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1/23/19

Cover Sheet for In-State Institutions  
New Program or Substantial Modification to Existing Program

Institution Submitting Proposal	Johns Hopkins University
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*Each action below requires a separate proposal and cover sheet.*

- New Academic Program
- New Area of Concentration
- New Degree Level Approval
- New Stand-Alone Certificate
- Off Campus Program
- Substantial Change to a Degree Program
- Substantial Change to an Area of Concentration
- Substantial Change to a Certificate Program
- Cooperative Degree Program
- Offer Program at Regional Higher Education Center

Payment  Yes      Payment  R\*STARS      Payment      Date  
Submitted:  No      Type:  Check      Amount: \$250      Submitted: 1/16/19

Department Proposing Program	Krieger School of Arts and Sciences - Advanced Academic Programs	
Degree Level and Degree Type	Area of Concentration within Master of Arts	
Title of Proposed Program	Immersive Storytelling and Emerging Technologies	
Total Number of Credits	24	
Suggested Codes	HEGIS:	CIP:
Program Modality	<input checked="" type="radio"/> On-campus <input type="radio"/> Distance Education ( <i>fully online</i> ) <input type="radio"/> Both	
Program Resources	<input checked="" type="radio"/> Using Existing Resources <input type="radio"/> Requiring New Resources	
Projected Implementation Date	<input checked="" type="radio"/> Fall <input type="radio"/> Spring <input type="radio"/> Summer      Year: 2019	
Provide Link to Most Recent Academic Catalog	URL: <a href="http://e-catalog.jhu.edu/departments-program-requirements-and-courses/arts-sciences/">http://e-catalog.jhu.edu/departments-program-requirements-and-courses/arts-sciences/</a>	

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President/Chief Executive	Type Name:	Sunil Kumar
	Signature:	SK      Date: 1/16/19
	Date of Approval/Endorsement by Governing Board:	n/a

Revised 12/2018

**The Johns Hopkins University**  
**Krieger School of Arts and Sciences – Advanced Academic Programs**  
**Proposal for a Substantial Modification to an Existing Program**

**New Area of Concentration in Immersive Storytelling and Emerging Technologies within  
Master of Arts in Film and Media**

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**A. Centrality to Institutional Mission and Planning Priorities:**

**1. Provide a description of the program, including each area of concentration (if applicable), and how it relates to the institution's approved mission.**

The Johns Hopkins University, Krieger School of Arts and Sciences is pleased to submit a proposal for a new concentration in Immersive Storytelling & Emerging Technologies (ISET) within the MA in Film & Media program, housed in the Krieger School's division of Advanced Academic Programs (JHU-AAP). This new concentration builds on the strength of the current MA in Film & Media program, which was launched in 2015 and grounds students in the business of film and media, and then allows them to concentrate in an area of interest. Students who complete the ISET concentration will be prepared to fill key positions such as: Augmented Reality/Virtual Reality (AR/VR) Developer, VR operator, Senior Gaming and VR Engineers, VR Director, and Experience Designer, just to name a few.

The proposed concentration in Immersive Storytelling & Emerging Technologies fits well within the MA in Film & Media program. JHU-AAP is noted for its high-quality graduate programs which cater to working professionals, educating them in a variety of disciplines, and preparing them to be tomorrow's most promising leaders. The proposed concentration is well aligned with the primary strategic goals of the MA in Film & Media program to specifically address the field of VR/AR at the master's level, even as this field expands rapidly. VR/AR has applications across multiple disciplines such as biotech, communication, medicine, public health, etc. Graduates from this degree program will be important contributors to the film and media industry. This degree program fulfills the KSAS mission and throughout the degree program students are immersed in the knowledge required to be successful film producers and film makers.

**2. Explain how the proposed program supports the institution's strategic goals and provide evidence that affirms it is an institutional priority.**

The mission of The Johns Hopkins University is to educate its students and cultivate their capacity for life-long learning, to foster independent and original research, and to bring the benefits of discovery to the world. In addition, the mission of JHU-AAP is to offer high quality graduate courses, certificates, and degree programs containing a mixture of theory and practice that serve the current and long term needs of today's adult learners.

The new concentration is designed to accelerate aspiring creators' understanding of dominant emerging technologies including virtual reality, augmented reality and artificial intelligence. The MA in Film & Media program will distinguish itself from other MA

programs in comparable fields because it will be the first Film & Media degree to offer a full concentration in Immersive Storytelling & Emerging Technologies.

**3. Provide a brief narrative of how the proposed program will be adequately funded for at least the first five years of program implementation. (Additional related information is required in section L.**

The JHU-AAP program sets aside a portion of its tuition revenue each year as part of its budgeting process to fund the development of new programs and new courses. In addition, the tuition revenue from enrollments in the courses in any program is used to cover the instructional costs of the program before and excess is used for other JHU-AAP efforts. If a new program finds that its instructional costs are greater than the tuition revenue, funds are allocated from elsewhere in the overall JHU-AAP program to cover the startup program's shortfalls during the first five years.

In addition, the MA in Film & Media program was the recipient of a \$500,000 grant from the Saul Zaentz foundation to create innovative and impactful arts programming. A portion of this grant will be used to cover start-up expenses for the ISET concentration, such as equipment purchases and lab development. These are large, one-time start-up costs – regular maintenance and tech upgrades will be included in the approved yearly budget for the MA in Film & Media program.

For additional information, see Finance Tables 1 and 2.

**4. Provide a description of the institution's a commitment to:**

**a) ongoing administrative, financial, and technical support of the proposed program**

Hopkins has a dedicated team of full-time administrators, financial managers, and technical support that will work with the Program Director to ensure ongoing support of the new concentration.

**b) continuation of the program for a period of time sufficient to allow enrolled students to complete the program.**

The new concentration will be an integral part of the MA in Film & Media program and will therefore have ongoing support that will enable enough time for all enrolled students to complete their studies in the concentration.

**B. Critical and Compelling Regional or Statewide Need as Identified in the State Plan:**

**1. Demonstrate demand and need for the program in terms of meeting present and future needs of the region and the State in general based on one or more of the following:**

- a) The need for the advancement and evolution of knowledge

The ISET concentration is a highly collaborative educational experience focused on expanding the horizons of Augmented Reality/Virtual Reality/Artificial Intelligence storytelling, as well as developing innovative uses for this technology across disciplines. In each course, students are guided by interdisciplinary experts to leverage immersive tech as a vehicle for change in a discipline, industry, social issue, or other applicable challenge. These may include applications to medicine, public health, education, media arts, diplomacy, and business. Each class will have a mix of students with different backgrounds, including computer programming, visual art, journalism, filmmaking, and music, who will come together through their focus on innovative storytelling. Innovation and collaboration are at the core of this project-based concentration, where students are expected to develop the skills and perspectives needed to create engaging storytelling through emerging technology. These stories will be designed to engage audiences and leave them thinking about vital business, policy, and social issues.

VR and AR technologies represent the next stage in the evolution of how we interact with information, entertainment, and one another. The applications are endless, and will create unprecedented amounts of opportunities and innovations across multiple sectors on a global scale.

Already, VR and AR are transforming medicine, education, and content creation. This will only continue, and on a larger scale and an increasingly faster pace, as the technology matures and its market share increases

- b) **Societal needs, including expanding educational opportunities and choices for minority and educationally disadvantaged students at institutions of higher education**

At Johns Hopkins, 10 percent of students in the 2017 entering cohort were first generation and 15 percent were from lower socioeconomic backgrounds. Approximately 5 percent of the students in this cohort were both. For AAP specifically, 31.2 percent of the student body identifies as minority.

This fall, the university is launching the FLI (first-generation and students from families with limited income) Network to increase the visibility of faculty who were also first generation and/or limited income college students. Members of the Network will share their undergraduate experience on the Network's digital community directory.

**c) The need to strengthen and expand the capacity of historically black institutions to provide high quality and unique educational programs**

JHU-AAP master's programs are accessible to minority and educationally disadvantaged students and welcomes applications from qualified graduates of historically black institutions. Please see also E.1. and F.1. below.

**2. Provide evidence that the perceived need is consistent with the Maryland State Plan for Postsecondary Education.**

JHU-AAP is aligned with Increasing Student Success with Less Debt, the 2017–2021 Maryland State Plan for Postsecondary Education. JHU-AAP has developed a variety of partnerships with peer institutions, corporations, trade associations, and other groups in an effort to lessen the financial burden on students. Additionally, all students accepted in to the Film & Media program will have access to the JHU Student Financial Aid office, which is dedicated to providing clear, concise, and helpful financial information to all students.

Goal 2, “Success” details the need to ensure students are able to reach their academic goals in a timely manner, and for institutions to offer improved services in service of this. JHU is in the process of launching the FLI network, which aims to connect first-generation students with faculty, staff, and graduates of similar backgrounds. Also, JHU-AAP has a robust Career Services department, which is dedicated to connecting students to employment and internship opportunities, both while they are enrolled in an academic program and after they have graduated.

The JHU-AAP and the proposed program are also consistent with Goal 3, “Innovation,” which articulates Maryland’s aspiration to foster a higher education ecosystem that “is quick to incorporate evolving knowledge in its teach and learning capacities...and nimble in responding to student needs in creative and cutting edge ways.” All faculty members are given access to a variety of courses and trainings focused on: course delivery platforms, classroom enhancing technologies, and pedagogy. Additionally, faculty are encouraged to participate in career development events and activities that will improve their skills and keep them up to date on the advancements in their field – a portion of the overall budget is dedicated to this expense.

**C. Quantifiable and Reliable Evidence and Documentation of Market Supply and Demand in the Region and State:**

**1. Describe potential industry or industries, employment opportunities, and expected level of entry (ex: *mid-level management*) for graduates of the proposed program.**

The VR/AR industry is growing rapidly. According to a 2016 report by Citigroup, the VR/AR sector has seen nearly \$3 billion in investments nationally over the past two years. The report also projects that the global VR/AR market could grow to \$2.16 trillion by 2035 as different industries and applications make use of the technology.

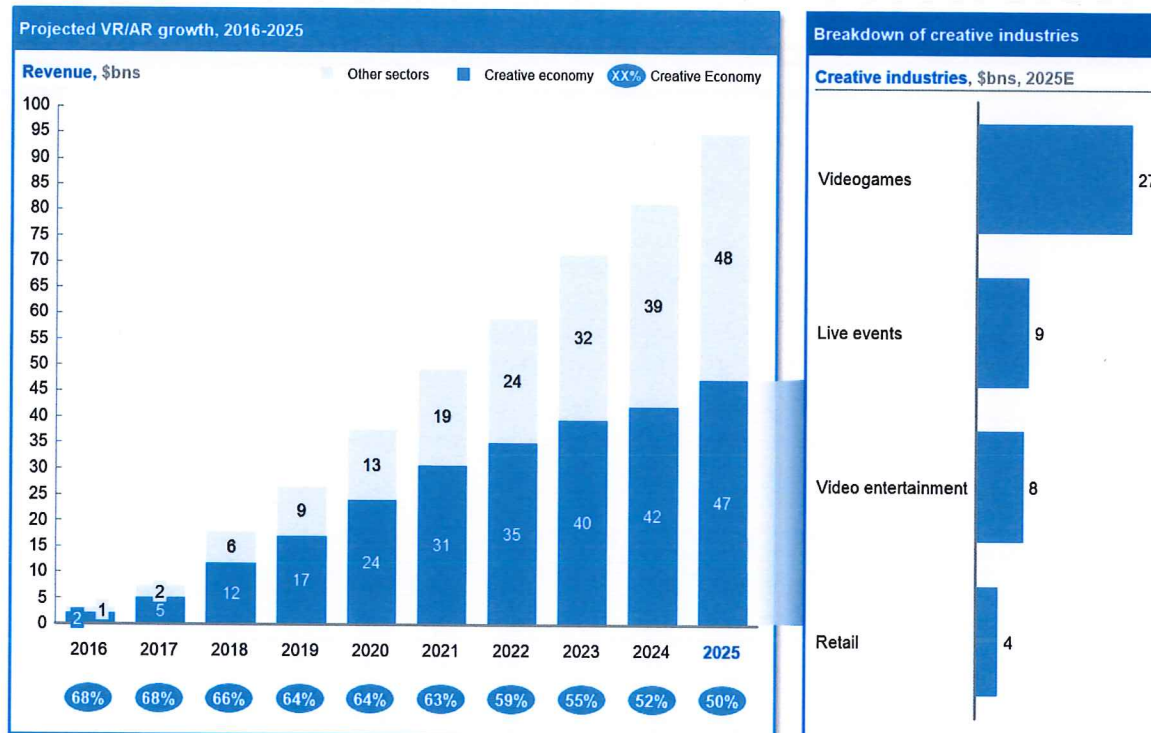
Johns Hopkins University is uniquely positioned to become a leader in VR/AR due to its diverse talent pool and strong academic reputations in fields destined to be affected by these new technologies. A 2016 Goldman Sachs report identified healthcare, education, real estate, retail, live entertainment, and video entertainment as those most likely to be impacted by VR/AR.

According to Forbes, both job searches and postings for VR/AR related positions are up exponentially - 1500 and 400 percent in growth, respectively. The top hirers for jobs are currently Samsung, Google, IBM, Facebook, Apple, and Intel. These numbers are expected to grow dramatically, as media outlets build out VR/AR departments and strategies, making VR/AR trainings one of the top fields sought by prospective students in their educational training.

**2. Present data and analysis projecting market demand and the availability of openings in a job market to be served by the new program.**

A range of major products came to market in 2016 from VR/AR focused companies including Oculus VR, Sony and Google. Since it bought Oculus for \$2.1 billion, Facebook has acquired a further 11 AR/VR companies, underscoring the company's view that those technologies are the next frontier. The large investments and acquisitions by tech giants suggest that these technologies will become increasingly integrated with the platforms on which we consume content. According to a recent estimate by Goldman Sachs, VR/AR are expected to grow into a \$95 billion market by 2025. As the chart below shows, the strongest demand for the technologies currently comes from industries in the creative economy – gaming, live events, video entertainment, and retail – but will find wider applications in industries as diverse as healthcare, education, the military, and real estate, over time.





SOURCE: World Economic Forum; Data courtesy Goldman Sachs

Immersive technologies will also empower smaller firms to produce higher quality content at lower cost. The technology already exists to process 360-degree imagery in hours – something that previously would take days – and is within reach for filmmakers on small budgets.

Demand for online freelancers with VR expertise grew far faster than for people with any other skill last quarter. Billings on VR projects grew more than 30-fold from the same period a year earlier, according to U.S. data provided by Upwork Inc.'s website, which connects freelancers with employers.

**3. Discuss and provide evidence of market surveys that clearly provide quantifiable and reliable data on the educational and training needs and the anticipated number of vacancies expected over the next 5 years.**

Specialization in AR/VR technology is an emerging discipline that will play an increasingly important role in a variety of employment areas in the Maryland region. As stated in section C.2, students with experience and skills relating to AR/VR technologies will have access to a dynamic job market and a wide variety of industries interested in their abilities. Specifically, the Maryland Department of Labor, Licensing, and Regulation (DLLR) anticipates that the number of job openings available in the Entertainment, Media, and Design, sector will increase by 11.4% by 2026. Additionally, the DLLR predicts openings for Film Directors and for Camera Operators will increase by 7.1% and 8.9% respectively; general Media and Communication Workers by 6%; and Marketing and Promotions Managers by 6.7%. All of this data points to a healthy and growing creative economy – made up of multimedia production companies, art and design studios, marketing and advertising firms, and cutting edge technology innovators

– that students in the ISET concentration would have access to upon completion of the JHU Film & Media program.

**4. Provide data showing the current and projected supply of prospective graduates.**

We expect to enroll 5 students in the proposed concentration in year 1, 12 students in year 2, and 19 students in year three, as overall enrollments in the MA in Film & Media Program grows.

**D. Reasonableness of Program Duplication:**

**1. Identify similar programs in the State and/or same geographical area. Discuss similarities and differences between the proposed program and others in the same degree to be awarded.**

There are very few existing film programs offering courses in VR/AR. When a program does include an immersive storytelling piece, it is typically as an option (e.g., Special Topics courses). The ISET concentration will be a distinctive track in that its focus is on the craft of storytelling and emerging technologies. This concentration within the MA in Film & Media program at Johns Hopkins University will be unique in its focus and wide appeal to students with a variety of educational and professional backgrounds.

The Tandon School of Engineering at NYU offers a MS in Integrated Digital Media. The curriculum includes Special Topics courses in VR/AR.

The School of Communication at American University offers an MA in Film & Media. The program includes Special Topics courses in VR/AR.

UCLA Extension offers a course entitled, “Understanding the nature of VR/AR - Breaking the Boundaries of the Imagination”.

**2. Provide justification for the proposed program.**

Virtual reality (VR) and augmented reality (AR) experiences have already entered the public consciousness. What began as a niche interest is finally accelerating in its evolution and will soon be a commonly used tool, from film studios and games developers to global brands and advertising agencies, developers are creating more sophisticated, immersive experiences to captivate and emotionally engage audiences.

The objective of VR is to immerse the user in story and create a true sense of presence – so the user believes they are inside the virtual world. The film and media industry needs individuals who can create engaging storytelling through emerging technology, and the concentration in Immersive Storytelling & Emerging Technologies will produce exactly that.



This program will prepare students for jobs in creative media companies, global IT companies, 3D graphics, and product design. Students will learn in a multidisciplinary environment where they will gain a broad understanding of the various ways that immersive technologies are being used and developed. Students who complete the concentration will be prepared to fill key positions such as: VR operator; Senior Gaming and VR Engineers; VR Director; Experience Designer; and, AR/VR Developer just to name a few.

**E. Relevance to High-demand Programs at Historically Black Institutions (HBIs)**

**1. Discuss the program's potential impact on the implementation or maintenance of high-demand programs at HBI's.**

Any student meeting the admissions requirements after attending and completing a baccalaureate degree at any undergraduate institution, including any HBIs, could apply to the program and select the ISET concentration. The program could serve as an extension of the opportunities provided by HBIs because the students will be able to improve their competitiveness and reach their professional goals by enrolling in and completing the degree program.

**F. Relevance to the identity of Historically Black Institutions (HBIs)**

**1. Discuss the program's potential impact on the uniqueness and institutional identities and missions of HBIs.**

By definition, an appropriate student for the MA in Film & Media program's ISET concentration would apply after attending and completing a baccalaureate degree at any undergraduate institution, including any of Maryland's Historically Black Institutions. The proposed program would not directly affect the implementation, maintenance, uniqueness, identity or mission of these institutions.

**G. Adequacy of Curriculum Design, Program Modality, and Related Learning Outcomes (as outlined in COMAR 13B.02.03.10):**

**1. Describe how the proposed program was established, and also describe the faculty who will oversee the program.**

This proposal for a new concentration in Immersive Storytelling & Emerging Technologies is being submitted by the MA in Film & Media degree program in Johns Hopkins's Advanced Academic Programs. This is a well-established on-ground master's program which employs highly-regarded faculty. Many of the faculty teaching in the degree program will also serve as instructors in this new concentration. Any new instructors recruited to teach in the concentration would be required to meet the same qualifications as those teaching in the master's degree program and other programs in JHU-AAP.

As with all JHU-AAP programs, the use of part-time adjunct faculty is both intentional and important. JHU-AAP is committed to marrying theory and practice, and this is particularly important in a concentration designed for current and aspiring professionals in the VR/AR/AI space. Therefore, this program will use a number of adjunct faculty who have extensive knowledge and experience working with these technologies.

See Appendix A for a representative list of faculty who will teach in the proposed program.

**2. Describe educational objectives and learning outcomes appropriate to the rigor, breadth, and (modality) of the program.**

Upon completion of the MA in Film & Media program, students will:

- Maximize the opportunities of content production and exploitation across the digital landscape.
- Develop a business plan for a project or a media company and have the opportunity to pitch the plan to select industry executives both for critique and as a way of further expanding their professional network.
- Strengthen the skills and expertise required to work in the industry at a management level.
- Broaden their professional network through access to industry specialists in content development, talent representation and production.
- Develop a screenwriting portfolio comprised of a feature length screenplay, a television spec script and a television pilot.
- Use professional audio equipment for the recording, mixing and editing of sound effects, Foley and musical performances in the recording studio and use remote recording equipment for capturing sound on location.
- Use software in the recording studio as a musical instrument to create sound design and musical compositions for underscoring.
- Design, develop and execute professional-level projects in their chosen field.

On completion of the concentration, students will:

- Become immersed in a new mindset and approach to story and technology development.
- Take on all-formats, story-centric, collaborative approach that brings immersive storytelling to new levels of user engagement and interaction. This new way of thinking and working is critical to becoming a more impactful agent of change who celebrates innovation and experimentation.
- Learn about the latest trends and thinking in immersive media directly from industry leaders, academics, and researchers. One size doesn't fit all when it comes to new technology. Students learn what works across issues and disciplines in virtual reality, augmented reality, conversational interfaces, connected devices and more.
- Get hands-on time with the latest software, equipment, and tools to elevate storytelling with powerful digital and physical displays. Each academic year,

student teams work on projects that push the boundaries of technology and storytelling.

- Take guidance and real-time feedback from professors and industry experts on creating visually and technologically driven content, with a potential for the highest impact in their respective fields.

**3. Explain how the institution will:**

**a) provide for assessment of student achievement of learning outcomes in the program**

JHU-AAP has a student course evaluation process that is completed at the midterm of each semester and after the offering of each course. This process will be applied to the proposed concentration. This evaluation also includes student reviews of the faculty for each course offered. Besides course grades, learning outcomes will be assessed through signature assignments. Students will be surveyed for their satisfaction with courses and instructors at the end of each completed semester as well as at the completion of the program.

Evaluations will provide valuable feedback on how well students believe their expectations are being met. The course evaluation process also allows student input on faculty, and all full-time MA in Film & Media faculty are evaluated annually by Program Chairs or Directors.

**b) document student achievement of learning outcomes in the program**

As part of the course design process in JHU-AAP, course assessments are required to be aligned with stated course learning outcomes. The new ISET concentration option for the M.A. in Film & Media program proposed here will incorporate authentic-based learning assessments that demonstrate student's application of learned concepts. In addition, students will be able to make their capstone projects be within immersive storytelling and emerging technologies.

**4. Provide a list of courses with title, semester credit hours and course descriptions, along with a description of program requirements**

In the MA in Film & Media Program, students complete 11 courses, including a capstone project that will provide them with a practical, hands-on experience to showcase the skills and knowledge they have gained throughout their studies. There are 3 required courses for the MA degree: 2 core courses and the capstone. Students then take an additional 8 courses from 2 of the tracks listed below, and they can select one of those tracks as their specialization. The existing tracks are: Business of Film and Media, Writing for Film and Television, and Sound Production & Design. The proposed fourth track will be Immersive Storytelling & Emerging Technologies.

**Overview of Proposed Curriculum**

**Film & Media Core Requirements**

Two required core courses & capstone:

AS.455.641 Graduate Filmmaking Studio I & II (4 credits)

Eight Elective Courses from Two of the Three Tracks:

**Track 1: Business of Film and Media**

AS.455.619 Business of Nonfiction: Producing the Documentary (3 credits)

AS.455.620 Fundamentals of Business I (3 credits)

AS.455.621 Entertainment Law for Independent Filmmakers (3 credits)

AS.455.623 Fundamentals of Business II (3 credits)

AS.455.625 Line Producing, Creative Producing, Executive Producing (3 credits)

**Track 2: Sound Production and Design**

AS.455.630 Recording Sound for Film (3 credits)

AS.455.631 Designing Sound for Film (3 credits)

AS.455.632 Sound on Film I (3 credits)

AS.455.633 Sound on Film II (3 credits)

PY.550.524 Sound Design for Video Games (2 credits)

**Track 3: Writing for Film and Television**

AS.455.611 Screenwriting Workshop I – The Outline (3 credits)

AS.455.612 Screenwriting Workshop II – The Draft (3 credits)

AS.455.614 Acting for Screenwriters (3 credits)

AS.455.615 Episodic Writing Workshop I – Drama (3 credits)

AS.455.616 Episodic Writing Workshop II– Comedy (3 credits)

AS.455.617 Episodic Writing III – The Limited Series (3 credits)

**Proposed Track 4: Immersive Storytelling & Emerging Technologies**

The cost to support the new concentration will be funded by a portion of the \$500,000 grant from the Saul Zaentz Innovation Fund.

NOTE: An asterisk (\*) indicates courses already developed (existing course titles may change to incorporate a greater VR/AR focus); Courses in italics indicate courses to be developed (with working titles).

**Foundations of Immersive Storytelling: Theory & Practice [AS.455.610] \* (3 credits)**

This introductory course will provide students with the tools and the mindset for making compelling VR/AR experiences. While the industry is nascent, technological innovations move forward at breakneck speed. Each class, students will dissect media to understand the approaches to the current catalog of immersive experiences, ranging from 360 film, to animation and room scale installation experiences. Students will often complete this exercise with the media creators to better understand the challenges and lessons learned. Subsequently, after this overview, students will have the opportunity to build their own prototypes and to assist a leading artist with a VR/AR project housed within the program.

**Immersive Tech: Empathy and Cognition (3 credits)**

Immersive technology is revolutionizing the relationship between storytellers and their audiences. But we still know very little about the cultural, ethical and psychological implications of such interactive interfaces. While it is clear the integration of VR/AR/AI will revolutionize multiple aspects of our society, careful consideration is required when extrapolating its benefits to media consumers. As the new medium evolves, students will learn how to evaluate empathy, identity, privacy, in addition to immersion, efficiency and productivity.

**Social Design: Concept, Story & Interaction (3 credits)**

This course will cover designing immersive tech concepts, stories, or games with social and cultural impact. Students will address the various components of an immersive experience including narrative flow, art, interaction design, and social impact objectives. Each session will include case studies, industry best practices, and presentation by experts followed by in-class discussions.

**VR Storytelling (3 credits)**

Virtual reality is a powerful tool providing a 360-degree view of the story. It catapults participants right into the middle of the action, breaking physical and economic barriers by enabling them to travel into different environments and explore new realities. Each session will introduce students to VR films and review published 360 video formats. In addition to a comprehensive overview into the technology, its history, as well as current and future uses, students will learn how to plan, produce, and edit stories in VR.

**Building Augmented and Mixed Reality (3 credits)**

The AR/MR course teaches students how to create new immersive AR formats for publication, exhibition, or other form of distribution. This course builds on skills learned during the Game Engine Camp and requires an understanding of Unity, Unreal Engine, 3D modeling, and animation. The course is organized in three sections: concept development, building & iteration, and optimization & testing.

**Future Tech: AI and Cognitive Technology (3 credits)**

This course provides students with the opportunity to learn how to create prototypes and to explore immersive storytelling using artificial intelligence, machine learning and data journalism. Students get hands-on experience using open source AI tools including Google Cloud, Microsoft Cognitive Services, and IBM Watson. In addition, to technical skills, students will learn key considerations related to ethics and standards of deploying artificial intelligence.

**Stories Through Conversation (3 credits)**

Voice commands, conversational interfaces, and chat bots are redefining how individuals engage with the world around them. These platforms carry new opportunities for storytelling, art, and media display. Students will learn the design principles of conversational interfaces and how to adapt messages and stories to each medium. Furthermore, they will be taught to build experiences for voice devices such as Amazon Alexa as well as produce media for messaging apps.

**Physical Computing and Installations (3 credits)**

The internet of things provides storytellers an opportunity to rethink the traditional approach of media creation. Students will learn how to combine software and hardware to develop new forms of content. In this course they will develop knowledge in Java Script and Python which allows them to program microcomputers such as the Raspberry Pi and Arduino. In addition to programming, students will also use modeling skills learned in the game engine camp to produce 3D printed installations which are connected to the internet.

**5. Discuss how general education requirements will be met, if applicable.**

Not applicable.

**6. Identify any specialized accreditation or graduate certification requirements for this program and its students.**

Not applicable.

**7. If contracting with another institution or non-collegiate organization, provide a copy of the written contract.**

JHU-AAP currently has an academic MOU with the Maryland Institute College of Art (MICA). The MOU creates a cooperative relationship between JHU-AAP and MICA to collaborate in delivering certain aspects of their respective Film programs.

**8. Provide assurance and any appropriate evidence that the proposed program will provide students with clear, complete, and timely information on the curriculum, course and degree requirements, nature of faculty/student interaction, assumptions about technology competence and skills, technical equipment requirements, learning management system, availability of academic support services and financial aid resources, and costs and payment policies.**

JHU-AAP maintains numerous web-based resources to inform prospective students on the information they may need as a student in the MA in Film & Media program. These resources include the JHU-AAP website at <http://advanced.jhu.edu> and the JHU-AAP online catalog, which includes detailed programmatic information, academic support services, financial aid, costs, and other policies.

**9. Provide assurance and any appropriate evidence that advertising, recruiting, and admissions materials will clearly and accurately represent the proposed program and the services available.**

All relevant program information is kept up to date on the JHU-AAP web site. We are also working closely with the head of marketing at JHU-AAP who are developing a specific strategy tailored to ISET.

## H. Adequacy of Articulation

1. If applicable, discuss how the program supports articulation with programs at partner institutions. Provide all relevant articulation agreements.

Not applicable.

## I. Adequacy of Faculty Resources (as outlined in COMAR 13B.02.03.11).

1. Provide a brief narrative demonstrating the quality of program faculty. Include a summary list of faculty with appointment type, terminal degree title and field, academic title/rank, status (full-time, part-time, adjunct) and the course(s) each faculty member will teach (in this program).

As with all JHU-AAP programs, the use of part-time adjunct faculty is both intentional and important. JHU-AAP is committed to marrying theory and practice, and this is particularly important in a concentration designed for current and aspiring professionals in the VR/AR/AI space. Therefore, this program will use a number of adjunct faculty who have extensive knowledge and experience working with these technologies.

No.	Faculty Name	Credential	Status	Courses
1	Tim Perell	MA	FT	455.651 Film Financing 455.800 Capstone
2	Gabo Arora	MA	FT	455.610 Foundations of Immersive Storytelling
3	Karen Yasinsky	MFA	FT	455.800.11 Independent Study
4	Matthew Porterfield	MFA	FT	455.641.11 Graduate Filmmaking Studio
5	Scott Metcalfe	BM	FT	455.626.11 Mixing Sound for Picture

2. Demonstrate how the institution will provide ongoing pedagogy training for faculty in evidenced-based best practices, including training in:
  - a) Pedagogy that meets the needs of the students

Faculty are supported by the program director, assistant director, coordinator, and other admin staff. JHU-AAP offers full-time and adjunct faculty the ability to audit and participate in workshops and trainings related to enhancing their teaching strategies and maintaining their high level of technical skills related to both AR/VR and filmmaking.



**b) The learning management system**

The Blackboard learning management system is available to faculty, and they have numerous opportunities throughout the year to receive training on how to use it.

**c) Evidenced-based best practices for distance education, if distance education is offered.**

Not applicable.

**J. Adequacy of Library Resources (as outlined in COMAR 13B.02.03.12).**

- 1. Describe the library resources available and/or the measures to be taken to ensure resources are adequate to support the proposed program. If the program is to be implemented within existing institutional resources, include a supportive statement by the President for library resources to meet the program's needs.**

Students will have full and complete access to the Milton S. Eisenhower Library on the Homewood campus, which is ranked as one of the nation's foremost facilities for research and scholarship. Its collection of more than three million bound volumes, several million microfilms, and more than 13,000 journal subscriptions has been assembled to support the academic efforts of the University. The interlibrary loan department makes the research collection of the nation available to faculty and students. The library also provides easy access to a wide selection of electronic information resources, including the library's online catalog, and numerous electronic abstracting and indexing tools. Many of the databases are accessible remotely. Librarians help students electronically and the library maintains an extensive web site to take visitors through all of its services and materials. To this are added more than 10,000 audiovisual titles available for on-site consultation.

**K. Adequacy of Physical Facilities, Infrastructure and Instructional Equipment (as outlined in COMAR 13B.02.03.13)**

- 1. Provide an assurance that physical facilities, infrastructure and instruction equipment are adequate to initiate the program, particularly as related to spaces for classrooms, staff and faculty offices, and laboratories for studies in the technologies and sciences. If the program is to be implemented within existing institutional resources, include a supportive statement by the President for adequate equipment and facilities to meet the program's needs.**

The cost to support the new concentration will be funded by a portion of the \$500,000 grant from the Saul Zaentz Innovation Fund. The courses in this concentration will be offered onsite at the JHU/MICA Film Center in Baltimore. The Center has adequate classroom, studio, and Dev Lab facilities, including access to media equipment.

The Meeting Rooms are spaces to aid in the work of industry experts, students, and faculty groups alike. Each room will be connected via headsets and PC driven screens available for monitoring the work in the studio, reviewing projects, and live chatting in virtual environments. They also provide a unique space for ideation and new storytelling development, including storyboarding inside the headset (e.g. the ability to build new virtual worlds and avatars for ideation and iteration in real-time).

The Studio includes a large area for video and photo capture equipped with a lighting grid and removable green walls. Other equipment includes: stereo and mono 360 rigs, depth kits, spatial microphones, camera monitors, motion capture suits, DSLR kits, and an HTC Vive for mixed reality capture. In addition, the studio will be wired into a control room for data capture and live feed manipulation including a Unity station for direct from camera integration. The control room also includes an audio workstation and the ability to distribute content to headsets and monitors in the Meeting Rooms.

The Dev Lab is an open area for students and faculty to work on their interactive projects. The available software includes allows for game development, volumetric rendering, voice recognition, facial recognition, and haptics. Four to six computer stations will be provided with specific software packages and tethered headsets, but most of the desk areas will be open for students to bring their own laptops.

In addition to hardware, software, and furnishings, a lead creative technologist and lab manager will be on call to help jumpstart key projects in the program's agenda. Faculty and staff will supervise students as they build, test, and train creators to use virtual reality, augmented reality, and artificial intelligence. In addition to normal business hours, students from JHU will have access to the lab on weeknights and weekends to explore, create, and test new applications using the latest technologies.

**2. Provide assurance and any appropriate evidence that the institution will ensure students enrolled in and faculty teaching in distance education will have adequate access to:**

- a) **An institutional electronic mailing system, and**
- b) **A learning management system that provides the necessary technological support for distance education**

Not applicable.

**L. Adequacy of Financial Resources with Documentation** (as outlined in COMAR 13B.02.03.14)

1. Complete **Table 1: Resources and Narrative Rationale**. Provide finance data for the first five years of program implementation. Enter figures into each cell and provide a total for each year. Also provide a narrative rationale for each resource category. If resources have been or will be reallocated to support the proposed program, briefly discuss the sources of those funds.

1. **Reallocated Funds:** N/A
2. **Tuition and Fee Revenue** The enrollment projections in Table 1 area reasonable estimate based on other JHU-AAP master's degree programs, as well as interest among current students in the MA in Film & Media Program.
3. **Grants and Contracts** The initial costs to support the new concentration will be funded by a grant from the Saul Zaentz Innovation Fund for the first 2 years. The grant will be used to purchase and install technology and other equipment vital to the concentration, and to retrofit classrooms and labs as necessary. These start-up costs are high, but they are one-time expenses. In years three, four, and five, the program will have a dedicated maintenance budget that will go towards general maintenance and upkeep of the equipment and classrooms.
4. **Other Sources** N/A
5. **Total Year** Please see Table 1.

<b>Resource Categories</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
1. Reallocated Funds	0	0	0	0	0
2. Tuition/Fee Revenue (c + g below)	\$112,500	\$283,500	\$471,105	\$677,040	\$902,385
a. Number of F/T Students	0	0	0	0	0
b. Annual Tuition/Fee Rate	0	0	0	0	0
c. Total F/T Revenue (a x b)	0	0	0	0	0
d. Number of P/T Students	5	12	19	26	33
e. Credit Hour Rate	\$1,500	\$1,575	\$1,653	\$1,736	\$1,823
f. Annual Credit Hour Rate	15	15	15	15	15
g. Total P/T Revenue (d x e x f)	\$112,500	\$283,500	\$471,105	\$677,040	\$902,385
3. Grants, Contracts & Other External Sources	\$110,864	\$97,850	0	0	0
4. Other Sources	0	0	0	0	0
<b>TOTAL (Add 1 – 4)</b>	<b>\$223,364</b>	<b>\$381,350</b>	<b>\$471,105</b>	<b>\$677,040</b>	<b>\$902,385</b>

2. Complete **Table 2: Program Expenditures and Narrative Rationale**. Provide finance data for the first five years of program implementation. Enter figures into each cell and provide a total for each year. Also provide a narrative rationale for each expenditure category.
  1. **Faculty (# FTE, Salary, and Benefits):** This includes the salary for a full-time program director (\$126,866 with a salary increase in year 3). Salary adjustments may be made, however, and the number of sections (\$6,120 per section, taught by adjunct or FT faculty) may need to be increased to meet enrollment demand.
  2. **Administrative Staff (# FTE, Salary, and Benefits):** N/A
  3. **Support Staff (# FTE, Salary, and Benefits):** N/A
  4. **Equipment:** The cost to support the new concentration will be funded by a grant from the Saul Zaentz Innovation Fund. New equipment for the studio/workroom will be purchased in years one and two. Years three, four, and five will have a dedicated maintenance budget of \$10,000 for equipment.
  5. **Library:** N/A
  6. **New and/or Renovated Space:** N/A
  7. **Other Expenses:** \$5,000 to cover the following: \$2,500 to cover faculty development and travel; and \$2,500 to cover software or other instructional materials.
  8. **Total Year:** See Table 2.

<b>TABLE 2: PROGRAM EXPENDITURES:</b>					
<b>Expenditure Categories</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
1. Faculty (b + c below)	\$170,000	\$170,000	\$179,380	\$179,380	\$187,420
a. Number of FTE	1	1	1	1	1
b. Total Salary	\$126,866	\$126,866	\$133,866	\$133,866	\$139,866
c. Total Benefits	\$43,134	\$43,134	\$43,514	\$47,514	\$47,554
2. Admin. Staff (b + c below)	0	0	0	0	0
a. Number of FTE	0	0	0	0	0
b. Total Salary	0	0	0	0	0
c. Total Benefits	0	0	0	0	0
3. Support Staff (b + c below)	0	0	0	0	0
a. Number of FTE	0	0	0	0	0
b. Total Salary	0	0	0	0	0
c. Total Benefits	0	0	0	0	0
4. Technical Support and Equipment	\$110,864	\$97,850	\$10,000	\$10,000	\$10,000
5. Library	0	0	0	0	0
6. New or Renovated Space	0	0	0	0	0
7. Other Expenses	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
<b>TOTAL (Add 1 – 7)</b>	<b>\$285,864</b>	<b>\$272,850</b>	<b>\$194,380</b>	<b>\$194,380</b>	<b>\$202,420</b>

**M. Adequacy of Provisions for Evaluation of Program (as outlined in COMAR 13B.02.03.15).**

**1. Discuss procedures for evaluating courses, faculty and student learning outcomes.**

JHU-AAP has a student course evaluation process that is completed at the midterm of each semester and after the offering of each course. This process will be applied to the proposed concentration. This evaluation also includes student reviews of the faculty for each course offered. Besides course grades, learning outcomes will be assessed through signature assignments. Students will be surveyed for their satisfaction with courses and instructors at the end of each completed semester as well as at the completion of the program.

Evaluations will provide valuable feedback on how well students believe their expectations are being met. The course evaluation process also allows student input on faculty, and all full-time MA in Film & Media faculty are evaluated annually by Program Chairs or Directors.

**2. Explain how the institution will evaluate the proposed program's educational effectiveness, including assessments of student learning outcomes, student retention, student and faculty satisfaction, and cost-effectiveness.**

As part of the course design process in JHU-AAP, course assessments are required to be aligned with stated course learning outcomes. The new ISET concentration option for the MA in Film & Media program proposed here will incorporate authentic-based learning assessments that demonstrate student's application of learned concepts.

**N. Consistency with the State's Minority Student Achievement Goals (as outlined in COMAR 13B.02.03.05).**

**1. Discuss how the proposed program addresses minority student access & success, and the institution's cultural diversity goals and initiatives.**

Johns Hopkins is strongly committed to cultural diversity and the recruitment and retention of underrepresented minority students. Any student meeting the admissions requirements can apply to the MA in Film & Media program. The program will work to help all accepted students improve their workplace competitiveness and reach their professional goals.

**O. Relationship to Low Productivity Programs Identified by the Commission:**

- 1. If the proposed program is directly related to an identified low productivity program, discuss how the fiscal resources (including faculty, administration, library resources and general operating expenses) may be redistributed to this program.**

Not applicable.

**P. Adequacy of Distance Education Programs (as outlined in COMAR 13B.02.03.22)**

- 1. Provide affirmation and any appropriate evidence that the institution is eligible to provide Distance Education.**

Not applicable.

- 2. Provide assurance and any appropriate evidence that the institution complies with the C-RAC guidelines, particularly as it relates to the proposed program.**

Not applicable.