

State of the Gaming Industry in the King County Region



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This is a high-level overview of the state of the gaming industry in the King County region and includes information related to types of gaming jobs, demand for software developers in gaming occupations, competition for community and technical college (CTC) in King County from other educational organizations. Finally, there are recommendations for developing a game developer program of study.

There is a variety of different jobs within the gaming industry. The gaming industry relies on teamwork, as there are specialized roles that all work to create a game.

Game ideas come from an original story, new technological development, a novel, or film, or the effort revolves around improving a pre-existing game. There are arcade, console, mobile, online, PC, and television games.

Types of Jobs in the Gaming Industry

Designer: Use scripting languages

Content Designer: Develop content (technical writing and research)

Programmer: These programmers are experts in writing code, work with artificial intelligence (AI), graphics, networking, physics, tools developer, user interface.

Game Tester: Perform quality assurance tasks on games, test for bugs, etc.

Gaming Job Posting Search, Seattle (50-mile radius)
Source: Indeed.com

Jobs Type	Number of Jobs
Artificial Intelligence/AI	11/33
Algorithms	32
Data Analyst/Engineer	157
Front-End/Back-End Web Developer	69
Game Developer/Designer/Engineer	408/221/577
Networking	52
Physics Engineer	3
Programming (Note: Systems Programming for video games run on a machine, stand-alone applications is C++ and Java. For Web Programming, HTML5, CSS3, JavaScript, SQL. Mobile Application Programming it's Java, C++, C# and Objective C (for iOS))	51
Software Development/Engineering	114/114
Technicians	20
Quality Assurance/Testers	15/35
Virtual Reality/VR	8/75

In looking at the gaming programs that are offered by educational institutions and in the CTC system, the following were found:

For-Profit

[Academy of Interactive Entertainment](#) : The Academy of Interactive Entertainment (AIE) offers two primary paths for students, one in programming and the other in art. Programming students have an intensive two-year period of learning everything they need to know to make program games. Art students have an intensive first year covering all the tools they will need to

be successful in their chosen field. They will then select specialty at the start of the second year, choosing between game art and design or 3D animation and visual FX for film.

AIE is private and for-profit. An Australian company owns it. The CoE Director was invited to attend an AIE gaming skills panel five years ago. Currently, tuition is \$21K a year. Thus, the two-year degree's total tuition is \$42K. AIE is increasing the total tuition to \$43,500 starting in 2019.

Note: Since the Director became aware of AIE, it has consistently had to raise their tuition, so that might mean it is running at a loss, or its operating expenses, including salaries are very high.

[Game Programming](#): two-year program.

Year One

- Game Programming with C
- Game Programming with C++
- Game Programming with C#
- Open GL
- Game Libraries
- Version control

Year Two

- 3D Graphics,
- Artificial Intelligence
- Networking Physics and Collision,
- Console Hardware
- Profiling
- Project Management

[DigiPen](#)

Undergraduate Programs: DigiPen offers a BS and a BA in Computer Science (CS) and Game Design.

- **Game design and development**, including game history, game analysis, game mechanics, game dynamics, game aesthetics, 2D and 3D level design, character behaviors, AI programming, design documentation, and play-testing.
- **Core academic courses** such as linear algebra, calculus, physics, and computer science (including C, C++, and scripting languages).
- **Humanities and social sciences courses** such as psychology, writing, and communication.

They list the different gaming occupations as follows (**Source:** Indeed.com):

- Game Designer (9 jobs)
- Level Designer (12 jobs)
- System Designer N/A as this would bring up networking jobs

- Technical Designer
- Software Engineer (See indeed.com job posting chart above, page 1)
- **Gameplay Programmer (91 jobs)**
- Tools Programmer (2 jobs)

The highlighted courses are the gaming/programming courses.

SAMPLE COURSE SEQUENCE CHART

Semester	Course	Course Title	Core	Credits
Semester 1	GAM 100	Project Introduction	X	3
	GAT 101	Game History and Analysis	X	4
	CS 100	Computer Environment	X	4
	CS 120	High-Level Programming I: The C Programming Language	X	4
	MAT 140	Linear Algebra and Geometry	X	4
	COL 101	College Life and Academic Skills		1
Semester Total				20
Semester 2	GAM 150*	Project I	X	3
	GAT 210	Game Mechanics I	X	3
	CS 170	High-Level Programming II: The C++ Language	X	4
	CS 230	Game Implementation Techniques	X	3
	MAT 150*	Calculus and Analytic Geometry I	X	4
Semester Total				17
	GAM 200*	Project II	X	4

Semester	Course	Course Title	Core	Credits
Semester 3	GAT 211	Game Mechanics II	X	3
	GAT 240	Technology for Designers	X	3
	CS 225	Advanced C/C++	X	3
	MAT 200*	Calculus and Analytic Geometry II	X	4
	ENG 110*	Composition		3
	Semester Total			
Semester 4	GAM 250*	Project II	X	4
	GAT 250	2D Game Design I	X	3
	CS 180	Operating System I: Man-Machine Interface	X	3
	CS 280	Data Structures	X	3
	PHY 200	Motion Dynamics	X	4
	PHY 200L	Motion Dynamics Lab	X	1
	Semester Total			
Semester 5	GAM 302*	Project III for Designers	X	4
	GAT 251	2D Game Design II	X	3
	MAT 258	Discrete Mathematics	X	3
	PHY 250	Waves, Optics, and Thermodynamics		4
	COM 150	Interpersonal and Work Communication		3
	Semester Total			
Semester 6	GAM 350*	Project III	X	4
	GAT 315	3D Game Design I	X	3
	CS Elective	Any three-credit CS course numbered 200 or higher.	X	3

Semester	Course	Course Title	Core	Credits
	Math or Science Elective	Any three-credit PHY or BIO course numbered 250 or higher, or MAT course numbered 220 or higher.		3
	Art, CG, or Music Elective	ART 105, CG 102, CG 125, CG 130, or MUS 115		3
	Semester Total			16
Semester 7	GAM 375*	Project III	X	4
	GAT 316	3D Game Design II	X	3
	CS Elective	Any three-credit CS course numbered 200 or higher.	X	3
	Math or Science Elective	Any three-credit PHY or BIO course numbered 250 or higher, or MAT course numbered 220 or higher.		3
	English Elective	Any three-credit course with the ENG designation.		3
	Semester Total			16
Semester 8	GAM 400*	Project IV	X	4
	CS 330	Algorithm Analysis	X	3
	Design Elective	Any three-credit GAT course numbered 200 or higher.	X	3
	Math or Science Elective	Any three-credit PHY or BIO course numbered 250 or higher, or MAT course numbered 220 or higher.		3
	HSS Elective	Any three-credit course with the COM, ENG, ECN, HIS, LAW, PHL, PSY, or SOS designation.		3
	Semester Total			16
Degree Total				140 minimum

[Gaming Course Descriptions](#)

Tuition: 16-22 Credit Flat Rate (1 semester) \$15,570. For eight semesters, the full degree costs \$124,560. The per-credit rate is \$1,005.

Community and Technical College (CTC) Game Program Offerings

The following CTCs offer a certificate or AA in gaming (not counting digital media arts, because it is centered more specifically on the front end of game design):

AA

- Lake Washington Institute of Technology (LWTech) (The AAS-T has two programming courses are: – ITAD 105: Programming Concepts for Non-Programmers, ITAD 111: Computer Programming Fundamentals)
 - **(Note:** LWTech also offers a Bachelor's of Applied Science (BAS) in Digital Gaming and Interactive Media and includes two courses in programming, CS 141: Computer Science 1 Java, and GAME 320: C# Programming in Unity)
- Shoreline

Certificate

- Edmonds
- Lake Washington Institute of Technology
- Shoreline

4-Year Colleges/Universities

University of Washington (UW): Computer Science and Engineering. As part of the program, they offer specialized classes in game design/development for a bachelor in CS. They are 400-level courses and focus mainly on animation. The Continuing Education does not offer much and again it focuses on animation.

Recommendations:

Based upon job demand, the primary area to focus on would be a gaming developer (gameplay designer) program of study.

Use content already contained within the Digital Media Arts and then use the programming courses in C++ and/or Java would be viable either as a:

- certificate program in continuing education
- new degree (AA)
- boot camp for current IT workers who need to either master programming or animation/graphics and/or bachelor graduates
- a summer program for high school or running start students

If it is priced competitively then a King County CTC gaming program(s) could directly compete with AIE and DigiPen. The UW is so hard to get into, that again there is a space in the market for a gameplay programming program of study.