESSIONAL GRANTS AND FUNDING:


2. Rochester Institute of Technology Grant Writer's Bootcamp Seed Funding, June 2014-May 2015.


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.*


OTHER PUBLICATIONS:


2. B. Jacob and J. Jacob. From zero to max optimal: $l_p$ optimality of graph rankings for $p \geq 0$. *In preparation.*


INVITED TALKS:


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.


CONFERENCE PRESENTATIONS AND POSTERS:


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.


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.


OTHER WORKSHOPS AND PROFESSIONAL MEETINGS:


3. Research Experience for Undergraduate Faculty (REUF 4), ICERM, Providence, RI, June 2012.


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.
7. Clemson University Mathematical Sciences Department Graduate Teacher of Record Award for Excellence in Teaching, 2005-2006.

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.

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 Ammanabolu, MS expected May 2016

GRADUATE COMMITTEE MEMBER:
• Cludayo 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 Penzelina (CURM 2013-2014)
• Katherine Fetcie (2012-2013)
• Tyler Swob (2011-2012)

SKILLS:
• \LaTeX, MATLAB, Maple
• Japanese Proficiency Exam, Level 1 Pass (highest level).
• American Sign Language, SLPI Rating Advanced.
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 I 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

• 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

• 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: *Materials, Application and Development for Organic Photovoltaic Devices (REU Site)*, NSF Award Number 1461063
- **2013** Faculty Evaluation and Development Grant for Computational Chemistry Proposal ($1,250), NTID/RIT
- **2012** Seed Funding for Proposal *Investigation of Strategies to Improve the Success of Deaf and Hard-of-Hearing Students Transitioning into Baccalaureate Studies in STEM Disciplines* ($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 Vocabulary Development course (FSSLEP 365-01)
2011  Successfully completed ASL Group Instruction course (FSSLEP 571-06)
2010-2011  Successfully completed ASL Classroom Observation (FSSLEP 500-03)
2010  Successfully completed ASL Role Shifting course (FSSLEP 840-01)
2009  Successfully completed Special Group Instruction 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 Demonstrating and Explaining in ASL course (FSSLEP 702-01)
2007  Earned “Intermediate” rating on NTID SLPI upon hire
2007  Successfully completed ASL Receptive Practice course (FSSLEP 240-01)
2006-2007  Successfully completed American Sign Language I and II courses, Pima Community College, Tucson, AZ

Peer-Reviewed and Disseminated Publications


**M. A. Lynn** and D. L. Lichtenberger, "Comparison of the Bonding of Benzene and C₆₀ to a Metal Cluster: Ru₃(CO)₉(μ-η²,η²,η²-C₆H₆) and Ru₃(CO)₉(μ₃-η²,η²,η²-C₆₀)," *J. Cluster Sci.*, **11**, 169-188 (2000).


**Published Abstracts and Proceedings from Presentations**


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.


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


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.


Jacqueline N. McClive
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Scottsville, New York 14546
Phone (585) 354-3480
jnmclive@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)

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                                   Home Address
NTID/RIT                                          77 Cattaragus Drive
52 Lomb Memorial Drive                        Rochester, NY 14623
Rochester, NY 14623                            (585) 359-3698 (TTY)
Email: kxmntm@rit.edu

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


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
    Associate Professor: Teaching mathematics to college
    students.

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

116
Teacher: taught mathematics/science to high school students.


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.


B. Presentations

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


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


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

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

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.

guided practice to improve math word problem solving. Presentation at the
NCTM Annual Regional Conference and (Math Special Interest Group of CAID),
Somerset, NJ.

guided practice to improve math word problem solving. Paper at the
Instructional Technology and Education of the Deaf Symposium, Rochester, NY.

web resource to improve deaf students’ problem solving skills. Presentation at

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

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

Issues and strategies. Presentation at the 24th Annual Conference of ACE-DHH,
Lexington, KY.


Los Angeles, CA.


C. Professional Supervision


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
Strategic Issues Task Force; subcommittee of NTID SPC, 1991

E. Curriculum Development

Fundamental Geometry Working Group, 2002-2006
Advanced Mathematics Working Group, 1995 -1997
Statistics Working Group, Fall 1993-1997

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)
-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)

Contact Information
Rochester Institute of Technology
National Technical Institute for the Deaf
Rochester, NY 14623
Phone: +1 585.475.4202
nordhaus@astro.rit.edu
http://ccrg.rit.edu/~nordhaus

Professional Preparation
University of Rochester
B.S., Physics and Astronomy, May 2003
B.A., Mathematics, May 2003
M.S., Physics, May 2004
Ph.D., Physics and Astronomy, May 2008

Princeton University
Astrophysics, Post-doctoral Research Fellow 2008-2011

Rochester Institute of Technology
Astrophysics, NSF Astronomy & Astrophysics Post-doctoral Fellow 2011-2014

Appointments
Assistant Professor, NTID Dept. of Science and Mathematics, 2014-present

Products
Five Most Related:
Dimension as a Key to the Neutrino Mechanism of Core-Collapse Supernova Explosions

Theoretical Support for the Hydrodynamic Mechanism of Pulsar Kicks

The Hydrodynamic Origin of Neutron Star Kicks

Induced Rotation in Three-Dimensional Simulations of Core-Collapse Supernovae: Implications for Pulsar Spins

A Call for a Paradigm Shift From Neutrino-driven to Jet-driven Core-collapse Supernova Mechanisms

Low-mass Binary-Induced Outflows from Asymptotic Giant Branch Stars

Magnetic Mixing in Red Giant and Asymptotic Giant Branch Stars

Tides and Tidal Envelopment in post-Main Sequence Binaries: Period Gaps for Planets and Brown Dwarfs Around White Dwarfs
Isolated versus Common Envelope Dynamos in Planetary Nebula Progenitors

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

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 CCCRG scientists with NYTD 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.

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 (BNL), Bruce Balick (Washington), Brian Babler (Wisconsin), Ehud Behar (Technion), John Bell (BNL), 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 Cheneau (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 Farhi (Cambridge), Bill Freeman (LSU), Joe Gallagher (LSU), Martin Huarte-Espinosa (Rochester), Hugh Harris (US Naval Observatory), Joel Kastner (RIT), L. Leao (Rio Grande), Niku Madhusudhan (Yale), Jeremiah Murphy (Princeton), Rudy Montez (Vanderbilt), Brent Miszalski (South Africa), Nyasa Maddapatt (Macquarie), Brian Metzger (Columbia), Ed Nelan (STScI), Manou Ramié (Berlin), Dave Spiegel (IAS), Rahghendra Sahai (JPL), John Subsewa (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), Brianna Zins (Allegheny College class of 2015), Asher Kirschbaum (RIT class of 2017), David Speck (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  
Bilingual Extension  
(2006)  
(Four Master Degree Program courses focused on teaching English Language Learners)

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

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 7th-12th  
(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  
Adjunct: 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


B. Presentations


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 Annual Clickers in the Classroom: Innovation and Best Practices Conference, Louisville, KY.


Santana, M. (2010, March). *How I became National Board Certified thanks to the use of technology.* Presented at the T^3 (Teachers Teaching with Technology) International Conference, Atlanta, GA.


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.


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
   - 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^3) 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
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., (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
Matthew J. Stefano

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

EDUCATION:

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

PROFESSIONAL EXPERIENCE:

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.
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:

Sign Communication Proficiency Interview Rating

CERTIFICATION:


COURSES TAUGHT AT NTID

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:

Behm G, Schwenzer 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.)


SERVICE:

RIT/NTID Committees
- Senior Lecturer Promotion Committee, 2016 – present
- 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
- 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
- Special Olympic Basketball & Soccer Team Assistant Coach, 2005 – 2008

HONORS & AWARDS:
- 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

- **Home**
  19 Church Street Honeoye Falls, NY 14472
  Honeoye Falls, NY 14472
  Phone: 585-444-1625

- **Email**: smwsdo@rit.edu

- **Work**
  52 Lomb Memorial Drive
  LBJ-2275
  Rochester, NY 14623
  Phone: 585-286-3550

EDUCATION


- **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

- **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.
Curriculum Vitae

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**  
  *NTID at RIT*  
  April 1983 - June 1984

  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)**
Curriculum Vitae

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**

Sign Communication Proficiency Interview rating:

  - **Advanced Plus**, April 1997
  - **Advanced Plus to Superior Plus Level Range**, April 2007

**COURSES TAUGHT**

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**


S. Webster
Curriculum Vitae

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.


**PUBLICATIONS**

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**

- Faculty Advisor for SVP students in Residence Hall (Summer 1987, 1988 & 1989)
- NTID Answering Machine Task Force, 1988
• 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
• 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

S. Webster
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**

<table>
<thead>
<tr>
<th>Faculty Positions (1.10 FTE) - Salary</th>
<th>Year 1 (AY18-19)</th>
<th>Year 2 (AY19-20)</th>
<th>Year 3 (AY20-21)</th>
<th>Year 4 (AY21-22)</th>
<th>Year 5 (AY22-23)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$ 80,950</td>
<td>$ 82,500</td>
<td>$ 65,000</td>
<td>$ 87,100</td>
<td>$ 89,300</td>
</tr>
<tr>
<td>Staff Assistant (0.10 FTE) - Salary</td>
<td>$ 2,500</td>
<td>$ 2,600</td>
<td>$ 2,700</td>
<td>$ 2,800</td>
<td>$ 2,900</td>
</tr>
<tr>
<td>Benefits</td>
<td>$ 33,000</td>
<td>$ 34,000</td>
<td>$ 35,000</td>
<td>$ 36,000</td>
<td>$ 37,000</td>
</tr>
<tr>
<td><strong>Total Salary and Benefits</strong></td>
<td><strong>$ 116,450</strong></td>
<td><strong>$ 115,500</strong></td>
<td><strong>$ 122,700</strong></td>
<td><strong>$ 125,900</strong></td>
<td><strong>$ 129,200</strong></td>
</tr>
</tbody>
</table>

| Computer Charges                    | $ 16,600          | $ 31,900          | $ 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          | $ 209,900         | $ 233,900         | $ 269,500         | $ 301,800         |
| Overhead (RIT Indirect Costs)       | $ 31,700          | $ 61,700          | $ 67,800          | $ 74,300          | $ 81,100          |
| **Other**                           | **$ 101,700**     | **$ 306,000**     | **$ 346,200**     | **$ 385,500**     | **$ 429,100**     |

| New Program Total Costs             | **$ 218,150**     | **$ 424,500**     | **$ 466,900**     | **$ 611,400**     | **$ 558,300**     |

| New Program Total Incremental Costs | $ 75,400          | $ 211,200         | $ 275,500         | $ 372,500         | $ 343,500         |

* 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 fewer 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) + (7 class / 6 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 course lectures and 25 for labs, average class sizes of 75 for second-year lab course lectures (both lab and non-lab courses) and 22 for labs, 6 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 / # of seats / average class size = # of classes. # of classes / # of courses 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

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AY18-19</td>
<td>AY19-20</td>
<td>AY20-21</td>
<td>AY21-22</td>
<td>AY22-23</td>
</tr>
<tr>
<td><strong>Total Enrollment</strong></td>
<td>13</td>
<td>20</td>
<td>22</td>
<td>24</td>
<td>26</td>
</tr>
<tr>
<td><strong>Total Students' Annual Enrollment</strong></td>
<td>19</td>
<td>20</td>
<td>22</td>
<td>24</td>
<td>26</td>
</tr>
<tr>
<td><strong>Incremental Students' Annual Enrollment</strong></td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td><strong>Annual Tuition Rate</strong></td>
<td>$16,218</td>
<td>$16,786</td>
<td>$17,373</td>
<td>$17,982</td>
<td>$18,611</td>
</tr>
<tr>
<td><strong>Total Student NTID Tuition Revenue</strong></td>
<td>$162,163</td>
<td>$335,720</td>
<td>$382,217</td>
<td>$431,558</td>
<td>$483,884</td>
</tr>
<tr>
<td><strong>Incremental Student NTID Tuition Revenue</strong></td>
<td>$32,427</td>
<td>$83,930</td>
<td>$121,614</td>
<td>$161,534</td>
<td>$204,770</td>
</tr>
<tr>
<td><strong>State Revenue</strong></td>
<td>$50</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Federal Appropriation</strong></td>
<td>$55,917</td>
<td>$88,760</td>
<td>$84,663</td>
<td>$79,842</td>
<td>$74,416</td>
</tr>
<tr>
<td><strong>Federal Appropriation - Incremental</strong></td>
<td>$123,983</td>
<td>$127,270</td>
<td>$156,886</td>
<td>$150,760</td>
<td>$144,600</td>
</tr>
<tr>
<td><strong>Grand Total Revenue</strong></td>
<td>$218,100</td>
<td>$424,500</td>
<td>$466,900</td>
<td>$511,400</td>
<td>$555,300</td>
</tr>
<tr>
<td><strong>Incremental Grand Total Revenue</strong></td>
<td>$158,400</td>
<td>$214,200</td>
<td>$277,500</td>
<td>$312,600</td>
<td>$349,600</td>
</tr>
</tbody>
</table>

---

*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.*

12/15/2016
# Department of Science and Mathematics

**Applied Science Associate of Science Degree Program**

**Projected Capital Expenditures**

**Table 3**

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AY18-19</td>
<td>AY19-20</td>
<td>AY20-21</td>
<td>AY21-22</td>
<td>AY22-23</td>
</tr>
<tr>
<td>Capital Facilities</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Equipment</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Total Capital Expenditures</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
</tbody>
</table>

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. The program's expenses 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

<table>
<thead>
<tr>
<th></th>
<th>Year 1 AY 2015-2016</th>
<th>Year 2 AY 2016-2017</th>
<th>Year 3 AY 2017-2018</th>
<th>Year 4 AY 2018-2019</th>
<th>Year 5 AY 2019-2020</th>
<th>5 Year Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel</td>
<td>$83,400</td>
<td>$85,500</td>
<td>$87,700</td>
<td>$89,900</td>
<td>$92,100</td>
<td>$444,700</td>
</tr>
<tr>
<td>Benefits</td>
<td>$33,000</td>
<td>$34,000</td>
<td>$35,000</td>
<td>$36,000</td>
<td>$37,000</td>
<td>$178,000</td>
</tr>
<tr>
<td>Computer Charges</td>
<td>$16,800</td>
<td>$18,600</td>
<td>$19,400</td>
<td>$20,200</td>
<td>$21,000</td>
<td>$105,000</td>
</tr>
<tr>
<td>Instructional Supplies</td>
<td>$5,000</td>
<td>$5,000</td>
<td>$5,000</td>
<td>$5,000</td>
<td>$5,000</td>
<td>$25,000</td>
</tr>
<tr>
<td>Telephone</td>
<td>$150</td>
<td>$150</td>
<td>$150</td>
<td>$150</td>
<td>$150</td>
<td>$750</td>
</tr>
<tr>
<td>Software Licenses</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$50,000</td>
</tr>
<tr>
<td>Travel-Conferences</td>
<td>$5,744</td>
<td>$7,414</td>
<td>$7,064</td>
<td>$7,734</td>
<td>$8,404</td>
<td>$35,754</td>
</tr>
<tr>
<td>Tuition Payments for RIT Credits</td>
<td>$197,744</td>
<td>$208,800</td>
<td>$218,850</td>
<td>$228,900</td>
<td>$238,950</td>
<td>$1,074,171</td>
</tr>
<tr>
<td><strong>Expense</strong></td>
<td>$256,400</td>
<td>$266,400</td>
<td>$276,400</td>
<td>$286,400</td>
<td>$296,400</td>
<td>$1,282,000</td>
</tr>
<tr>
<td>Overhead (RIT Indirect Costs)</td>
<td>$32,700</td>
<td>$32,700</td>
<td>$32,700</td>
<td>$32,700</td>
<td>$32,700</td>
<td>$163,500</td>
</tr>
<tr>
<td><strong>Total Expense</strong></td>
<td>$289,100</td>
<td>$299,100</td>
<td>$309,100</td>
<td>$329,100</td>
<td>$349,100</td>
<td>$1,445,500</td>
</tr>
<tr>
<td>Enrollment</td>
<td>10</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>90</td>
</tr>
<tr>
<td>Tuition</td>
<td>$202,183</td>
<td>$202,183</td>
<td>$202,183</td>
<td>$202,183</td>
<td>$202,183</td>
<td>$1,010,917</td>
</tr>
<tr>
<td>Federal Appropriations</td>
<td>$55,174</td>
<td>$55,174</td>
<td>$55,174</td>
<td>$55,174</td>
<td>$55,174</td>
<td>$275,871</td>
</tr>
<tr>
<td><strong>Total Revenue</strong></td>
<td>$257,357</td>
<td>$257,357</td>
<td>$257,357</td>
<td>$257,357</td>
<td>$257,357</td>
<td>$1,283,290</td>
</tr>
<tr>
<td>Total Rev. – Total Exp.</td>
<td>$78,257</td>
<td>$78,257</td>
<td>$78,257</td>
<td>$78,257</td>
<td>$78,257</td>
<td>$398,290</td>
</tr>
</tbody>
</table>

* These numbers are based on total projected students for the program which is shown here in the estimated line. They are based on the estimated revenue which is shown in the proposed program line. Incremental student enrollment and related revenue is reflected in the total student enrollment and related revenue. 

12/10/16
# Science and Mathematics Department

## Applied Science Associate of Science Degree Program

### Projected Expenditures For The Proposed Program

**Table 5 – New Resources**

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

** 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 credit 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