# Concept Paper for the proposed NTID Associate of Science in Applied Networking

## I. Title/Department/College

**Associate of Science in Applied Networking**

Information and Computing Studies department, National Technical Institute for the Deaf (NTID)

## II. Goals and Justification for the Proposed Program

NTID’s Information and Computing Studies (ICS) department proposes a new AS degree program in Applied Networking. The goal of this program is to continue a practice that is already in place in the quarter system that allows for an effective and efficient transition from the ICS AS degree program to Golisano College of Computing and Information Science (GCCIS)’s Networking and Systems Administration (NSA) program in the Information Science and Technologies (IST) department.

There is a growing number and proportion of NTID supported students who are entering RIT baccalaureate programs. The 2012 NTID Annual Report shows that more than 40% of the student enrollment through NTID is in baccalaureate programs. Additionally, NTID Admissions reports that roughly six out of seven students entering NTID have aspirations beyond an associate level degree. The proposed AS in Applied Networking is in line with both of these trends since it provides opportunities for students to start at NTID, enhance their skills and transition to a baccalaureate program in the NSA field.

The ICS department has had a long and successful relationship with the IST department and specifically with two programs in that department, Information Technology (IT) and NSA. In 2003, an AS degree was approved that allowed students to transition to either the IT or NSA program since the first two years of those baccalaureate programs were very similar. However, when the new semester curriculum was developed for IT and NSA, it became apparent that the programs had taken such significantly different directions that one AS degree was no longer sufficient to transition ICS students to both degree programs. Given that the majority of our AS students were interested in transferring to the IT program, for semester conversion purposes, in 2011, the ICS curriculum team made the decision to convert our AS degree to provide a transition to the IT degree program. However, this has left a significant number of students without an effective transition path to an NSA degree.

Historically, approximately 30% of the ICS students that transfer to a baccalaureate program have chosen to transfer into the NSA program. It therefore makes sense to develop an AS program, specifically designed to transition students into the NSA program.

Since the proposed AS in Applied Networking is designed as a transfer degree not a terminal degree, market need for this program will be driven by student demand. History has shown sufficient student demand for this program. Further, demand can be tied to the job market which is projected to be very favorable. For Network and Computer Systems Administrators, the 2010-2020 job outlook, published in the Bureau of Labor Statistics Occupational Outlook Handbook, estimates a 28% (faster than average) growth rate.

## III. Description of the New Program

The ICS curriculum team has worked diligently with the NSA program coordinator to develop a strong four-semester AS degree program as well as an articulation agreement that allows for smooth and efficient transition into the NSA program with minimal loss of credits. It is designed with 61 total credits, 31 of those dedicated to liberal arts and sciences, and 30 dedicated to the major. 59 of the 61 total credits, or almost 97% will articulate directly to the NSA program. Although this degree is designed and intended as a transfer degree, the skills attained are sufficient for entry level employment as a computer network support specialist (or similar title) should a student choose or be unable for any reason to continue for a full baccalaureate degree in the NSA program.

The first semester contains the same courses as the recently approved semester AS degree already established (that allows for transition to the IT program). In that semester, students gain foundational skills in Math and English as well as in three technical courses that include foundational skills in programming, web development, and basic networking and security. Semesters 2-4, build on those skills and allow students to take fewer technical courses in NTID/ICS, and more courses that are required and taught as part of the GCCIS/NSA curriculum. One three credit course from the Information Security and Forensics (ISF) program in GCCIS is also included in semester 2.

The AS curriculum team has identified skills needed to successfully transition into the more rigorous courses in NSA. We know that learning programming languages for example, is difficult for our students so we have chosen to replace the first required NSA programming course (ISTE-100 Computational Problem Solving in the Networking Domain) with a two-course programming sequence (NACA-160 Programming Fundamentals I and NACA-162 Programming Fundamentals in the Networking Domain) to help build a solid foundation in programming. The AS program will also include a NTID bridging physics course (NSCI-270) which helps prepare students for the more rigorous two-semester COS College Physics sequence (PHYS-111 and 112) required in the third year of the NSA program.

Only one new course will need to be developed and taught for this proposed curriculum: Programming Fundamentals in the Networking Domain. All other courses are required and offered as part of other degree programs. The distribution of credit hours for the proposed AS degree is shown below.

**Distribution of Credit Hours**

Liberal Arts, Math/Science

Liberal Arts (COLA) 22

Math/Science (COS) 3

Math/Science (NTID) 6

Technical

ICS Program Requirements/Electives (NTID) 18

Credits from NSA Program (GCCIS) 9

Credits from ISF Program (GCCIS) 3

**Total Credits Required for Graduation 61**

## IV. Fit with RIT Mission and Strategy

According to the RIT Mission:

“The RIT community engages and motivates students through stimulating and collaborative experiences. Our mission is to provide technology-based educational programs for personal and professional development.”

The proposed program will “motivate and engage students” to pursue a BS degree in Networking and System Administration “for personal and professional development” who would not otherwise have that opportunity.

## V. Synergy with Other Programs

The first semester of this AS degree program contains the same courses as the first semester of our current AS degree that transitions to the IT program. We have developed semesters 2-4 in collaboration with the GCCIS/NSA program so that available course offerings provide maximum benefit for successfully transitioning from the NTID/ICS program to the NSA program.

## VI. Administrative Structure for the New Program

The administrative structure of the proposed program will follow the standard administrative structure of the Institute. There will no new administrative roles created for the proposed program. The ICS chair will work as needed with the program coordinator relative to administrative duties such as course scheduling, faculty assignments, and program budget.

## VII. Enrollment Management Expectations and Sustainment

Each year, ICS admits 10-15 students into the AS degree program. Another 10-15 students from the career focused (AOS or AAS) degree programs improve their skills and take the necessary courses to transition to the IT or NSA program. With approximately 30% of this combined number (20-30 students) preferring to enter the NSA degree program, we anticipate enrollment of six to nine students per year in the AS in Applied Networking.

For AY 2006-07 through 2010-11, 59 students were enrolled in the ICS AS program. Of those 59, 15 have graduated, 24 are still registered in a program and 19 have left the institute. Since the AS program inception in 1995 until today, there have been 142 AS students. 46 have graduated, 46 are still registered in a program and 50 have left the institute. We anticipate that the path to NSA provided by this NTID AS program will lead to persistence and graduation rates at least as good as the historical data.

## VIII. Impact on Resources

We are anticipating that the number of students interested in transitioning to NSA will be consistent with current numbers. Additionally, this new AS degree program contains only one new course specific to the degree (NACA-162 Programming Fundamentals in the Network Domain), so the impact on resources will be minimal. Faculty in the ICS department currently have the skills necessary to teach the new course. Lecture and lab space will be minimally affected as well by the addition of this one new course since just one section will be sufficient. Software is readily available without an extra cost for use in this course. Computers used for other software instruction will be available.

Since the AS in Applied Networking will allow us to continue a practice we already have, (transitioning students to NSA), fewer resources will be needed as compared to the resources needed to customize curriculum plans for students if the AS in Applied Networking is not available.

## IX. Conclusion

In summary, the AS degree in Applied Networking will allow us to continue what we are currently doing in the quarter system without developing customized academic plans for each student interested in transitioning to NSA once semesters begin. This program will provide technical education opportunities for students at the associates’ degree level and subsequent employment opportunities available at the baccalaureate level.

## X. Summary of Community Input and Response to Input

This concept Paper was developed and reviewed by the ICS curriculum committee:

David Lawrence, Chair, and committee members comprised of the faculty in the ICS department.

**PROPOSED** Semester AS in Applied Networking Curriculum

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Term: Fall 1** | | | Check course classification (s) | | | | |  | **Term: Spring 1** | | | (Check course classification (s) | | | | |
| **Course Number & Title** | | CR | LAS | | Maj | New | Prerequisite(s) |  | **Course Number & Title** | | CR | LAS | | Maj | New | Prerequisite(s) |
| First-Year Seminar | | 3 | X | |  |  |  |  | UWRT-150 FYW: Writing Seminar | | 3 | X | |  |  |  |
| NMTH-275  Advanced Math | | 3 | X | |  |  | NMTH-212 with a C or better, or appropriate placement score |  | NACA-162 Programming  Fundamentals  Network Domain | | 3 |  | | x | X |  |
| NACA-172 Website Development | | 3 |  | | X |  |  |  | NACT-150 Intro to PC Hardware | | 3 |  | | X |  | NACA-160 |
| NACA-150 Network and Security Fundamentals | | 3 |  | | X |  |  |  | CSEC-101 Fund of Comp Security | | 3 |  | | X |  |  |
| NACA-160 Programming Fundamentals I | | 3 |  | | X |  |  |  | LAS-P1 | | 3 | X | |  |  |  |
| Term credit total: | | 15 | 6 | | 9 |  | |  | Term credit total: | | 15 | 6 | | 9 |  | |
| **Term: Fall 2** | | | Check course classification (s) | | | | |  | **Term: Spring 2** | | | (Check course classification (s) | | | | |
| **Course Number & Title** | | CR | LAS | Maj | | New | Prerequisite(s) |  | **Course Number & Title** | | CR | LAS | | Maj | New | Prerequisite(s) |
| ISTE-101 – Computational Problem  Solving Network Domain II | | 4 | X |  | |  | ISTE-100 or equivalent (NACA-162) |  | NSSA-220 Intro to Scripting | | 3 |  | | X |  | C or better on Math-101 (or equivalent) or score of at least 55% on Math placement exam |
| NACT-151 Windows Operating Systems | | 3 |  | X | |  | NACT-150 |  | NSSA-242 Networking II | | 3 |  | | X |  | NSSA-241 |
| NSSA-241 Networking I | | 3 |  | X | |  | NSSA 101 or equivalent (NACA-150) |  | NSCI-270 Concepts of College  Physics LAS-P6 | | 3 | X | |  |  |  |
| LAS-P2 | | 3 | X |  | |  |  |  | COS MATH 111 Pre-Calculus | | 3 | X | |  |  |  |
| LAS-P3 | | 3 | X |  | |  |  |  | LAS-P4 | | 3 | X | |  |  |  |
| Term credit total: | | 1 6 | 10 | 6 | |  | |  | Term credit total: | | 15 | 9 | | 6 |  | |
|  | | | | | | | | | | | | | | | | |
| **Program Totals:** | **Credits: 61** | | | | | **Liberal Arts & Sciences: 31** | | | | **Major: 30** | | | **Elective & Other:** | | | |
|  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |

**Cr:**  credits     **LAS:** liberal arts & sciences      **Maj:**  major requirement           **New:**  new course                      **Prerequisite(s):** list prerequisite(s) for the noted

Note:

NTID Course Subject Codes: NMTH, NACA, NACT, NSCI

GCCIS Course Subject Codes: ISTE, NSSA, CSEC

R∙I∙T Rochester Institute of Technology

Information & Computing Studies,

NTID Support for Golisano

Golisano Building, Room 1511

20 Lomb Memorial Drive

Rochester, New York 14623-5608

585-475-6395 (Voice/TTY)

Fax 585-475-7101

B. Thomas Golisano College of Computing and Information Sciences and

National Technical Institute for the Deaf Articulation Agreement

The purpose of this Transfer Agreement is to:

* Attract qualified students to the Networking and Systems Administration program.
* Facilitate the transition of qualified transfer students from the National Technical Institute for the Deaf to the Networking and Systems Administration program at the B. Thomas Golisano College of Computing and Information Sciences.
* Encourage academic cooperation and exchange of information between the Information and Computing Studies department and the Information Sciences and Technology Department.

Terms

* The Networking and Systems Administration program at the B. Thomas Golisano College of Computing and Information Sciences agrees to accept those qualified students who have successfully completed their Associate of Science degree from the Applied Computer Technology program at the National Technical Institute for the Deaf.

Qualified students will:

1. Have earned a cumulative grade point average of 2.75 or above on a 4.00 scale and
2. Be a student in good standing at the National Technical Institute for the Deaf

* Transfer credit will be considered for all courses completed with a grade of “C” or better.
* A review of this Transfer Agreement can be requested by either college in case of significant curriculum changes, but no less then every two years.

APPROVED FOR APPROVED FOR

B. THOMAS COLLEGE OF COMPUTING NATIONAL TECHNICAL

AND INFORMATION SCIENCES INSTITUTE FOR THE DEAF

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Dr. Andrew Sears Dr. Gerard J. Buckley, President/Dean

B. Thomas Golisano College of Computing National Technical Institute for the Deaf

and Information Sciences

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**PROPOSED Articulation Agreement**

**Between**

**National Technical Institute for the Deaf &**

**B. Thomas Golisano College of Computing and Information Sciences**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **AS Program in**  **Applied Networking** | | | **BS Program in**  **Networking and Sys Admin** | | |
| *Course #* | *ACT Courses* | *Cr.* | *Course #* | *NSA Core Courses* | *Cr.* |
| NACA-150 | Network and Security Fundamentals | 3 | NSSA-101 | NSA Themes | 3 |
| NACA-160  NACA-162 | Programming Fundamentals I  Programming Fundamentals in the Network Domain | 3  3 | ISTE-100 | Computational Problem Solving Network Domain I  + 2 free elective credits | 4  2 |
| NACT-150 NACT-151 | Intro to PC Hardware Windows Operating Systems | 3  3 | NSSA-102 | Computer Systems Concepts + 1 free elective credit | 3  1 |
| CSEC-101 | Fund of Computer Security | 3 | CSEC-101 | Fund of Computer Security | 3 |
| NSSA-241 | Networking I | 3 | NSSA-241 | Networking I | 3 |
| NSSA-242 | Networking II | 3 | NSSA-242 | Networking II | 3 |
| NSSA-220 | Intro to Scripting | 3 | NSSA-220 | Intro to Scripting | 3 |
| *Course #* | *General Education Courses* | *Cr.* | *Course #* | *General Education Courses* | *Cr.* |
|  | First-Year Seminar | 3 |  | First-Year Seminar | 3 |
| UWRT-150 | FYW: Writing Seminar | 3 | UWRT-150 | FYW: Writing Seminar | 3 |
|  | LAS-P1 | 3 |  | LAS-P1 | 3 |
|  | LAS-P2 | 3 |  | LAS-P2 | 3 |
|  | LAS-P3 | 3 |  | LAS-P3 | 3 |
|  | LAS-P4 | 3 |  | LAS-P4 | 3 |
| NSCI-270 | LAS-P6 Concpts of Colleg Physics | 3 |  | LAS-P6 | 3 |
| LAS-E1 ISTE-101 | Computational Problem Solving Network Domain II | 4 | ISTE-101 | Computational Problem Solving Network Domain II | 4 |
| LAS-E2 NMTH-275 | Advanced Math | 3 |  | LAS-Elective | 3 |
| LAS- E3 MATH 111 | Pre-Calculus | 3 |  | LAS-Elective | 3 |
| *Course #* | *Other* | *Cr.* | *Course #* | *Other* | *Cr.* |
| NACA-172 | Website Development | 3 |  | Free Elective 1 | 3 |
| **Totals** |  | **61** |  |  | **59** |

Note: NTID Course Subject Codes: NMTH, NACA, NACT, NSCI

GCCIS Course Subject Codes: ISTE, NSSA, CSEC