# Our State of Play
Higher Education Video Game Alliance
Survey 2014-15

# From The Executive Committee

Good strategy begins with a full understanding of the landscape within which you are playing. Thus, the impetus behind the Higher Education Video Game Alliance Survey 2014-15: Our State of Play — which we are boldly calling the "first annual" survey of its kind.

These data points represent the first landscape analysis of video game-based programs in higher education. Given our growing membership, and the importance of building a shared understanding of the emerging field and current member needs, we will continue with and expand on this work annually.

As the first survey of its kind in our sector, these findings offer a preliminary glimpse into the depth and diversity of game-based scholarly work at institutions of higher education. Future iterations will be responsive to what we have learned thus far, including more variety in program types (not just degree-conferring, but lab- and center-based work), greater categorization and synthesis of course types offered (based on the initial course data collected herein), and a reflective self-assessment as to how well the Higher Education Video Game Alliance ("The Alliance") has met its yearly goals.

We are pleased to offer these first insights into the field of video games in higher education. We hope you will find the results as thought provoking as we do.

Sincerely,

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## ABOUT THE ALLIANCE

Our mission is to create a platform for higher education leaders which will underscore the cultural, scientific, and economic importance of video game programs in colleges and universities. The key is to create a robust network of resources, including unified advocacy, policymaker engagement, media coverage, and external funding, in order to incubate and harness the impact of this community in a 21st century learning environment.

To learn more about the Higher Education Video Game Alliance, or to become a member, please visit higheredgames.org.

# Executive Summary

The Higher Education Video Game Alliance (The Alliance) surveyed 73 colleges and universities with video game certification or degree-granting programs. The first comprehensive nationwide and international survey of its kind, The Alliance now has a clear picture of its landscape. The results of this survey speaks volumes to the strength and relevance of the industry today.
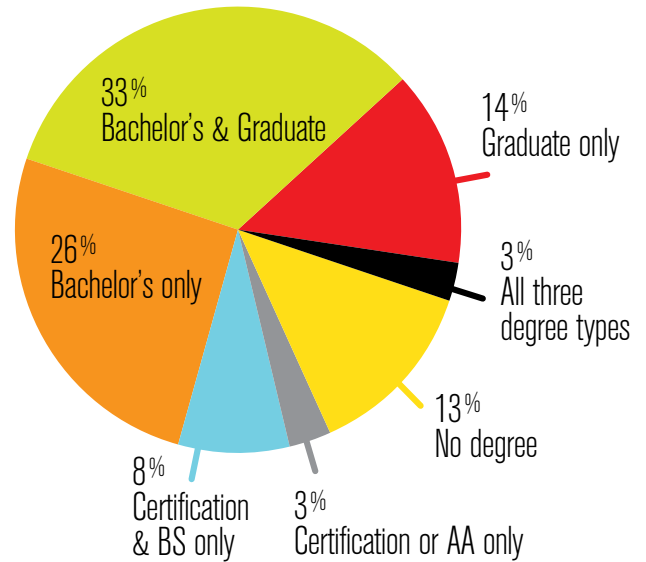
Video game education programs are fostering the next generation of video game engineers and designers, creating an environment of **committed students**, establishing a **pipeline of talent**, and improving **diversity in the field**. The findings and statistics that follow signal positive momentum for the video game industry as it continues to drive job creation and economic growth nationwide.

## Enrollment

The success of the video game industry begins with education. Enrollment of video game-related programs continues to grow, demonstrating the interest and strength in this course of study at universities and colleges nationwide and internationally. Key survey findings include:

- Responding game-based programs in higher education account for a total of 7,675 undergraduate students in the United States and four other countries. Such programs are most commonly established within computer and information sciences (roughly 43,000 total undergraduate degrees per year in the States), engineering and engineering technologies (roughly 93,000 per year), and visual and performing arts (roughly 94,000). [1]

## Academic Degrees Provided by Institution



- 33% Bachelor's & Graduate
- 26% Bachelor's only
- 14% Graduate only
- 3% All three degree types
- 13% No degree
- 8% Certification & BS only
- 3% Certification or AA only

- The average undergraduate video game-related program has 172 enrolled students; the average graduate program has 46 students.

## Gender Diversity

Undergraduate video game programs show a notable level of diversity, by nearly a two to one margin, than other computer science and STEM-related programs. Key survey findings include:

- The average percentage of women in undergraduate programs is slightly more than 30%, with highest representation reported at 57% women. The average is nearly 33% at the graduate level. By contrast, women made up 17.6% of undergraduate and 28.2% of master's degrees conferred in computer and information sciences, and 17.2% of undergraduate and 22.7% of master's degrees in engineering and engineering technologies. [2] The involvement of female perspectives in the industry pipeline is especially relevant as women age 18 or older represent a significantly greater portion of the game-playing population (36%) than boys 18 or younger (17%), and the number of female gamers age 50 and older increased by 32% from 2012 to 2013. [3]

## Percentage of Women Enrolled

**VIDEO GAME PROGRAMS**

30% VS. 33%

**COMP. & INFO. SCIENCES**

17.6% | 28.2%

**ENGINEERING & ENG. TECH.**

17.2% | 22.7%

UNDERGRADUATE    GRADUATE

1  U.S. Department of Education, National Center for Education Statistics, Higher Education General Information Survey, "Degrees and Other Formal Awards Conferred" surveys, 1970-71 through 1985-86; Integrated Postsecondary Education Data System (IPEDS), "Completions Survey" (IPEDS-C:87-89); and IPEDS Fall 2000 through Fall 2011, Completions component (tables prepared in July 2012).
2  Ibid.
3  "2014 Essential Facts About the Computer and Video Game Industry" by the Entertainment Software Association (http://www.theesa.com/about-esa/industry-facts).

**Retention**

Video game programs have significantly higher retention rates than national averages, building a strong workforce pipeline to meet the needs of today's 21st century digital economy. Key survey findings include:
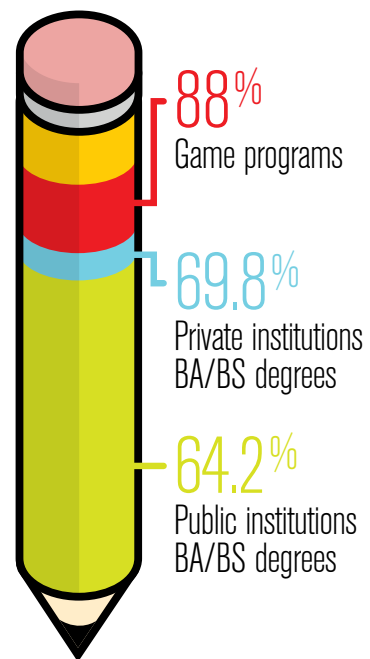
- A retention rate of over 88% was reported among programs that tracked first-to-second year retention. By comparison, the 2014 freshman to sophomore year retention rate was 64.2% among public and 69.8% among private institutions conferring BA and BS degrees.[4]

- Nearly half of all video game-based programs offered some form of scholarship for their students.

**Curriculum and Program Content**

The diverse curricula offered by video game-related programs demonstrate the breadth and dynamism of this developing field. The diverse array of coursework allows individuals to customize their education to meet the needs of today's evolving technology workforce. For example:

- Classes offered through video game-related programs span more than 240 subjects ranging from Advanced Drawing and 3D Modeling to Artificial Intelligence and Computer Programming in C++ to Marketing Principles and Business Law.

- More than 62% of video game programs in our sample require a capstone course, but only 20% currently require a practicum and only 18% currently require an internship.

- More than half of responding institutions offer a bachelor's degree. Roughly half offer a graduate degree. More than half offer some form of program or course sequence that contributes to another degree.

- More than three-fourths of respondents indicated that the traditional liberal arts are important to game-related programs and students in the field; nearly 42% say they are very important.

**The Higher Education Video Game Alliance (The Alliance)**

According to survey respondents, the five most important functions of The Alliance are:
1. Sharing best practices for instructional and other issues in video game programs
2. Facilitating partnerships with industry such as potential student internships and faculty fellowship programs
3. Coordinating and hosting gatherings connected to existing conferences/events
4. Sharing access to research related to video game design and development
5. Developing collaborative partnership opportunities among its members, including joint pursuit of external funding

**SURVEY METHODOLOGY**

The Higher Education Video Game Alliance proposed and developed this survey of institutions as the first of its kind to assess the current state of game-related programs in higher education. The survey was sent to contact persons at 328 institutions.[5] The online collection of responses began in December of 2014 and continued through January 30, 2015.



Freshman to Sophomore Retention

88% Game programs

69.8% Private institutions BA/BS degrees

64.2% Public institutions BA/BS degrees

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4  ACT "College Student Retention and Graduation Rates from 2000 through 2014" (www.act.org/research/policymakers/reports/graduation.html).
5  These included higher education institutions with identified game-related certifications and degree programs; Source: Entertainment Software Association.

# Full Survey Results

Over the last decade, game-related programs have emerged across the globe in a variety of forms and at a variety of institutions. The 73 programs responding to this survey come from five countries and 27 different U.S. states and Canadian provinces. The current sample includes programs distributed primarily across public (54%) and private non-profit (36.5%) institutions of higher education, with additional representation across private for-profit programs (9.5%) and those connected with K-12 education.

Doctoral research-intensive institutions account for 41.9% of programs responding. The breakdown by institutional type is further presented in Table 1.

**Table 1**. Institution type where game related programs are located

|  | All | Public | Private Non-Profit | Private For-Profit |
|---|---|---|---|---|
| Two-year | 4 | 4 | 0 | 0 |
| Four-year | 14 | 5 | 5 | 4 |
| Master's granting | 12 | 6 | 5 | 1 |
| Doctoral granting | 8 | 4 | 3 | 0 |
| Doctoral/Research | 31 | 17 | 14 | 0 |
| Other[6] | 2 | * | * | * |

## ACADEMIC DEGREES AND PROGRAMS OFFERED

Game-related programs exist at many different levels, from a single course to doctoral degrees. Seven categories of program were included in the original survey: minor/area of concentration, certificate, associate's degree, bachelor's degree, master's, joint bachelor's of science/master's of science (BS/MS), and doctorate. In addition to these seven categories, programs self-identified in three other areas: informal programs housed within another program, informal programs directed by a single faculty member interested in game-related studies, and research centers that study games and game-related applications but do not confer a degree. Sixty-two of the 73 (86.3%) completed surveys, including institutions[7] with one or more of the seven program types included in the survey. Noting the need to expand the reporting of these additional program types, Table 2 reports the frequency of each of the original seven program types.

**Table 2**. Frequency of game program types

| Type of Program | Number | Percentage |
|---|---|---|
| Minor/area of concentration | 35 | 56.5% |
| Certificate | 12 | 19.4% |
| Associate's degree | 5 | 8.1% |
| Bachelor's degree | 39 | 62.9% |
| Joint BS/MS degree | 7 | 11.9% |
| Master's degree | 28 | 45.2% |
| Doctorate (PhD) | 12 | 19.4% |

6   One is a 3-year program. The other is a 1-year certification-only program
7   One institution had two completed submissions, each for two different programs. For statistics related to institutional-level data, the institution is only counted once.
     For all program level data, both responses are treated as separate.

The bachelor's degree is the most common game-related program, and is offered by well over half of all institutions responding to the survey. This is followed closely by institutions offering a minor or an area of concentration within another bachelor's degree program. At the graduate level, just under half of the institutions surveyed offered a master's degree. Nearly two-thirds (65.6%) of all institutions with some formal game related curriculum offered more than one degree, with one institution offering six of the seven options.

Table 3 shows the concordance between degree types indicating the number of programs offering more than one type of degree. The diagonal represents the number of degree programs offering only that type of degree. For example there are seven programs that offer a minor and only a minor. The values in the rows will not sum because programs may be counted in multiple columns; for example,  institutions offering a certificate, BS, and PhD will be counted in the bachelor's row under each of the associated columns. Programs offering graduate degrees tend to offer both an MS and a PhD. Graduate-granting programs are also quite likely to offer a variety of undergraduate options, including minors, certificates and/or bachelor's degree.

**Table 3**. Concordance of degree options across programs, showing the number of programs offering the combination of any two degree types.

| Type of Program | Minor/Area of Concentration | Certificate | Associate's degree | Bachelor's degree | Joint BS/ MS degree | Master's degree | Doctorate (PhD) |
|---|---|---|---|---|---|---|---|
| Minor/Area of Concentration | 7 | 7 | 1 | 22 | 6 | 15 | 7 |
| Certificate | 7 | 1 | 3 | 6 | 2 | 3 | 2 |
| Associate's degree | 1 | 3 | 1 | 1 | 0 | 0 | 0 |
| Bachelor's degree | 22 | 6 | 1 | 9 | 7 | 18 | 6 |
| Joint BS/MS degree | 6 | 2 | 0 | 7 | 0 | 7 | 4 |
| Master's degree | 15 | 3 | 0 | 18 | 7 | 3 | 11 |
| Doctorate (PhD) | 7 | 2 | 0 | 6 | 4 | 11 | 0 |

Most programs began in the last 15 years, and the average age of these programs is under 10 years (starting in 2007). Three responding institutions are in the process of developing a game related program at the time of the response.

Not all respondents reported enrollment information, and a few programs were in development, pilot delivery, or just beginning. However, 46 programs reported undergraduate enrollment estimates, and 26 reported graduate enrollment estimates. Enrollment numbers are not externally verified, and thus should be treated as estimates.[8]

**Undergraduate enrollment.** Programs reporting undergraduate enrollment estimates revealed that the average program size was 172 students. However, the median enrollment is 100 students, indicating that the mean is skewed by the relatively large enrollment of some programs. Table 4 shows the breakdown in enrollment by size for six selected ranges. The bottom quartile for undergraduate enrollment is below 52 students, and the top quartile for enrollment is above 262 students.

**Table 4**. Undergraduate enrollment by size

| Undergraduate Program Size | Number | Percentage |
| --- | --- | --- |
| Less than 10 | 1 | 2.3% |
| 10-49 | 9 | 20.9% |
| 50-99 | 10 | 23.3% |
| 100-249 | 9 | 20.9% |
| 250-499 | 11 | 25.6% |
| 500+ | 3 | 7.0% |

**Gender distribution (undergraduate).** The distribution of men and women was reported for 40 of the 46 institutions providing enrollment estimates at the undergraduate level. The total number of students enrolled in undergraduate programs was 7,675. Among programs reporting enrollment by gender, 23.1% of participants were women, which is consistent with the median percentage of women of all programs. The mean percentage of women in reporting programs is slightly higher at 30.3%, with the highest representation reported as 57% women.

**Graduate enrollment.** At the graduate level, 26 programs reported enrollment estimates, with 25 offering a breakdown by gender. The average enrollment was 46.1 students, with 32.7% of those students women. Six large programs (more than 90 students) skew the enrollment average, so the median (26.6 students) may be a better indicator of typical graduate program size. Table 5 shows the distribution of graduate enrollment across size categories.

**Table 5**. Graduate enrollment by size

| Graduate Program Size | Number | Percentage |
| --- | --- | --- |
| Less than 10 | 5 | 19.2% |
| 10-29 | 9 | 34.6% |
| 30-49 | 3 | 11.5% |
| 50-69 | 3 | 11.5% |
| 70-89 | 0 | 0.0% |
| 90+ | 6 | 23.1% |

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8   Some programs reported exact numbers, while others noted that their numbers were close, but should be considered approximate

## PROGRAM ADMINISTRATION

Program administrators are most likely to be department chairs (22) or directors (17), with the primary distinction between these two groups being the average age of the program and the type of graduate degree offered. Programs granting doctoral degrees were for more likely to have a chair/head as administrator, while master's-only programs were managed by directors. Both chairs and directors oversee similar numbers of full-time faculty (averages of 8 and 7.7 respectively). Coordinators (defined as someone with less than 50% of their time assigned to administrative duties) make up 23.3% of administrators, and they tend to oversee primarily undergraduate-only programs and those with fewer students and faculty. A small number of responding programs are lead by deans (3), and some are directed by faculty with no administrative assignment (2). Table 6 reports the number of program in each of the four major types included on the original survey. Some of the non-responses in this category came from developing or new programs.

**Table 6**. Program characteristics by administrator type

| Administrator Title | Total | MS/PhD | Mean UG Enrollment | Mean Grad Enrollment | Mean Age of Program |
|---|---|---|---|---|---|
| Chair/Department Head | 22 | 12 | 204.5 | 58.4 | 13 years |
| Director ( >50% admin) | 19 | 14 | 243.2 | 46.6 | 7 years |
| Coordinator ( <50% admin) | 17 | 1 | 85.6 | * | 5.5 years |
| Dean | 3 | * | * | * | * |
| Other/Not reported | 12 | * | * | * | * |

## ADDITIONAL PROGRAM CHARACTERISTICS

The survey asked a series of questions about additional characteristics that give some indication of the state of the educational environment. This section summarizes the results from those items, including scholarships, assistantships, retention, and graduation rates, and completion of program reviews.

**Scholarships.** Just under half (47.6%) of all programs offer some form of scholarship. Programs offering scholarships tended to be larger in undergraduate enrollment (average of 231.4 students) compared to those without scholarships (average of 132.5 students). Scholarships are more common in programs also offering graduate degrees and non-degree certification.

**Graduate assistantships.** Assistantships are common across the 31 programs responding to this item, with 25 programs (80.6%) providing some form of graduate assistantship. As with scholarships programs, graduate assistantships are associated with larger programs. The average graduate enrollment of the programs with assistantships is 58.9, compared to 18.8 for the few programs not offering an assistantship. Future surveys may wish to include further assessment of the number of assistantships and questions about tuition remission/reduction and other compensation-related items.

**Retention and graduation rates.** Retention and graduation rates are often-used metrics in assessing educational programs. As with enrollment numbers, these are not externally verified, and should be considered estimates of retention rates. Further, at least one program noted that they are a one-year program, meaning for them the first-to-second-year retention rate is irrelevant. Of the 38 programs reporting a first-to-second-year retention rate, the average was 88.1% and the median was 90.0%. Four-year graduation rate is also widely used, but not always applicable, as at least one program noted their degree is intended to be earned in five years, and several other programs offer joint BS/MS degrees. The mean reported four-year graduation rate was 74% based on self-reported rates from 29 programs, with a median graduation rate of 82%. There was little change in the six-year graduation rates overall.

**Program review.** Thirty-nine programs (63.9% of those responding to the question) had completed a program review. Of those completing a program review, 82.1% had an external evaluator and 74.4% were required by the institution. Almost half (43.6%) of those reporting a review were completed within the last year, with 69.2% reporting completing a program review since 2011.

Additional student-relevant services are often managed at either an institutional or a program level. For each of five categories, programs indicated whether the service was offered at the institutional level, program level, or not at all. Table 7 shows the breakdown by response for each of the five categories.

**Table 7**. Responses for presence of five forms of student service and contact

| Service or Contact | Offered at Institutional Level | Offered at Program Level | Not Available |
|---|---|---|---|
| Job placement services | 48.5% | 34.8% | 16.7% |
| High school bridge program | 31.8% | 27.3% | 40.9% |
| Diversity enhancement initiatives | 58.2% | 19.4% | 22.4% |
| Exit survey or interview | 34.3% | 38.8% | 26.9% |
| Maintain contact with former students[9] | 27.3% | 57.6% | 15.2% |

9   This includes alumni and people who left higher education for the work world and therefore are not technically alumni.

One of the goals of The Alliance survey was to gain a better understanding of the depth and breadth of game-related curricula. To that end, programs were asked to indicate courses that were required, elective, or not offered in a number of different categories. With the knowledge that generating a comprehensive list of courses would be nearly impossible and ultimately unmanageable, the survey used 21 general course categories (Table 8) and offered programs the opportunity to enter information on all additional courses (see Appendix A).

**Undergraduate.** The great variety in course offerings and type (required or elective) is apparent in the table. Only the most generic of descriptors (project courses) is required by more than half of the programs at the undergraduate level. This is most certainly due to the team-based model of game development, and the fact that program emphases vary widely from one institution to another.

**Table 8**. Percentage of programs (undergraduate) reporting course use for each of 21 course categories.

| Course | Required of All Students | Required in Some Specializations | Elective | Not Available |
|---|---|---|---|---|
| 3D Modeling | 28.8% | 24.2% | 27.3% | 18.2% |
| Animation | 22.7% | 31.8% | 21.2% | 21.2% |
| Audio Design | 12.1% | 13.6% | 36.4% | 34.8% |
| Business of Gaming | 21.2% | 7.6% | 24.2% | 40.9% |
| Critical Game Studies | 30.3% | 4.5% | 21.2% | 39.4% |
| Game Artificial Intelligence | 7.6% | 28.8% | 22.7% | 37.9% |
| Game Design | 45.5% | 18.2% | 21.2% | 13.6% |
| Game Engine Scripting | 30.3% | 21.2% | 21.2% | 22.7% |
| Game Platform Hardware Architecture | 1.5% | 22.7% | 21.2% | 48.5% |
| Game Production | 34.8% | 12.1% | 18.2% | 25.8% |
| Game Programming | 31.8% | 24.2% | 25.8% | 16.7% |
| Game Research | 24.2% | 13.6% | 31.8% | 24.2% |
| Games and Society | 22.7% | 9.1% | 33.3% | 28.8% |
| Games and Learning | 16.7% | 10.6% | 40.9% | 28.8% |
| Graphics | 30.3% | 31.8% | 18.2% | 18.2% |
| Interactive Storytelling | 24.2% | 19.7% | 21.2% | 30.3% |
| Level Design | 18.2% | 27.3% | 15.2% | 33.3% |
| Music Courses | 3.0% | 10.6% | 48.5% | 34.8% |
| Project Courses | 56.1% | 6.1% | 12.1% | 19.7% |
| Serious Games | 16.7% | 9.1% | 43.9% | 27.3% |
| Visual Design | 28.8% | 22.7% | 24.2% | 22.7% |

The list of additional courses listed under other required or elective offerings numbers more than 240 different course titles. A review of the list (see Appendix A) reveals a number of courses related to specific programing languages or applications; character, world, and story development; media, film, or animation; user interface and user experience; history and culture of games; and mobile application development, to name only a few.

Three separate items asked about some basic curricular elements that might be addressed by specific coursework, or outside of coursework. Table 9 shows the breakdown of responses about internships, practicum and capstone courses.

**Table 9**. Presence of three general curricular components

|  | Required | Optional | Planning | Not Offered |
|---|---|---|---|---|
| Internship | 18.2% | 54.5% | 6.1% | 16.7% |
| Practicum | 19.7% | 33.3% | 7.6% | 34.8% |
| Capstone Course | 62.1% | 12.1% | 7.6% | 15.2% |

**Graduate.** Programs offering graduate degrees were asked to respond concerning the same 21 courses and their applicability at the graduate level. Results for the 29 programs that responded are summarized in Table 10 (next page). Comparison between undergraduate and graduate course requirements reveals a greater emphasis on game design, production, and research, as would be expected at the graduate level. Specific course areas are more likely to be electives due to the specialized and varied nature of graduate study, but the two lists are very similar.

**Table 10**. Percentage of programs (graduate) reporting course use for each of 21 course categories

| Course | Required of All Students | Required in Some Specializations | Elective | Not Available |
|---|---|---|---|---|
| 3D Modeling | 13.8% | 13.8% | 58.6% | 10.3% |
| Animation | 13.8% | 13.8% | 58.6% | 10.3% |
| Audio Design | 3.4% | 10.3% | 58.6% | 24.1% |
| Business of Gaming | 24.1% | 3.4% | 34.5% | 37.9% |
| Critical Game Studies | 31.0% | 10.3% | 27.6% | 31.0% |
| Game Artificial Intelligence | 3.4% | 17.2% | 58.6% | 17.2% |
| Game Design | 51.7% | 13.8% | 20.7% | 10.3% |
| Game Engine Scripting | 24.1% | 17.2% | 27.6% | 27.6% |
| Game Platform Hardware Architecture | 6.9% | 10.3% | 51.7% | 27.6% |
| Game Production | 48.3% | 6.9% | 20.7% | 20.7% |
| Game Programming | 34.5% | 24.1% | 27.6% | 10.3% |
| Game Research | 44.8% | 17.2% | 20.7% | 17.2% |
| Games and Society | 31.0% | 10.3% | 34.5% | 20.7% |
| Games and Learning | 17.2% | 13.8% | 41.4% | 24.1% |
| Graphics | 17.2% | 17.2% | 48.3% | 10.3% |
| Interactive Storytelling | 17.2% | 13.8% | 44.8% | 20.7% |
| Level Design | 6.9% | 17.2% | 41.4% | 31.0% |
| Music Courses | 0.0% | 10.3% | 55.2% | 31.0% |
| Project Courses | 62.1% | 6.9% | 17.2% | 10.3% |
| Serious Games | 34.5% | 6.9% | 34.5% | 20.7% |
| Visual Design | 24.1% | 13.8% | 41.4% | 17.2% |

**Table 11**. Top 10 courses by category (Undergraduate)

| Required (of all students) | Elective | Not Available |
|---|---|---|
| Project Courses | Music Courses* | Game Platform Hardware |
| Game Design | Serious Games | Business of Gaming* |
| Game Production | Games and Learning* | Critical Game Studies** |
| Game Programming* | Audio Design | Game Artificial Intelligence |
| Graphics | Games and Society* | Music Courses* |
| Game Engine Scripting | Game Research | Audio Design |
| Critical Game Studies** | 3D Modeling* | Level Design |
| 3D Modeling* | Game Programming* | Interactive Storytelling |
| Visual Design* | Visual Design* | Games and Learning* |
| Game Research | Business of Gaming* | Games and Society* |

\* Represents courses that appear in two adjacent categories

\*\* Represents courses that appear in both "Required" and "Not Available" columns

**Table 12**. Top 10 courses by category (Graduate)

| Required (of all students) | Elective | Not Available |
|---|---|---|
| Project Courses | 3D Modeling | Business of Gaming** |
| Game Design | Animation | Music Courses* |
| Game Production | Audio Design* | Level Design |
| Game Research | Game Artificial Intelligence | Critical Game Studies** |
| Game Programming | Music Courses* | Architecture* |
| Serious Games | Architecture* | Game Engine Scripting |
| Critical Game Studies** | Graphics | Audio Design* |
| Games and Society** | Interactive Storytelling | Games and Learning* |
| Business of Gaming** | Visual Design | Interactive Storytelling |
| Game Engine Scripting | Games and Learning* | Games and Society** |

\* Represents courses that appear in two adjacent categories

\*\* Represents courses that appear in both "Required" and "Not Available" columns

A series of items was included to evaluate the respondents' opinions on issues relevant to the development and direction of the Higher Educational Video Game Alliance. The inclusion of these items and the responses is exploratory.

**Value of the liberal arts in game-related programs.** Institutions were asked to respond to the question "how important are traditional liberal arts courses in a video game related curriculum?" On a scale ranging from 1 to 6, with 1 being very important and 6 being not at all important, the mean response value was 2.09 (corresponding with a value of 'moderately important'). Overall, 70.1% of respondents indicated that the traditional liberal arts were moderately or very important.

**Accreditation.** Respondents were also asked to rate their agreement with the following statement: "Professional accreditation of game design programs is beneficial for promotion, growth and sustained success." Using a 6 point scale, with 1 being strongly agree and 6 being strongly disagree, the mean response value was 2.88 (somewhat agree), and 42.6% moderately or strongly agreed.

**Mission of The Alliance.** A series of questions probed the perceived value of several services, activities, or products potentially delivered or organized by The Alliance. These were rated using a 7-point scale ranging from 1 (very valuable) to 7 (not at all valuable). Table 13 shows the mean value and percentages of responses in the 1 and 2 categories. On average all items were rated as potentially valuable, although some items are not highly valued by a majority of respondents.

**Table 13**. Perceived value of potential services, activities or products coordinated by The Alliance

| | Rank | Mean Value | Percentage 1 or 2 |
|---|---|---|---|
| Share best practices forum for instructional and other issues in video game programs | 1 | 1.70 | 86.8% |
| Facilitate partnerships with the industry (such as potential student internship and faculty fellowship programs) | 2 | 1.82 | 81.2% |
| Coordinate/host gatherings connected to existing conferences/events | 3 | 1.98 | 72.5% |
| Share access to research related to video game design and development | 4 (tie) | 2.07 | 78.3% |
| Develop collaborative partnership opportunities, which may include joint pursuit of external funding | 4 (tie) | 2.07 | 75.4% |
| Facilitate advocacy activities encouraging private and public spending on video game-related issues | 5 | 2.11 | 69.6% |
| Collect and distribute data on video game programs (such as aggregate information from this survey) | 6 (tie) | 2.18 | 71.0% |
| Sponsor a conference dedicated to video games and education topics | 6 (tie) | 2.18 | 63.8% |
| Collect and distribute data on post-graduate activity (job placement, salary, job satisfaction) | 7 | 2.23 | 66.7% |
| Facilitate advocacy activities to educate key policymakers in the Legislative and Executive Branches of government | 8 | 2.57 | 59.4% |
| Provide a list of qualified consultants and external evaluators | 9 | 2.82 | 37.7% |
| Produce a guide and ranking of video game-related programs based on transparent and publicly available metrics | 10 | 3.05 | 45.6 |

# Appendix A

This represents a comprehensive list of every course added in the other category. It represents course names and contains many courses that are elective and multiple courses of which only one is required:

2D and 3D Graphics and Game Engines

2D Digital Art and Animation for Games

2D Digital Scene Rendering

3D Digital Art for Games and Video

3D Modeling and Fabrication

3D Modeling and Unity3D

Advanced 2D

Advanced 3D Projects

Advanced Computer Graphics

Advanced Digital Audio

Advanced Digital Imaging

Advanced Drawing

Advanced Interactive Animation

Advanced Seminars in Game Programming

Advanced Visual Effects

Aesthetics of Game Design

Affective Computing

Analytics

Animation I

Animation II

Animation Thesis

ART && CODE && INTERACTIVITY

Art For Interactive Media

Art History

Art History I

Artificial Intelligence

Audio Programming

Basic Drawing

Behavioral Neuroscience

Board Game Design

Business Law

Business Law Ethics

Calculus I

Character and Story For Games

Character and World Design

Character Animation in 3D

Character Design

Character Rigging

Cinematic Storytelling and Production

Cognitive Modeling

Cognitive Psychology

Commercial Game Development Practicum

Communication Studies

Computer Audio Production

Computer Graphics

Computer Graphics for Film and Games

Computer Networks

Computer Organization

Computer Programming in C++

Computer Science I

Computing for Visualization

Console Programming

Creating Music for Film, Video, and Games

Creative Portfolio Tools

Creative Seminar

Creative Writing

Data Structures

Data Structures and Algorithms

Database Programming

Design Process

Designing Virtual Worlds

Digital Filmmaking

Digital Games for Communication

Digital Painting

Distributed Computing

Documentation for Design

Drawing

Editing

Engineering Entrepreneurship

Engineering Math

Ethics and Gaming

Experimental Game Design

Experimental Games

Figure Drawing

Flash Prototyping

Flash Scripting

Foley

Foundations of Computer Science

Foundations of HCI Usability

Fundamentals in Digital Audio

Fundamentals of Accounting for Decision-Making

Fundamentals of Animation

Game Artificial Intelligence

Game Architecture

Game Art:
- 3D Environments
- Drawing for Game Development
- Foundations of Concept Painting
- 2D Game Art
- Technical Art
- Advanced Seminar for Game Art
- Senior Portfolio for Game Art
- 3D Character Development
- Game Design

Game Design for Diverse Populations

Game Design:
- Game Systems and Experience Design
- Advanced Seminars in Game Design
- Senior Portfolio for Game Design
- Visual Communication for Game Designers
- Game Development Capstone: 2D Games

Game Development Capstone: 3D Games

Game Development I

Game Development II

Game Device Design

Game Literacy

Game Mechanics

Game Physics

Game Production

Game Programming

Game Technology

Game Testing

Game Theory

Games, Culture, Technology

Gaming Mathematics for Non-Programmers

Generic Programming with the STL

Graphical Storytelling

History and Culture of Games

History of Games

Human Factors in Design

Human Computer Interaction

Immersive Design

Information Architecture

Information Design

Interaction Design

Interaction Design/UX/UI
(required for some specializations)

Interactive Animation

Interactive Digital Storytelling

Interface Design

Intermediate Audio Recording

Intermediate Computer/Electronic Music

Intermediate Digital Art and Animation for Games

Intermediate Digital Imaging

Internet Programming

Intro to Artificial Intelligence

Intro to Algorithms

Intro to Cognitive Science

Intro to Communication Theory

Intro to Game Design

Intro to Philosophy of Science

Introduction to 2D Animation

Introduction to Audio Recording

Introduction to Communication Theory

Introduction to Computer/Electronic Music

Introduction to Digital Media

Introduction to Interactive Media
and Game Development

Introduction to Management

Introduction to Media and Live Performance

Introduction to Visual Communication

Introductory Economics

Junior Year Study Away

Knowledge and Rationality

Learning and Advanced Game AI

Level Design

Level Design in Unreal 4/Unity Pro

Life Drawing

Linear Algebra

Linux/Unix Programming

LiveCode

Location-Based Design

Managerial Finance

Marketing Principles

Mathematics for Game Programmers

Matrices

Media and Popular Culture

Media History and Theory

Media Studio Imaging

Metaphysics and Consciousness

Microcomputers and Applications

Minds and Machines

Mobile App Development

Mobile Computing

Mobile Design

Monetization

Motion Capture

Music and Sound

Natural Language Processing

Network Gameplay

Network Programming

Networking

Networking for Online Games

Object-Oriented Programming

Operating Systems

Organic Modeling

Organizational Behavior in
High-Performing Organizations

Painting

Philosophy of AI

Physics

Physics based Animation

Physics I

Placement/Internship or Civic Engagement Project

Portfolio

Post Production

Principles of Design

Principles of Software

Programming for Cognitive Science
and Artificial Intelligence

Programming for Performance

Programming Languages

Project Management:
    Business and Entrepreneurism
    Financial and Managerial Accounting
    Marketing
    Project Management and Team Leadership
    Management and Organization Behavior
    Managerial Economics
    Business Law
    International Business
    Human Resources
    Financial Management
    Projects in Computer/Electronic Music

Psychology of Games

Research Project

Sculpture I

Sculpture II

Sensation and Perception

Serious Games and Virtual Worlds

Small Group Communications

Social Gaming

Social Modeling

Software Engineering

Statistics

Storyboarding

Strategy and Policy

Studio Design in HCI

The Multimedia Century

Typography

University Core Curriculum

User Centered Design

User Interface Design

Vectors and 3D Math

Video Game Level Design

Virtual Reality

Virtual Worlds

Visual Effects and Motion Graphics

VR

Writing for Games I

Writing for Games II

Writing Internship

Writing/Narrative Design for Video Games

# Appendix B

The following are the Institutional Charter Members of the Higher Education Video Game Alliance, as of January 2015.
*(Note: This list does not make up the full data set of respondents to the survey.)*

American University

Arizona State University

Ball State

Becker College

Berklee College of Music

California Polytechnic State University

Carnegie Mellon University

Champlain College

City University of New York (CUNY)

Concordia University

Dartmouth College

DePaul University

DigiPen Institute of Technology

Drexel University

Dublin Institute of Technology

Duke University

Eastern Kentucky University

Excelsior College

Ferris State University

Franciscan University of Steubenville

George Mason University

Georgia Institute of Technology

Grantham University

Hampshire College

Harrisburg University

Howard University

Indiana University

Louisiana State University

Maryland Institute College of Art

Massachusetts Institute of Technology

Michigan State University

New York Institute of Technology

New York University

Northeastern University

Northern Illinois University

Parsons The New School for Design

Pennsylvania State University

Raritan Valley Community College

Rensselaer Polytechnic University

Rochester Institute Of Technology

Royal Melbourne Institute of Technology University

Saint Edwards University

Southern Polytechnic State University

Stanford University

Texas A&M University

The State University of New York – Empire State College

University of California Irvine

University of California Los Angeles

University Of California Santa Cruz

University of Miami

University of Southern California

University of Tampere

University of Texas – Austin

University of Utah

University of Waterloo

University of Wisconsin – Madison

University of Wisconsin – Platteville

University of Wisconsin – Stout

University of Wisconsin – Whitewater

Uppsala University

Vanderbilt University

Walsh University

Western University – Canada

Worcester Polytechnic Institute

Yale University