

FEB 08 2016



Frederick Community College

January 28, 2016

Dr. James D. Fielder
Acting Secretary of Higher Education
Maryland Higher Education Commission
6 N. Liberty St.
Baltimore, MD 21201

Dear Dr. Fielder,

Frederick Community College (FCC) is requesting MHEC approval of the following programs:

A.A.S. Degree:	Game and Simulation Development	\$850
Lower Division Certificate:	Computer Animation Certificate	\$250
Lower Division Certificate:	Game Programming Certificate	\$250

The proposed **Associate of Applied Science in Game and Simulation Development** is designed to prepare students for a career in the interactive technology capacities, such as Multimedia Artist, Visual Effects Artist, Interactive Content Designer, Interactive Media Designer, Digital Animator, Graphic Designer, Modeling & Simulation Engineer, Simulation Application Developer, Web Developer, Game Designer, Game Developer, and Application Programmer. The proposed program introduces students to the current animation and modeling software, trains students with interactive 3D technology, and prepares students' proficiency in programming languages, including Java, C++, C#, and Python. Students can also transfer to a 4-year institution to pursue their bachelor degree in Multimedia & Web Technology, bachelor degree in Computer Animation & Simulation, or bachelor degree in Computer Science with the Game Development concentration.

The **Computer Animation Certificate** falls under the A.A.S., Game and Simulation Development. It introduces students to the current animation and modeling software, such as Blender, Autodesk 3ds Max, and Autodesk Maya, and covers animation production, computer graphics, interactive 3D foundations, and 3D modeling & animation. The proposed certificate will prepare graduates to become contributing information technology professionals in the fields of Digital Graphic Designers, Multimedia Designers, Digital Animators, Character Riggers, or Web Designers/Developers.

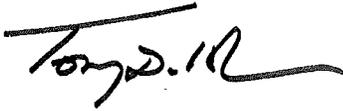
The **Game Programming Certificate** falls under the A.A.S., Game and Simulation Development. It prepares students to develop interactive computer games on the Internet, mobile computers, and personal computers by requiring students to complete five (5) programming courses relevant to the development of computer games. This certificate will target students who wish to obtain the skills necessary to develop computer games using programming languages such as Java, C++, C#, and Python.

At this time, FCC would also ask that the A.A.S., Game and Simulation Development, Computer Animation Certificate, and Game Programming Certificate be added to MSDE's List A.

A check for administrative costs in the amount of \$1,350 is enclosed. The MHEC proposals with a copy of this letter will be transmitted electronically to MHEC.

Thank you for your consideration of these proposals. If you have any questions regarding FCC's request for approval, please do not hesitate to call me at 301-846-2491.

Sincerely,

A handwritten signature in black ink, appearing to read "Tony D. Hawkins". The signature is written in a cursive style with a long horizontal line extending from the end.

Dr. Tony D. Hawkins
Provost/Vice President for Academic Affairs
thawkins@frederick.edu

pc: Mary Sciré, FCC (mscire@frederick.edu)
Karen Wilson, FCC (kwilson@frederick.edu)

Proposal for New Instructional Program

Frederick Community College
Frederick, Maryland 21702

Associate of Applied Science: Game and Simulation Development

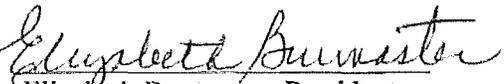
HEGIS CODE:

CIP CODE:

Department in which Program will be located: Computing and Business Technology

Name of Department Head: Karen A. Wilson, Ph.D.

Award to be offered: Associate of Applied Science

President/Chief Executive Approval: 
Elizabeth Burmaster, President

Date of President/Chief Executive Approval: _____

Date Endorsed by Board of Trustees 1/20/2016

Date Received by Secretary of Higher Education _____

1. Rationale and Need for the Program

A. Describe the extent to which this program is central to the institutional mission, the planning priorities of the campus, and the relationship to the instructional program emphasis.

The proposed Associate of Applied Science in Game and Simulation Development by Frederick Community College (FCC) is designed to prepare students for a career in the interactive technology capacities, such as Multimedia Artist, Visual Effects Artist, Interactive Content Designer, Interactive Media Designer, Digital Animator, Graphic Designer, Modeling & Simulation Engineer, Simulation Application Developer, Web Developer, Game Designer, Game Developer, and Application Programmer. The proposed program introduces students to the current animation and modeling software, trains students with interactive 3D technology, and prepares students' proficiency in programming languages, including Java, C++, C#, and Python. Students can also transfer to a 4-year institution to pursue their bachelor degree in Multimedia & Web Technology, bachelor degree in Computer Animation & Simulation, or bachelor degree in Computer Science with the Game Development concentration.

This new program directly supports the mission of Frederick Community College (FCC) and prepares students for workforce preparation, transfer, and career development. This new program directly contributes to FCC's mission – "... To prepare students to complete their goals of workforce preparation, transfer, and career development"

To be in line with FCC's mission, classes will be delivered in traditional and alternative learning environments, including face-to-face, hybrid, and online.

B. Describe how this program meets a critical and compelling regional or statewide need as described in the Maryland state plan.

....Increasing the number of STEM degrees awarded to students is another key goal for Maryland postsecondary education. STEM related occupations are critical because they are closely tied to technological innovation, economic growth, and increased productivity. Currently, workers with STEM competencies and degrees are in high demand. Data from the Georgetown University Center for Education and the workforce (2011) rank STEM jobs as the second fastest-growing occupational category in the nation, behind health care. Since 2006-2007, Maryland's production of STEM degrees has increased over 26%, from nearly 9,000 to approximately 11,300 in 2011-2012... ..

The above was extracted from "Maryland Ready 2013-2017: Maryland State Plan for Postsecondary Education" and indicates that STEM degrees are in high demand. Entertainment Software Association (ESA theesa.com) publishes many reports/articles as open resources to remind the public that the needs of gaming has impact in many areas of the society, including education, workplace, social issues, economy, health, art, family life, and advertising.

Games: Improving Education	Games: Improving Health
Games: Improving the Workplace	Games: Improving Art
Games: Improving Social Issues	Games and Family Life
Games: Improving the Economy	Games and Advertising

Source: <http://www.theesa.com/about-esa/industry-facts/>

Currently, only two (2) out of sixteen (16) community colleges in Maryland offer a similar degree – both are transfer degrees. This proposed A.A.S. degree by FCC prepares students for jobs in STEM fields as well as enables graduates to pursue their bachelor degree in a related field.

- C. State the specific local, state, and/or national needs for graduates of the proposed program. Describe job opportunities that are available to persons who complete the program. Provide evidence of market demand through supporting data including results of a survey which has recently been conducted. Present data showing the current and projected supply of graduates from existing programs in the state, if any.**

Shown below is a report published by Entertainment Software Association (ESA theesa.com), which indicates that the U.S. video game industry increased more than 9% between 2009 and 2012.

The U.S. Video Game Industry's Economic Impact

The entertainment software industry creates jobs and generates revenue for communities across the nation. *Video Games in the 21st Century: The 2014 Report*, an economic impact study conducted by Economists Incorporated and released by ESA in 2014, quantifies the U.S. video game industry's contributions to the American economy, including:

- From 2009 to 2012, the U.S. video game industry increased in size by more than 9 percent – four times the growth rate of the U.S. economy during the same period.
- In 2012, the entertainment software industry added over \$6.2 billion to U.S. Gross Domestic Product.
- The computer and video game industry directly and indirectly employs more than 146,000 people.
- The average salary for direct employees is \$94,747, resulting in total national compensation of \$4 billion.
- Direct employment for the industry grew at an annual rate more than 13 times the growth of the overall U.S. labor market (9 percent vs. 0.72 percent) between 2009 and 2012.

Source: <http://www.theesa.com/article/u-s-video-game-industrys-economic-impact/>

ESA's website also reports that in 2014, this industry generated more than \$22 billion in revenue, which confirms the growth of gaming industry is strong.

Video games are a strong engine for economic growth. In 2014, the industry sold over 135 million games and generated more than \$22 billion in revenue. Fifty two percent of total game sales were generated by purchases of digital content, including online subscriptions, downloadable content, mobile applications, and social networking games. Computer and video game companies directly and indirectly employ more than 146,000 people in 36 states.

Source: <http://www.theesa.com/about-esa/industry-facts/>

The following screen shots from study.com website show the growth for this line of careers is expected to be faster than average job growth of 22%.

Employment Outlook and Salary Information

In 2014, applications software developers earned an average annual salary of \$99,530, while multimedia artists and animators earned \$69,410, according to the U.S. Bureau of Labor Statistics (BLS). From 2012-2022, the software developers could expect faster than average job growth of 22%, the BLS predicted. The outlook for multimedia artists and animators in general was for slower than average growth of 6%.

Popular Careers

Individuals with an associate's degree in simulation and game programming may seek employment in the entertainment, education and business industries, as well as in the military. These jobs are usually as junior developers, programmers or testers. Occupations may include:

- Junior game programmer
- Quality assurance analyst
- Game and simulation tester
- Animators
- Database administrators
- Junior game designer

Source:

http://study.com/articles/Associate_of_Simulation_and_Game_Programming_Degree_Overview.html

Bureau of Labor Statics (BLS) of U.S. Department of Labor, reports the following facts, relevant to careers that the game and simulation development degree may prepare, on its website.

Quick Facts: Computer Programmers

2012 Median Pay	\$74,280 per year \$35.71 per hour
Entry-Level Education	Bachelor's degree
Work Experience in a Related Occupation	None
On-the-job Training	None
Number of Jobs, 2012	343,700
Job Outlook, 2012-22	8% (As fast as average)
Employment Change, 2012-22	28,400

Quick Facts: Software Developers

2012 Median Pay	\$93,350 per year \$44.88 per hour
Entry-Level Education	Bachelor's degree
Work Experience in a Related Occupation	None
On-the-job Training	None
Number of Jobs, 2012	1,018,000
Job Outlook, 2012-22	22% (Much faster than average)
Employment Change, 2012-22	222,600

Quick Facts: Web Developers

2012 Median Pay	\$62,500 per year \$30.05 per hour
Entry-Level Education	Associate's degree
Work Experience in a Related Occupation	None
On-the-job Training	None
Number of Jobs, 2012	141,400
Job Outlook, 2012-22	20% (Faster than average)
Employment Change, 2012-22	28,500

Quick Facts: Multimedia Artists and Animators

2012 Median Pay	\$61,370 per year \$29.50 per hour
Entry-Level Education	Bachelor's degree
Work Experience in a Related Occupation	None
On-the-job Training	Moderate-term on-the-job training
Number of Jobs, 2012	68,900
Job Outlook, 2012-22	6% (Slower than average)
Employment Change, 2012-22	4,300

As a summary, the projected growth for game and simulation degree relevant jobs between 2012 and 2022, by BLS, are:

- Software developers: 22 percent
- Computer Programmers: 8 percent
- Web developers: 20 percent
- Multimedia Artists and Animators: 6 percent

D. Provide evidence of student interest in the program. What are the projections of program majors full-time and part-time for each of the first five years of the program?

Advisors, counselors, faculty and the Computer and Information Sciences (CIS) program manager have been constantly receiving enquiries from students regarding computer gaming or simulation courses and programs. Since May of 2014, the Computer Technology Education coordinator of Frederick County Public Schools (FCPS) has expressed that FCPS high school students have consistently asked for computer game development or programming courses/programs either at the high school or college level. These enquiries have been shared by full-time and part-time students in the ratio of 50/50.

E. Project the number of graduates for the first five years of the program following the first year of awarding the degree/certificate.

The proposed program anticipates 15 students annually, following the initial year of implementation.

F. If a similar program exists in the state, describe the similarities or differences in the degree/certificate to be awarded, the areas of specialization, and the specific academic content of the program or course of study.

The table below provides the summary of similar programs currently offered at other community colleges in Maryland. This table shows that only two community colleges out of sixteen (16) community colleges in Maryland offer a computer gaming related degrees and both are transfer degrees. Further, these degrees emphasize on game design, rather than on game development. FCC's proposed A.A.S., Game and Simulation Development puts the emphasis on computer game and simulation programming and development, and will be the first and only career degree that covers computer game and simulation programming/development, within Maryland's sixteen (16) community colleges.

College	Program Information	Remark
Hagerstown Community College	A.A.S., Simulation & Digital Entertainment	Career
Howard Community College	A.A., Gaming and Simulation Design	Transfer
Montgomery	A.A., Computer Gaming and Simulation	Transfer

2. Course of Study Leading to the Proposed Degree/Certificate

A. State the educational objectives of the program.

Students will complete 22 general education credits, 29 credits in supporting professional studies courses, and 9 elective credits, for a total of 60 credits. This proposed A.A.S. degree prepares graduates to:

- obtain knowledge and skills with current programming languages
- design, implement, test and debug computer game or simulation software using current technologies and tools
- design and develop computer animation using industry standard tools
- use appropriate techniques and resources to research game and simulation related issues as well programming tools and technologies to engage lifelong technical learning
- integrate software design and project implementation into their roles as computer game or simulation designers/developers
- gain knowledge and skills in subject areas including practical game design, visual design, simulation design, game scripting, game programming, and project management.

B. Describe the program as it would appear in a catalog, including each area of concentration.

Prepares graduates for a career in the interactive technology capacities, such as Multimedia Artist, Visual Effects Artist, Interactive Content Designer, Interactive Media Designer, Digital Animator, Graphic Designer, Modeling & Simulation Engineer, Simulation Application Developer, Web Developer, Game Designer, Game Developer, and Application Programmer. Game design and development skills covered include This program covers the game design and development skills, including animation, graphics, 3D modeling and simulation, game engines, user interfaces, game

scripting, and game programming. Students will also learn programming languages, such as Java, C++, C#, and Python.

- C. List the course (title, number, semester credit hours, and catalog description) that would constitute the requirements and other components of the proposed program. Indicate which are currently offered and which will be the new (indicate new courses with an X).**

<i>Course</i>	<i>Credits</i>
CORE Requirements	
English	
EN 101 English Composition	3
Mathematics	
Math Elective (GenEd course list) (MA 206–Elementary Statistics recommended)	3/4
Social & Behavioral Sciences	
‡ Social Science Elective (GenEd course list) (HS 102–Human Relations recommended)	3
Arts & Humanities	
Arts, Humanities or Communications Elective (GenEd course list) (PH 208 or PH 101 recommended)	3
Biological & Physical Sciences Elective (GenEd course list)	3/4
General Education Elective (GenEd course list)	3
Interdisciplinary & Emerging Issues	
CIS 106 Object Design and Programming	3
Cultural Competence Requirement	
All degree seeking students must complete a cultural competence requirement in order to graduate. This course may satisfy another requirement in your program.	
PE/Health Requirement	1
Departmental Requirements	
CIS 175 Game Theory & Design	3
CIS 176 Game Creation	3
CIS 177 Interactive 3D Technology	3
CIS 178 3D Modeling & Animation	3
CIS 203 Systems Analysis & Design	3
CIS 225C Mobile App Programming	3
CIS 226 Game Scripting	3
CIS 227 Game Programming	4
CIS 228 Simulation & Game Development	4
Other Requirements (select 9 credits from the following list of approved electives)	
CAD 101 Introduction to AutoCAD I	3
CIS 101 Information Systems & Technology	3
CIS 111J Web Page Development	3
CIS 111L UNIX/Linux Operating System	3

CIS 116P Photoshop	1
CIS 140 Java Programming	3
CIS 201 Computer Science I	4
CIS 202 Computer Science II	4
CIS 208 C++ Programming	3
CIS 222 Computer Organization	4
CIS 225A Computer Programming Language: PHP	3
CIS 230 Database Management Systems	3
CMM 111 Communications Graphics I	3
INTR 103 Internship	1/3
TOTAL	60

Catalog Description of Supporting Courses:

CIS 106 Object Design & Programming (3)

Covers college-level communications skills, critical thinking skills, basics of object-oriented programming, fundamentals of computer information systems, impact of information technology on the economic, political and cultural development of society as well as the ethical, societal, and legal aspects of information technology. This course introduces object-oriented design and programming skills using a language that supports the object-oriented paradigm. This course emphasizes software engineering principles and best practices. Students will design, implement, document, and debug object-oriented programs to solve problems by utilizing various data types and algorithms, control structures, encapsulation, and inheritance. Students will practice critical thinking and communications skills by participating in structured walkthroughs and discussions, creating Unified Modeling Language (UML) diagrams in designing solutions, and debugging errors within the designed solutions. This course requires no prior programming knowledge or experience.

CIS 175 Game Theory and Design (3)

Covers game theory and design. Topics include the roles of game designers, game structures and elements as well as game development stages and methods. Students learn about designing, prototyping, and playtesting games.

CIS 176 Game Creation (3)

This course covers the creation of basic games. This hands-on course guides students step by step through the basics of building interactive games. Students learn to create computer games utilizing current technologies, such as web page design/development languages, animation/simulation software, and game engines.

CIS 177 Interactive 3D Technology (3)

Surveys the current 3 dimensional (3D) technologies and introduces the design and creation of virtual interactive 3D models. Covered techniques include mesh modeling, texturing, lighting, animation, and rendering. Students learn to design and develop computer generated interactive 3D worlds, using 3D production tools, such as Blender.

CIS 178 3D Modeling and Animation (3)

Introduces fundamentals of creating and animating 3 dimensional (3D) computer modeling. The industry standard 3D modeling and animation software are surveyed and explored. This course covers Autodesk Maya Certified Professional exam topics and objectives. Topics include 3D modeling concepts and 3D animation process. Students learn to create and animate 3D models using 3D modeling tools.

CIS 203–Systems Analysis & Design (3)

Presents concepts of structured systems analysis and design techniques such as problem definition, cost analysis, charting and scheduling, implementation planning and documentation. Emphasizes project management, communication and analytical skills.

CIS 208 C++ Programming (3)

Emphasizes object-oriented programming in C++. This course provides a comprehensive coverage of C++ features, including arrays, strings, pointers, references, classes, inheritance, polymorphism, function overloading, function overriding, virtual function, and template. Students learn to design and implement object-oriented programs in C++ programming language.

CIS 225C Computer Programming Language: Mobile Applet Programming (3)

Introduces applet programming for mobile devices using the Android operating system.

CIS 226 Game Scripting (3)

Introduces the development of computer games using a scripting language. A modern scripting language will be covered and used to develop game programs. Students learn to design and develop cross-platform computer games.

CIS 227 Game Programming (4)

Covers the development of computer games using a high-level programming language. It introduces the game development aspects and techniques through creation of computer programs. This course also surveys the modern game engines. Students learn to develop computer game programs for specific game engines and platforms.

CIS 228 Simulation and Game Development (4)

Covers the development of digital interactive contents used in computer games and computerized simulations. This course introduces students to the current game engines and simulation software used to build comprehensive and interactive computer games and simulations.

CIS 101–Information Systems & Technology (3)

Emphasizes microcomputer hardware and software, data organization and an overview of programming and application software. Uses application software in the areas of database management, spreadsheets, word processing and graphics. Prerequisite: *EN 50A and EN 52 or ESL 95 and ESL 99*

CIS 111J Web Page Development (3)

Introduces modern web development tools for website construction. This course covers the topics relevant to the development of interactive websites, including conceptualization, design, layout, and visual stimulation. Students will learn HTML5, CSS3, and JavaScript.

CIS 140–Java Programming (3)

Covers the Java programming language as a student's first programming language. Introduces object-oriented programming in a Java environment. Emphasizes developing Java application and applets using a Java programming style. Includes debugging Java applications and applets.

CIS 201 Computer Science I (4)

Emphasizes object-oriented design, data abstraction and programming beyond an introductory level. Introduces user interfaces and graphics through the study of object design. Emphasizes object-oriented software engineering including Unified Modeling Language (UML). Investigates fundamental sorting and searching algorithms, introductory dynamic data structures and event-driven programming techniques. Develops programming skills using a language that supports the object-oriented paradigm.

CIS 202 Computer Science II (4)

Emphasizes algorithms, data structures, and object-oriented software engineering. Introduces algorithmic analysis including asymptotic notation, empirical performance measurements, and time/space tradeoffs. Covers fundamental computing algorithms including sorting, searching, and manipulating dynamic data structures, such as lists, stacks, queues, trees, graphs and hash tables. Investigates recursion including applications to algorithms and data structures. Integrates further software engineering concepts including data abstraction and participation in team programming projects. Projects will be completed using a language that supports the object-oriented paradigm (Java).

CIS 222 Computer Organization (4)

Introduces the organization and essential functions of computer systems. This course surveys the components of computer systems from the architecture point of view and provides an in-depth discussion on topics including Central Processor Unit (CPU) structure, instruction sets, data representation, computer arithmetic, digital logic, memory architectures, and parallel processing. Students will also explore the support of operating systems from programming perspectives.

CIS 225A Computer Programming Language: PHP (3)

Introduces programming using PHP.

CIS 230 Database Management Systems (3)

Provides an in-depth study of database management systems and the fundamentals of database design and development. Topics include Structured Query Language (SQL), normalization, integrity constraints, data models, and transaction control. Students design and develop databases and database applications utilizing database management systems (DBMS), such as Oracle or Microsoft SQL Server.

CAD 101–Introduction to AutoCAD I (3)

Prerequisite: EN 51 or ESL 97

Introduces AutoCAD software and its application as a drawing tool. Students will utilize basic AutoCAD commands to create two-dimensional production and architectural drawings. Students will

use templates, layer control, dimensioning, editing, text, symbol creation, and blocks to create and modify geometrical designs and print/plot drawings for presentation.

CMM 111–Communications Graphics I (3)

Level one graphic design. Prepares the student for the print graphic design field through the use of the computer. The student will be introduced to design vocabulary, methods and technology through lecture, examples and hands-on project work. Emphasizes Adobe Illustrator, Adobe Photoshop, and Adobe InDesign.

INTR 101, 102, 103–Internship (1, 2, 3)

Provides the student with an opportunity to gain knowledge and skills from a planned work experience in the student's chosen career field. In addition to meeting Core Learning Outcomes, jointly developed Specific Learning Outcomes are selected and evaluated by the Faculty Internship Advisor, Work-Site Supervisor, and the student.

Internship placements are directly related to the student's program of study and provide learning experiences not available in the classroom setting. Internships provide entry-level, career-related experiences, and workplace competencies that employers value when hiring new employees. Internships may also be used as an opportunity to explore career fields. Students must meet with the Internship Coordinator prior to registering.

Catalog Description of General Education Courses:

EN101 English Composition (3)

Develops students' ability to use writing, reading, research, and thinking processes to create documented essays that demonstrate the conventions of academic writing.

Prerequisites: *EN 50A* (or satisfactory performance on writing assessment) or *EN61* and *EN 52* (or satisfactory performance on reading assessment) or *ESL 95* and *ESL 99*.

Mathematics: Any 3-4 credit math course from the list of approved general education math courses in the college catalog will fulfill this requirement.

Social & Behavioral Sciences: Any 3 credit social or behavioral sciences course from the list of approved general education social & behavioral sciences courses in the college catalog will fulfill this requirement.

Arts & Humanities: Any 3 credit arts or humanities course from the list of approved general education arts & humanities courses in the college catalog will fulfill this requirement.

Science: Any 3-4 credit science course from the list of approved general education science courses in the college catalog will fulfill this requirement.

Interdisciplinary & Emerging Issues: Any 3-credit interdisciplinary & emerging issues course from the list of approved general education interdisciplinary & emerging issues courses in the college catalog will fulfill this requirement.

Health Elective: Any 3-credit wellness course from the list of approved general education wellness courses in the college catalog will fulfill this requirement.

D. If applicable, describe any selective admissions policy or specific criteria for students selecting their major field of study.

None.

E. Describe expected student learning outcomes for the proposed program and directly relate these to the general curricular requirements of the program.

Upon successful completion of this program, general education courses will enable the graduates to:

- Demonstrate college-level communication skills.
- Demonstrate critical thinking
- Demonstrate the capacity for systems thinking about ways in which individuals, groups, institutions, and societies interrelate. (Social Sciences)
- Demonstrate quantitative problem solving (Math)
- Apply scientific reasoning (Science)
- Demonstrate technological competence
- Interpret and apply academic, professional and civic ethics
- Make informed, critical responses to the visual, performing and literary arts and to the human values expressed in all art forms.
- Evaluate personal wellness to make critically informed lifestyle choices reflecting an understanding of wellness.
- Demonstrate cultural competence.

In addition, the application of general education courses will enhance the specific skills acquired through the Game and Simulation Development program. The graduate will be able to:

- Apply game design and programming skills in creating computer game or simulation software
- Complete game or simulation projects utilizing current technologies and tools
- Discuss the current trends and issues related to game and simulation systems
- Play test and critique computer game or simulation applications
- Develop knowledge and skills in programming languages that are suitable for creating animation simulation, and gaming software

3. Faculty

A. Provide a list of current faculty (and areas of expertise) who will teach in the program.

Current College faculty from the specific department discipline will teach the required general education courses, in accordance with COMAR 13B.02.02.17.

CBT/CIS faculty will teach departmental courses required by this new program. If necessary, an adjunct faculty member may be hired to cover some of the departmental courses.

B. List faculty by rank required for full implementation of the program. Indicate which additional faculty are to be hired and describe their qualifications.

The Department Chairs will hire specific adjunct faculty in their respective discipline, as needed, for the Gen Ed courses based on the requirements set forth by FCC's hiring practices.

Name	Qualification	Course
Brian Groover	M.S.	CIS226, CIS227
Lisa Hawkins	Ph.D.	CIS106, CIS175, CIS176
Susan Johnson	M.S.	CIS106, CIS175, CIS176, CIS177, CIS178, CIS228
Melanie Kalmar	M.S.	CIS106, CIS175, CIS176
Walter Martynenko	M.S.	CIS106, CIS175, CIS176, CIS208
Frank Seidel	M.S.	CIS106, CIS175, CIS176, CIS208, CIS225C, CIS226
Andy Yao	Ph.D.	CIS106, CIS175, CIS176, CIS177, CIS178, CIS208, CIS225C, CIS226, CIS227, CIS228

4. Accreditation

A. Does the institution intend to seek accreditation for this program by one of the specialized accrediting bodies recognized by the U.S. Department of Education?

No outside agency accreditation is required for this program.

B. Does the institution intend to seek any State licensure or certification requirements, which may be necessary for graduates to be employed in this field of study?

No.

C. Describe any additional resources, including facilities, required to gain accreditation or licensure.

FCC has sufficient space to accommodate the general education courses and discipline specific courses required by this new program.

5. Cooperative Agreements

A. Describe cooperative agreements with other institutions and organizations that may be used to offer this program. Specify the nature of such agreements and attach any formal statements of agreement that have been developed.

None.

- B. All public institutions shall show evidence of the development and dissemination of Recommended Transfer Programs (RTP's). In cooperation with sending/receiving institutions. All institutions shall also provide evidence that the RTP's are available to students through ARTSYS or in written form. In order to foster articulation with K-12, community colleges will also identify parallel curricula in secondary schools.**

Transfer information will be made available to participants in this program in a variety of methods including hard copy, ARTSYS (articulation information) via the Internet, and other web-based resources.

6. Library Requirements

- A. Provide a brief shelf analysis of existing resources to support the proposed program. Indicate the need for additional on-site resources and over what time period do you expect that they will be required. Discuss additional provisions for access to library holdings----e.g. inter-library loans, local library holdings, the UMS integrated library system, and/or other computerized systems that allow access to library resources housed at other institutions. Attach letters of agreement if appropriate.**

No significant library holdings will need to be purchased for this program. Current library loan mechanisms and electronic data retrieval methods can be utilized. The library exceeds state and national standards for community, junior, and technical college learning resources programs. There is a librarian who may be contacted for bibliographic searches and for the purchase of discipline-specific materials.

7. Facilities and Equipment

- A. How will the proposed program impact on the use of existing facilities and equipment?**

Classrooms, facilities and laboratories on campus currently support general education and prerequisite courses for the proposed program. Program specific classes will take place at the existing classrooms and 1 dedicated classroom.

- B. Describe additional facilities, faculty modifications, and equipment which will be required for use in the proposed program. Indicate the status of the facility and equipment requested to support your needs.**

No additional facilities and equipment will be needed. One additional adjunct faculty member may be hired, if needed.

8. Minority Student Achievement

- A. Identify specific actions and strategies which will be utilized in the recruitment and retention of other-race students.**

Frederick Community College has long been committed to the recruitment and retention of minority students and will expand its policies to include this program. The DFRS agencies involved have an aggressive recruitment strategy to encourage diversity amongst its applicants.

9. Low-Productivity Programs

- A. Those low-productivity programs directly related to the proposed program should be addressed. Careful review should consider the fiscal resources (faculty, administration, library resources, and general operating expenses) currently devoted to the low-productivity programs and how those resources can be redistributed to help fund the proposed program.

Currently there are no low-productivity programs at Frederick Community College which can be redirected.

10. Finance

- A. This information is requested to permit the Secretary to assess the adequacy of resources requested to support this program. Complete Tables 1 and 2. Please provide a narrative rationale for each of the resource requirements.

FINANCE DATA

Finance data for the first five years of program implementation should be entered in Table 1 – Resources and Table 2 – Expenditures. Figures should be presented for five years and then totaled by category for each year. As an attachment, narrative explanation should accompany each table.

Narrative Table 1: Resources

Tuition and Fee Revenue

Tuition and fee revenue is based upon the in-county combined tuition/fee rate of \$189 per credit hour for part-time students and an annual tuition/fee rate of \$3,568 for full-time students with an annual average increase of 2.6% for both part-time and full-time students. Full-time students are taking, on average, 13 credits per semester and part-time students are taking, on average, 6 credits per semester. Enrollment projections are based on current enrollment figures for the fall 2015 with a projected 20% increase each year in full-time enrollment and 25% increase in part-time enrollment.

Table 1 RESOURCES					
Resource Categories	Year 1	Year 2	Year 3	Year 4	Year 5
1. Relocation Fund	\$0	\$0	\$0	\$0	\$0
2. Tuition/Fee Revenue (c+g below)	\$44,420	\$46,184	\$46,764	\$47,968	\$49,188
a. # F/T Students	8	8	8	8	8
b. Annual Tuition/Fee Rate	\$3,568	\$3,661	\$3,756	\$3,854	\$3,954
c. Total F/T Revenue (a*b)	\$28,544	\$29,288	\$30,048	\$30,832	\$31,632
d. # P/T Students	7	7	7	7	7
e. Credit Hr. Rate	\$189	\$194	\$199	\$204	\$209

f. Annual Credit Hrs.	12	12	12	12	12
g. Total/T Revenue (d*e*f)	\$15,876	\$16,296	\$16,716	\$17,136	\$17,556
c. Total Benefits	\$0	\$0	\$0	\$0	\$0
3. Grants, Contracts, & Other External Sources	\$0	\$0	\$0	\$0	\$0
4. Other Sources	\$0	\$0	\$0	\$0	\$0
5. Total (Add 1-4)	\$44,420	\$46,184	\$46,764	\$47,968	\$49,188

Grants and Contracts

None.

Other Sources

No other sources will be used to finance the program.

Narrative Table 2: Expenditures

Table 2 EXPENDITURES					
Expenditure Categories	Year 1	Year 2	Year 3	Year 4	Year 5
1. Faculty (b + c below)	\$15,276	\$15,582	\$15,894	\$15,900	\$16,211
a. # FTE	.5	.5	.5	.5	.5
b.1. FT Salary	\$0	\$0	\$0	\$0	\$0
b.2. PT Salary*	\$14,184	\$14,468	\$14,757	\$14,763	\$15,052
c.1. FT Benefits	\$0	\$0	\$0	\$0	\$0
c.2. PT Benefits	\$1,092	\$1,114	\$1,136	\$1,137	\$1,159
2. Admin. Staff (b + c below)	\$0	\$0	\$0	\$0	\$0
a. #FTE	\$0	\$0	\$0	\$0	\$0
b. Total Salary	\$0	\$0	\$0	\$0	\$0
c. Total Benefits	\$0	\$0	\$0	\$0	\$0
3. Support Staff (b + c below)	\$0	\$0	\$0	\$0	\$0
a. #FTE	\$0	\$0	\$0	\$0	\$0
b. Total Salary	\$0	\$0	\$0	\$0	\$0
c. Total Benefits	\$0	\$0	\$0	\$0	\$0
4. Equipment	\$0	\$0	\$0	\$0	\$0
5. Library	\$0	\$0	\$0	\$0	\$0
6. New or Renovated Space	\$0	\$0	\$0	\$0	\$0
7. Other Expenses	\$0	\$0	\$0	\$0	\$0
8. Total (add 1-7)	\$15,276	\$15,582	\$15,894	\$15,900	\$16,211

* 1 adjunct to teach 9 credits per semester = $\$788 \times 9 \text{ credits} \times 2 \text{ semesters} = \$14,184$

Financial Data Narrative

Resources

Reallocated Funds – No college funds are being reallocated for this program.

Tuition/Fee Revenue – (see table)

Grants, Contracts, Other External Resources – none

Expenditures

Faculty – One adjunct faculty will be needed.

Administrative Staff – No additional staff will be needed.

Support Staff – No additional support staff will be needed.

Equipment – No additional equipment will be required.

Library – No additional library costs will be necessary for the program.

New or Revised Space – No new or revised space will be needed.

Other Expenses – No additional expenses are necessary.

