THE UNIVERSITY OF ARIZONA

New Academic Program Workflow Form

General

Proposed Name: Games and Behavior

Transaction Nbr: 00000000000035

Plan Type: Major

Academic Career: Undergraduate

Degree Offered: Bachelor of Arts

Do you want to offer a minor? Y

Anticipated 1st Admission Term: Fall 2020

Details

Department(s):

SBSC

DEPTMNT ID	DEPARTMENT NAME	HOST
0481	School of Information	Y

Campus(es):

MAIN

LOCATION	DESCRIPTION
TUCSON	Tucson

Admission application terms for this plan: Spring: Y Summer: Y Fall: Y

Plan admission types:

Freshman: Y Transfer: Y Readmit: Y Graduate: N

Non Degree Certificate (UCRT only): N

Other (For Community Campus specifics): N

Plan Taxonomy: 50.0411, Game and Interactive Media Design.

Program Length Type: Program Length Value: 0.00

Report as NSC Program:

SULA Special Program:

Print Option:

Diploma: Y Bachelor of Arts in Games and Behavior

Transcript: Y Bachelor of Arts in Games and Behavior

Conditions for Admission/Declaration for this Major:

Students must be in good standing academically (2.0 GPA or above) in order to declare the major. Students do not have to complete any coursework before joining the major, and should declare the major by meeting with an academic advisor.

Requirements for Accreditation:

N/A

Program Comparisons

University Appropriateness

The iSchool is the only iSchool in the Southwest U.S. and in Arizona - as an interdisciplinary site for exploring 4th IR, cutting edge, and new media experiences, the iSchool is uniquely situated to serve the student population in this capacity. As a College, SBS means to explore human experiences, the iSchool focuses on issues where technologies and people intersect, so these programs are consistent with our University and College goals. These proposals are also consistent with other top iSchool activity (e.g., Illinois iSchool announces the hire of Dr. Pintar, who does research on: Social Informatics, interactive AI and suggestibility, developing tools to foster programming literacy through collaborative game design, interactive digital narrative, playful pedagogies, social narrative approaches to trauma and memory studies).

Arizona University System

NBR	PROGRAM	DEGREE	#STDNTS	LOCATION	ACCRDT
1	Digital Culture	BA	67	Arizona State University	N
2	Visual Communication	BA	220	Northern Arizona University	N

Peer Comparison

See Comparison attachments below.

Faculty & Resources

Faculty

Current Faculty:

INSTR ID	NAME	DEPT	RANK	DEGREE	FCLTY/%
01183700	Drew Castalia	0481	Adj. Instor.	Master of Arts	.50
16308664	David Sherman	0481	Lecturer	Master of Fine Arts	.60
22054491	Catherine Brooks	0481	Assoc. Prof	Doctor of Philosophy	.20
22075562	Lal Bozgeyikli	0481	Assit. Prof	Doctor of Philosophy	.40
22075762	Evren Bozgeyikli	0481	Assit. Prof	Doctor of Philosophy	.40

Additional Faculty:

N/A

Current Student & Faculty FTE

DEPARTMENT	UGRD HEAD COUNT	GRAD HEAD COUNT	FACULTY FTE
0481	482	230	27.82

Projected Student & Faculty FTE

	UGRD HEAD COUNT			GRAD HEAD COUNT			FACULTY FTE		
DEPT	YR 1	YR 2	YR 3	YR 1	YR 2	YR 3	YR 1	YR 2	YR 3
0481	534	586	638	247	264	281	27.82	27.82	27.82

Library

Acquisitions Needed:

Additional online access to library resources.

Physical Facilities & Equipment

Existing Physical Facilities:

Existing resources will be used.
-Oculus Go head-mounted displays (x12)
-Virtual reality and game development compatible computer workstations (x25)
-Virtual reality and game development software installed on the computers, such as Unity Game Engine,
Adobe Suite and Oculus Libraries.
-Equipment of the Extended Reality and Games Lab that are used in some of the classes to broaden the
students knowledge on advanced systems, such as Magic Leap spatial augmented reality head-mounted

display, HTC VIVE Pro Eyes virtual reality head-mounted display, FOVE virtual reality head-mounted
display.

Additional Facilities Required & Anticipated:

Additional sections of OSCR lab offerings, along with the possibility of more:
-Oculus Go head-mounted displays
-Virtual reality and game development compatible computer workstations
-Virtual reality and game development software installed on the computers, such as Unity Game Engine,
Adobe Suite and Oculus Libraries.
-Equipment of the Extended Reality and Games Lab that are used in some of the classes to broaden the
students knowledge on advanced systems, such as Magic Leap spatial augmented reality head-mounted
display, HTC VIVE Pro Eyes virtual reality head-mounted display, FOVE virtual reality head-mounted
display.

Other Support

Other Support Currently Available:

existing resources will be used

Other Support Needed over the Next Three Years:

existing resources will be used

Comments During Approval Process

2/21/2020 10:23 AM
KATHRYNC

Comments
The School of Information will be the sole supporters for this program

THE UNIVERSITY OF ARIZONA

NEW ACADEMIC PROGRAM-UNDERGRADUATE MAJOR
ADDITIONAL INFORMATION FORM

I. **MAJOR DESCRIPTION** -provide a marketing/promotional description for the proposed program. Include the purpose, nature, and highlights of the curriculum, faculty expertise, emphases (sub-plans; if any), etc. The description will be displayed on the advisement report(s), Degree Search, and should match departmental and college websites, handouts, promotional materials, etc.

The **Bachelor of Arts in Games and Behavior** will provide students with a broad understanding of important design principles and human behavior in serious and recreational games, but also the implications tied to gamification in society. Students will learn the basics of multimedia, storytelling, and sound technologies. This degree will also include courses that focus on the individual (e.g., psychology of simulations and play) and also courses that consider group or societal trends (e.g., inequality in the game and in the development environment; psychology of play in game communities). Issues of artistic game design alongside behavioral and societal trends related to games and gamification across sectors are the focus of this degree (e.g., education, health management, occupational training, social support, recreation). The degree will cover many aspects of game design and related social and societal factors without the need of extensive knowledge of computer programming.

II. **NEED FOR THE MAJOR/JUSTIFICATION**-describe how the major fulfills the needs of the city, state, region, and nation. Provide market analysis data or other tangible evidence of the need for and interest in the proposed major (and emphases, if applicable). This might include results from surveys of current students, alumni, and/or employers or reference to student enrollments in similar programs in the state or region. Include an assessment of the employment opportunities for graduates of the program for the next three years. Curricular Affairs can provide a job posting/demand report by skills obtained/outcomes/CIP code of the proposed major.

The video game industry has been steadily growing in recent years. As the technology advances and new mediums, such as virtual and mixed reality arise, application areas of video games expand beyond entertainment, spanning areas from training and education to healthcare. A recent report (Video Games in the 21st Century) states the following facts: The total direct employment by the U.S. game industry now exceeds 65,000 employees, growing at an annual rate of 2.9%. The total employment in the U.S. that depends on the game software industry now exceeds 220,000. Statistics reported the value of the video game market in the U.S. in 2017 as $18.4Bn. Video games constitute a major industry not only in the U.S., but also in the world. In a recent report (by the games and eSports analytics company NewZoo), global games market is estimated to grow to $143.5Bn in 2020. Hence, creating degrees and education opportunities relating to gaming, gamification, and societal impact of these trends is paramount for students to have strong educational choices on higher education.

For graduates, there are several employment opportunities in a wide-array of job roles, such as game designer, game programmer, game analyst, network specialist, user interface(UI) developer, art director, lead game artist, modeler, animator, quality assurance specialist, audio programmer, user experience researcher, cloud architect, level designer, content creator, user experience analyst, UI designer, producer and artificial intelligence programmer. Moreover, there are several opportunities for entrepreneurially-minded students in independent careers that offer significant income opportunities (e.g., streaming gameplay on Twitch, which has more than 15M unique daily visitors; participating in eSports, where players can make up to $2M by playing games competitively; publishing independent games such as Minecraft, which can lead to big success and significant revenues). This degree will provide students a broad understanding of individual and societal impacts of these trends.

Demand for our gaming course in the iSchool provid a strong interest in the major – our current courses relating to games are consistently full. In the State of Arizona, there are four game-related programs according to the data from the National Center for Education Statistics: (1) Embry-Riddle Aeronautical University-Prescott, which hasn't awarded any degrees yet, as the program was opened in 2017; (2) The Art Institute of Phoenix, which awarded 18 Bachelor's Degrees in 2017; (3) Yavapai College, awarded 3 certificates in 2017; (4) Pima Community College, which awarded 10 Associate Degrees in 2017. The community colleges in Arizona can be feeders to the proposed program. As a more established game program in the area, the University of Southern California's game program awarded 50 degrees in 2017.

III. MAJOR REQUIREMENTS– complete the table below by listing the major requirements, including required number of units, required core, electives, and any special requirements, including emphases* (sub-plans), thesis, internships, etc. Note: information in this section must be consistent throughout the proposal documents (comparison charts, four year plan, curricular/assessment map, etc.). Delete the EXAMPLE column before submitting/uploading. Complete the table in Appendix A if requesting a corresponding minor.

Total units required to complete the degree	120
Upper-division units required to complete the degree	24 in the major, 42 upper div. overall
Foundation courses	
Second language	4th Semester Proficiency
Math	Moderate Strand
General education requirements	Tier I Two 150s Two 160s Two 170s Tier II One Tier II Arts One Tier II Humanities One Tier II Natural Sciences
Pre-major? (Yes/No). If yes, provide requirements. Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	No
List any special requirements to declare or gain admission to this major (completion of specific coursework, minimum GPA, interview, application, etc.)	None
Major requirements	
Minimum # of units required in the major (units counting towards major units and major GPA)	42
Minimum # of upper-division units required in the major (upper division units counting towards major GPA)	30
Minimum # of residency units to be completed in the major	18
Required supporting coursework (courses that do not count towards major units and major GPA, but are required for the major). Courses	

listed must include prefix, number, units, and title. Include any limits/restrictions needed (house number limit, etc.). Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	
Major requirements. List all major requirements including core and electives. If applicable, list the emphasis requirements for each proposed emphasis*. Courses listed count towards major units and major GPA. Courses listed must include prefix, number, units, and title. Mark new coursework (New). Include any limits/restrictions needed (house number limit, etc.). Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	Core Courses/Required Major Coursework (21 Units) Game 2XX Games, Behavior, and Individuals (3) Game 3XX Gamification in Society (3) ISTA 161 Ethics in a Digital World (3) ISTA 251 Introduction to Game Design (3) ESOC 211 Collaborating in Online Communities (3) ESOC 302 Quantitative Methods for the Digital Marketplace (3) ESOC 480 Digital Engagement(3) Elective Coursework in the Major (at least 21 units) GAME 3XX Monetizing Indep. Gaming (3) ISTA 301 Computing and the Arts (3) ISTA 302 Technology of Sound (3) ISTA 321 Data Mining and Discovery (4) ISTA 416 Introduction to Human Comp. Interaction (3) ESOC 316 Digital Commerce (3) ESOC 318 Disruptive Technologies (3) ESOC 340 Multimedia Design & the Moving Image (3) LIS 484 Introduction to Copyright (3)
Internship, practicum, applied course requirements (Yes/No). If yes, provide description.	No
Senior thesis or senior project required (Yes/No). If yes, provide description.	No

Additional requirements (provide description)	None
Minor (specify if optional or required)	Required
Any double-dipping restrictions (Yes/No)? If yes, provide description.	No

*Emphases are officially recognized sub-specializations within the discipline. ABOR Policy 2-221 c. Academic Degree Programs Subspecializations requires all undergraduate emphases within a major to share at least 40% curricular commonality across emphases (known as "major core"). Total units required for each emphasis must be equal. Proposed emphases having similar curriculum with other plans (within department, college, or university) may require completion of an additional comparison chart. Complete the table found in Appendix B to indicate if emphases should be printed on student transcripts and diplomas.

IV. CURRENT COURSES–using the table below, list all existing courses included in the proposed major. You can find information to complete the table using the UA course catalog or UAnalytics (Catalog and Schedule Dashboard> "Printable Course Descriptions by Department" On Demand Report; right side of screen). If the courses listed belong to a department that is not a signed party to this implementation request, upload the department head's permission to include the courses in the proposed program and information regarding accessibility to and frequency of offerings for the course(s). Upload letters of support/emails from department heads to the "Letter(s) of Support" field on the UAccess workflow form. Add rows to the table, as needed.

Course prefix and number (include cross-listings)	Units	Title	Course Description	Pre-requisites	Modes of delivery (online, in-person, hybrid)	Typically Offered (F, W, Sp, Su)	Dept signed party to proposal? (Yes/No)
ESOC 211	3	Collaborating in Online Communities	With the increasing reliance on new media for collaborative work, social connection, education, and health-related support, this course will analyze human collaboration and community processes online. By considering how people create a sense of community, maintain group connections, and cooperate with others to bring about a particular outcome, this class will focus on what humans do, how they present themselves, and how they do the work of collaboration in online contexts. In addition to focusing on how humans work together	None	In-Person Online	F, Sp, Su	In iSchool

			in online in communities, this course will examine the many theories and interdisciplinary bodies of literature that pertain to community generally, and online communities specifically. With a focus on both theory and practical applications, this course gives learners opportunities to think intellectually about technology-based collaborations and to apply course-based knowledge in their mediated social lives. This course is not a technical experience, rather it focuses on the theories pertaining to and the processes in play when humans engage in group collaborations (e.g., gaming, teaching, learning, working, or gaining health-related support) via mobile technologies and online sites.				
ESOC 302	3	Quantitative Methods for the Digital Marketplace	This course will explore broad research paradigms and theoretical approaches that inform contemporary social research, varying study designs, as well as the systematic methods utilized in differing types of data analyses. Though this course will introduce research processes across the academic spectrum, quantitative analysis of both small and large data sets will be emphasized. Therefore, students will learn about basic statistical analyses and will be introduced to the emerging worlds of data science and social media analytics. Students will also consider related topics such as data visualization or research presentations.	Junior or Senior ESOC and ISTA majors and minors only.	In-person	F, Sp	In iSchool
ESOC 316	3	Digital Commerce	This course will look at how commerce in information content (websites, books, databases, music, movies, software, etc.) functions. We will discuss things like switching costs, net neutrality, the long tail, differential pricing, and complementary goods. We will address the following sorts of questions: - Why do so many information producers give away content (such as "apps" for mobile phones) for free? How do companies (such as Google and Facebook) stay in business when no one has to pay to	None	In-person Online	F, Sp, Su	In iSchool

			use their services? - What are contemporary practices with regard to purchasing access to information content? For instance, why do we tend to buy books, but only rent movies? Also, how do new modes of content provision (such as Pandora and Spotify) change the way that creators get paid for their work? - Why are there restrictions on how information content can be used? For instance, why can you play the DVD that you bought on your trip to Europe on the DVD player that you bought at home in the United States? But why should anybody other than an economist care about the answers to these sorts of questions? The world now runs on the production, dissemination, and consumption of information. All of us constantly access all sorts of information, through all sorts of devices, from all sorts of providers. We read and interact with websites, we query databases, and we communicate with each other via social media. These sorts of activities permeate both our personal and professional lives. In order to successfully navigate this digital world, information consumers, information producers, and information policy makers need to understand what sorts of information goods are likely to be available and how much they are likely to cost. We cannot learn enough about digital commerce simply by studying the various information technologies that are now available to create and disseminate information content. What matters most is how people choose to spend their time using these technologies, and what sorts of content can provide earning potential for its creators. What also matters are the unique properties of information content that make it very different from other sorts of goods. For instance, while only one person at a time can drive a particular car				

			or eat a particular hamburger, millions of people can simultaneously read the same book, listen to the same song, and use the same software. These are issues that are part and parcel to living, working, purchasing, and being entertained in an eSociety; these are the issues addressed in this course.				
ESOC 318	3	Disruptive Technologies	This course introduces key concepts and skills needed for those working with information and communication technologies (ICT). Students will be exposed to hardware and software technologies, and they will explore a wide variety of topics including processing and memory systems, diagnostics and repair strategies, operating systems in both desktop and mobile devices. As part of this course, students will consider current technological disruptions, those issues emerging as technologies and social needs collide. Students we also learn about design issues and user needs tied to mobile or computer applications and web-based tools, sites, games, data platforms, or learning environments.	None	In-person Online	F, Sp, Su	In iSchool
ESOC 340	3	Information, Multimedia Design & the Moving Image	We are living in a time when nearly everyone has the means to make movies, music and photos using just their own personal tools like smartphones, iPads, and similar mobile gadgets. This course will develop and refine skills and understanding of multimedia in contemporary culture. Offering a survey of innovative works in film and information arts, this course will allow students a hands-on opportunity to respond to concepts covered in class using self-produced media. This course will address how information functions in time-based forms of multimedia and video in this era of interactive information and displays. Drawing on historical precedents in the media and computational arts, this course focuses on both linear and non-linear approaches of using image, sound and text	None	In-person	F, Sp, Su	In iSchool

			to create critical and creative works that function in a the context of social media and our contemporary digital society. How and why do certain images, music or films affect us so profoundly? We will address this question through a study of the components of media literacy that include: Production, Language, Representation, and Audience. These concepts will be examined through a cross-section of writers including: Marshall McLuhan, John Berger and Susan Sontag.				
ESOC 480	3	Digital Engagement	This course is designed to be a culminating experience for the eSociety degree program, a course that engages students in practical activity as well as prepares learners for contemporary work. eSociety major and minor students as well as other undergraduates preparing for work relating to digital information or related fields can enroll in and will benefit from this course. Students will be given opportunities to discuss, review and reflect on their learning in their undergraduate work relative to an eSociety and will be provided the mechanisms through which their coursework can be applied to `real-world' contexts (e.g., internships, interviews with leaders in their area of study, professional shadowing experiences, service learning projects, or community-based event planning). Ultimately, this course provides students the opportunity to learn about what it means to be prepared in an eSociety as well as reflect on their own skill sets and the professional preparation needed for career satisfaction and success.		In-person Online	F, Sp	In iSchool
ISTA 161	3	Ethics in a Digital World	This course explores the social, legal, and cultural fallout from the exponential explosion in communication, storage, and increasing uses of data and data production. In this class, we emphasize the opposing potentials of information technologies to make knowledge widely available and to	None	In-person	F, Sp, Su	In iSchool

			distort and restrict our perceptions. In a world of rapid technological change, topics include (but are not limited to): eavesdropping and secret communications, privacy; Internet censorship and filtering, cyberwarfare, computer ethics and ethical behavior, copyright protection and peer-to-peer networks, broadcast and telecommunications regulation, including net neutrality, data leakage, and the power and control of search engines.				
ISTA 251	3	Introduction to Game Design	This course provides an introduction to game design and teaches students the fundamental concepts for creating games. Students will survey many different games, exploring the issues game designers face when designing games in different genres. Students will participate in a series of game design challenges and will be responsible for designing and prototyping simple games using a game building tool. Students will present their solutions to these challenges in front of the class for general discussion and constructive criticism.	None	In-Person	F, Sp, Su	In iSchool
ISTA 301	3	Computing and the Arts	This course examines the ways in which computing and information science support and facilitate the production and creation of art in current society. A particular focus of the course will be to discuss how artists have used advances in technology and computing capacity to explore new ways of making art, and to investigate the relationships between technical innovation and the artistic process.	None	In-Person	F, Sp	In iSchool
ISTA 302	3	Technology of Sound	This course will provide the student with the information and experience necessary for the creation and manipulation of digital audio. Students will have the opportunity to experience the music-making process with the technology tools and techniques that are common in both home and professional studios. The class will make use of a variety of software packages designed for contemporary music production, explaining the universal techniques and concepts that	None	In-Person	F, Sp	In iSchool

			run through all major software programs. Topics will include musical analysis, MIDI control, synthesis techniques, audio editing, and audio mixing. Lab assignments will emphasize hands-on experience working with musical hardware and software to provide the necessary skills to create music based on today's musical styles. The course provides the foundation for further study, creative applications, and personal expression.				
ISTA 321	4	Data Mining and Discovery	This course will introduce students to the theory and practice of data mining for knowledge discovery. This includes methods developed in the fields of statistics, large-scale data analytics, machine learning and artificial intelligence for automatic or semi-automatic analysis of large quantities of data to extract previously unknown interesting patterns. Topics include understanding varieties of data, classification, association rule analysis, cluster analysis, and anomaly detection. We will use software packages for data mining, explaining the underlying algorithms and their use and limitations. The course include laboratory exercises, with data mining case studies using data from biological sequences and networks, social networks, linguistics, ecology, geo-spatial applications, marketing and psychology.	ISTA 311 or equivalent and ISTA 350; or consent of instructor	In-person	F	In iSchool
ISTA 416	3	Introduction to Human Comp. Interaction	The field of Human-Computer Interaction (HCI) encompasses the design, implementation, and evaluation of interactive computing systems. This course will provide a survey of HCI theory and practice. The course will address the presentation of information and the design of interaction from a human-centered perspective, looking at relevant perceptive, cognitive, and social factors influencing in the design process. It will motivate practical design guidelines for information presentation through Gestalt theory and studies of consistency, memory, and interpretation. Technological concerns will	ISTA 130 or CSC 110 or ECE 175 or consent of the instructor	In person	F, Sp	In iSchool

			be examined that include interaction styles, devices, constraints, affordances, and metaphors. Theories, principles and design guidelines will be surveyed for both classical and emerging interaction paradigms, with case studies from practical application scenarios. As a central theme, the course will promote the processes of usability engineering, introducing the concepts of participatory design, requirements analysis, rapid prototyping, iterative development, and user evaluation. Both quantitative and qualitative evaluation strategies will be discussed. This course is co-convened: Upper-level undergraduates and graduate students are encouraged to enroll. Graduate students will be expected to complete more substantial projects and will be given more in-depth reading assignments.				
LIS 484	3	Introduction to Copyright	Introduces the basics of copyright law and fair use, also discusses the theoretical foundations and history of copyright and the public domain. These issues are placed within a broader multicultural and international context. By the end of the course students will: (a) know the basics of copyright law and fair use as they apply to libraries and related information services, and (b) understand the importance of balancing the rights of intellectual property owners with the societal need for a robust public domain.	None	In Person	F, Su	In iSchool

V. NEW COURSES NEEDED – using the table below, list any new courses that must be created for the proposed program. If the specific course number is undetermined, please provide level (ie CHEM 4**). Add rows as needed. Is a new prefix needed? If so, provide the subject description so Curricular Affairs can generate proposed prefix options.

Game 2XX Games, Behavior, and Individuals (3)
Game 3XX Gamification in Society (3)
Game 3XX Monetizing Indep. Gaming (3)

These are all in development for in-person delivery, hopefully ready for fall 2020 delivery.
*In development (D); submitted for approval (S); approved (A)
Subject description for new prefix (if requested). Include your requested/preferred prefix, if any:

GAME
Courses with the game prefix will focus on individual experiences with games and gaming, the design and development of games, virtual reality simulations for training and other purposes, as well as societal impacts of gamification across contexts and sectors.

VI. FACULTY INFORMATION- complete the table below. If UA Vitae link is not provided/available, attach a short CV (2-3 pages) to the end of the proposal or upload to the workflow form (in the "Letter(s) of Support" field). UA Vitae profiles can be found in the UA directory/phonebook. Add rows as needed. Delete the EXAMPLE rows before submitting/uploading. **NOTE: full proposals are distributed campus-wide, posted on committee agendas and should be considered "publicly visible". Contact Pam Coonan and Martin Marquez if you have concerns about CV information being "publicly visible".**

Faculty Member	Involvement	UA Vitae link or "CV attached"
Lila Bozgeyikli	Currently teaching ISTA/INFO 424/524: Virtual Reality	https://ischool.arizona.edu/sites/ischool.arizona.edu/files/Lila-Bozgeyikli-CV.pdf
Ren Bozgeyikli	Currently teaching ISTA/INFO 425/525: Algorithms for Games	https://ischool.arizona.edu/sites/ischool.arizona.edu/files/Ren-Bozgeyikli-CV.pdf
Drew Castalia	Currently teaching ISTA 251: Intro to Game Design and ISTA/INFO 451/551: Game Development	http://www.hwstn.com/Resume.pdf
Catherine Brooks	Director of the School of Information. Plans to teach a future course centered around Game Culture	https://ischool.arizona.edu/sites/ischool.arizona.edu/files/CV_Brooks_06172019.pdf
David Sherman	Currently teaching ESOC 340: Info MM Design & Moving Images, ISTA 301: Computing and the Arts, and ISTA 302: Technology of Sound	https://ischool.arizona.edu/people/david-sherman
Other iSchool faculty as needed		

VII. FOUR-YEAR PLAN – provide a sample four-year degree plan that includes all requirements to graduate with this major and takes into consideration course offerings and sequencing. Refer to Degree Search for examples. Use generic title/placeholder for requirements with more than one course option (e.g. Upper Division Major Elective, Minor Course, Second Language, GE Tier 1, GE Tier 2). Add rows as needed.

Semester 1		**Semester 2**		**Semester 3**		**Semester 4**	
Course prefix and number	**Units**	**Course prefix and number**	**Units**	**Course prefix and number**	**Units**	**Course prefix and number**	**Units**
Game 2XX Games, Behavior, and Individuals (3)	3	ESOC 211 Collaborating in Online Communities (3)	3	Elective	3	Game 3XX Gamification in Society (3)	3
Math	3	Math	3	ISTA 251 Introduction to Game Design	3	ISTA 161 Ethics in a Digital World	3
English 101	3	English 102	3	Language 101	4	Tier II Arts	3
Indiv. & Soc 150	3	Indiv. & Soc 150	3	Natural Science 170	3	Language 102	4
Traditions & Culture 160	3	Traditions & Culture 160	3	Tier II Natural Sciences	3	Natural Science 170	3
Total	15	**Total**	15	**Total**	16	**Total**	16

Semester 5		**Semester 6**		**Semester 7**		**Semester 8**	
Course prefix and number	**Units**	**Course prefix and number**	**Units**	**Course prefix and number**	**Units**	**Course prefix and number**	**Units**
Upper Division Major Elective	3	Upper Division Major Elective	3	ESOC 480: Digital Engagement	3	Internship/Directed Research/Ind. Study	3
ESOC 314 Theories of New Media	3	ESOC 302 Quantitative Method	3	Upper Division Minor	3	Upper Division Major Elective	3
Tier II: Arts	3	Tier II Humanities	3	Upper Division Minor	3	Upper Division Major Minor	3
Minor	3	Elective	3	Elective	3	Elective	3
Minor	3	Elective	3	Elective	3	Elective	3
Total	15	**Total**	15	**Total**	15	**Total**	15

VIII. STUDENT LEARNING OUTCOMES AND CURRICULUM MAP—describe what students should know, understand, and/or be able to do at the conclusion of this major. Work with Office of Instruction and Assessment to create a curricular map using Taskstream. Include your curricular map in this section (refer to Appendix C for sample Curriculum Map generated using Taskstream).

4/22/2019 Curriculum Map - Courses and Activities Mapped to BA Game Design and Human Behavior

University of Arizona AMS
DEMO AREA

BA Game Design and Human Behavior

Courses and Activities Mapped to BA Game Design and Human Behavior

Outcome								
Outcome F1.1 Students will demonstrate understanding of the use of information and communication technologies and the implications of such use, for example: scientific and social uses of information, and social, cultural, and economic implications of digital life and culture.	Outcome F1.2 Students will demonstrate facility using basic research methods, for example: research design; statistics and analysis; organization, identification, and location of data and information including open- and closed-access sources; and/or presentation of findings in oral, written and multi-media form, including proper use of and citation of sources.	Outcome F1.3 Students will acquire the skills, knowledge and self-understanding to communicate with and effectively work and interact across cultures and with diverse people and groups.	Outcome F1.4 Students will demonstrate knowledge of career and further education options and opportunities open to them relative to their plan of study and will set goals and make plans beyond their expected graduation.	Outcome EV3.1 Students will be able to recognize and analyze ethical and policy concerns raised by new technologies and will be able to apply ethical thinking to real world cases and craft effective solutions.	Outcome EV3.2 Students will be able to identify and apply professional ethics and standards relevant to their career to aspirations.	Outcome: Game One Students will demonstrate knowledge of user's needs and rights, such as identifying target user groups for games, PR tools and platforms, analytics and metric tools, play testing and evaluation, monetization models, information protection, game related permissions on different platforms, ethical competence, professional ethics, quality steering, assurance, monitoring and social media utilization.	Outcome: Game Two Students will demonstrate the ability to design a game for various purposes, such as education, health and well-being, training and entertainment, by incorporating best-practices related to gamification in all stages, including challenges and fun factor, balancing, level design, scoring and progression, user interface, interaction mechanics, narration, functionality, usability and playability.	Outcome: Game Three Students will exhibit understanding of human behavior in serious and recreational games, the impact of gaming on individuals across contexts, and the implications tied to gamification in society.

Courses and Learning Activities									
GAME/PSY games Game/Psych (new) Games, Behavior, and Individuals (3)			I	I	I	I	P/A	P/A	P/A
GAME 3XX Class assignments Gamafication in Society (3)				I	I	I	P/A	P/A	P/A
ISTA 161 Class assignments Ethics in a Digital World (3)	P/A		P/A		P/A	P/A			
ISTA 251 Class assignments Introduction to Game Design (3)	P		P	P	I/P	I/P	I/P	I/P	I/P
ESOC 211 Class assignments Collaborating in Online Communities (3)	I/P		I/P			I/P		I/P	
ESOC 302 Class assignments Quantitative Methods for the Digital Marketplace (3)		P/A	I	I	I	I			
Program Outcome Assessment Activities									
ESOC 480 Capstone experience Digital Engagement (already coded in system)	A	A	A	A	A	A	A	A	A
Survey Student Survey (Indirect)	A	A	A	A	A	A	A	A	A

Legend : I Introduced | P Practiced | A Assessed | I/P Introduced/Practices

Last Modified: 04/22/2019 01:25:35 PM

Curriculum Map:

IX. ASSESSMENT PLAN FOR STUDENT LEARNING- using the table below, provide a schedule for program assessment of intended student learning outcomes 1) while students are in the program and 2) after completion of the major. Add rows as needed. Delete EXAMPLE row.

Learning Outcomes	Sources(s) of Evidence	Assessment Measures	Data Collection Points
Students will demonstrate understanding of the use of information and communication technologies and the implications of such use, for example: scientific and social uses of information and social, cultural and economic implications of the digital life and culture.	Course-embedded assessments Pre-post student reflection essays; exit surveys; student focus group; alumni surveys	Exams, papers, and other forms of student work Summative critical self-reflections	During each course, end of each course
Students will demonstrate facility using basic research methods, for example: research design, statistic and analysis; organization, identification, and location of data and information including open- and closed access sources; and/or presentation of findings in oral, written and multi-media form, including proper use of and citation of sources.	Course-embedded assessments Pre-post student reflection essays; exit surveys; student focus group; alumni surveys	Exams, papers, and other forms of student work Summative critical self-reflections	During each course, end of each course
Students will acquire the skills, knowledge and self-understanding to communicate with and effectively work and interact across cultures and with diverse people and groups.	Course-embedded assessments Pre-post student reflection essays; exit surveys; student focus group; alumni surveys	Exams, papers, and other forms of student work Summative critical self-reflections	During each course, end of each course
Students will demonstrate knowledge of career and further education options and opportunities open to them relative to their plan of study and will set goals and make plans beyond their expected graduation.	Course-embedded assessments Pre-post student reflection essays; exit surveys; student focus group; alumni surveys	Exams, papers, and other forms of student work Summative critical self-reflections	During each course, end of each course
Students will be able to recognize and analyses ethical and policy concerns raised by new technologies and will be able to apply ethical thinking to real world cases and craft effective solutions.	Course-embedded assessments	Exams, papers, and other forms of student work Summative critical self-reflections	During each course, end of each course

	Pre-post student reflection essays; exit surveys; student focus group; alumni surveys		
Students will be able to identify and apply professional ethics and standards relevant to their career to aspirations.	Course-embedded assessments Pre-post student reflection essays; exit surveys; student focus group; alumni surveys	Exams, papers, and other forms of student work Summative critical self-reflections	During each course, end of each course
Students will demonstrate knowledge of users' needs and rights, such as identifying target user groups for games, PR tools and platforms, analytics and metric tools, play testing and evaluation, monetization, models, information, protection, game related permissions on different ethical competence, professional ethics, quality steering, assurance, monitoring and social media utilization.	Course-embedded assessments Pre-post student reflection essays; exit surveys; student focus group; alumni surveys	Exams, papers, and other forms of student work Summative critical self-reflections	During each course, end of each course
Students will demonstrate the ability to design a game for various purposes, such as education, health and well-being, training and entertainment by incorporating best-practices related to gamification in all stages including challenges and fun factor, balancing, level design, scoring and progression, user interface, interaction mechanics, narration, functionality, usability and playability.	Course-embedded assessments Pre-post student reflection essays; exit surveys; student focus group; alumni surveys	Exams, papers, and other forms of student work Summative critical self-reflections	During each course, end of each course
Students will exhibit understanding of and skills related to varied approaches, tools, systems, platforms, devices, processes and their effective utilization for game development that are well established and currently used in the games industry.	Course-embedded assessments Pre-post student reflection essays; exit surveys; student focus group; alumni surveys	Exams, papers, and other forms of student work Summative critical self-reflections	During each course, end of each course

X. **PROGRAM ASSESSMENT PLAN-** using the table below, provide a schedule for program evaluation 1) while students are in the program and 2) after completion of the major. Add rows as needed. Delete EXAMPLE rows.

Assessment Measure	Source(s) of Evidence	Data Collection Point(s)
Job placement statistics	Student/alumni surveys	At graduation and as part of alumni survey
Academic program review	Reviewers' responses	Every 7 years
Student interest	Enrollment numbers	Every year
The School's academic success	National ranking	Every year

XI. ANTICIPATED STUDENT ENROLLMENT-complete the table below. What concrete evidence/data was used to arrive at the numbers?

5-YEAR PROJECTED ANNUAL ENROLLMENT					
	1st Year	2nd Year	3rd Year	4th Year	5th Year
Number of Students	20	40	60	80	100

Data/evidence used to determine projected enrollment numbers:
We've looked at the enrollment data in colleges that offer similar degrees in Arizona and in the nearby region, and used an average of these numbers in our estimations. We've used the increasing trend in enrollment in our existing undergraduate degrees, while projecting the enrollment numbers. The estimated enrollment numbers include both the new students and the existing students who would want to switch to the new program. These numbers reflect students enrolled in the BA program of this degree.

XII. ANTICIPATED DEGREES AWARDED- complete the table below, beginning with the first year in which degrees will be awarded. How did you arrive at these numbers? Take into consideration departmental retention rates. Use National Center for Education Statistics College Navigator to find program completion information of peer institutions offering the same or a similar program.

PROJECTED DEGREES AWARDED ANNUALLY					
	1st Year	2nd Year	3rd Year	4th Year	5th Year
Number of Degrees	3	21	42	50	55

Data/evidence used to determine number of anticipated degrees awarded annually:

We've looked at the program completion information data in colleges that offer similar degrees both in Arizona and in the nearby region. We also took into account the degree completion percentage in our existing programs and used a combination of these inputs in our estimations. For the first year degrees will be awarded (estimated 3 years into the program), we are only expecting three degrees awarded, consisting of the students who changed majors and switched to the new program. For the second year, we are expecting degrees awarded to a high percentage of the students who enrolled the program in its first year, with an addition of the major changing students. The third year's estimated degree awarding includes the students who enrolled in the program in its second year and the major-changing students. We are expecting a high retention rate in the program, due to the high demand in the game-related courses we currently offer. During the fourth and fifth year, we are expecting the numbers to begin to level out, which is the pattern we saw with a similar degree within the School of Information. These numbers reflect the numbers of students that will be awarded with the BA degree.

XIII. PROGRAM DEVELOPMENT TIMELINE- describe plans and timelines for 1) marketing the major and 2) student recruitment activities.

This program will be marketed alongside our other degree programs. As an iSchool we invest in event sponsorships so that we can hand out flyers and other marketing materials, we attend conferences, and advertise in print outlets and on the radio across Arizona. We plan to directly recruit students in and from locations like:
- GE courses where a wide variety of students are in attendance (e.g., ESOC 150b).
- non-GE courses that draw students from across that campus to the iSchool (e.g., ISTA 251 game design).
- Undergraduate on-campus fairs and recruiting events.
- UA events like the UA hackathon, or community events like TenWest.
- Social media

Upon approval, the School of Information will begin marketing and recruiting efforts immediately, accepting majors as soon as the program is approved.

XIV. DIVERSITY AND INCLUSION-describe how you will recruit diverse students and faculty to this program. In addition, describe retention efforts in place or being developed in order to retain students.

The iSchool's strong commitment to diversity will be maintained across the proposed new major. Student diversity in recruitment will be ensured through outreach activities that target the high schools that serve underrepresented populations. During the recruitment process, the Curriculum and Instruction Committee will aim to maintain an increased diversity among the accepted students, while ensuring qualification quality of the students. Program information will be placed on the website, so that the prospective students easily see it. The University of Arizona's diversity initiatives on the campus will be made visible on the website as well, with links that direct prospective students to these resources, so that they become aware of an existing support network for diversity and inclusion. Social media posts that aim to increase awareness about the proposed program will encourage diversity, as all posts of the iSchool. High-school students will be invited to on-campus demo events, such as the School's iShowcase where enrolled students demonstrate their finished course projects, such as video games and applications. Voluntary outreach activities, such as game development workshops for AP Campus Visits, have been held at the iSchool. These activities will be continued, as they help in increasing diversity and inclusion, in addition to outreach. We believe the current diverse student population of the iSchool will also encourage diverse student populations to apply. The race breakdown in the previous semester was as follows: 53% white, 19% Hispanic, 8% international, 7% Asian, 5% two or more races 5%, American Indian 1%, less than 1% unknown, less than 1% Pacific Islander. We give great importance to make our diverse student population visible in all possible outlets, such as website pictures, social media posts and outreach activities. The iSchool's Knowledge River program, which aims to increase and maintain diversity will be another important factor in supporting underrepresented students who are interested in studying the intersection of library sciences and games (e.g., using virtual reality in libraries). Lastly, the University of Arizona's existing mechanisms for supporting and increasing diversity in prospective students (e.g., campus tours, summer camps, workshops, Early Academic Outreach Program etc.) and in enrolled students (e.g., financial aid, academic assistance, community support, leadership skills development programs

etc.) will help in increasing multiculturalism and diversity within the proposed program. With all of these mentioned efforts, equitable access to the program will be ensured for a diverse and qualified pool of candidates, such as ethnic minorities and first generation and low-income students. Moreover, for the enrolled students, a nondiscriminatory and inclusive environment will always be maintained to provide support for students and increase their sense of belonging.

To ensure an inclusive climate, diversity will also be emphasized in hiring of new faculty. Existing faculty will be encouraged to use inclusive materials in their courses (e.g., photographs) and encourage their students to use inclusive materials in their coursework as well (e.g., game characters).

XV. ABOR REQUIREMENT: Proposed New Program Information

Name of Proposed Academic Program: Bachelor of Arts in Games and Behavior
Academic Department: School of Information
Geographic Site: In-person classes will be taught at UA MAIN campus with the opportunity for online courses
Instructional Modality: Fully in-person, fully online , and potentially hybrid courses
Total Credit Hours: 120
Proposed Inception Term: Fall 2020
Brief Program Description: The Bachelor of Arts in Games and Behavior will provide students with a broad understanding of important design principles and human behavior in serious and recreational games, but also the implications tied to gamification in society. Students will learn the basics of multimedia, storytelling, and sound technologies. This degree will also include courses that focus on the individual (e.g., psychology of simulations and play) and also courses that consider group or societal trends (e.g., inequality in the game and in the development environment; psychology of play in game communities). Issues of artistic game design alongside behavioral and societal trends related to games and gamification across sectors are the focus of this degree (e.g., education, health management, occupational training, social support, recreation). The degree will cover many aspects of game design and related social and societal factors without the need of extensive knowledge of computer programming.
Learning Outcomes and Assessment Plan: Students will demonstrate understanding of the use of information and communication technologies and the implications of such use, for example: scientific and social uses of information and social, cultural and economic implications of the digital life and culture. Students will demonstrate facility using basic research methods, for example: research design, statistic and analysis; organization, identification, and location of data and information including open-and closed access sources; and/or presentation of findings in oral, written and multi-media form, including proper use of and citation of sources.

Students will acquire the skills, knowledge and self-understanding to communicate with and effectively work and interact across cultures and with diverse people and groups.

Students will demonstrate knowledge of career and further education options and opportunities open to them relative to their plan of study and will set goals and make plans beyond their expected graduation.

Students will be able to recognize and analyses ethical and policy concerns raised by new technologies and will be able to apply ethical thinking to real world cases and craft effective solutions.

Students will be able to identify and apply professional ethics and standards relevant to their career to aspirations.

Students will demonstrate knowledge of users' needs and rights, such as identifying target user groups for games, PR tools and platforms, analytics and metric tools, play testing and evaluation, monetization, models, information, protection, game related permissions on different ethical competence, professional ethics, quality steering, assurance, monitoring and social media utilization

Students will demonstrate the ability to design a game for various purposes, such as education, health and well-being, training and entertainment by incorporating best-practices related to gamification in all stages including challenges and fun factor, balancing, level design, scoring and progression, user interface, interaction mechanics, narration, functionality, usability and playability.

Students will exhibit understanding of human behavior in serious and recreational games, the impact of gaming on individuals across contexts, and the implications tied to gamification in society.

Projected Enrollment for the First Three Years:

5-YEAR PROJECTED ANNUAL ENROLLMENT					
	1st Year	2nd Year	3rd Year	4th Year	5th Year
Number of Students	20	40	60	80	100

Evidence of Market Demand:

The video game industry has been steadily growing in recent years. As the technology advances and new mediums, such as virtual and mixed reality arise, application areas of video games expand beyond entertainment, spanning areas from training and education to healthcare. A recent report (Video Games in the 21st Century) states the following facts: The total direct employment by the U.S. game industry now exceeds 65,000 employees, growing at an annual rate of 2.9%. The total employment in the U.S. that depends on the game software industry now exceeds 220,000. Statistics reported the value of the video game market in the U.S. in 2017 as $18.4Bn. Video games constitute a major industry not only in the U.S., but also in the world. In a recent report (by the games and eSports analytics company NewZoo), global games market is estimated to grow to $143.5Bn in 2020. Hence, creating degrees and education opportunities

relating to gaming, gamification, implications of emerging eSports, and societal impact of these trends is paramount for students to have strong educational choices on higher education.

For graduates, there are several employment opportunities in a wide-array of job roles, such as game designer, game programmer, game analyst, network specialist, user interface(UI) developer, art director, lead game artist, modeler, animator, quality assurance specialist, audio programmer, user experience researcher, cloud architect, level designer, content creator, user experience analyst, UI designer, producer and artificial intelligence programmer. Moreover, there are several opportunities for entrepreneurially-minded students in independent careers that offer significant income opportunities (e.g., streaming gameplay on Twitch, which has more than 15M unique daily visitors; participating in eSports, where players can make up to $2M by playing games competitively; publishing independent games such as Minecraft, which can lead to big success and significant revenues). This degree will provide students a broad understanding of individual and societal impacts of these trends.

One of the tools that the interest for the proposed major was gauged was the interest in the currently offered game courses at the iSchool – our current courses relating to games are consistently full. In the State of Arizona, there are four game-related programs according to the data from the National Center for Education Statistics: (1) Embry-Riddle Aeronautical University-Prescott, which hasn't awarded any degrees yet, as the program was opened in 2017; (2) The Art Institute of Phoenix, which awarded 18 Bachelor's Degrees in 2017; (3) Yavapai College, awarded 3 certificates in 2017; (4) Pima Community College, which awarded 10 Associate Degrees in 2017. The community colleges in Arizona can be feeders to the proposed program. As a more established game program in the area, the University of Southern California's game program awarded 50 degrees in 2017.

Similar Programs Offered at Arizona Public Universities:
Digital Culture (Art and Design Sciences), BA
Arizona State University

Visual Communication, BA,
Northern Arizona University

New Resources Required? (i.e. faculty and administrative positions; infrastructure, etc.):
This degree is structured to use existing faculty and administration members.

Program Fee/Differentiated Tuition Required? YES ☐ NO ☐ Estimated Amount:

Program Fee Justification:

Specialized Accreditation? YES ☐ NO ☐

Accreditor:

Name of Proposed Degree (degree type and major), College/School, Location, Anticipated Catalog Year	**Program Fee Required? (Yes or No)**	**Brief Description Justification and Identified Market Need**	**Learning Outcomes and Assessment Plan**	**Projected 3rd Year Enrollment**
		Description: Justification: Market Need:		

Appendix A. Minor Requirements. Complete if requesting a corresponding minor. Delete EXAMPLE column before submitting.

Minimum total units required	18
Minimum upper-division units required	9
Total transfer units that may apply to the minor	12
List any special requirements to declare/admission to this minor (completion of specific coursework, minimum GPA, interview, application, etc.)	None
Minor requirements. List all minor requirements including core and electives. Courses listed must include course prefix, number, units, and title. Mark new coursework (New). Include any limits/restrictions needed (house number limit, etc.). Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	Game 2XX Games, Behavior, and Individuals (3) ESOC 211 Collaborating in Online Communities (3) ISTA 251 Introduction to Game Design (3) Game 3XX Gamification in Society (3) GAME 3XX Monetizing Indep. Gaming (3) Additional GAME elective (3)
Internship, practicum, applied course requirements (Yes/No). If yes, provide description.	No
Additional requirements (provide description)	No
Any double-dipping restrictions (Yes/No)? If yes, provide description.	No Students with a major in the new BS degree will not be able to minor in this BA.

Appendix A. Enrollment Trends for the gaming-related courses

Term	Campus	Session	Subject	Cat #	Section	Course	Total Enroll	Max Enroll	% Enroll	Instructor
Spring 2017	MAIN	Regular Academic Session	ISTA	251	001	Introduction to Game Design	39	40	97.5%	Giannone,Angelia R
Fall 2017	MAIN	Regular Academic Session	ISTA	251	001	Introduction to Game Design	24	26	92.3%	Castalia,Drew
Spring 2018	MAIN	Regular Academic Session	ISTA	251	001	Introduction to Game Design	29	30	96.7%	Castalia,Drew
	MAIN	Regular Academic Session	ISTA	251	002	Introduction to Game Design	29	30	96.7%	Castalia,Drew
	MAIN	Regular Academic Session	ISTA	451	001	Game Development	24	30	80.0%	Bozgeyikli,Evren
	MAIN	Regular Academic Session	ISTA	251	002	Introduction to Game Design	27	30	90.0%	Castalia,Drew
	MAIN	Regular Academic Session	ISTA	424	001	Virtual Reality	19	25	76.0%	Bozgeyikli,Lal
	MAIN	Regular Academic Session	ISTA	424	002	Virtual Reality	23	25	92.0%	Bozgeyikli,Lal
	MAIN	Regular Academic Session	ISTA	451	001	Game Development	23	20	115.0%	Castalia,Drew
Spring 2019	MAIN	Regular Academic Session	ISTA	251	001	Introduction to Game Design	29	30	96.7%	Castalia,Drew
	MAIN	Regular Academic Session	ISTA	251	002	Introduction to Game Design	22	30	73.3%	Castalia,Drew
	MAIN	Regular Academic Session	ISTA	424	002	Virtual Reality	23	20	115.0%	Bozgeyikli,Lal
	MAIN	Regular Academic Session	ISTA	451	002	Game Development	27	30	90.0%	Castalia,Drew
	MAIN	Regular Academic Session	ISTA	251	002	Introduction to Game Design	22	30	73.3%	Castalia,Drew
	MAIN	Regular Academic Session	ISTA	451	001	Game Development	27	35	77.1%	Castalia,Drew
	MAIN	Regular Academic Session	ISTA	451	002	Game Development	23	25	92.0%	Castalia,Drew

Appendix B: Results from survey of iSchool students showing existing interest in a Gaming BA and BS.

	Column Labels Neither Agree nor Disagree (3)	Somewhat Agree (2)	Somewhat Disagree (4)	Strongly Agree (1)	Strongly Disagree (5)	Grand Total
If there had been a BA in Games and Behavior Major/Minor when I entered UA, I would have considered earning the degree	9	30	6	52	13	110
	8%	27%	5%	47%	12%	

	Column Labels Definitely Not (5)	Definitely Yes (1)	Might or Might Not (3)	Probably Not (4)	Probably Yes (2)	Grand Total
Count of If either of these degrees had been available when I entered UA, I would have considered a double major or dual degree in the BA or BS	7	50	13	6	34	110
	6%	45%	12%	5%	31%	

Appendix C. Major Enrollment Trends for the Degrees Offered by the School of Information

Major Enrollment Trends

						Headcount				
						Fall 2014	Fall 2015	Fall 2016	Fall 2017	Fall 2018
Academic Career	College	Academic Program	Academic Plan	Academic Sub Plan	Degree	Active in Plan	Active in Plan	Active in Plan	Active in Plan	Active in Plan
Undergraduate	College of Social & Behav Sci	College of Science	Information Science & Arts	Not Available	Bachelor of Arts	62				
			Information Science & Tech	Not Available	Bachelor of Science	111	3			
		College of Soc & Behav Sci	Information Science & Arts	Not Available	Bachelor of Arts		56	53	50	43
			Information Science & Tech	Not Available	Bachelor of Science		118	139	196	225
			Information Science & eSociety	Not Available	Bachelor of Arts		54	91	176	226
			eSociety	Not Available	Bachelor of Arts	48	41	12	1	
Grand Total						**221**	**272**	**295**	**423**	**494**

Academic Plan is equal to **Information Science & Arts** , **Information Science & Arts 2** , **Information Science & Tech** , **Information Science & Tech 2** , **Information Science & eSociety** , **eSociety**

and Academic Plan Type is equal to **Major** , **Major (Secondary)**

and Term is equal to **Fall 2014** , **Fall 2015** , **Fall 2016** , **Fall 2017** , **Fall 2018**

and Enrolled in Term Flag is equal to **Y**

and Term Specific Primary Major Plan Flag is equal to **Y**

and Term Specific Plan Active Flag is equal to **Y**

Appendix D: Signed Memo about the new GAME subject

THE UNIVERSITY OF ARIZONA
COLLEGE OF SOCIAL & BEHAVIORAL SCIENCES
School of Information

Harvill Building
1103 E. Second Street
Tucson, Arizona 85721
Phone: 520.621.3565
https://ischool.arizona.edu/

August 26, 2019

To: Pam Coonan, Executive Director, Academic & Curricular Affairs

From: Catherine Brooks, Director, School of Information (iSchool)
Amy C. Kimme Hea, Associate Dean for Academic Affairs and Student Success
College of Social and Behavioral Sciences

Dear Pam:

To begin, we would like to provide students a new prefix (GAME) for the following courses under development:
GAME 1XX Programming for Game Dev. (3)
GAME 2XX Games, Behavior, and Individuals (3)
GAME 2XX Game Development I (4)
GAME 3XX Game Physics (3)
GAME 3XX Gamification in Society (3)
GAME 3XX Monetizing Independent Gaming (3)
GAME 4XX Artificial Intelligence in Games (3)

Courses with the game prefix will focus on individual experiences with games and gaming, the design and development of games, virtual reality simulations for training and other purposes, as well as societal impacts of gamification across contexts and sectors. We expect additional game courses will be developed over time.

For students, the GAME prefix will make the classes easy to find and distinct from School of Information's other courses. This prefix will help students locate the classes much like FOOD prefix has done for the BA and BS degrees shared with CALS. Thank you for your consideration of this new path for future learners at the University of Arizona.

THE UNIVERSITY OF ARIZONA

BUDGET PROJECTION FORM

Name of Proposed Program or Unit:

	Projected		
Budget Contact Person:	**1st Year** 2020 - 2021	**2nd Year** 2021- 2022	**3rd Year** 2022- 2023
METRICS			
Net increase in annual college enrollment UG	20	40	60
Net increase in college SCH UG	870	1,680	2,520
Net increase in annual college enrollment Grad	-	-	-
Net increase in college SCH Grad	-	-	-
Number of enrollments being charged a Program Fee	-	-	-
New Sponsored Activity (MTDC)	-		
Number of Faculty FTE	-	-	-
FUNDING SOURCES			
Continuing Sources			
UG RCM Revenue (net of cost allocation)			
Grad RCM Revenue (net of cost allocation)			
Program Fee RCM Revenue (net of cost allocation)			
F and A Revenues (net of cost allocations)			
UA Online Revenues			
Distance Learning Revenues			
Reallocation from existing College funds (attach description)			
Other Items (attach description)			
Total Continuing	**$ -**	**$ -**	**$ -**
One-time Sources			
College fund balances	500	250	250
Institutional Strategic Investment			
Gift Funding			
Other Items (attach description)			
Total One-time	**$ 500**	**$ 250**	**$ 250**
TOTAL SOURCES	**$ 500**	**$ 250**	**$ 250**
EXPENDITURE ITEMS			
Continuing Expenditures			
Faculty			
Other Personnel			
Employee Related Expense			
Graduate Assistantships			
Other Graduate Aid			
Operations (materials, supplies, phones, etc.)			
Additional Space Cost			
Other Items (attach description)			
Total Continuing	**$ -**	**$ -**	**$ -**
One-time Expenditures			
Construction or Renovation			
Start-up Equipment			
Replace Equipment			
Library Resources			
Other Items (attach description)	500	250	250
Total One-time	**$ 500**	**$ 250**	**$ 250**
TOTAL EXPENDITURES	**$ 500**	**$ 250**	**$ 250**
Net Projected Fiscal Effect	**$ -**	**$ -**	**$ -**

Undergraduate Major Peer Comparison Chart - select two peers for completing the comparison chart from (in order of priority) ABOR-approved institutions, AAU members, and/or other relevant institutions recognized in the field. The comparison chart will be used to identify typically required coursework, themes, and experiences for majors within the discipline. The comparison programs are not required to have the same degree type and/or major name as the proposed UA program. Information for the proposed UA program must be consistent throughout the proposal documents. Delete EXAMPLE columns once ready to submit/upload.

Program name, emphasis (sub-plan) name (if applicable), degree, and institution	**Proposed UA Program:** Games and Behavior, BA	**Peer 1:** Digital Culture (Art and Design Sciences), BA, Arizona State University	**Peer 2:** Visual Communication, BA, Northern Arizona University
Current # of enrolled students			
Major Description. Includes the purpose, nature, and highlights of the curriculum, faculty expertise, emphases (sub-plans; if any), etc.	The Bachelor of Arts in Games and Behavior will provide students with a broad understanding of important design principles and human behavior in serious and recreational games, but also the implications tied to gamification in society. Students will learn the basics of multimedia, storytelling, and sound technologies. This degree will also include courses that focus on the individual (e.g., psychology of simulations and play) and also courses that consider group or societal trends (e.g., inequality in the game and in the development environment; psychology of play in game communities). Issues of artistic game design alongside behavioral and societal trends related to games and gamification across sectors are the focus of this degree (e.g., education, health management, occupational training, social support, recreation). The degree will cover many aspects of game design and related social	The BA in digital culture equips students with the technical skills to create computational media and the cultural skills to know when or why to apply them. Students learn to create computational media, which is computation combined with objects, sound, video, time, space, culture and bodies; breathe behavior into media, objects or systems by programming; and think critically about how computation impacts lives and how culture makes a difference in how people experience computational media, a critical skill in this dynamic age. Armed with skills and sound judgment, graduates work in cultural communication, marketing, design, social media, health, education, entertainment and creative arts, and all areas in which culture is shaped by technology and computational media. All students gain techniques to change the world and communicate using	Available Emphasis Areas: Motion Design - Emphasis Graphic Design - Emphasis The Visual Communications program develops the analytical skills and creative passion in our students to be designers, animators and professional artists who creatively, yet strategically, resolve challenging visual design problems across a variety of media in an artistic, visually compelling manner. In our program, students begin by building a strong foundation in the elements, principles, and processes of design. They build upon this foundation across their studio classes by engaging in the creation of increasingly complex designs focused on solving real-world problems. As a student progresses

	and societal factors without the need of extensive knowledge of computer programming.	contemporary computational media, a vital power in the 21st-century. Some go on to invent fresh techniques. Digital Culture - Arts and Design Studies Concentration The digital culture program with a concentration in arts and design studies is for students wishing to integrate transdisciplinary studies in design and the arts into new media applications. Students complement their knowledge of new media with broad-based transdisciplinary studies in design and the arts.	through the program, they incorporate a multi-disciplinary approach by applying concepts from art history, communication theory, drawing, and their liberal studies requirements to issues of design. Cutting-edge software and technological applications are then integrated into their experience. Particularly, students learn to apply design principles to software in a manner that provides the skills to adapt to the newest technologies in expectation for the technologies which will emerge in the future. To be effective in the world of design, our students learn to develop excellent relationships with clients, and work collaboratively to co-create projects in teams. By learning how to communicate effectively with clients and utilize the talents and strengths of design colleagues, our students learn how to creatively navigate relationships to develop the best design products. Our faculty members know that the elements, principles, and processes of design, the software, the ability to collaborate; all of this is just the beginning. Our program is taught using small, studio-based courses, one-on-one faculty mentoring, and advanced facilities. Yet, the ever-changing world of design requires its practitioners to learn throughout

			their careers and constantly keep their skills up-to-date. Our program and faculty provide the strategic approaches to learning that will sustain our graduates' abilities in a continually evolving field for years to come. Overall, our integrative approach develops students who are capable of applying fundamentals to solve increasingly complex design problems in technologically innovative ways, and result in a portfolio of work designed to launch them in their career. Student Learning Outcomes Outcomes align with Standards from the National Association of Schools of Art & Design Accreditation Studio. • Gain functional competence with principles of visual organization, including the ability to work with visual elements in two and three dimensions; color theory and its applications; and drawing. • Present work that demonstrates perceptual acuity, conceptual understanding, and technical facility at a professional entry level in their chosen field(s). • Become familiar with the historical achievements, current major issues, processes, and directions of their field(s). • Be afforded opportunities to exhibit their work and to experience

			and participate in critiques and discussions of their work and the work of others • Art/ Design History, Theory, and Criticism. • Learn to analyze works of art/ design perceptively and to evaluate them critically • Develop an understanding of the common elements and vocabulary of art/ design and of the interaction of these elements, and be able to employ this knowledge in analysis. • Acquire the ability to place works of art/ design in historical, cultural, and stylistic contexts. • Technology: Acquire a working knowledge of technologies and equipment applicable to their area(s) of specialization. Synthesis: While synthesis is a lifetime process, by the end of undergraduate studies students should be able to work independently on a variety of art and/or design problems by combining, as appropriate to the issue, their capabilities in studio, analysis, history, and technology. Specialization: Students must demonstrate achievement of professional, entry-level competence in the major area of specialization, including significant technical mastery, capability to produce work and solve professional

			problems independently, and a coherent set of artistic/ intellectual goals that are evidence in their work. Students must demonstrate their competence by developing a body of work for evaluation in the major area of study. A senior project or final presentation in the major area is required. Students must have the ability to form and defend value judgments about art and design and to communicate art/ design ideas, concepts, and requirements to professional and laypersons related to the practice of the major field. They are able to work collaboratively as appropriate to the area(s) of specialization. Graphic Design Emphasis The ability to solve communication problems, including the skills of problem identification, research and information gathering, analysis, generation of alternative solutions, and prototyping. The ability to describe and respond to the audiences and contexts which communication solutions must address, including recognition of the physical, cognitive, cultural, and social human factors that shape design decisions. The ability to create and develop visual form in response to communication problems, including

			an understanding of principles of visual organization/ composition, information hierarchy, symbolic representation, typography, aesthetics, and the construction of meaningful images. An understanding of tools and technology, including their roles in the creation, reproduction, and distribution of visual messages. An understanding of design history, theory, and criticism from a variety of perspectives, including those of art history, linguistics, communication and information theory, technology, and the social and cultural use of design objects. An understanding of basic business practices, including the ability to organize design projects and to work productively as a member of teams. Motion Design Emphasis Knowledge and skills in the use of basic principles, concepts, tools, techniques, procedures, and technologies sufficient to produce motion graphics from concept to a finished product that communicates ideas and/or stories to a viewer or to an audience. This includes, but is not limited to, the ability to use the competencies listed in items below in professional contexts as appropriate to the needs of specific projects. Knowledge of the principles of motion design, including its visual,

			spatial, sound, motion, and temporal elements and features, and how these elements are combined in the development of motion graphics. Functional understanding of and ability to use narrative, non-narrative, and other information/language structures (linear, non-linear, thematic, cinematic, interactive, etc.) to organize content in time-based media. Ability to use concepts and processes for the development, coordination, and completion of motion graphics (examples include, but are not limited, to concept, visual, and character development; the use of scenarios and personas; and storyboarding, flowcharting, and layout). Functional understanding and ability to use the characteristics and capabilities of various animation methods and technologies in creative and project development contexts (examples include, but are not limited to, stop motion, 2D Digital, 3D Digital).
Target careers		Art Director, Computer Network Technician, Computer Scientist, Corporate Web Developer, Designer (General), Graphic Designer, Industrial Designer, Production Assistant, Sound Recording Engineer, **Video Game Designer**	Advertising design Graphic design Illustration Experience / Interface design Interaction design Corporate media design Print production design

			With further education, one of these paths is possible: Museum curator Art director Design manager Mobile designer Motion graphics designer Academic professional Content developer Web producer
Total units required to complete the degree	120	120	120
Upper-division units required to complete the degree	24	45	30
Foundation courses			
Second language	4th Semester Proficiency	None required.	
Math	Moderate Strand	MAT 210: Brief Calculus, 3 units	MAT 114: Quantitative Reasoning, 3 units
Pre-major? (Yes/No). If yes, provide requirements. Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	No	No	Admission requirements over and above admission to NAU are required. Admission to the Visual Communication Major is contingent upon: Completion of the Visual Communication Pre Major coursework (13 units) with a Grade of "C" or better and a minimum GPA of 2.5: VC 101, VC 102 (6 units) VC 181 (1 unit) ART 135, ART 150 (6 units) Approval of student portfolio submitted online through the VC 181 Portfolio Review class and reviewed by the Visual Communication faculty.

			All VC courses at a 200-level or above are restricted to students who successfully complete the first year of Pre Major requirements and pass the Portfolio Review.
List any special requirements to declare or gain admission to this major (completion of specific coursework, minimum GPA, interview, application, etc.)	None	All Digital Culture majors must have a minimum 3.00 Digital Culture GPA at the end of Term 2 to continue in the program. If a student's Digital Culture GPA is below a 3.00, the student will be placed on a probationary status for one term. If the student is not successful in raising their Digital Culture GPA to a 3.00 after the probationary term, the student will not be able to continue in the Digital Culture program.	-Complete all pre-major coursework with 2.5 GPA. -Complete interview with department. -Submit career path vision statement.
Major requirements			
Minimum # of units required in the major (units counting towards major units and major GPA)	42		56
Minimum # of upper-division units required in the major (upper division units counting towards major GPA)	30	45	38
Minimum # of residency units to be completed in the major	18	56	18
Required supporting coursework (courses that do not count towards major units and major GPA, but are required for the major). Courses listed must include prefix, number, units, and title. Include any		Term 1: ENG 101 or Eng 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 OR ENG 108: First-Year Composition, 3 units MAT 210: Brief Calculus, 3 units Term 2:	List all required supporting coursework. -MATH 129 (3) Calculus II Complete 1 of the following: -PHYS 240 (3) Introductory Electricity and Magnetism

limits/restrictions needed (house number limit, etc.). Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.		ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: First-Year Composition, 3 units Elective Options: Lower Division Digital Culture Flexible Elective, 3 units Social-Behavioral Sciences AND Cultural Diversity in the U.S., 3 units Term 3: Humanities, Arts and Design AND Global Awareness, 3 units Natural Science-Quantitative (PHY 101 recommended), 4 units Social-Behavioral Sciences, 3 units Term 4: Humanities, Arts and Design AND Historical Awareness, 3 units, Natural Science – Quantitative OR Natural Science – General, 4 units Elective, 3 units Term 5: Upper Division History/Theory Course, 3 units Elective OR AME484: Internship, 3 units Term 6: Upper Division History/Theory Course, 3 units Upper Division The Arts Core OR Design Studies Core, 3 units Upper Division Literacy and Critical Inquiry, 3 units	-PHYS 241 (4) Introductory Electricity and Magnetism

		Term 7: Upper Division The Arts Core OR Design Studies Core, 3 units Upper Division Humanities, Arts and Design OR Upper Division Social-Behavioral Sciences, 3 units Term 8: The Arts Core Elective OR Design Studies Core Elective, 3 units	
Major requirements. List all major requirements including core and electives. If applicable, list the emphasis requirements for each proposed emphasis. Courses listed count towards major units and major GPA. Courses listed must include prefix, number, units, and title. Mark new coursework (New). Include any limits/restrictions needed (house number limit, etc.). Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	Core Courses/Required Major Coursework (21 Units) Game 2XX Games, Behavior, and Individuals (3) Game 3XX Gamification in Society (3) ISTA 161 Ethics in a Digital World (3) ISTA 251 Introduction to Game Design (3) ESOC 211 Collaborating in Online Communities (3) ESOC 302 Quantitative Methods for the Digital Marketplace (3) ESOC 480: Digital Engagement Individual/Capstone Required Coursework (3 upper division units) Internship, Directed Research, Individual or Independent Study (3). Elective Coursework in the Major (at least 18 units) GAME 3XX Monetizing Indep. Gaming (3) ISTA 301 Computing and the Arts (3) ISTA 302 Technology of Sound (3) ISTA 321 Data Mining and Discovery (3) ISTA 416 Introduction to Human Comp. Interaction (3)	Term 1: AME 111: Introduction to Digital Culture (CS), 3 units AME 101: ASU Digital Culture Experience , 1 unit Complete 2 courses: AME 112: Computational Thinking for Digital Culture OR AME 130: Prototyping Dreams OR AME 230: Programming for the Media Arts, 6 units Term 2: AME 112: Computational Thinking for Digital Culture OR AME 130: Prototyping Dreams OR AME 230: Programming for the Media Arts, 3 units Term 3: Digital Media – Media Arts & Design OR Design Culture Studies, 3 units The Arts Core OR Design Studies Core, 3 units Term 4: Digital Media-Media Arts & Design OR Digital Culture Studies, 3 units The Arts Core OR Design Studies Core, 3 units Term 5: Upper Division Digital Culture Studies, 3 units	List all required major coursework. For example: **Fire Services Core:** Complete 2 courses (6 units) -(New)FIRE 345 (3) Introduction to Fire -(New) FIRE 346 (3) Advanced Fire **Fire Management Electives**: Complete 18 units from the following:

	ESOC 316 Digital Commerce (3) ESOC 318 Disruptive Technologies (3) ESOC 340 Multimedia Design & the Moving Image (3) LIS 484 Introduction to Copyright (3) ● ESOC 340 Information, Multimedia Design & the Moving Image (3)	Upper Division Digital Media-Media Arts & Design OR Upper Division Digital Culture Studies, 3 units Upper Division Digital Culture Studies OR Related Digital Culture Course, 3 units Term 6: Upper Division Digital Culture Studies, 3 units Upper Division Digital Media-Media Arts & Design OR Upper Division Digital Culture Studies, 3 units Term 7: AME 485: Digital Culture Capstone I, 3 units Upper Division Digital Culture Studies, 3 units Upper Division Related Digital Culture Course OR Upper Division Digital Media-Media Arts & Design, 3 units Term 8: AME 486: Digital Culture Capstone II, 3 units Upper Division Digital Culture Studies, 3 units Upper Division Digital Media-Media Engineering, 3 units	
Internship, practicum, applied course requirements (Yes/No). If yes, provide description.	Individual/Capstone Required Coursework (6 upper division units) INFO 493 Internship, INFO 492 Directed Research, INFO 499 Individual or Independent Study (3) along with ISTA 498 Senior Capstone (3)	Optional: Structured practical experience following a contract or plan, supervised by faculty and practitioners.	Yes. Complete 6 units: FIRE 493 (6) Fire Fighting Internship. Students complete internship at a fire station.
Senior thesis or senior project required (Yes/No). If yes, provide description.	No	Capstone: Senior capstone projects in digital culture are interdisciplinary team projects that offer experience in diverse collaborations for solving complex	Yes. Complete 6 units: FIRE 498 (6) Fire Senior Thesis

		problems, a proficiency widely demanded by employers. Students integrate, extend and apply information, principles, theories and/or methods learned in previous courses while supervised by the instructor.	
Additional requirements (provide description)	None	Optional Global Experience Opportunity: Additionally, The School of Arts, Media and Engineering also offers a summer study abroad to the Netherlands. Interested parties (regardless of major) should explore the program Design and Society in the Netherlands: Visualizing the Invisible on the study abroad website: http://links.asu.edu/VisualizingtheInvisible.	-Present Senior Thesis and Internship experience at departmental conference. -Complete non-credit lecture series on EMS and FIRE topics. -Earn 2.5 major GPA
Minor (specify if optional or required)	Required	No requirements listed.	Optional

*Note: comparison of additional relevant programs may be requested.

Undergraduate Major Peer Comparison Chart-delete EXAMPLE columns once ready to submit/upload. Find UA peers here: https://www.azregents.edu/arizonas-public-universities/peer-institutions

Program name, sub-plan name (if applicable), degree, and institution	**Proposed UA Program:**	**Peer 1:** Computer Game Science, Bachelor of Science, Univ. of California, Irvine	**Peer 2:** Game Design and Development, Bachelor of Science, Rochester Institute of Technology
Current # of enrolled students	[redacted]	??	??
Major Description - provide a description for the proposed program. Include the purpose, nature, and program highlights. Description must be consistent throughout the proposal documents and match departmental and college websites, handouts, and promotional materials.	The Bachelor of Arts in Games and Behavior will provide students with a broad understanding of important design principles and human behavior in serious and recreational games, but also the implications tied to gamification in society. Students will learn the basics of multimedia, storytelling, and sound technologies. This degree will also include courses that focus on the individual (e.g., psychology of simulations and play) and also courses that consider group or societal trends (e.g., inequality in the game and in the development environment; psychology of play in game communities). Issues of artistic game design alongside behavioral and societal trends related to games and gamification across sectors are the focus of this degree (e.g., education, health management, occupational training, social support, recreation). The	From: https://www.ics.uci.edu/ugrad/degrees/degree_cgs.php The B.S. in computer game science is designed around a set of core courses that introduce the fundamentals of computer science (programming, data structures, graphics and artificial intelligence), math (statistics, linear algebra and logic), and games (games and society, game design, game engines and multiplayer games). From there, nearly thirty electives offer students the chance to specialize, focusing anywhere from typical game topics such as modeling, world building and mobile games to more peripheral topics such as software design and social impacts. Throughout the major, students gain hands-on experience in creating a variety of digital games, for entertainment purposes, but also for education, training and engendering social change. Working in teams, you will employ a variety of different programming languages, game platforms and hardware. This culminates in the two-quarter capstone course, in which you will be part of a team that designs and implements a new game from	From: https://www.rit.edu/programs/game-design-and-development-bs With an emphasis on game programming, the major exposes students to a breadth of development and design processes. Students complete a core of required course work and then pursue advanced studies that can be customized to individual interests and career goals. Students can further specialize their major by taking electives in areas such as game design, production, engines and systems, graphics programming and animation, mobile, web, audio, and more. This depth of course work also enables students to build a robust portfolio of games and other interactive projects. Cooperative education is full-time, paid work experience that provides students with an opportunity to learn on the job in real-world industry setting—a definite edge when applying for jobs after graduation. Students are required to complete two blocks of co-op, which may

	degree will cover many aspects of game design and related social and societal factors without the need of extensive knowledge of computer programming.	scratch under the supervision of game designers from the local industry. Overall, the major strongly emphasizes the technical aspects of creating games, as well as working in teams to design and implement them. You will be prepared to adapt to what are the always-changing circumstances of the profession — whether it is a new game platform, newly emerging game mechanics, or new ways of earning revenue.	start after their second year of study. Although students usually complete co-ops during the summer term, they may also be completed during the academic year.
Target careers		Because of the strong technical underpinnings of the degree program, demand for our computer game science majors is strong. The majority find employment in the industry, whether at a major publisher, smaller studio or as self-employed freelancers. Many squarely focus on entertainment, others succeed in bringing their skills to the design and development of serious games in a variety of domains, including healthcare and education. Of course, graduate school in game design, interactive media, computer science, informatics or related field is a career path that a portion of our students also choose to take after they complete the major.	The game design and development major allo/ws students to explore the entertainment technology landscape and related areas, while still pursuing a broad-based university education. The degree is intended specifically for students who aspire to hold careers within the professional games industry or a related field, such as simulation, edutainment, or visualization. This degree also provides students with a core computing education that prepares them for graduate study or employment in a number of computing fields.
Total units required to complete degree	120	180	124
Upper-division units required to complete degree	24	64 http://catalogue.uci.edu /donaldbrenschoolofinformationandcomputersciences /#undergraduatetext	62

Foundation courses			
English composition		Two lower-division plus one upper-division course (12 units total)	RIT required all students to complete three Writing Intensive (WI) courses. The courses come from the degree program (IGME 236), the First Year Writing Program (UWRT 150 or ENGL 150 or ISTE 110), and one General Education Writing Intensive (GE-WI) course or one Program Writing Intensive (PR-WI) course.
Second language	4th Semester Proficiency	One course (4 units)	-
Math	Moderate Strand	MATH 2A Single-Variable Calculus MATH 2B Single-Variable Calculus And I&C SCI 6N Computational Linear Algebra or MATH 3A Introduction to Linear Algebra	GAMEDES-BS students are required to complete a minimum three-course math sequence. The score on the Math Placement Exam (MPE) determines the first course in the math sequence, though typically it will be MATH 131. Students can opt to take MATH 171, MATH 181A, or MATH 181 in the fall of their second year. Placement in MATH 171, MATH 181A, or MATH 181 is determined by the MPE score.
General education requirements	Tier I Two 150s Two 160s Two 170s Tier II One Tier II Arts One Tier II Humanities One Tier II Natural Sciences	http://catalogue.uci.edu/informationforadmittedstudents/requirementsforabachelorsdegree/ The general education requirement is a *graduation* requirement and, with the exception of the lower-division writing requirement, need *not* be satisfied during only the lower-division years. To satisfy the general education requirement, courses are required in each of the following categories: **I. Writing** (two lower-division plus one upper-division course) **II. Science and Technology** (three courses) **III. Social and Behavioral Sciences** (three courses)	https://www.rit.edu/gccis/igm/sites/rit.edu.gccis.igm/files/images/gdd-handbook-ay2018-2019.pdf The 124 credits that students need to graduate are as follows: • 41 credits of GDD Core Courses • 12 credits of IGM Advanced Electives • 3 credits of First Year Writing • 15 credits of Arts & Sciences Perspectives • 9 credits of Immersion Experience • 15 credits of General Education Electives • 14-15 credits of Math and Science • 15 credits of Free Electives

		IV. Arts and Humanities (three courses) **V. Quantitative, Symbolic, and Computational Reasoning, with subcategories Va and Vb** (three courses that may also satisfy another GE category) **VI. Language Other Than English** (one course) **VII. Multicultural Studies** (one course that may also satisfy another GE category) **VIII. International/Global Issues** (one course that may also satisfy another GE category)	• 1 Co-op Preparation Workshop, non-credit bearing • 2 different Wellness or Activity courses are also required, but they are non-credit bearing • YearOne, non-credit bearing • 2 Co-operative Education experiences, non-credit bearing • 3 Writing Intensive courses (First Year Writing (FYW), a program course (IGME-236), and a third course of your choosing)
Pre-major? (Yes/No. If yes, provide requirements.) Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	No	No	No
List any special requirements to declare or gain admission to this major (completion of specific coursework, minimum GPA, interview, application, etc.)	None	None	For all bachelor's degree programs, a strong performance in a college preparatory program is expected. Generally, this includes 4 years of English, 3-4 years of mathematics, 2-3 years of science, and 3 years of social studies and/or history. Specific math and science requirements and other recommendations: 4 years of math including pre-calculus required

			Requires chemistry or physics and strongly recommends both. Computing electives are recommended SAT (EBRW+M): 1280 -1450 ACT Composite: 29-34
Major requirements			
Minimum # of units required in major (units counting towards major units and major GPA)	42	124	124
Minimum # of upper-division units required in the major (upper division units counting towards major GPA)	30	64	32
Minimum # of residency units to be completed in the major	18	??	??
Required supporting coursework (courses that do not count towards major units and major		None	All incoming first-year students must take YearOne, designed to prepare them for success at RIT. Students are required to complete two different wellness activities.

GPA, but are required for the major). Courses listed must include subject code, units, and title. Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.			GDD students must successfully complete two co-ops, which count toward the graduation requirements.
Major requirements (list all required major coursework including major core, major electives, sub-plan core, and sub-plan electives; courses count towards major units and major GPA) Courses listed must include course prefix, number, units, and title.	Core Courses/Required Major Coursework (21 Units) Game 2XX Games, Behavior, and Individuals (3) Game 3XX Gamification in Society (3) ISTA 161 Ethics in a Digital World (3) ISTA 251 Introduction to Game Design (3) ESOC 211 Collaborating in Online Communities (3) ESOC 302 Quantitative Methods for the Digital Marketplace (3) ESOC 480: Digital Engagement Individual/Capstone Required Coursework (3 upper division units) Internship, Directed Research, Individual or Independent Study (3).	Lower-division A. Select one of the following series: I&C SCI 31- 32- 33 Introduction to Programming and Programming with Software Libraries and Intermediate Programming or I&C SCI 32A- 33 Python Programming and Libraries (Accelerated) and Intermediate Programming B. Complete: I&C SCI 45C Programming in C/C++ as a Second Language I&C SCI 46 Data Structure Implementation and Analysis I&C SCI 51 Introductory Computer Organization I&C SCI 60 Computer Games and Society	**First Year** IGME-105 Game Development and Algorithmic Problem Solving I 4 IGME-106 Game Development and Algorithmic Problem Solving II 4 IGME-110 Introduction to Interactive Media 3 MATH-131 LAS Perspective 7A (mathematical): Discrete Mathematics 4 IGME-119 2D Animation and Asset Production 3 PHYS-111 LAS Perspective 6 (scientific principles): College Physics I 4 MATH-185 LAS Perspective 7B (mathematical): Mathematics of Graphical Simulation I 3 ACSC-010 Year One 0 First Year Writing 3

Mark new coursework (New). Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	Elective Coursework in the Major (at least 18 units) GAME 3XX Monetizing Indep. Gaming (3) ISTA 301 Computing and the Arts (3) ISTA 302 Technology of Sound (3) ISTA 321 Data Mining and Discovery (3) ISTA 416 Introduction to Human Comp. Interaction (3) ESOC 316 Digital Commerce (3) ESOC 318 Disruptive Technologies (3) ESOC 340 Multimedia Design & the Moving Image (3) LIS 484 Introduction to Copyright (3) ● ESOC 340 Information, Multimedia Design & the Moving Image (3)	I&C SCI 61 Game Systems and Design I&C SCI 62 Game Technologies and Interactive Media IN4MATX 43 Introduction to Software Engineering MATH 2A Single-Variable Calculus MATH 2B Single-Variable Calculus I&C SCI 6N Computational Linear Algebra or MATH 3A Introduction to Linear Algebra I&C SCI 6B Boolean Logic and Discrete Structures I&C SCI 6D Discrete Mathematics for Computer Science STATS 67 Introduction to Probability and Statistics for Computer Science PHYSICS 3A Basic Physics I FLM&MDA 85A Introduction to Film and Visual Analysis or FLM&MDA 85C New Media and Digital Technologies Upper-division A. Computer Game Science Core Requirements COMPSCI 171 Introduction to Artificial Intelligence I&C SCI 161 Game Engine Lab I&C SCI 162 Modeling and World Building I&C SCI 167 Multiplayer Game Systems I&C SCI 168 Multiplayer Game Project I&C SCI 169A-169B Capstone Game Project I and Capstone Game Project II and select two of the following: COMPSCI 112 Computer Graphics I&C SCI 163 Mobile and Ubiquitous Games I&C SCI 166 Game Design B. Select two of the following:	LAS Perspective 1 (ethical) 3 LAS Perspective 2 (artistic) 3 Wellness Education* 0 **Second Year** IGME-202 Interactive Media Development 3 IGME-219 3D Animation and Asset Production 3 IGME-236 Interaction, Immersion, and the Media Interface (WI) 3 IGME-220 Game Design and Development I 3 IGME-209 Data Structures and Algorithms for Games and Simulations I 3 IGME-230 Website Design and Implementation 3 IGME-099 Co-op Preparation Workshop 0 IGME-499 (summer) Cooperative Education Co-op LAS Perspective 3 (global) LAS Perspective 4 (social) LAS Perspective 5 (natural science inquiry) Mathematics Course† **Third Year** IGME-320 Game Design and Development II 3 IGME-309 Data Structures and Algorithms for Games and Simulations II 3 IGME-330 Rich Media Web Application Development I 3

		COMPSCI 122A Introduction to Data Management COMPSCI 132 Computer Networks COMPSCI 143A Principles of Operating Systems COMPSCI 152 Computer Systems Architecture IN4MATX 113 Requirements Analysis and Engineering IN4MATX 121 Software Design: Applications IN4MATX 131 Human Computer Interaction C. CGS Elective Courses: Five additional courses: 1. Two courses from A-C. 2. Three courses must be in the same Bren ICS track.	IGME-499 Cooperative Education (summer) Co-op LAS Immersion 1, 2 6 LAS Electives 6 Advanced Elective 3 Free Electives 6 **Fourth Year** Advanced Electives 9 Free Electives 9 LAS Immersion 3 3 LAS Electives 9 Total Semester Credit Hours 124 **Advanced electives** IGME-340 Multi-platform Media App Development IGME-420 Level Design IGME-421 Tabletop Game Design and Development IGME-430 Rich Media Web Application Development II IGME-440 Online Virtual Worlds and Simulations IGME-450 Casual Game Development IGME-451 Systems Concepts for Games and Media IGME-460 Data Visualization IGME-470 Physical Computing and Alternative Interfaces IGME-480 Current Topics in Interactive Development IGME-529 Foundations of Interactive Narrative

			IGME-540 Foundations of Game Graphics Programming IGME-550 Foundations of Game Engine Design and Development IGME-560 Artificial Intelligence for Game Environments IGME-570 Digital Audio Production IGME-571 Interactive Game Audio IGME-580 IGM Production Studio IGME-581 Innovation and Invention IGME-582 Humanitarian Free and Open Source Software Development IGME-583 Legal/Business Aspects of FOSS IGME-584 Linux Software Development IGME-585 Project in FOSS Development IGME-589 Research Studio IGME-590 Undergraduate Seminar in IGM IGME-599 Independent Study
Internship, practicum, applied course requirements (Yes/No. If yes, provide description)	Individual/Capstone Required Coursework (6 upper division units) INFO 493 Internship, INFO 492 Directed Research, INFO 499 Individual or Independent Study (3) along with ISTA 498 Senior Capstone (3)		The IGM Bachelor of Science degrees in Game Design & Development requires two semesters of full-time work to fulfill your co-op requirements. Co-op is short for co-operative education which has the following benefits: ● Gain real life career experience ● All co-ops are compensated ● The experience gained will assist with full-time position. ● Allow the opportunity for students to define their career paths

Senior thesis or senior project required (Yes/No. If yes, provide description)	No	**I&C SCI 169A&B. Capstone Game Project I&II. 8 Units.** Students work in teams to design and implement a new computer game or virtual world. Emphasis on sound, art, and level design, building a community, cut scenes, production values, full utilization of hardware and software platform, and current industry trends.	No
Additional requirements (provide description)	None		
Minor (specify if optional or required)	Required	optional	Optional

*Note: comparison of additional relevant programs may be requested.

Comparison Chart—UA Game Proposals

Program name, emphasis (sub-plan) name (if applicable), degree, and institution	BS Game Design and Development (in INFO)	BA Games and Behavior (in INFO)	Game Studies emphasis, BA in Applied Humanities
Current # of enrolled students	0	0	0
Major Description. Includes the purpose, nature, and highlights of the curriculum, faculty expertise, emphases (sub-plans; if any), etc.	The Bachelor of Science in Game Design and Development will provide undergraduate students with the design and development skills necessary to create virtual interactive environments that span across devices and platforms. This game program would include games for entertainment but also serious games and virtual reality simulations for training, education, healthcare and other purposes. The degree will provide students with the real-world skills and experience needed for successful game design and development; and will signal to employers that students have dedicated the time and energy necessary to build fluency with the underlying concepts and tools. The degree will cover all aspects of game design and development. This would include conceptualization, market analysis, art design, technical design, implementation and marketing. The degree program will serve a diverse student population, training learners in artistic, technical and business aspects of games. The degree will require	The Bachelor of Arts in Games and Behavior will provide students with a broad understanding of important design principles and human behavior in serious and recreational games, but also the implications tied to gamification in society. Students will learn the basics of multimedia, storytelling, and sound technologies. This degree will also include courses that focus on the individual (e.g., psychology of simulations and play) and also courses that consider group or societal trends (e.g., inequality in the game and in the development environment; psychology of play in game communities). Issues of artistic game design alongside behavioral and societal trends related to games and gamification across sectors are the focus of this degree (e.g., education, health management, occupational training, social support, recreation). The degree will cover many aspects of game design and related social and societal factors without the need of extensive knowledge of computer programming.	The proposed Game Studies emphasis in the BA in Applied Humanities will concentrate on what is widely known as "Game Studies," that is, the study of games as distinct from the technical context of designing and making them. The emphasis will include the following focus areas: ● Critical approaches to understanding games and the game industry (e.g., techniques for understanding the relationship between a game's technical design and the socio-cultural milieu out of which it arose); ● Studies of the cultures surrounding games (e.g., cosplay, pro-gaming, fan crafts); ● Studies of the industry itself (e.g., corporate trajectories, mergers, and collapses; shifting monetization structures); ● Cultural studies of game content (e.g., analyses of gender, race, and age representation in games); ● Studies of game narratives (e.g., how games tell stories);

	students to complete a set of core courses, yet also allow students to choose among a large set of electives in order to focus on their preferred areas of study (e.g., intensive programming, creative computing, and entrepreneurial aspects of game development). Students will apply the key theories and best practices they learned to practical game projects and refine their skills. Students will have multiple opportunities to produce finished games, both individually and team-based. The degree is intended for students who aspire to hold careers in the digital games industry or work independently on gaming. There will be ongoing opportunities to participate in research into games being conducted by faculty across campus and by industrial partners.		● Studies of design histories (e.g., changing form factors of game cartridges, consoles, and arcade cabinets); ● Game reviewing for online and print venues, as well as for fan and trade audiences (e.g., publishing critical evaluations of games for independent gaming websites); ● Studies of game cultures and practices internationally (e.g., 1980s Russian bootleg game culture); ● Studies of changing play styles, aesthetics, and interfaces (e.g., gaming in the arcade vs. at home). At the recommendation of an external consultant, the emphasis will also include one introductory course in game design, and one introductory course in game development. The purpose of these courses is to integrate rudimentary knowledge of game production practices so that students acquire (1) a deeper understanding of the products and cultures that flow from those labors, and (2) a fuller sense of the day-to-day production side of media sphere should they choose to explore employment there.

Methodology	Programming, logic, linear algebra, discrete mathematics, trigonometry	Design, prototyping, qualitative and quantitative social research methods.	Humanities-based approaches to the game medium, its industry, and the cultures that inform and are informed by them.
Learning Outcomes	Game One: for the BA and BS Students will demonstrate knowledge of user's needs and rights, such as identifying target user groups for games, PR tools and platforms, analytics and metric tools, play testing and evaluation, monetization models, information protection, game related permissions on different platforms, ethical competence, professional ethics, quality steering, assurance, monitoring and social media utilization. Game Two: for the BA and BS Students will demonstrate the ability to design a game for various purposes, such as education, health and well-being, training and entertainment, by incorporating best-practices related to gamification in all stages, including challenges and fun factor, balancing, level design, scoring and progression, user interface, interaction mechanics, narration, functionality, usability and playability.	Game One: for the BA and BS Students will demonstrate knowledge of user's needs and rights, such as identifying target user groups for games, PR tools and platforms, analytics and metric tools, play testing and evaluation, monetization models, information protection, game related permissions on different platforms, ethical competence, professional ethics, quality steering, assurance, monitoring and social media utilization. Game Two: for the BA and BS Students will demonstrate the ability to design a game for various purposes, such as education, health and well-being, training and entertainment, by incorporating best-practices related to gamification in all stages, including challenges and fun factor, balancing, level design, scoring and progression, user interface, interaction mechanics, narration, functionality, usability and playability.	Upon completing the BA in Applied Humanities–Game Studies major, students are expected to have achieved the following primary learning outcomes. Students should be able to: ● Describe the industrial, creative, and cultural processes by which play is transformed into games; ● Analyze games as design objects, playful companions, era defining technologies, and artifacts for contemplation, escape, and education; ● Develop reports, business plans, design documents, and other applied work for critical, commercial, and persuasive purposes related to games, their industries, and their cultures;

	Game Three: for the BS only Students will exhibit understanding of and skills related to varied approaches, tools, systems, platforms, devices, processes and their effective utilization for game development that are well-established and currently used in the games industry.	Game Three: for the BA only Students will exhibit understanding of human behavior in serious and recreational games, the impact of gaming on individuals across contexts, and the implications tied to gamification in society.	
Target careers	Game Developer Graphic Designer Animation Specialist Sound Technologist Software Developers. Computer and Information Research Scientists Computer Programmer Software Developer	Game Designer Social Worker Educator Occupational Therapist eSport Behavior/Planner Computer and Information Research Scientists Game Event Planner Game-based Trainer Instructional Designer Game Coach	● Reviewing (print/online) ● Marketing and promotion ● Public relations ● Legal services ● Financial services ● Quality assurance ● Retail ● Museums/archives ● Producing ● Localization/translation ● Adaptation ● Technical support
Total units required to complete the degree	120	120	120
Upper-division units required to complete the degree	51	24	42
Foundation courses			
English Composition	English 101 and 102	English 101 and 102	UA Foundations Composition
Math	Moderate Strand	Moderate Strand	UA Foundations G-strand math
Second Language	2nd Semester Proficiency	4thSemester Proficiency	4th semester proficiency

General Education			
Tier I GE Requirements (150, 160, 170)	Tier I Two 150s Two 160s Two 170s	Tier I Two 150s Two 160s Two 170s	18 units Tier One (6 each 150, 160, 170)
Tier II GE Requirements (Arts, HUMS, INDV, NATS)	One Tier II Arts One Tier II Humanities One Tier II Individuals and Societies	One Tier II Arts One Tier II Humanities One Tier II Natural Sciences	9 units Tier Two (3 each Individuals & Societies, Natural Science, Arts)
Pre-major? (Yes/No). If yes, provide requirements. Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	No	No	No
List any special requirements to declare or gain admission to this major (completion of specific coursework, minimum GPA, interview, application, etc.)	None	None	None
Major requirements			
Minimum # of units required in the major (units counting towards major units and major GPA)	51	42	42
Minimum # of upper-division units required in the major (upper division	51	42	24

units counting towards major GPA)			
Minimum # of residency units to be completed in the major	18	18	18
Required supporting coursework (courses that do not count towards major units and major GPA, but are required for the major). Courses listed must include prefix, number, units, and title. Include any limits/restrictions needed (house number limit, etc.). Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	Required courses: Math 113, or Math 116, and ISTA 116	None	None
Major requirements. List all major requirements including core and electives. If applicable, list the emphasis requirements for each proposed emphasis. Courses listed	**Core Courses/Required Major Coursework (33 units)** 1XX Programming for Game Dev. (3) 2XX Game Development I (4) ESOC 302 Quantitative Methods for the Digital Marketplace (3)	**Core Courses/Required Major Coursework (21 Units)** 2XX Games, Behavior, and 3XX Gamification in Society ISTA 161 Ethics in a Digital ISTA 251 Introduction to Ga ESOC 211 Collaborating in	**MAJOR CORE (21 units)** ● PAH 200: Introduction to Applied Humanities (3) ● PAH 201: Applied Humanities Practice: Techniques and Technologies (3) ● PAH 372: Intercultural Competence: Culture, Identity, Adaptation, and Intercultural Relations (3)

count towards major units and major GPA. Courses listed must include prefix, number, units, and title. Mark new coursework (New). Include any limits/restrictions needed (house number limit, etc.). Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	ESOC 314 Theories of New Media (3) ISTA 130 Computational Thinking and Doing (4) ISTA 161 Ethics in a Digital World (3) ISTA 251 Introduction to Game Design (3) ISTA 416 Introduction to Human Computer Interaction (3) ISTA 425 Algorithms for Games (3) STA 451 Game Development (4) **Individual/Capstone Required Coursework (6 upper division units)** Internship, Directed Research, Individual or Independent Study (3) along with the ISTA 498 Capstone req.(3). **Elective Coursework in the Major (12 upper division units)** *These courses are organized in to 'tracks' depending on students' interests, students are encouraged but not required to complete their elective coursework in a particular specialty area. PROGRAMMING-INTENSIVE TRACK (12 units) 3XX Game Physics (3) ISTA 311 Foundations of Info. and Inference (3) ISTA 331 Principles and Practice of Data Sci (3)	ESOC 302 Quantitative Methods for the Digital Marketplace (3) ESOC 480: Digital Engagement **Individual/Capstone Required Coursework (3 upper division units**) Internship, Directed Research, Individual or Independent Study (3). **Elective Coursework in the Major (at least 18 units)** 3XX Monetizing Indep. Gaming (3) ISTA 301 Computing and the Arts (3) ISTA 302 Technology of Sound (3) ISTA 321 Data Mining and Discovery (3) ISTA 416 Introduction to Human Comp. Interaction (3) ESOC 316 Digital Commerce (3) ESOC 318 Disruptive Technologies (3) ESOC 340 Multimedia Design & the Moving Image (3)	● PAH 383/383H: Pre-internship: Building Career Readiness (3) ● PAH 420: Innovation and the Human Condition: Learning How to Improve Life in the Community and Beyond (3) ● PAH 493/493H: Internship (3) ● PAH 498: Senior Capstone (3) **GAME STUDIES EMPHASIS (18 units)** ● PAH 230: Video Games as Artifacts: Appreciating Interactive Multimedia Entertainment (3) ● PAH 231: Global Video Game Cultures and Their Origins (3) **[New]** ● PAH 330: The Video Game Industry: An Introduction to the Business of Making Money with Play (3) ● PAH 331: Video Game Studies: Critical/Cultural Approaches (3) **[New]** ● INFV 405: Introduction to Game Design (3) <u>or</u> ISTA 251: Introduction to Game Design (3) ● INFV 406: Introduction to Game Development (3) <u>or</u> ISTA 451: Game Development (3) **MAJOR ELECTIVES (3 units from among the following)** <u>Africana Studies Program</u> ● AFAS 223: African Philosophical Worlds (3) ● AFAS 463: Doing Business In/With Africa: A Cultural Perspective (3)

	ISTA 350 Prog. for Informatics Applications (3) ISTA 424 Virtual Reality (3) GAME ENTREPRENEUR TRACK (12 units) 3XX Monetizing Indep. Gaming (3) ESOC 316 Digital Commerce (3) ESOC 318 Disruptive Technologies (3) LIS 484 Introduction to Copyright (3) ARTIFICIAL INTELLIGENCE TRACK (12 Units) ISTA 450 Artificial Intelligence (3) 4XX Artificial Intelligence in Games (3) ISTA 421 Introduction to Machine Learning (3) ISTA 457 Neural Networks (3) ART OF GAMES TRACK (12 Units) ISTA 301 Computing and the Arts (3) ISTA 302 Technology of Sound (3) ISTA 303 Introduction to Creative Coding (3) ISTA 403 Advanced Creative Coding (3) ESOC 300 Digital Storytelling and Culture (3) ESOC 340 Information, Multimedia Design & the Moving Image (3)	LIS 484 Introduction to Copyright (3)	<u>College of Humanities</u> ● HUMS 375: Globalization and Transnational Cinema (3) <u>Department of East Asian Studies</u> ● CHN 245: Chinese Popular Culture (3) ● CHN 410B: The Anthropology of Contemporary China (3) ● CHN 444: Chinese Media & Culture (3) ● JPN 245: Japanese Anime and Visual Culture (3) ● JPN 425A: Anthropology of Japan: Images and Realities (3) ● KOR 245: K-pop, Webtoons, Ethnic Food, and More: Understanding Korean Pop Culture (3) ● KOR 251: Introduction to Korea through Films (3) ● EAS 444: East Asian Traditions and the Rise of Commercial Civilization (3) ● EAS 466: Japanese and Chinese Nationalism (3) <u>Department of French & Italian</u> ● FREN 230: French Culture (1789-present) (3) ● FREN/ITAL 231: Fashion and Culture in France and Italy (3) ● FREN 373: US & Francophone Hip-Hop Cultures (3) ● FREN 433: Business French 1(3) ● FREN 434: Business French 2 (3) ● ITAL 230: Introduction to Italian Culture (3) ● ITAL 240: Italian Folklore and Popular Culture (3)

			<u>Department of German Studies</u> ● GER 246: Culture, Science and Technology (3) ● GER 315: German for Professional Purposes (3) ● GER 371: Contemporary German Culture (3) ● GER 416: Minority Views in German Culture (3) ● GER 430: Crossing Borders/Crossing Cultures (3) <u>Department of Public & Applied Humanities</u> ● PAH 220: Collaboration: A Humanities Perspective (3) ● PAH 221: Creating, Imagining, Innovating: Intercultural Approaches to Academic and Career Success (3) ● PAH 240: Some We Love, Some We Hate, Some We Eat: Global Perspectives on Human/Animal Relationships (3) ● PAH 310: Urban Multilingualism: An Introduction to Exploring Diverse Cities (3) ● PAH 320: Working: The Rewards and Costs of Employment (3) ● PAH 350: Health Humanities: Intercultural Perspectives ● PAH 456: Humanities and the Global Creative Economy (3) <u>Department of Religious Studies & Classics</u> ● CLAS 311: Athens Through the Ages (3)

			● RELI 210: Religion in the American Experience (3) ● RELI 230: Religions and Cultures of India (3) ● RELI 335: Rap, Culture and God (3) ● RELI 345: Religion and the Arts in India (3) ● RELI 363: Religion and Sex (3) ● RELI 367: Yoga (3) ● RELI 404: Religion, Gender, and the Body (3) ● RELI 412: Religion and Literature in Latin America (3) <u>Department of Russian & Slavic Studies</u> ● RSSS 315: Werewolves and Vampires: Slavic Folklore in our Culture (3) ● RSSS 325: Eastern Orthodoxy in a Global Age (3) <u>Department of Spanish & Portuguese</u> ● PORT 430: Brazilian Civilization (3) ● PORT 463: Topics in Luso-Brazilian Literature (3) ● SPAN 352: Reading Politics and Culture in the Hispanic World (3) ● SPAN 371A/B: Spanish for Business and Economics (3) ● SPAN 430: Issues in Spanish Culture (3) ● SPAN 431: Issues in Spanish-American Culture (3) ● SPAN 433: Issues in Mexican and Mexican-American Culture (3) ● SPAN 480: Service Learning v <u>Department of Teaching, Learning & Sociocultural Studies</u>

			● TLS 386: Global Citizenship: Reading the World and the Word (3)
Internship, practicum, applied course requirements (Yes/No). If yes, provide description.	**Yes/Individual/Capstone Required Coursework (6 upper division units)** INFO 493 Internship, INFO 492 Directed Research, INFO 499 Individual or Independent Study (3) along with ISTA 498 Senior Capstone (3)	**Yes/Individual/Capstone Required Coursework (3 upper division units**) INFO 493 Internship, INFO 492 Directed Research, INFO 499 Individual or Independent Study (3).	Yes. Complete 3 units of pre-internship (PAH 383) and 3 units of an internship (PAH 493).
Senior thesis or senior project required (Yes/No). If yes, provide description.	No	No	No (no separate senior project but one is embedded in capstone)
Additional requirements (provide description)	None	None	None
Minor (specify if optional or required)	Optional	Required	Required

*Note: comparison of additional relevant programs may be requested.

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March 24, 2020

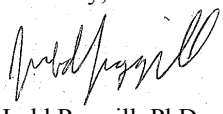
Catherine Brooks, PhD
Director and Associate Professor | School of Information | College of Social & Behavioral Sciences
Affiliate Faculty:
- Graduate Interdisciplinary Program in Social, Cultural & Critical Theory
- Graduate Interdisciplinary Program in Second Language Acquisition & Teaching
cfbrooks@arizona.edu

Dear Dr. Brooks:

Subject: Proposed BA in Games & Behavior; proposed BS in Game Design & Development

On behalf of the Department of Public & Applied Humanities, I write this letter in support of the proposed BA in Games & Behavior and the proposed BS in Game Design & Development. The degrees look very exciting, and will no doubt be well received by students. Please let me know if there are additional ways we can help support the proposals.

Sincerely,



Judd Ruggill, PhD
Professor and Head | Department of Public & Applied Humanities | College of Humanities
Affiliated Faculty:
- Africana Studies Program | College of Humanities
- Department of English | College of Social & Behavioral Sciences
- Graduate Interdisciplinary Program in Social, Cultural & Critical Theory
- Institute for LGBT Studies
- School of Information | College of Social & Behavioral Sciences
- School of Theatre, Film & Television | College of Fine Arts
Co-Director, Learning Games Initiative
jruggill@email.airzona.edu

cc Kimberly Jones, PhD
Vice Dean for Academic Affairs | College of Humanities
Affiliate Faculty:
- Graduate Interdisciplinary Program in Second Language Acquisition & Teaching
kjones@email.arizona.edu

VALIDATE: EMPLOYMENT POTENTIAL

PROJECT CRITERIA

Validate	Programs
States	Arizona
Degree Level	Bachelor's degree
Time Period	9/1/2018 - 8/31/2019
Selected Programs	Game and Interactive Media Design (50.0411)
Career Outcomes mapped to Selected Programs of Study	Video Game Designer

HOW MANY JOBS ARE THERE FOR YOUR GRADUATES?

For your project criteria, there were 4 job postings in the last 12 months.

Compared to:

- 875,530 total job postings in your selected location
- 275,216 total job postings requesting a Bachelor's degree in your selected location

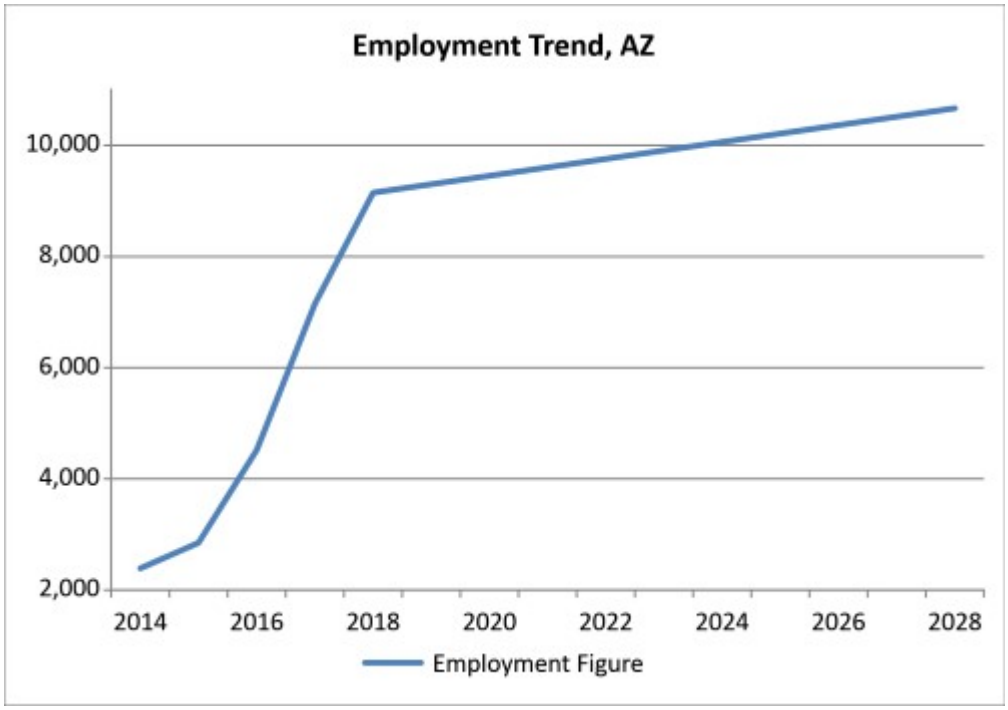
The number of jobs is expected to grow over the next 8 years.

GROWTH BY GEOGRAPHY

Geography	Selected Occupations	Total Labor Market	Relative Growth
Arizona	16.60 %	14.97 %	Average
Nationwide	9.30 %	5.78 %	Average

HOW HAS EMPLOYMENT CHANGED FOR CAREER OUTCOMES OF YOUR PROGRAM?

	2014	2015	2016	2017	2018	2028
Employment (BLS)	2,390	2,850	4,520	7,150	9,150	10,669



Employment data between years 2019 and 2028 are projected figures.

DETAILS BY OCCUPATION

Occupation Group	Postings	LQ	Employment (2018)	Employment Growth (2017 - 2018)	Projected Employment Growth (2019-2028)
Front-End Application Design	4	0.1	9,150	28.0%	16.6%

HOW VERSATILE IS MY PROGRAM?

Graduates of this program usually transition into any of the 1 different occupation groups:

Occupations Group	Market Size (postings)	Percentage of Career Outcome demand
Front-End Application Design	4	100.0%

WHAT SALARY WILL MY GRADUATES MAKE?

The average salary in Arizona for graduates of your program is $96,320

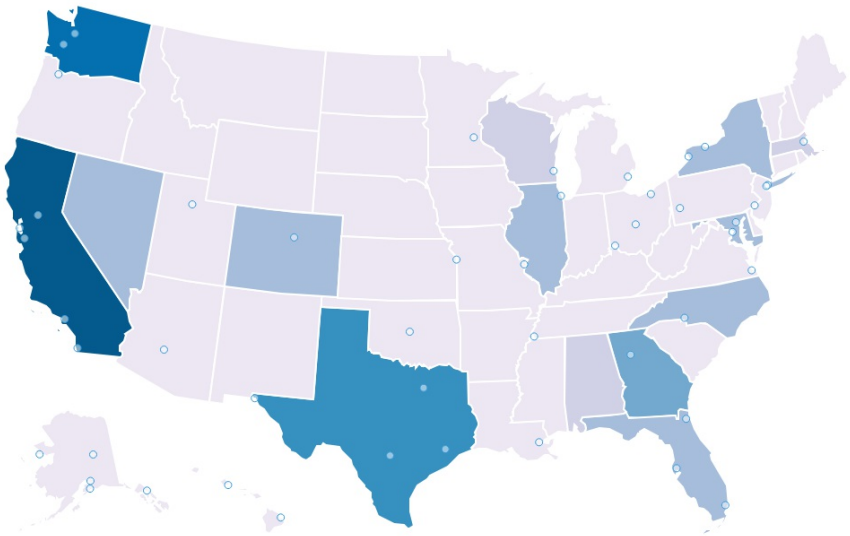
This average salary is Above the average living wage for Arizona of $32,531

No experience salary information is currently available

Salary numbers are based on Burning Glass models that consider advertised job posting salary, BLS data, and other proprietary and public sources of information.

Occupation Group	25th Percentile	Average	75th Percentile
Front-End Application Design	$0	$0	$0

WHERE IS THE DEMAND FOR MY GRADUATES?



TOP LOCATIONS BY POSTING DEMAND

Location	Postings
California	934
Washington	228
Texas	148
Georgia	54
New York	44
North Carolina	31
Maryland	31

Florida	30
Nevada	27
Illinois	24

VALIDATE: COMPETITIVE LANDSCAPE

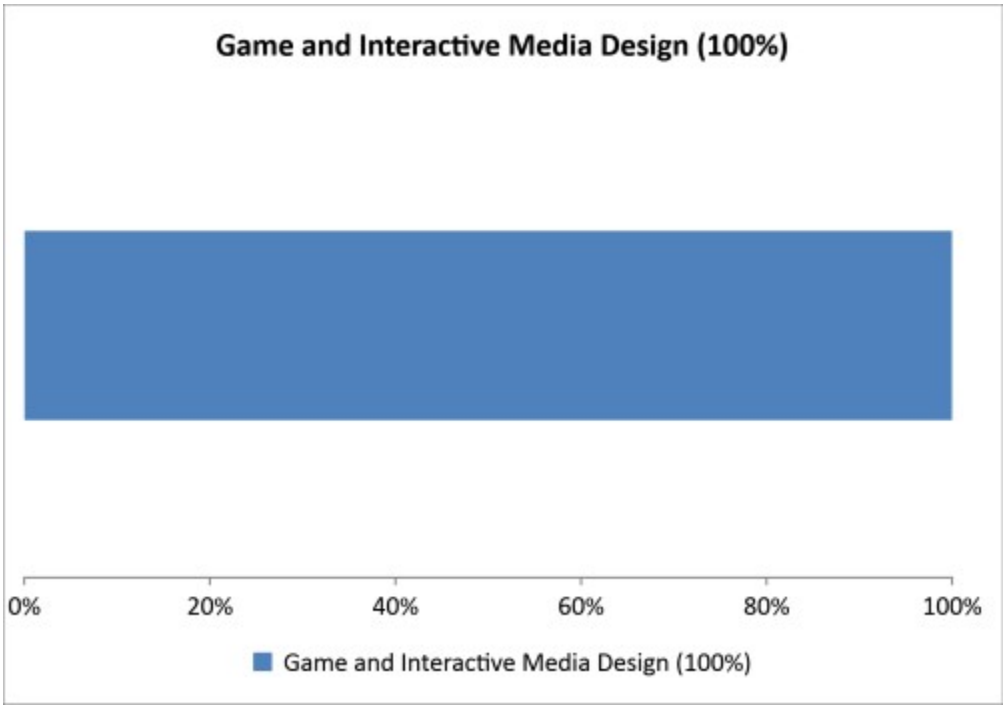
PROJECT CRITERIA

Validate	Programs
States	Arizona
Degree Level	Bachelor's degree
Time Period	9/1/2018 - 8/31/2019
Selected Programs	Game and Interactive Media Design (50.0411)
Career Outcomes mapped to Selected Programs of Study	Video Game Designer

OVERVIEW

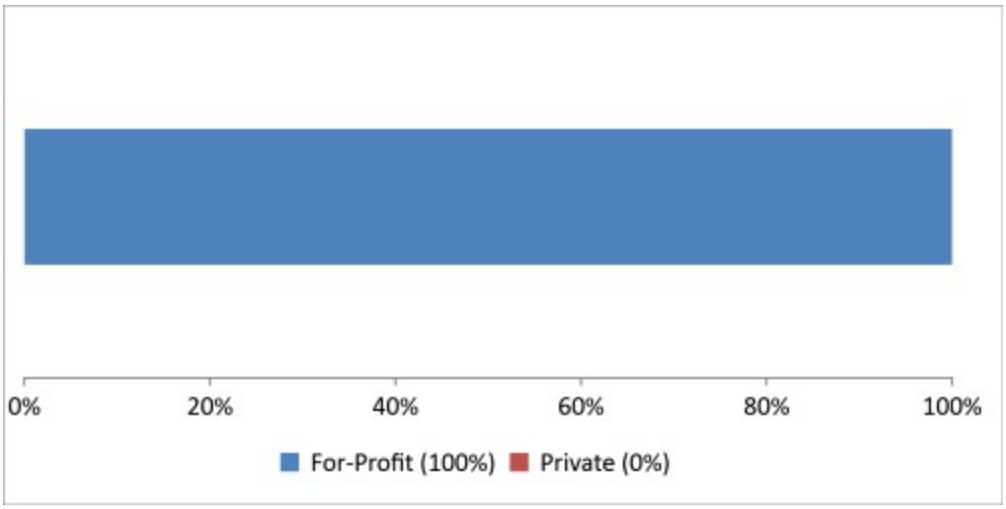
	#	% Change (2013-2017)
Degrees Conferred	21	-63%
Number of Institutions	3	50%
Average Conferrals by Institution	7	-75.90%
Median Conferrals by Institution	3	-89.70%

MARKET SHARE BY PROGRAM



Program	Conferrals (2017)	Market Share (%)
Game and Interactive Media Design	21	100.00%

MARKET SHARE BY INSTITUTION TYPE



Institution Type	Conferrals (2017)	Market Share (%)
For-Profit	21	100.00%
Private	0	0.00%

TOP INSTITUTIONS

Institution	School Type	Market Share (2017)	Market Share Change	Conferrals (2017)	Conferrals Change (2013-2017)
The Art Institute of Phoenix	For-Profit	85.71%	66.74%	18	63.60%
The Art Institute of Tucson	For-Profit	14.29%	14.29%	3	100.00%
Collins College	For-Profit	0.00%	-81.03%		-100.00%

Embry-Riddle Aeronautical University-Prescott	Private	0.00%	0.00%	0	0.00%

TOP PROGRAMS

Program	Market Share (2017)	Market Share Change	Conferrals (2017)	Conferrals Change (2013-2017)
Game and Interactive Media Design	100.00%	0.00%	21	-63.80%

ACTIVE COMPETITORS

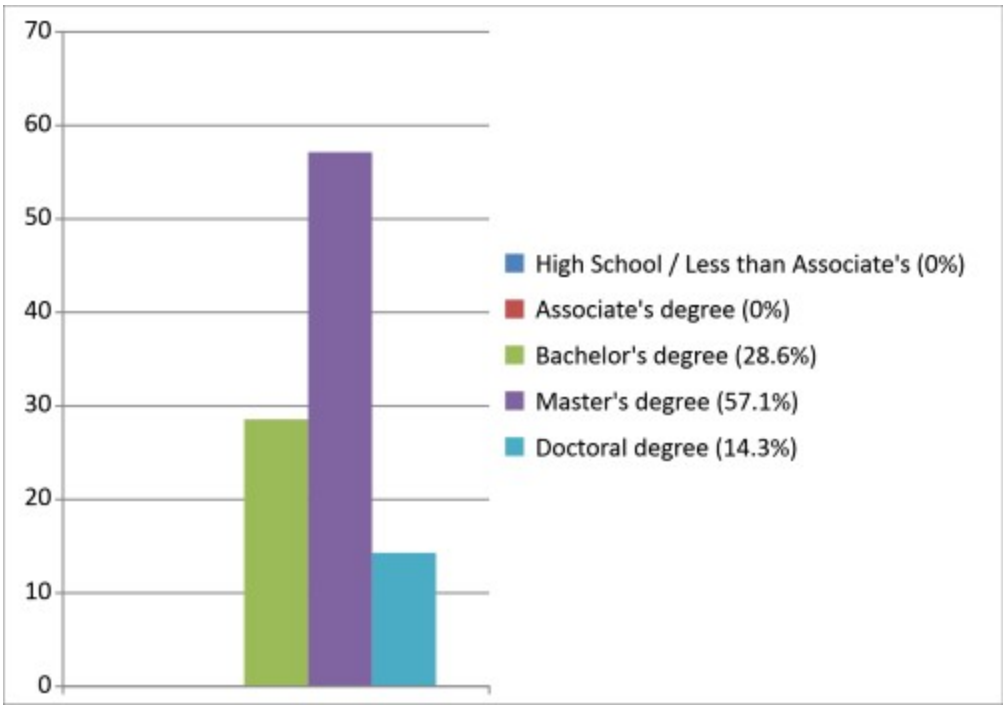
Institution	School Type	Market Share (2017)	Market Share Change	Conferrals (2017)	Conferrals Change (2013-2017)

VALIDATE: MARKET ALIGNMENT

PROJECT CRITERIA

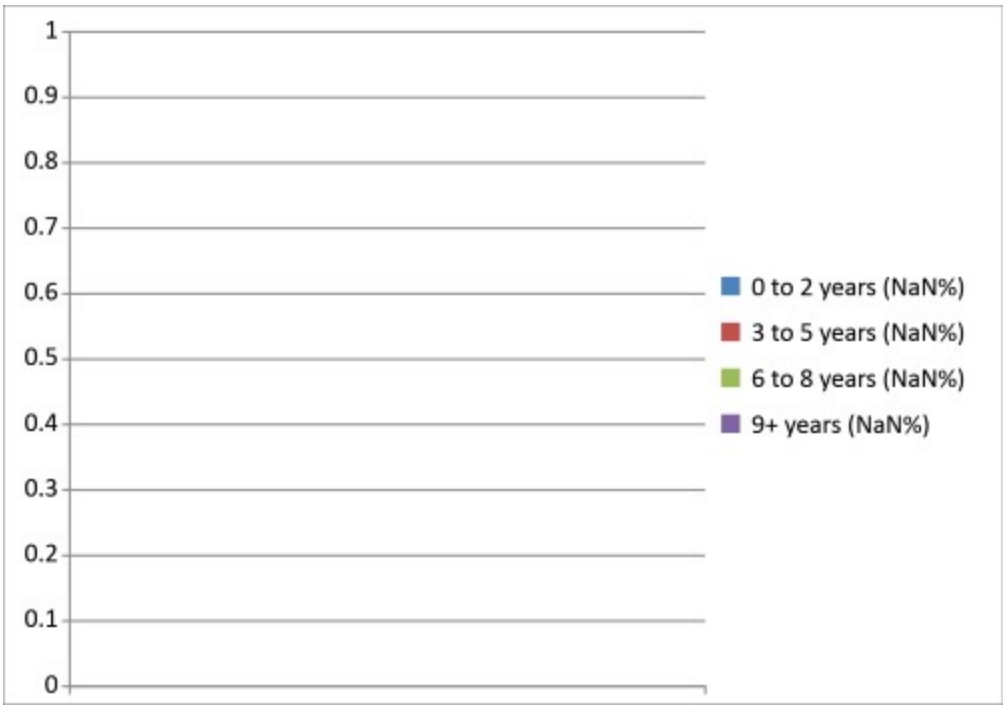
Validate	Programs
States	Arizona
Degree Level	Bachelor's degree
Time Period	9/1/2018 - 8/31/2019
Selected Programs	Game and Interactive Media Design (50.0411)
Career Outcomes mapped to Selected Programs of Study	Video Game Designer

JOB POSTINGS BY ADVERTISED EDUCATION (%)



JOB POSTINGS BY INDUSTRY (%)

JOB POSTINGS BY EXPERIENCE REQUESTED (%)



TOP TITLES

Experience Level: All Experience

Title	Postings	Market Share (%)
Senior Engineer	2	100.00%

TOP EMPLOYERS HIRING

Experience Level: All Experience

Employer	Postings	Market Share (%)

VALIDATE: KEY COMPETENCIES

PROJECT CRITERIA

Validate	Programs
States	Arizona
Degree Level	Bachelor's degree
Time Period	9/1/2018 - 8/31/2019
Selected Programs	Game and Interactive Media Design (50.0411)
Career Outcomes mapped to Selected Programs of Study	Video Game Designer

TOP 15 SPECIALIZED SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage
Unity (Programming Language)	7 (175%)	48.49%	No	No
Microsoft C#	6 (150%)	-25.69%	No	No

Gaming Industry Knowledge	3 (75%)	-25.87%	No	No
Object-Oriented Programming	3 (75%)	5.43%	No	No
Unity 3D	2 (50%)	-8.52%	No	No
Object-Oriented Analysis and Design (OOAD)	2 (50%)	-28.56%	No	No
Unity	2 (50%)	39.69%	No	No
Atlassian JIRA	1 (25%)	74.16%	No	No

TOP 15 BASELINES SKILLS

Skill	Postings

TOP 15 SOFTWARE PROGRAMMING SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage
Microsoft C#	6 (150%)	-25.69%	No	No
Object-Oriented Programming	3 (75%)	5.43%	No	No

Object-Oriented Analysis and Design (OOAD)	2 (50%)	-28.56%	No	No
Unity	2 (50%)	39.69%	No	No
Atlassian JIRA	1 (25%)	74.16%	No	No

TOP 15 SKILL CLUSTERS

Skill	Postings
Animation and Game Design	4 (100%)
Programming Principles	3 (75%)
Augumented Reality / Virtual Reality (AR / VR)	0 (0%)
Simulation	0 (0%)
Uncategorized	0 (0%)
Physics	0 (0%)

Art and Illustration	0 (0%)
Product Management	0 (0%)
Computer and Information Technology Industry Knowledge	0 (0%)
Java	0 (0%)
Quality Assurance and Control	0 (0%)
User Interface and User Experience (UI/UX) Design	0 (0%)
Product Development	0 (0%)
Software Development Principles	0 (0%)
JavaScript and jQuery	0 (0%)

TOP 15 SALARY PREMIUM SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage

No skills available

TOP 15 COMPETITIVE ADVANTAGE SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage

No skills available

TOP 15 CERTIFICATIONS

Skill	Postings	Salary Premium	Competitive Advantage

TOP 15 SALARY PREMIUM CERTIFICATIONS

Skill	Postings	Salary Premium	Competitive Advantage

No certificates available

TOP 15 COMPETITIVE ADVANTAGE CERTIFICATIONS

Skill	Postings	Salary Premium	Competitive Advantage

No certificates available

VALIDATE: EMPLOYMENT POTENTIAL

PROJECT CRITERIA

Validate	Programs
Metro Areas (MSAs)	Tucson, AZ
Degree Level	Bachelor's degree
Time Period	9/1/2018 - 8/31/2019
Selected Programs	Game and Interactive Media Design (50.0411)
Career Outcomes mapped to Selected Programs of Study	Video Game Designer

HOW MANY JOBS ARE THERE FOR YOUR GRADUATES?

For your project criteria, there were 0 job postings in the last 12 months.

Compared to:

- 111,367 total job postings in your selected location
- 32,031 total job postings requesting a Bachelor's degree in your selected location

The number of jobs is expected to grow over the next 8 years.

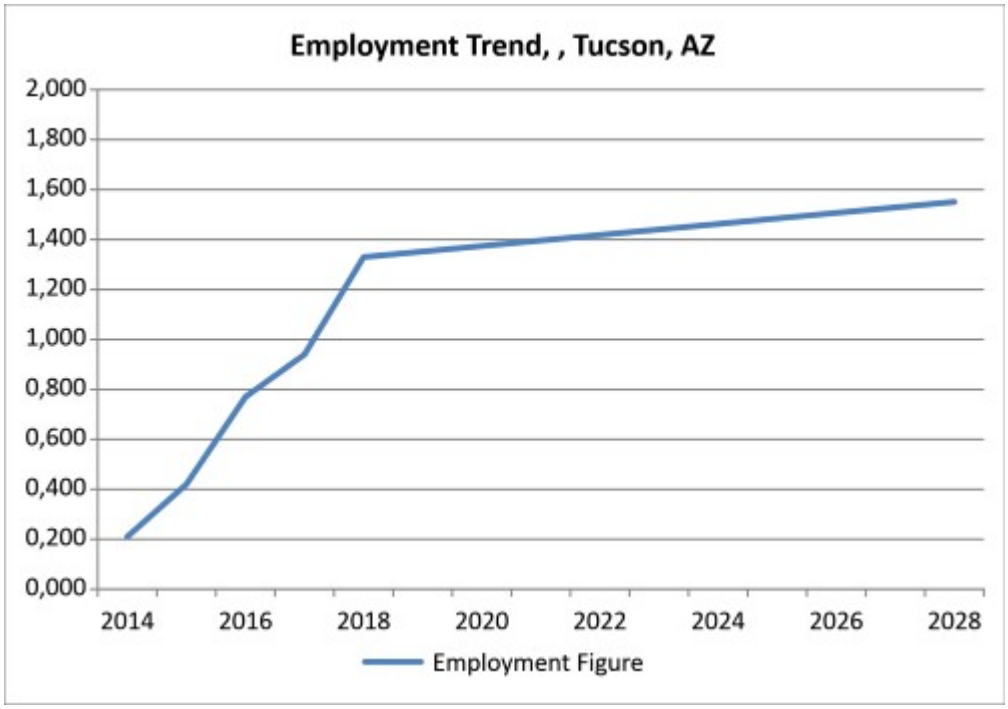
GROWTH BY GEOGRAPHY

Geography	Selected Occupations	Total Labor Market	Relative Growth
Tucson, AZ	16.62 %	17.14 %	Average
Arizona	16.60 %	14.97 %	Average

Nationwide	9.30 %	5.78 %	Average

HOW HAS EMPLOYMENT CHANGED FOR CAREER OUTCOMES OF YOUR PROGRAM?

	2014	2015	2016	2017	2018	2028
Employment (BLS)	210	420	770	940	1,330	1,551



Employment data between years 2019 and 2028 are projected figures.

DETAILS BY OCCUPATION

Occupation Group	Postings	LQ	Employment (2018)	Employment Growth (2017 - 2018)	Projected Employment Growth (2019-2028)
Front-End Application Design	0	0.0	1,330	41.5%	16.6%

HOW VERSATILE IS MY PROGRAM?

Graduates of this program usually transition into any of the 1 different occupation groups:

Occupations Group	Market Size (postings)	Percentage of Career Outcome demand
Front-End Application Design	0	0.0%

WHAT SALARY WILL MY GRADUATES MAKE?

The average salary in Tucson, AZ for graduates of your program is $0

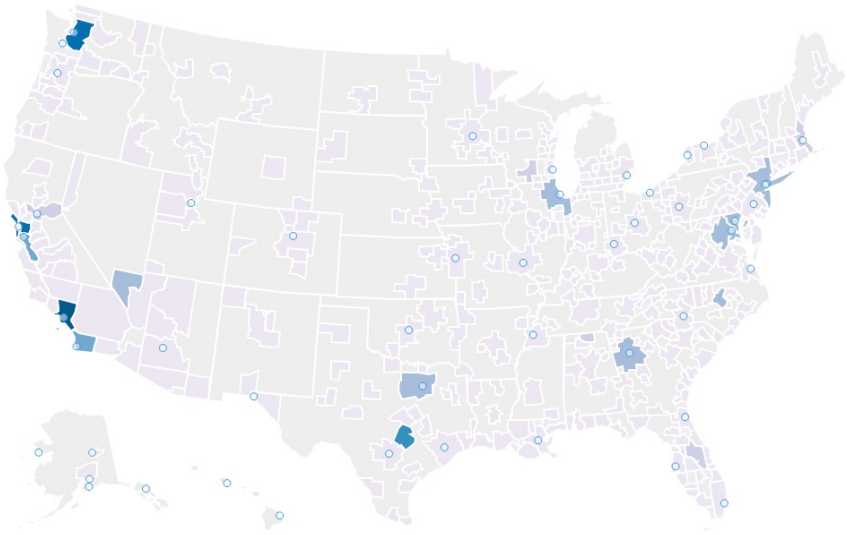
This average salary is Below the average living wage for Tucson, AZ of $32,011

No experience salary information is currently available

Salary numbers are based on Burning Glass models that consider advertised job posting salary, BLS data, and other proprietary and public sources of information.

Occupation Group	25th Percentile	Average	75th Percentile

WHERE IS THE DEMAND FOR MY GRADUATES?



TOP LOCATIONS BY POSTING DEMAND

Location	Postings
Los Angeles-Long Beach-Anaheim, CA	525
San Francisco-Oakland-Hayward, CA	275
Seattle-Tacoma-Bellevue, WA	227
Austin-Round Rock, TX	106
San Jose-Sunnyvale-Santa Clara, CA	68
San Diego-Carlsbad, CA	51
Atlanta-Sandy Springs-Roswell, GA	47
New York-Newark-Jersey City, NY-NJ-PA	39

Las Vegas-Henderson-Paradise, NV	27
Chicago-Naperville-Elgin, IL-IN-WI	24

VALIDATE: COMPETITIVE LANDSCAPE

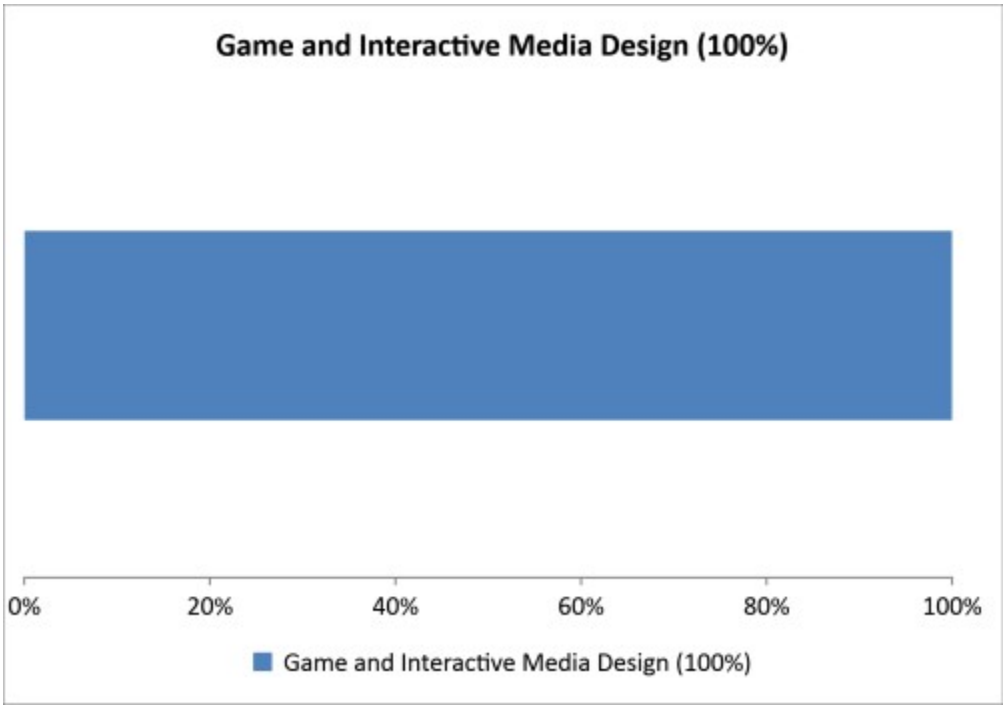
PROJECT CRITERIA

Validate	Programs
Metro Areas (MSAs)	Tucson, AZ
Degree Level	Bachelor's degree
Time Period	9/1/2018 - 8/31/2019
Selected Programs	Game and Interactive Media Design (50.0411)
Career Outcomes mapped to Selected Programs of Study	Video Game Designer

OVERVIEW

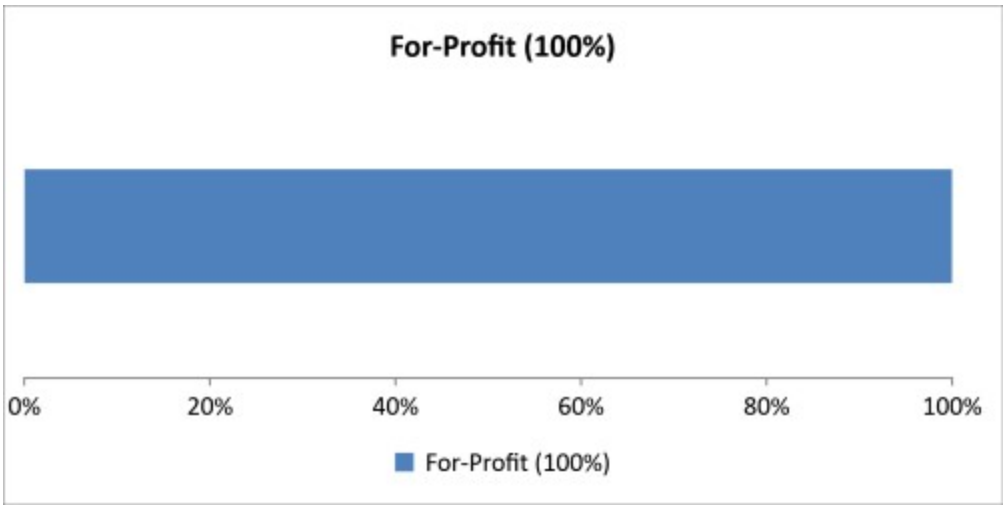
	#	% Change (2013-2017)
Degrees Conferred	3	100%
Number of Institutions	1	100%
Average Conferrals by Institution	3	100.00%
Median Conferrals by Institution	3	100.00%

MARKET SHARE BY PROGRAM



Program	Conferrals (2017)	Market Share (%)
Game and Interactive Media Design	3	100.00%

MARKET SHARE BY INSTITUTION TYPE



Institution Type	Conferrals (2017)	Market Share (%)
For-Profit	3	100.00%

TOP INSTITUTIONS

Institution	School Type	Market Share (2017)	Market Share Change	Conferrals (2017)	Conferrals Change (2013-2017)
The Art Institute of Tucson	For-Profit	100.00%	100.00%	3	100.00%

TOP PROGRAMS

Program	Market Share (2017)	Market Share Change	Conferrals (2017)	Conferrals Change (2013-2017)

Game and Interactive Media Design	100.00%	100.00%	3	100.00%

ACTIVE COMPETITORS

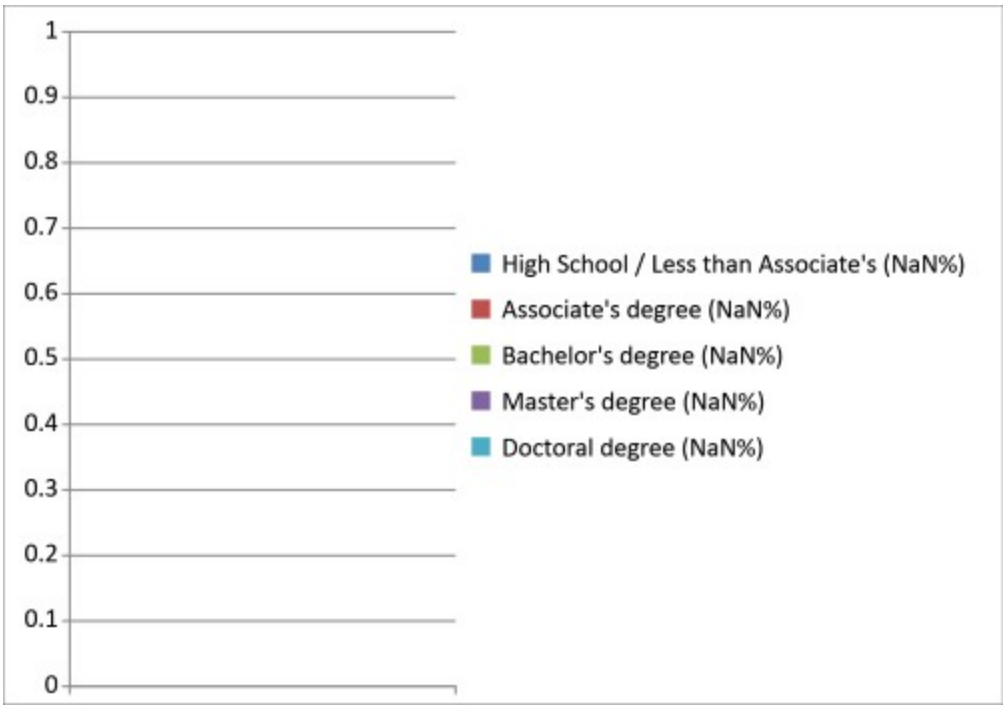
Institution	School Type	Market Share (2017)	Market Share Change	Conferrals (2017)	Conferrals Change (2013-2017)

VALIDATE: MARKET ALIGNMENT

PROJECT CRITERIA

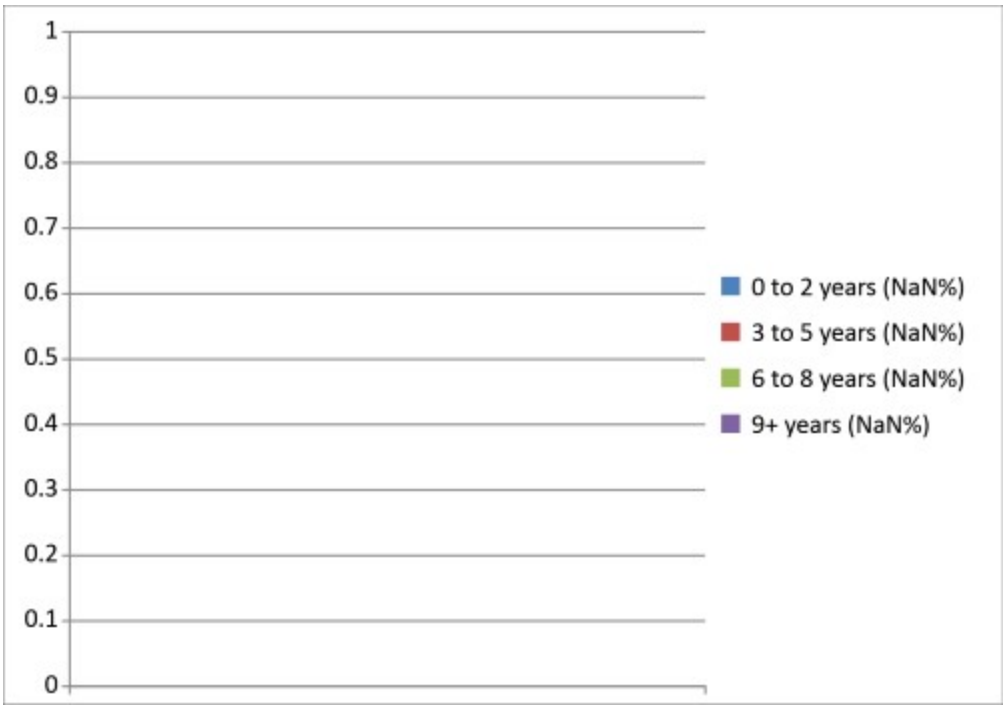
Validate	Programs
Metro Areas (MSAs)	Tucson, AZ
Degree Level	Bachelor's degree
Time Period	9/1/2018 - 8/31/2019
Selected Programs	Game and Interactive Media Design (50.0411)
Career Outcomes mapped to Selected Programs of Study	Video Game Designer

JOB POSTINGS BY ADVERTISED EDUCATION (%)



JOB POSTINGS BY INDUSTRY (%)

JOB POSTINGS BY EXPERIENCE REQUESTED (%)



TOP TITLES

Experience Level: All Experience

Title	Postings	Market Share (%)

TOP EMPLOYERS HIRING

Experience Level: All Experience

Employer	Postings	Market Share (%)

VALIDATE: KEY COMPETENCIES

PROJECT CRITERIA

Validate	Programs
Metro Areas (MSAs)	Tucson, AZ
Degree Level	Bachelor's degree
Time Period	9/1/2018 - 8/31/2019
Selected Programs	Game and Interactive Media Design (50.0411)
Career Outcomes mapped to Selected Programs of Study	Video Game Designer

TOP 15 SPECIALIZED SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage

TOP 15 BASELINES SKILLS

Skill	Postings

TOP 15 SOFTWARE PROGRAMMING SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage

TOP 15 SKILL CLUSTERS

Skill	Postings
Animation and Game Design	0 (0%)
Augumented Reality / Virtual Reality (AR / VR)	0 (0%)
Simulation	0 (0%)
Uncategorized	0 (0%)
Physics	0 (0%)
Art and Illustration	0 (0%)
Programming Principles	0 (0%)
Product Management	0 (0%)

Computer and Information Technology Industry Knowledge	0 (0%)
Java	0 (0%)
Quality Assurance and Control	0 (0%)
User Interface and User Experience (UI/UX) Design	0 (0%)
Product Development	0 (0%)
Software Development Principles	0 (0%)
JavaScript and jQuery	0 (0%)

TOP 15 SALARY PREMIUM SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage

No skills available

TOP 15 COMPETITIVE ADVANTAGE SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage

No skills available

TOP 15 CERTIFICATIONS

Skill	Postings	Salary Premium	Competitive Advantage

TOP 15 SALARY PREMIUM CERTIFICATIONS

Skill	Postings	Salary Premium	Competitive Advantage

No certificates available

TOP 15 COMPETITIVE ADVANTAGE CERTIFICATIONS

Skill	Postings	Salary Premium	Competitive Advantage

No certificates available

VALIDATE: EMPLOYMENT POTENTIAL

PROJECT CRITERIA

Validate	Programs
Location	Nationwide
Degree Level	Bachelor's degree
Time Period	9/1/2018 - 8/31/2019
Selected Programs	Game and Interactive Media Design (50.0411)
Career Outcomes mapped to Selected Programs of Study	Video Game Designer

HOW MANY JOBS ARE THERE FOR YOUR GRADUATES?

For your project criteria, there were 1,698 job postings in the last 12 months.

Compared to:

- 31,389,607 total job postings in your selected location
- 11,211,265 total job postings requesting a Bachelor's degree in your selected location

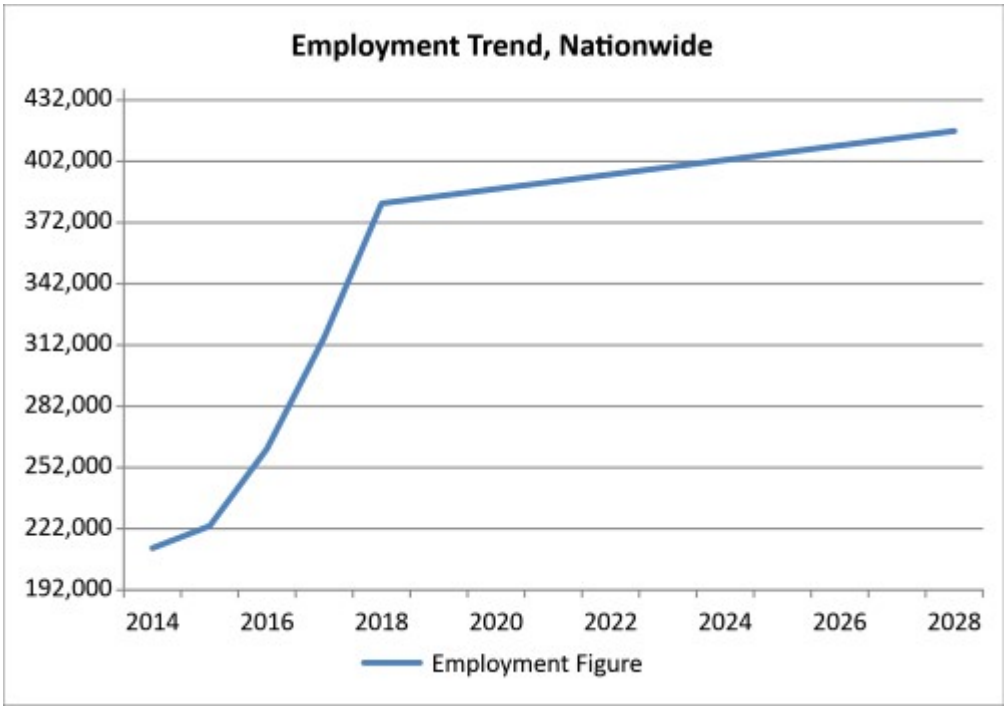
The number of jobs is expected to grow over the next 8 years.

GROWTH BY GEOGRAPHY

Geography	Selected Occupations	Total Labor Market	Relative Growth
Nationwide	9.30 %	5.78 %	Average

HOW HAS EMPLOYMENT CHANGED FOR CAREER OUTCOMES OF YOUR PROGRAM?

	2014	2015	2016	2017	2018	2028
Employment (BLS)	212,510	223,370	261,210	315,830	381,380	416,848



Employment data between years 2019 and 2028 are projected figures.

DETAILS BY OCCUPATION

Occupation Group	Postings	LQ	Employment (2018)	Employment Growth (2017 - 2018)	Projected Employment Growth (2019-2028)
Front-End Application Design	1,698	NA	381,380	20.8%	9.3%

HOW VERSATILE IS MY PROGRAM?

Graduates of this program usually transition into any of the 1 different occupation groups:

Occupations Group	Market Size (postings)	Percentage of Career Outcome demand
Front-End Application Design	1,698	100.0%

WHAT SALARY WILL MY GRADUATES MAKE?

The average salary in the nation for graduates of your program is $83,943

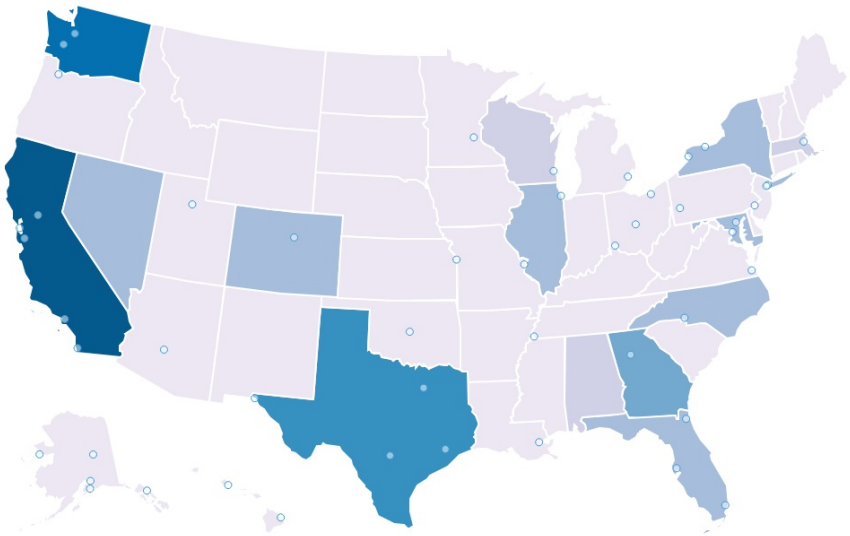
This average salary is Above the average living wage for your region of $31,450


Front-End Application Design
76K
90K92K
21k
0-2 Years
3-5 Years
6+ Years
102k

Salary numbers are based on Burning Glass models that consider advertised job posting salary, BLS data, and other proprietary and public sources of information.

Occupation Group	25th Percentile	Average	75th Percentile
Front-End Application Design	$76,136	$89,551	$91,559

WHERE IS THE DEMAND FOR MY GRADUATES?



TOP LOCATIONS BY POSTING DEMAND

Location	Postings
California	934
Washington	228
Texas	148
Georgia	54
New York	44
North Carolina	31
Maryland	31

Florida	30
Nevada	27
Illinois	24

VALIDATE: COMPETITIVE LANDSCAPE

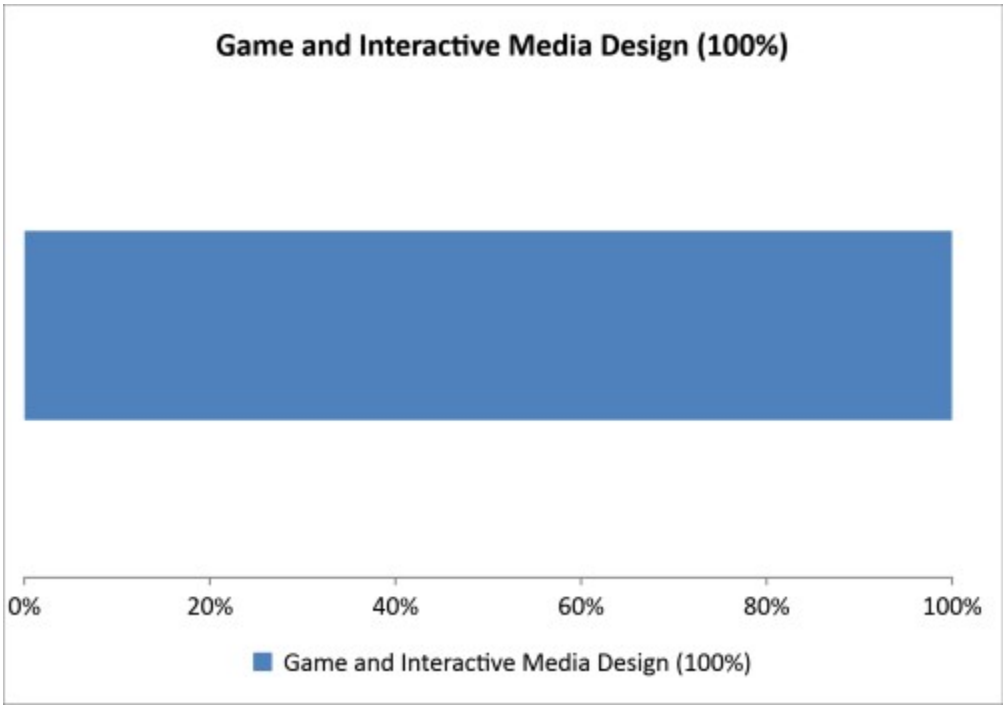
PROJECT CRITERIA

Validate	Programs
Location	Nationwide
Degree Level	Bachelor's degree
Time Period	9/1/2018 - 8/31/2019
Selected Programs	Game and Interactive Media Design (50.0411)
Career Outcomes mapped to Selected Programs of Study	Video Game Designer

OVERVIEW

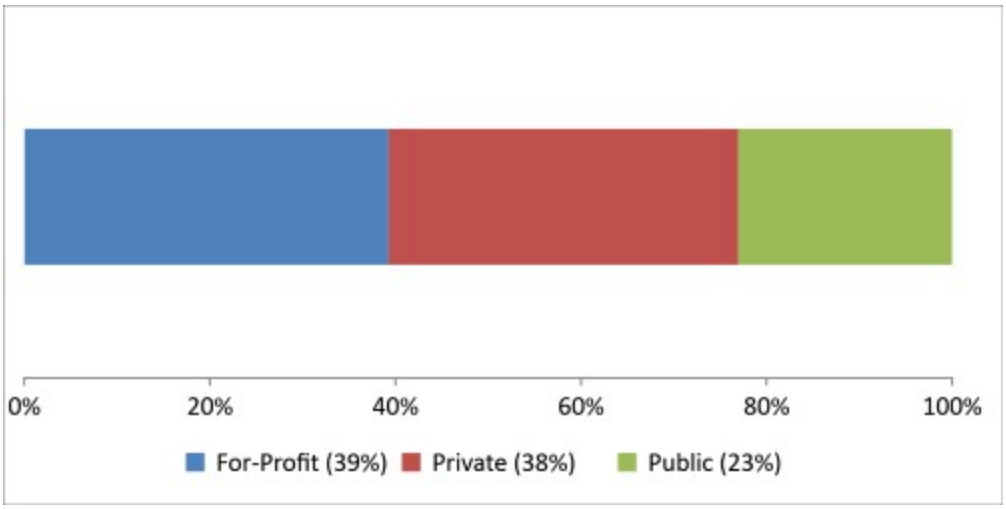
	#	% Change (2013-2017)
Degrees Conferred	1,347	0%
Number of Institutions	103	33%
Average Conferrals by Institution	13	-23.50%
Median Conferrals by Institution	8	-27.30%

MARKET SHARE BY PROGRAM



Program	Conferrals (2017)	Market Share (%)
Game and Interactive Media Design	1,347	100.00%

MARKET SHARE BY INSTITUTION TYPE



Institution Type	Conferrals (2017)	Market Share (%)
For-Profit	529	39.27%
Private	507	37.64%
Public	311	23.09%

TOP INSTITUTIONS

Institution	School Type	Market Share (2017)	Market Share Change	Conferrals (2017)	Conferrals Change (2013-2017)
The University of Texas at Dallas	Public	14.48%	5.30%	195	58.50%
Savannah College of Art and Design	Private	6.83%	1.68%	92	33.30%
Becker College	Private	5.64%	5.64%	76	100.00%

Drexel University	Private	3.56%	3.56%	48	100.00%
The Art Institute of Pittsburgh-Online Division	For-Profit	3.34%	0.80%	45	32.40%
California State University-Chico	Public	3.12%	3.12%	42	100.00%
University of Southern California	Private	2.38%	0.59%	32	33.30%
Rensselaer Polytechnic Institute	Private	2.30%	0.06%	31	3.30%
SAE Expression College	For-Profit	2.23%	0.59%	30	36.40%
Champlain College	Private	2.15%	-0.24%	29	-9.40%

TOP PROGRAMS

Program	Market Share (2017)	Market Share Change	Conferrals (2017)	Conferrals Change (2013-2017)
Game and Interactive Media Design	100.00%	0.00%	1,347	0.50%

ACTIVE COMPETITORS

Institution	School Type	Market Share	Market Share Change	Conferrals	Conferrals Change

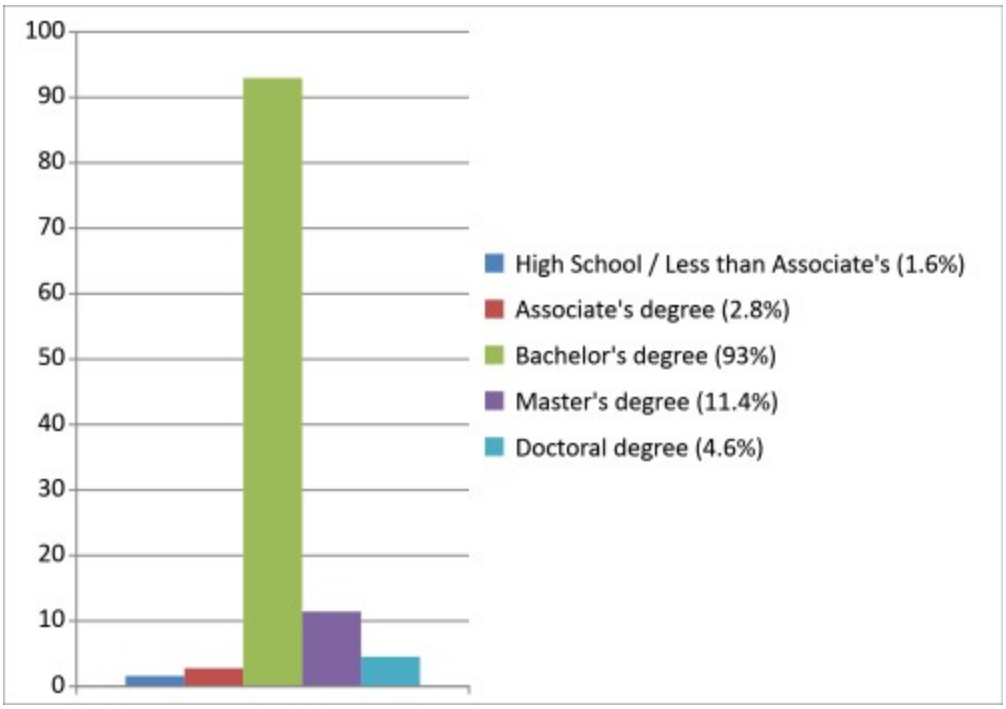
	(2017)	**(2017)**	**(2013-2017)**

VALIDATE: MARKET ALIGNMENT

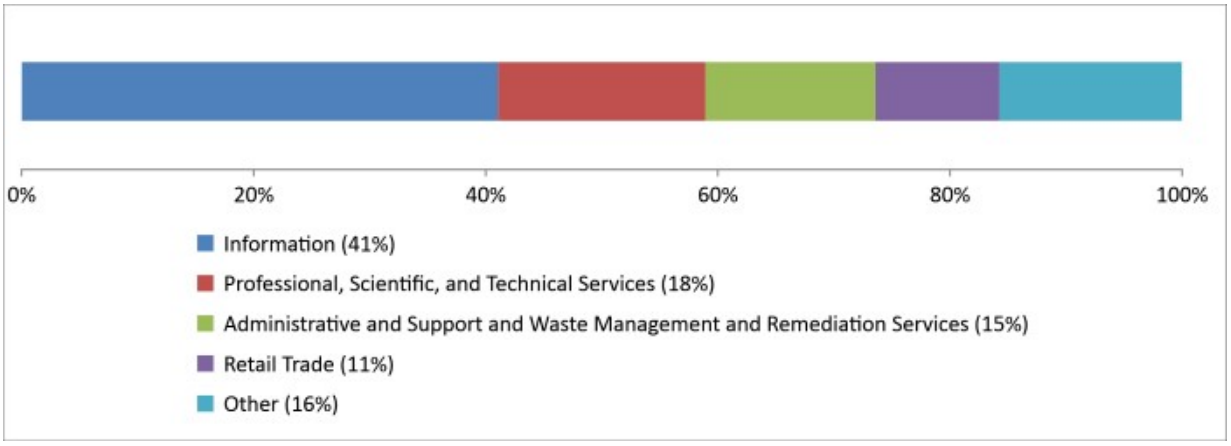
PROJECT CRITERIA

Validate	Programs
Location	Nationwide
Degree Level	Bachelor's degree
Time Period	9/1/2018 - 8/31/2019
Selected Programs	Game and Interactive Media Design (50.0411)
Career Outcomes mapped to Selected Programs of Study	Video Game Designer

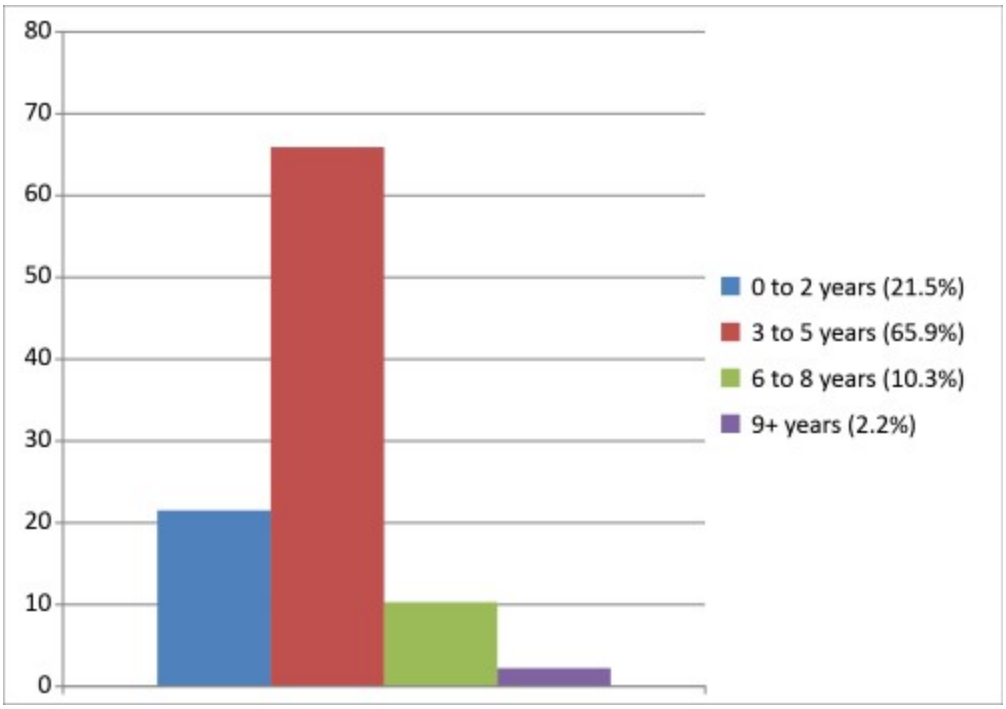
JOB POSTINGS BY ADVERTISED EDUCATION (%)



JOB POSTINGS BY INDUSTRY (%)



JOB POSTINGS BY EXPERIENCE REQUESTED (%)



TOP TITLES

Experience Level: All Experience

Title	Postings	Market Share (%)
Game Designer	183	28.86%
Senior Engineer	77	12.15%
Gameplay Engineer	47	7.41%
Engineer	38	5.99%
Environment Artist	32	5.05%
Concept Artist	26	4.10%
Lead Engineer	26	4.10%

Summer Instructor, Video Game Design	19	3.00%
Senior Environment Artist	14	2.21%
Lead Game Desinger	11	1.74%
Development Engineer	10	1.58%
Game Engineer	10	1.58%
Senior Concept Artist	10	1.58%
Lead Concept Artist	7	1.10%
Lead Environment Artist	7	1.10%

TOP EMPLOYERS HIRING

Experience Level: All Experience

Employer	Postings	Market Share (%)
Amazon	28	4.42%
Activision	17	2.68%
Time Warner	17	2.68%
Electronic Arts Incorporated	15	2.37%
Booz Allen Hamilton Inc.	13	2.05%
Survios	13	2.05%
Sony Electronics Incorporated	12	1.89%
Blizzard Entertainment	11	1.74%

SAIC	11	1.74%
Cryptic Studios Incorporated	10	1.58%
Facebook	9	1.42%
Wargaming	9	1.42%
Zenimax Media Incorporated	9	1.42%
Big Fish Games, Inc	7	1.10%
Disney	7	1.10%

VALIDATE: KEY COMPETENCIES

PROJECT CRITERIA

Validate	Programs
Location	Nationwide
Degree Level	Bachelor's degree
Time Period	9/1/2018 - 8/31/2019
Selected Programs	Game and Interactive Media Design (50.0411)
Career Outcomes mapped to Selected Programs of Study	Video Game Designer

TOP 15 SPECIALIZED SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage
Game Development	785 (46%)	-9.49%	No	No
Level design	519 (31%)	7.16%	No	No

Adobe Photoshop	431 (25%)	-22.36%	No	No
C++	421 (25%)	-24.09%	No	No
Maya	382 (22%)	7.51%	No	No
Microsoft C#	251 (15%)	-25.69%	No	No
Zbrush	232 (14%)	20.69%	No	Yes
EPIC Unreal Engine	216 (13%)	53.88%	No	No
Art Direction	198 (12%)	-31.29%	Yes	No
Software Engineering	168 (10%)	7.27%	Yes	No
Scheduling	158 (9%)	1.88%	No	No
Painting	152 (9%)	5.51%	No	No
Painting (Art)	152 (9%)	4.49%	No	No
Physics	140 (8%)	-16.38%	No	Yes

3D Modeling / Design	139 (8%)	6.84%	No	No

TOP 15 BASELINES SKILLS

Skill	Postings
Teamwork / Collaboration	747 (44%)
Creativity	709 (42%)
Communication Skills	607 (36%)
Problem Solving	301 (18%)
Organizational Skills	208 (12%)
Writing	189 (11%)
Research	144 (8%)

Detail-Oriented	116 (7%)
Editing	111 (7%)
Time Management	105 (6%)
Microsoft Excel	97 (6%)
Written Communication	80 (5%)
Troubleshooting	74 (4%)
Meeting Deadlines	72 (4%)
Planning	69 (4%)

TOP 15 SOFTWARE PROGRAMMING SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage

Level design	519 (31%)	7.16%	No	No
Adobe Photoshop	431 (25%)	-22.36%	No	No
C++	421 (25%)	-24.09%	No	No
Maya	382 (22%)	7.51%	No	No
Microsoft C#	251 (15%)	-25.69%	No	No
Software Engineering	168 (10%)	7.27%	Yes	No
3D Studio Max	117 (7%)	-23.06%	No	No
Python	116 (7%)	61.12%	No	No
Unity	102 (6%)	39.69%	No	No
Microsoft Excel	97 (6%)	17.03%	No	No
Java	92 (5%)	-13.18%	Yes	No
Software Development	87 (5%)	5.78%	No	No

Debugging	86 (5%)	7.39%	Yes	No
JavaScript	80 (5%)	6.81%	Yes	No
Object-Oriented Analysis and Design (OOAD)	60 (4%)	-28.56%	No	No

TOP 15 SKILL CLUSTERS

Skill	Postings
Animation and Game Design	1031 (61%)
Software Development Principles	325 (19%)
Art and Illustration	282 (17%)
Programming Principles	147 (9%)
Product Development	147 (9%)
Physics	140 (8%)

Quality Assurance and Control	121 (7%)
Simulation	100 (6%)
User Interface and User Experience (UI/UX) Design	95 (6%)
JavaScript and jQuery	95 (6%)
Java	92 (5%)
Augumented Reality / Virtual Reality (AR / VR)	62 (4%)
Product Management	55 (3%)
Computer and Information Technology Industry Knowledge	16 (1%)
Uncategorized	0 (0%)

TOP 15 SALARY PREMIUM SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage

Art Direction	198 (12%)	-31.29%	Yes	No
Software Engineering	168 (10%)	7.27%	Yes	No
Quality Assurance and Control	121 (7%)	39.46%	Yes	No
Prototyping	112 (7%)	10.91%	Yes	No
Simulation	100 (6%)	9.66%	Yes	No
Java	92 (5%)	-13.18%	Yes	No
Debugging	86 (5%)	7.39%	Yes	No
JavaScript	80 (5%)	6.81%	Yes	No
Virtual Reality (VR)	57 (3%)	91.72%	Yes	No
cryEngine	52 (3%)	-100%	Yes	Yes
Product Management	45 (3%)	28.58%	Yes	No
User Interface (UI) Design	39 (2%)	-23.75%	Yes	No

Scrum	27 (2%)	39.96%	Yes	No
Information Technology Industry Knowledge	16 (1%)	51.77%	Yes	No

TOP 15 COMPETITIVE ADVANTAGE SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage
Zbrush	232 (14%)	20.69%	No	Yes
Physics	140 (8%)	-16.38%	No	Yes
cryEngine	52 (3%)	-100%	Yes	Yes
Augmented Reality (AR)	34 (2%)	93.19%	No	Yes

TOP 15 CERTIFICATIONS

Skill	Postings	Salary Premium	Competitive Advantage
Security Clearance	35 (2%)	No	No

Casino Gaming License	1 (0%)	No	No
Certified Teacher	1 (0%)	No	No
Driver's License	1 (0%)	No	No

TOP 15 SALARY PREMIUM CERTIFICATIONS

Skill	Postings	Salary Premium	Competitive Advantage

No certificates available

TOP 15 COMPETITIVE ADVANTAGE CERTIFICATIONS

Skill	Postings	Salary Premium	Competitive Advantage

No certificates available