#  Concept Paper for the proposed NTID Game and Simulation Graphics Program

## I. Title/Department/College

**Game and Simulation Graphics**

A new Associate of Applied Sciences (AAS) degree program that is supported by the Arts & Imaging Studies department in the National Technical Institute for the Deaf, a college of RIT.

## II. Describe goals and justification for the proposed program

With the growth in the use of games, simulation software, mobile applications (“apps”) and animated training material that span various platforms in today’s culture, there has been an increase in interest in the creation and development of games and simulations by prospective students and students who are already enrolled in the college of NTID. There has also been a documented increase in interest from prospective students at NTID for the opportunity to acquire skills in the creation of games and apps. The proposed Game and Simulation Graphics program will meet the demand at the associates degree level by focusing on the production and creation of graphics and animations used in games, character designs, and designing the user experience in games. Basic programming concepts and the use of game engines will also be used to create games and applications.

The goals of the proposed program are:

* Provide students with an understanding of the project workflows in both the Game Graphics and the Simulation industry segments.
* Develop production skills in creating graphics for games and simulations.
* Foster creative approaches to graphics for use in games and simulations.
* Apply traditional and computer-based skills to the creation of graphics.
* Implement graphics and animation in various game and simulation formats.
* Develop skills in computer software required for creation of games and simulation graphics.
* Develop team-based collaboration and communication skills.
* Understand the employment opportunities for students with an associates’ level degree in this major.

## III. Description of the new program: summarize program curriculum and other program aspects

NTID is always exploring opportunities to expand the range of its programmatic offerings to Deaf and Hard of Hearing students. As part of this effort, the Arts and Imaging Studies (AIS) department initiated discussion and development of a game graphics-focused program.

After identifying the broad scope of jobs and skills expected in the game industry, the AIS department identified the area of graphics and imaging that are used for games and simulations as being the primary area of focus in the program for training for students at the associates’ degree level.

The goal of the proposed program is to attract students with creative visual communication skills, who are interested in working in the game art, design, and animation fields while preparing and training them for entry-level employment in the game industry. The proposed Game and Simulation Graphics program will cover the “artistic” side of the game industry, with a specific focus on the graphics and animation aspects of the games and simulations. Students will acquire the creative and technical skills required to create art, game graphics, visual design for overall user experience, and animate media elements that are used in games and simulations.

While students acquire the needed creative skills, they will also use varying game engines to develop games for the software platforms available in the commercial market. Game engines are software applications that allow the user to create games with the ability to plug in graphics and use the game engine and its associated features and settings to produce the code required for game creation. The game and simulation industry is moving toward the same model of product creation that graphic design, printing, and web design have been using for many years. These industries use software that abstracts the majority of the coding away from the designer. The game engines work very much like the widely used software applications such as Adobe Dreamweaver and Adobe Illustrator. The game engines that students will use are rapidly becoming industry standards, and are widely used in games available in the marketplace today.

The program will also require students to acquire skills in traditional media drawing and painting, game concept development, storyboarding, storytelling, and computer-based skills in 2D and 3D graphics software, and using game engines. In addition, students will acquire skills related to project management and teamwork.

The marketplace for employment in the game and simulation graphics area has grown considerably, and jobs can be found worldwide. Generally, jobs can be found that are full-time, part-time, or on a contract basis, however, the nature of employment in this industry is primarily project based. Many of the available jobs are contract based. There is a high level of competition for employment at all levels, but many entry-level jobs can be found in the games and simulations industry. For employment, students in the Game and Simulation Graphics program will be prepared and qualified for obtaining entry-level employment in the industry, finding jobs with titles such as: Junior Computer Graphic Designer, Junior Computer Animator, Technical Illustrator, 2D Illustrator, 3D Animator, Junior Environment Artist, Concept Artist, Junior Animator, 3D Generalist, Visual Effect Artist, Modeler, Animator, Texture Artist, Rigger, Storyboard and Concept Artist, and Tester.

During their course of study in the Game and Simulation Graphics program, students will take two required, team-based project courses that focus on teamwork and collaboration in developing a game or simulation. The first team-based project course will happen in their third semester, where students will take three regular courses along with one that is a 3-credit team-based project course where they will create a small-scale game or simulation. During their fifth semester in the program, students will take a 3-credit team-based project course where they will create a larger-scale game or simulation as a capstone project for the program.

For the proposed curriculum plan, there will be nine courses that will be created for the new program (shown in **bold**) and will draw on the existing AIS department course offerings for five courses (shown in *italics*). Liberal Arts Perspective courses are shown in regular typeface. Doing this will allow students to draw their skills from a broad mix of faculty and student perspectives. With the curriculum working within the associates’ degree structure, there will be no electives offered in this program.

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| **First Semester (15 Credits)** |
| *NAIS-130 Raster and Vector Graphics* | *NGRD-115 Visual Idea Development* |
| **Intro. to Game Design** | First Year Seminar |
| **3D Modeling & Rendering I** |  |
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| **Second Semester Courses (15 Credits)** |
| *NGRD-111 Drawing I* | **3D Modeling & Rendering II** |
| **Intro. to Game Systems and Engines** | **Storytelling & Storyboarding** |
| First Year Writing |  |
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| **Third Semester Courses (12 credits)** |
| *NGRD-257 Animation*  | LA Perspective #1 |
| **Project Development**  | **Games and Simulations Group Project I** |
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| **Fourth Semester Courses (15 Credits)** |
| **Marketing and Business for Games** | LA Perspective #2 |
| **Animation II** | Math |
| *NAIS-201 Employment Seminar*  |  |
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| *Required Co-op experience between fourth and fifth semesters* |
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| **Fifth Semester Courses (12 credits)** |
| **Games and Simulations Group Project II** | LA Perspective #3 |
| Science | LA Perspective #4 |

## IV. Describe new program’s fit with RIT’s Mission and strategic directions

From the RIT Strategic plan, and its mission statement:

 *“Our mission is to provide technology-based educational tracks for personal and professional development. We rigorously pursue* ***new and emerging career areas****. We develop and deliver curricula and advance scholarship relevant to emerging technologies and social conditions.”*

The Game and Simulation Graphics program will be a new addition to the NTID education portfolio that will allow students to earn an associates’ degree in new and rapidly growing fields and will lead to opportunities for students to enter baccalaureate degree tracks in other colleges within RIT. The proposed program addresses the new and rapidly growing field of games and simulation graphics. The growth of this area over the last few years in the consumer market has been exponential, and the use of the technologies and products from games and simulation has had an impact on the daily experiences of today’s increasingly computer-literate society. The proposed program will allow our students to have an opportunity to acquire technical skills and knowledge to pursue entry-level careers in the game and simulation graphics area of the Game and Simulation industry, or prepare them for further study at the baccalaureate degree level.

## V. Synergy with other programs: describe curricular linkages with other academic programs and associated interdisciplinary connection

**Links within the same college (NTID)**

The new program will draw on the expertise of faculty in the NTID Arts & Imaging Studies department (AIS) who teach the Graphics, Animation, and Web Design courses.

**Links to BFA/BS tracks in other colleges at RIT**

After students complete their Associates’ degree in the Game and Simulation Graphics program, they can decide between two options: to enter the workforce, or to pursue further study at the baccalaureate degree level. The BFA program is in the *3D Digital Graphics* program in the School of Design at the College of Imaging Arts and Sciences at RIT is identified as having a good fit with the program outcomes of the Game and Simulation Graphics program.

## VI. Administrative structure for the new program

The administrative structure of the proposed Game and Simulation Graphics will reside in the existing NTID Arts & Imaging Studies department. The AIS chair will have administrative duties related to faculty and course schedules and budget management for the proposed program. The AIS department coordinator would have a one-course reduction in teaching workload and would be responsible for overseeing curriculum development, managing and tracking student enrollment in the program, and assisting in outreach for the program.

## VII. Enrollment management expectations and sustainment

The enrollment expectations for the Game and Simulation Graphics program will be in line with historical enrollment for individual NTID departments.

One set of enrollment data from the NTID admissions office shows that the number of prospective students in 2011-2012 who express a primary interest in, but are not qualified to enter the BS/BFA tracks in Film/Animation, Video Game Development, New Media Design and Imaging, and 3D Digital Graphics were:

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| --- | --- | --- |
| Program | 2011 | 2012 |
| Film/Animation BFA (JPHQ) | 23 | 19 |
| Video Game/Development BS (VIGD) | 30 | 27 |
| 3D Digital Graphics (3DDG) (JADQ) | 6 | 12 |
| New Media Design and Imaging (JADW) | 2 | 3 |

The numbers show that there is a consistent, high level of interest from students who qualify for the associates’ degrees at NTID at RIT. Outside of the pool of students who apply to RIT/NTID, this program will also tap the market of deaf students who might be planning to attend other colleges due to the lack of an existing Game and Simulation Graphics program at NTID. The proposed program is an identified growth opportunity for NTID to attract a group of students who might not otherwise attend the college due to the lack of availability of academic programs that are in line with their future career interests.

While the expectation for the Game and Simulation Graphics program will be in line with historical enrollment for individual NTID departments, we anticipate the initial enrollment for the Game and Simulation Graphics program to be 10 students. When considering attrition as a natural occurrence in academic programs, drawing from the enrollment history of the Arts and Imaging Studies department, the AIS has a first-year retention rate of over 70%, and the expectation is that the Game and Simulation Graphics program would be in line with this expectation for retention, while operating with the additional understanding that the program willrecruit a different type of student than those who traditionally enter the AIS programs.

## VIII. Impact on resources

The proposed Game and Simulation Graphics (GSG) program will share the faculty, staff and facilities of the existing Arts & Imaging Studies department which has the AAS and AOS degree programs of the same name: Arts & Imaging Studies (AIS) — focusing on preparing students for creative and technical careers in the graphic communications industry.

### Enrollment

We anticipate that the Game and Simulation Graphics program will draw students who normally would not attend NTID at RIT due to the absence of a Game and Simulation Graphics program, and will attract qualified associates’ degree–ready students that would not normally be interested in the current offerings by the AIS department. The expected enrollment impact on the AIS department will be minimal, due to the broad scope of programs and skill paths available in the department. Historically, the AIS department enrollment totals have ranged between 120-140 students. In this academic year, the AIS department has approximately 120 students enrolled full-time into the current program offerings. With the estimated beginning enrollment range of 10 GSG students each year, the AIS department will be able to handle the overall increased student enrollment through maximizing section enrollment and coordinated scheduling.

### Faculty and Facilities resources

The AIS department is confident that the current personnel and facilities resources will accommodate the proposed Game and Simulation Graphics program. Existing faculty, with experience in 3D modeling, rendering and animation, have already declared their interest in developing and teaching new courses in the GSG program. Their Plans of Work are already including both professional development and curriculum development expectations. The AIS department faculty who will develop and teach courses in the Game & Simulation Graphics AAS program will maintain some teaching responsibilities in the Arts & Imaging Studies AOS and AAS programs. Computer lab scheduling within the AIS department's facilities will be able to accommodate both the GSG and AIS program courses each semester. Several AIS department courses will have students from both the GSG and AIS programs.

### Budgetary Implications

The AIS department will provide the budget for the proposed Game and Simulation Graphics program. The costs associated with software licenses, computer systems, and on-going professional development will result in minimal budgetary implications for the AIS department and the college of NTID.

## IX. Conclusion

In summary, the Game and Simulation Graphics program will be an attractive new addition to the NTID education portfolio that will allow students to earn an Associate of Applied Sciences degree in the new and rapidly growing field of game and simulation graphics. In the increasing globalization of the work opportunities for students, the Game and Simulation Graphics associates’ degree will provide students exposure and experience to individual and team-based experiences.

## X. Summary of Community Input and Response to Input (This information is added following the public vetting and prior to review by Provost)

*This concept Paper was proposed and developed by the AIS Game and Simulation Graphics committee, based on an idea discussed and proposed to the AIS department by the AIS chair, Kenneth Hoffmann:*

*Kurt Stoskopf, committee chair, with committee members, Paula Grcevic, Katherine Olsen, and Heather Smith.*