CGS Agenda Item: 17-04
Effective Fall 2018

Eastern Illinois University
New Course Proposal
DGT 4793, Programming for Gaming, Animation, and Simulation

Banner/Catalog Information (Coversheet)

1. **_X_New Course or _____Revision of Existing Course**
2. **Course prefix and number:** *DGT 4793*
3. **Short title:** *Programming for Gaming*
4. **Long title:** *Programming for Gaming, Animation, and Simulation*
5. **Hours per week: 1** Class **4** Lab **3** Credit
6. **Terms:** ___Fall ___Spring ___ Summer **X** On demand
7. **Initial term**: **X** Fall ___ Spring ___ Summer Year: **2018**
8. **Catalog course description:** *(1-4-3) On demand. A study of the programming languages used in gaming, animation, and simulation modeling. Emphasis will be on application of programming languages for gaming, animation, and simulation for desktop and mobile devices.*
9. **Course attributes:**

   General education component: ____NOT APPLICABLE_____

   ___ Cultural diversity ___ Honors ___ Writing centered ___ Writing intensive ___Writing active

10. **Instructional delivery**
    Type of Course:

    ___ Lecture ___ Lab **X** Lecture/lab combined ___ Independent study/research

    ___ Internship ___ Performance ___ Practicum/clinical ___ Other, specify: _____

    Mode(s) of Delivery:

    X Face to Face **X** Online ___ Study Abroad

    X Hybrid, specify approximate amount of on-line and face-to-face instruction *1-50 minute session online, 1- 200 minute sessions face-to-face or 2- 100 minute sessions face-to-face per week*

11. Course(s) to be deleted from the catalog once this course is approved. *N/A*
12. **Equivalent course(s):** *None*

    a. Are students allowed to take equivalent course(s) for credit? ___ Yes ___ No

13. **Prerequisite(s):** *CIT 3303*

    a. Can prerequisite be taken concurrently? ___ Yes _X No

    b. Minimum grade required for the prerequisite course(s)? C

    c. Use Banner coding to enforce prerequisite course(s)? **X** Yes ___ No

d. Who may waive prerequisite(s)?

___ No one ___ Chair **X** Instructor ___ Advisor ___ Other (specify)

14. Co-requisite(s): __Not Applicable_____

15. Enrollment restrictions

a. Degrees, colleges, majors, levels, classes which may take the course: *All*

b. Degrees, colleges, majors, levels, classes which may not take the course: __NONE_

16. Repeat status: X May not be repeated ___ May be repeated once with credit

17. Enter the limit, if any, on hours which may be applied to a major or minor: ___

18. Grading methods: X Standard ___ CR/NC __ Audit ___ ABC/NC

19. Special grading provisions:

___ Grade for course will not count in a student's grade point average.

___ Grade for course will not count in hours toward graduation.

___ Grade for course will be removed from GPA if student already has credit for or is registered in: _____

___ Credit hours for course will be removed from student's hours toward graduation if student already has credit for or is registered in: _____

20. Additional costs to students:
Supplemental Materials or Software *None*

Course Fee **X** No ___Yes, Explain if yes_____

21. Community college transfer:

___ A community college course may be judged equivalent.

X A community college may not be judged equivalent.

Note: Upper division credit (3000+) will not be granted for a community college course, even if the content is judged to be equivalent.

Rationale, Justifications, and Assurances (Part I)

1. ___Course is required for the major(s) of _____

   ___Course is required for the minor(s) of _____

   ___Course is required for the certificate program(s) of _____

   X Course is used as an elective for the BS in Digital Media and MS in Technology

2. **Rationale for proposal**: *The topics of gaming, animation and simulation typically fall under the description of multimedia artists and animators according to the Bureau of Labor Statistics. This is a profession projected to grow 6% each year until the year 2022. The career paths for individuals in this profession are many, including an increasing number of positions within agencies searching for individuals with experience in creating interactive advertisements, training simulations, rules based scenarios, and entertainment media. There is no known program on EIU's campus offering courses in the proposed topic. Courses in gaming, animation, and simulation support the proposed BS in Digital Media as the technical proficiencies in graphics, 3D modeling, and 3D graphics knowledge are mutually supportive.*

3. **Justifications for (answer N/A if not applicable)**

   Similarity to other courses: **N/A**

   Prerequisites: *CIT 3303 is a needed prerequisite for student success. A background in the process of basic creation of games, animation and simulations is required so that students understand processes involved in creation of these projects and the time required to produce these projects. This course provides the foundation students need to be successful in the given course.*

   Co-requisites: **N/A**

   Enrollment restrictions: *The prerequisite rationale is listed above. Graduate students may also be allowed to enroll in the course. Students that will acquire Computer and Information Technology major or will acquire a Media Technology minor as undergraduates enroll in the MS in Technology. Other students that come into the MS in technology may have graphics production backgrounds from other academic majors. As these students complete their Master's degree they seek to take electives in the Digital Media area to complete their degree program. Without an open enrollment option for MS in Technology, students must either be manually enrolled in the course or seek other coursework.*

   Writing active, intensive, centered: **N/A**

4. **General education assurances (answer N/A if not applicable)**

   General education component: **N/A**

Curriculum: **N/A**

Instruction: **N/A**

Assessment: **N/A**

5. **Online/Hybrid delivery justification & assurances (answer N/A if not applicable)**

Online or hybrid delivery justification: *The online or hybrid delivery is a necessity to offer flexible options to our student population. The content of a gaming, animation, and simulation course requires little in the way of hardware and many of the needed software packages are free. The Internet connection speed for many users has increased thereby allowing for higher quality rich media instruction to be delivered. Finally, the course management tools that the university now uses allows there to be a richer interaction between students and faculty. Therefore, students at a remote location may benefit more from a course that is entirely online or hybridized.*

Instruction: *Instructional techniques may include flipped classroom strategies, peer learning, video based lecture, instructor based demonstration, and/or textbook tutorials. In flipped classroom instruction, the instructor will ask students to read on a particular topic and then complete a short assignment in advance of the material being presented. The students will also engage in a short discussion regarding the topics being presented. Certain elements of the course may require the students to teach one another a concept via video, screencast or podcasting. For these assignments, students will work in small groups to present each other material, work through the concepts, and complete assignments related to the topic. Video based lecture may be used to present certain topics from the instructor. In these videos, the instructor will introduce material, complete demonstrations, and show examples of material to be learned. To supplement the videos, the instructor will create tutorials on how to apply and utilize certain tools and techniques or ask students to complete textbook tutorials. Any instructors of technology-delivered courses/sections must provide proof of having the Online Course Development Institute (OCDI) training and certification.*

Integrity: *Assignments and/or papers will require that students submit work to a dropbox in the course management system where it will be checked for plagiarism. Assignments will be designed to where students will also have to draw on experiences, case studies, and/or develop solutions to problems that would be difficult to replicate from classmates. Projects will be applied and design based. Therefor,e the projects will rely upon the students developing and creating new designs of websites unique to a particular client or customer and therefore difficult to replicate. Presentations of work will require students to complete a screencast and/or computer based presentation where the student will present the results of their work to their classmates. Students involved in peer review of classmates projects and*

presentations will be required to give feedback via discussion boards or synchronous chat rooms. All assignments, papers, projects, presentations, and critiques will be assigned a rubric that students must review and adhere to. All rubrics will be given to students on the first day of class. Finally, exams and quizzes will be administered through the course management system. Exams and quizzes will validate that students have retained knowledge from all instructional activities.

Interaction: *This course will rely upon email, discussion boards, chat rooms, and remote assistance tools. The instructor will frequently respond to emails to address any concerns that students might have and send out messages to remind students of important due dates and address any other issues students may have. Discussion boards will be used as areas to discuss the topics of the week asynchronously. Students will be required to complete discussions with the whole class and/or small groups. Forums may also be set up for students to share issues or work collaboratively to solve problems on lab assignments. Chat rooms will be encouraged for both instructor to student interaction as well as student to student interaction synchronously. In the chat room, students may ask questions, give answers, and share information. Remote assistance tools will be relied upon heavily for this course. Issues that students may be unable to solve on their own may require a digital helping hand. Remote assistance software will be used to demonstrate to students synchronously or help to solve issues.*

Model Syllabus (Part II)

Please include the following information:

1. Course number and title

DGT 4793, Programming for Gaming, Animation, and Simulation

2. Catalog description

A study of the programming languages used in gaming, animation, and simulation modeling. Emphasis will be on application of programming languages for gaming, animation, and simulation for desktop and mobile devices.

3. Learning objectives.

1. Discuss the differences between various programming languages. (WCR 1-7) (Grad 1-4)
2. Evaluate various programming languages for creating 3D models for gaming, animation, and simulation. (WCR 1-7) (Grad 1-4)
3. Utilize programming languages to animate a preexisting 3D model. (WCR 1-7) (Grad 1-4)

4. Create 3D models with programming languages for games, animations, or simulations utilizing industry standard tools and techniques. (CT 2, 3, 4) (Grad 1-2)
5. Troubleshoot and solve issues with various programming languages in game, animation, or simulation models. (QR 1-6) (Grad 4)
6. Publish and present finished gaming, animation, and simulation projects in a professional format to be critiqued by peers and professionals. (SL 1-7) (Grad 1-4)
7. Offer criticism and suggestions for improvement of websites utilizing emerging technologies. (CT 1-6) (Grad 1-3)

4. Course materials.

- One USB Drive – Minimum of 16 GB
- Access to a computer and reliable internet connection
- Blender Modeling Software
- Autodesk Software (Maya, 4D, 3DS Max)
- Adobe Creative Cloud Software (Photoshop)
- Unity Software

5. Weekly outline of content.

Face-to-face

Week	Day 1 (50 minutes) *Face-to-face*	Lab work (2-100 minute sessions or 1- 200 minute session) *Face-to-face*
Week 1	C, C#, C++, and what else?	C# Exercises
Week 2	Introduction to Languages	Variables and Fundamental Data Types Exercises
Week 3	Operators and Variable Scopes	Operators and Variable Scopes Exercises
Week 4	Control flow, Arrays, Strings, Pointers, References	Control flow, Arrays, Strings, Pointers, References Exercises
Week 5	Functions, Object Oriented Programming	Functions, Object Oriented Programming Exercises
Week 6	Operator Overloading, Composition, Inheritance	Operator Overloading, Composition, Inheritance Exercises
Week 7	Virtual Functions, Input and Output, Exceptions	Virtual Functions, Input and Output, Exceptions Exercises
Week 8	**Midterm Exam**	
Week 9	Programming in Unity	Unity Exercises
Week 10	Scene Navigation and Physics	Begin integration of model with language Exercises
Week 11	Importing Static Assets	Mecanim and Animation Exercises
Week 12	Populating and Environment	Manipulation of environment Exercises

Week 13	Menus and Special Effects	Programming Exercises
Week 14	Development	Final Project Testing
Week 15	Final Project Presentations	Final Project Presentations
Week 16	**Final Exam**	

Hybrid

Week	**Day 1 (50 minutes)** ***Online***	**Lab work (2-100 minute sessions or 1- 200 minute session)** ***Face-to-face***
Week 1	C, C#, C++, and what else?	C# Exercises
Week 2	Introduction to Languages	Variables and Fundamental Data Types Exercises
Week 3	Operators and Variable Scopes	Operators and Variable Scopes Exercises
Week 4	Control flow, Arrays, Strings, Pointers, References	Control flow, Arrays, Strings, Pointers, References Exercises
Week 5	Functions, Object Oriented Programming	Functions, Object Oriented Programming Exercises
Week 6	Operator Overloading, Composition, Inheritance	Operator Overloading, Composition, Inheritance Exercises
Week 7	Virtual Functions, Input and Output, Exceptions	Virtual Functions, Input and Output, Exceptions Exercises
Week 8	**Midterm Exam**	
Week 9	Programming in Unity	Unity Exercises
Week 10	Scene Navigation and Physics	Begin integration of model with language Exercises
Week 11	Importing Static Assets	Mecanim and Animation Exercises
Week 12	Populating and Environment	Manipulation of environment Exercises
Week 13	Menus and Special Effects	Programming Exercises
Week 14	Development	Final Project Testing
Week 15	Final Project Presentations	Final Project Presentations
Week 16	**Final Exam**	

Online

Week	**Day 1 (50 minutes)** ***Online***	**Lab work (2-100 minute sessions or 1- 200 minute session)** ***Online***
Week 1	C, C#, C++, and what else?	C# Exercises
Week 2	Introduction to Languages	Variables and Fundamental Data Types Exercises

Week 3	Operators and Variable Scopes	Operators and Variable Scopes Exercises
Week 4	Control flow, Arrays, Strings, Pointers, References	Control flow, Arrays, Strings, Pointers, References Exercises
Week 5	Functions, Object Oriented Programming	Functions, Object Oriented Programming Exercises
Week 6	Operator Overloading, Composition, Inheritance	Operator Overloading, Composition, Inheritance Exercises
Week 7	Virtual Functions, Input and Output, Exceptions	Virtual Functions, Input and Output, Exceptions Exercises
Week 8	**Midterm Exam**	
Week 9	Programming in Unity	Unity Exercises
Week 10	Scene Navigation and Physics	Begin integration of model with language Exercises
Week 11	Importing Static Assets	Mecanim and Animation Exercises
Week 12	Populating and Environment	Manipulation of environment Exercises
Week 13	Menus and Special Effects	Programming Exercises
Week 14	Development	Final Project Testing
Week 15	Final Project Presentations	Final Project Presentations
Week 16	**Final Exam**	

6. Assignments and evaluation, including weights for final course grade.

	Undergraduate	**Graduate**
Assignments (software/technique exercises)	15%	10%
Discussions	15%	10%
Quizzes	15%	10%
Applied Projects (research project)	20%	20%
Exams	25%	20%
Papers (journal article reviews)	10%	20%
Graduate Research Paper	-----	10%
TOTAL	**100%**	**100%**

7. Grading scale.

A = 90 to 100 %, B = 80 to 89%, C = 70 to 79%, D = 60 to 69%, F < 60%

8. Correlation of learning objectives to assignments and evaluation.

Objective	Assignments Undergraduate: 15% Graduate: 10%	Discussions Undergraduate: 15% Graduate: 10%	Quizzes Undergraduate: 15% Graduate: 10%	Projects Undergraduate: 20% Graduate: 20%	Exams Undergraduate: 25% Graduate: 20%	Papers Undergraduate: 10% Graduate: 20% Research paper: 10%
1. Discuss the differences between various programming languages. (WCR 1-7) (Grad 1-4)	X	X	X		X	X
2. Evaluate various programming languages for creating 3D models for gaming, animation, and simulation. (WCR 1-7) (Grad 1-4)	X	X		X		
3. Utilize programming languages to animate a preexisting 3D model. (WCR 1-7) (Grad 1-4)	X			X		
4. Create 3D models with programming languages for games, animations, or simulations utilizing industry standard tools and techniques.	X		X	X	X	

(CT 2, 3, 4) (Grad 1-2)						
5. Troubleshoot and solve issues with various programming languages in game, animation, or simulation models. (QR 1-6) (Grad 4)	X		X		X	
6. Publish and present finished gaming, animation, and simulation projects in a professional format to be critiqued by peers and professionals. (SL 1-7) (Grad 1-4)		X				X
7. Offer criticism and suggestions for improvement of websites utilizing emerging technologies. (CT 1-6) (Grad 1-3)		X			X	X

Date approved by the department or school: 10/20/2016
Date approved by the college curriculum committee: 12/9/2016

Date approved by the Honors Council ***(if this is an honors course):***
Date approved by CAA: 2/23/2017 CGS: