PROPOSAL TO ESTABLISH A NEW UNDERGRADUATE CONCENTRATION

ARIZONA STATE UNIVERSITY

The completed and signed proposal should be submitted by the Dean's Office to: curriculumplanning@asu.edu.

Before academic units can advertise undergraduate concentrations or include them in their offerings as described in the university catalogs, they must be recommended for approval by the Senate Curriculum and Academic Programs Committee and approved by the Office of the University Provost.

Definition and minimum requirements:

A concentration is a formalized selection of courses within a major.

- A concentration requires a minimum of 15 credit hours of which at least nine credit hours must be upper division. Specialized concentrations (e.g., Bachelor of Science in Interdisciplinary Studies concentrations) may have additional or different requirements.
- A concentration is offered by a single unit and is intended exclusively for students pursuing a particular major. If a concentration consists of courses from more than one college, the approval of each college Dean is required.

College/School/Institute:	Ira A. Fulton Schools of Engineering
Department/Division/School:	The Polytechnic School
Proposing Faculty Group (*if applicable*)**:**	Graphic Information Technology (CGRAPHINFO)
Are two or more academic units collaborating on this program?	No, this is not a joint degree program

If "Yes", list all the additional college(s)/school(s)/institute(s) that will be involved in the development and resources for the degree program by offering courses, faculty or facilities. Please note: This question does not refer to official joint degree programs. Official joint degree programs are ones in which the degree is jointly conferred by two colleges. If the program is jointly conferred, please complete the Proposal to Establish a New Joint Undergraduate Degree Program.

Existing Degree and Major under which this concentration will be established:	Graphic Information Technology
Proposed Concentration Name:	Full-Stack Web Development
What is the first catalog year available for students to select on the undergraduate application for this this program?	2021-2022

Delivery method and campus or location options: *select all locations that apply*

☐ Downtown Phoenix ☒ Polytechnic ☐ Tempe ☐ Thunderbird ☐ West ☐ Other: _____

☒ **Both** on-campus **and** ☒ ASU Online* - (check applicable campus(es) from options listed above)

☐ ASU Online only (<u>all</u> courses online and managed by ASU Online)

Note: Once students elect a campus or online option, students will not be able to move between the on-campus and the ASU Online options. Approval from the Office of the University Provost and Philip Regier (Executive Vice Provost and Dean) is required to offer programs through ASU Online. Please contact Ed Plus then complete the ASU Online Offering form in Curriculum ChangeMaker to begin this request.
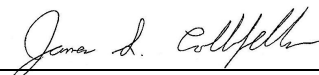
Proposal Contact

Name:	Susan Squire	**Title:**	Graphic Information Technology Program Chair & Lecturer
Phone number:	480-727-1325	**Email:**	Susan.Squire@asu.edu

<table>
<tr><td colspan="3" align="center">DEAN APPROVAL(S)</td></tr>
<tr><td colspan="3">This proposal has been approved by all necessary unit and College/School levels of review. I recommend implementation of the proposed organizational change.</td></tr>
<tr><td colspan="3">College/School/Division Dean name: James S. Collofello</td></tr>
<tr><td>Signature: <i>James S. Collofello</i></td><td>Date:</td><td>2/24/2021</td></tr>
<tr><td colspan="3">College/School/Division Dean name:
<i>(if more than one college involved)</i></td></tr>
<tr><td>Signature:</td><td>Date:</td><td>/ /20</td></tr>
</table>

Note: An electronic signature, an email from the dean or dean's designee, or a PDF of the signed signature page is acceptable.

OVERVIEW

A. Provide a brief description of the new concentration (including the specific focus of the new concentration, relationship to other concentrations in this degree program, etc.).

The Bachelor of Science in Graphic Information Technology with a concentration in Full-Stack Web Development will focus on website/application design as well as front-end and back-end website/application development. Full-stack web developers are familiar with HTML, CSS, JavaScript, and one or more back-end languages. Some full-stack developers, especially in 2020, also learn project management, visual design, web design, or user experience skills to complete their "stack."

This degree will help support the Informational Technology program on the Polytechnic campus. Four IFT subject courses are included in the required concentration courses, as well as two information technology elective options. Graphic Information Technology and Information Technology leads worked together to select the best courses for this concentration. Required courses include IFT 101 (Python), IFT 200 (Database), IFT 210 (Java), and IFT 458 (PHP, Ruby, Etc.). The elective courses include IFT 300 (Intermediate Database) and IFT 365 (Applied Programming; new course as of Fall 2021). These IFT courses are very relevant to the degree and do not require any additional prerequisites.

B. Explain the unit's need for the new concentration (e.g., market demand, research base, direction of the discipline, and interdisciplinary considerations). How will the new concentration complement the existing degree program?

According to the 2020 Emerging Jobs Report, Full-Stack Engineer is number 4 of the top 15 emerging jobs in 2020. Since 2015, hiring growth for this profession has been 35% every year from a wide range of developer and engineering backgrounds.

Career Outcomes:
15-1134.00 Web Developers
15-1199.10 Search Marketing Strategists
15-1132.00 Software Developers
15-1131.00 Computer Programmers
15-1199.09 Information Technology Project Managers

The new concentration will be an option for students who would typically be enrolled in the BS in Graphic Information Technology program, but who show interest in becoming a full-stack web developer. This concentration would give students the option to pursue an education in a more specified field, while continuing to support the existing BS in Graphic Information Technology program.

1. Collaboration and Impact

A. Faculty governance

Attach a supporting letter from the chair of the academic unit verifying that the proposed concentration has received faculty approval through appropriate governance procedures in the unit and that the unit has the resources to support the concentration as presented in the proposal, without impacting core course resources.

B. Other related programs
Identify other related ASU programs and outline how the new concentration will complement these existing ASU programs.

There do not appear to be any other ASU programs similar to this concentration. While this concentration will utilize courses from the Information Technology program within the Polytechnic School, the curriculum for the Information Technology program is not similar to this proposed concentration, as it addresses back-end courses that are not involved in the area of graphic information technology or full-stack web development.

a. Attach a letter of collaboration and impact from each Dean, or Dean's designee at the Assistant or Associate Dean level, from impacted programs. Refer to the Provost's Office Curriculum Development website (https://provost.asu.edu/node/3227) for guidelines on collaboration and impact statements.

C. Attach a supporting letter from each college/school from which individual courses, or the entire concentration, are taken.

2. Academic Curriculum and Requirements

A. Attach a PDF copy of the assessment plan printed from the University Office of Evaluation and Educational Effectiveness assessment portal demonstrating UOEEE's approval of your assessment plan for this program. Visit the assessment portal at https://uoeee.asu.edu/assessment-portal or contact uoeee@asu.edu with any questions.

B. Curricular Checksheet

Attach a PDF copy of the curriculum checksheet from BAMM to the proposal submission. The curricular checksheet should outline all core/required courses and program specific electives. To retrieve the checksheet in BAMM:

1. Select the "Checksheet" tab for the program.
2. From the tab, select "Preview Checksheet." The preview will open in a new window.
3. Select "Save as PDF" in upper right-hand corner of the page.

2021 Course List for
Graphic Information Technology (Full-Stack Web Development) (BS) (Proposed)

Ira A. Fulton Schools of Engineering | CTFTPXV

Major Requirements	Credit Hours	Min. Grade
Management of Technology Requirements		
TMC 110: Understanding the Enterprise	3	
Math, Science, General Studies Requirements		
MAT 170: Precalculus (MA)	3	C
Major Requirements - Core		
GIT 135: Graphic Communications	3	C
GIT 210: Creative Thinking and Design Visualization	3	
GIT 215: Introduction to Web Authoring	3	C
GIT 230: Digital Illustration in Publishing	3	C
GIT 250: Introduction to Commercial Print	3	
GIT 303: Digital Publishing	3	
GIT 314: Multimedia Design, Planning and Storyboards	3	
GIT 315: Digital Video Techniques	3	
GIT 384: Commercial Photography	3	
GIT 413: Professional Portfolio Design and Presentation	3	
GIT 432: Graphic Industry Business Practices	3	
GIT 450: Digital Workflow in Graphic Industries	3	
GIT 480: Senior Project	3	
HSE 101: Introduction to Human Systems Engineering (SB)	3	C
HSE 230: Statistics for Human Systems Research I (CS)	3	C
TWC 451: Copyright and Intellectual Property in the Electronic Age	3	
Required Concentration Courses		
GIT 337: Web Content Design	3	
GIT 414: Web Site Design and Internet/Web Technologies	3	
GIT 417: Advanced Web Markup and Scripting	3	
GIT 418: Multimedia Authoring, Scripting and Production	3	
IFT 101: Information Technology Programming Logic	3	C
IFT 200: Information Modeling, Storage and Retrieval	3	C
IFT 210: Introduction to Java Technologies	3	C
IFT 458: Middleware Programming and Database Security	3	C

Electives	Credit Hours	Min. Grade
Elective	6	
Upper Division Full-Stack Elective	3	

Track/Groups

Full-Stack Elective
GIT 340: Information Design and Usability
GIT 435: Website and E-Commerce Strategies
IFT 300: Intermediate Database Management Systems
IFT 365: Applied Programming Language for Information Technology
IFT 494: Appl Multi Tier End to End Application Development

2021 Course List for
Graphic Information Technology (Full-Stack Web Development) (BS) (Proposed) - (ONLINE)

Ira A. Fulton Schools of Engineering | KCQNBVE

Major Requirements	Credit Hours	Min. Grade
Management of Technology Requirements		
TMC 110: Understanding the Enterprise	3	
Math, Science, General Studies Requirements		
MAT 170: Precalculus (MA)	3	C
Major Requirements - Core		
GIT 135: Graphic Communications	3	C
GIT 210: Creative Thinking and Design Visualization	3	
GIT 215: Introduction to Web Authoring	3	C
GIT 230: Digital Illustration in Publishing	3	C
GIT 250: Introduction to Commercial Print	3	
GIT 303: Digital Publishing	3	
GIT 314: Multimedia Design, Planning and Storyboards	3	
GIT 315: Digital Video Techniques	3	
GIT 384: Commercial Photography	3	
GIT 413: Professional Portfolio Design and Presentation	3	
GIT 432: Graphic Industry Business Practices	3	
GIT 450: Digital Workflow in Graphic Industries	3	
GIT 480: Senior Project	3	
HSE 101: Introduction to Human Systems Engineering (SB)	3	C
HSE 230: Statistics for Human Systems Research I (CS)	3	C
TWC 451: Copyright and Intellectual Property in the Electronic Age	3	
Required Concentration Courses		
GIT 337: Web Content Design	3	
GIT 414: Web Site Design and Internet/Web Technologies	3	
GIT 417: Advanced Web Markup and Scripting	3	
GIT 418: Multimedia Authoring, Scripting and Production	3	
IFT 101: Information Technology Programming Logic	3	C
IFT 200: Information Modeling, Storage and Retrieval	3	C
IFT 210: Introduction to Java Technologies	3	C
IFT 458: Middleware Programming and Database Security	3	C

Electives	Credit Hours	Min. Grade
Upper Division Full-Stack Elective	3	
Elective	6	

Track/Groups

Full-Stack Elective
GIT 340: Information Design and Usability
GIT 435: Website and E-Commerce Strategies
IFT 300: Intermediate Database Management Systems
IFT 365: Applied Programming Language for Information Technology
IFT 494: Appl Multi Tier End to End Application Development

C. A minimum residency requirement: How many hours of the concentration must be ASU credit?

51 credit hours must be taken at ASU.

D. Provide a brief course description for each new course.

Note: All new required courses should be submitted in Curriculum Changemaker and ready for Provost's Office approval before this concentration is put on the CAPC agenda.

N/A

3. Administration and Resources

A. How will the proposed concentration be administered (including admissions, student advisement, retention, etc.)?

The proposed concentration will be administered in the same manner as the existing BS in Graphic Information Technology.

B. What are enrollment projections for the next three years?

	1st Year	2nd Year (Yr 1 continuing + new entering)	3rd Year (Yr 1 & 2 continuing + new entering)
Number of Students (Headcount)	50	75	100

C. What are the resource implications for the proposed concentration, including any projected budget needs? Will new books, library holdings, equipment, laboratory space and/or personnel be required now or in the future? If multiple units/programs will collaborate in offering this concentration, please discuss the resource contribution of each participating program. Letters of support must be included from all academic units that will commit resources to this concentration.

This proposal leverages existing Ira A. Fulton Schools of Engineering offerings. The faculty in Graphic Information Technology already offer a BS in Graphic Information Technology, a BS in Graphic Information Technology with a concentration in User Experience, a BAS in Graphic Information Technology, a BAS in Internet and Web Development, and an MS in Graphic Information Technology. All of the concentration courses are already offered by Fulton faculty as required or elective courses for other Fulton degree programs, particularly the BS in Information Technology.

This program will draw on the existing Fulton Schools infrastructure in advising and student services teams to support a rapidly growing student population. The school is confident they can handle first-year enrollment in the new program and will expand as needed using revenue from enrollment.

D. Please list the primary faculty participants regarding this proposed concentration. For interdisciplinary concentrations, please include the relevant names of faculty members from across the University.

Name	Title	Area(s) of Specialization as they relate to proposed concentration
Susan Squire	Program Chair (Graphic Information Technology) and Lecturer	Web design and development, HTML/CSS, information architecture, and user experience (UX)
Damien Doheny	Program Chair (Information Technology) and Lecturer	Information technology, networking
Christina Carrasquilla	Senior Lecturer, Graphic Information Technology	Design, interactive visual media, social media, visual communication, design thinking

Deborah Prewitt	Senior Lecturer, Graphic Information Technology	Web design, user experience, human factors
Jessica Barnett	Instructor, Graphic Information Technology	Software development – web, web design, user experience
Asmaa Elbadrawy	Lecturer, Information Technology	Information technology, programming, big data

4. Additional Materials

A. Prepare and attach a Major Map. If this program will be delivered online as well as in-person, attach a copy of both the major map and the online major map. Please use the "proposed map" function to create a Major Map in BAMM. Instructions on how to create a "proposed major map" in BAMM can be found in the Build a Major Map Training Guide.

B. *Complete and attach the Appendix document.*

C. Attach other information that will be useful to the review committees and the Office of the University Provost.

The Graphic Information Technology faculty met with the Chair of the Information Technology department (Damien Doheny) to determine the courses that would be beneficial for this proposed concentration. The front-end design courses offered by the Graphic Information Technology department, coupled with the back-end courses offered through the Information Technology department, will not only prepare our students to find employment within the area of full-stack web development, but will also increase enrollment within the Polytechnic School.

Additionally, many students in the Graphic Information Technology BS program have expressed to the faculty that they would like to take back-end courses, but by the time students typically discover their interest in back-end courses, they have advanced too far into the Graphic Information Technology program to fit all the required courses in to their remaining course schedules. Thus, completing of all the necessary prerequisite courses in addition to taking the specific back-end courses would delay the students' respective graduation dates. With this proposed concentration, students will understand and follow the appropriate plan from the beginning of their studies, ultimately enabling them to take all the required courses.

PROVOST OFFICE APPROVAL(S)

This proposal has been approved by all necessary Provost office levels of review. I recommend implementation of the proposed organizational change.

Office of the University Provost

       Signature _____   **Date:**   /   /20

Note: An electronic signature, email, or a PDF of the signed signature page is acceptable.

APPENDIX

OPERATIONAL INFORMATION FOR UNDERGRADUATE CONCENTRATIONS
(This information is used to populate the Degree Search/catalog website.
Please consider the student audience in creating your text.)

Proposed Major and Concentration Name: BS in Graphic Information Technology (Full-Stack Web Development)

1. **Marketing Description (***Optional.*** 50 words maximum. The marketing description should not repeat content found in the program description.**)**

   The Full-Stack Web Development concentration in Graphic Information Technology B.S. focuses on both front-end and back-end website and application development. This cross-disciplinary program has a foundation in user-centered design and client-side scripting and extends to server-side programming.

2. **Program Description** (150 words maximum)

   The B.S. in Graphic Information Technology with a concentration in Full-Stack Web Development focuses on both front-end and back-end website and application development. This cross-disciplinary program has a foundation in user-centered design and client-side scripting (HTML, CSS, JS) and extends to server-side programming (PHP, Python, SQL…).

3. **Contact and Support Information**

Building code and room number: (Search ASU map)	WANER 101
Program office telephone number: (i.e. 480/965-2100)	480/727-1874
Program Email Address:	polyadvising@asu.edu
Program Website Address:	*Will be created and added to https://poly.engineering.asu.edu/degrees/bachelors-degrees/ upon approval.*
Does this program have a second language requirement?	No

4. **Delivery/Campus Information Options**

   Both, On-Campus and ASU Online

   Note: Once students elect a campus or online option, students will not be able to move between the on-campus and the ASU Online options. Approval from the Office of the University Provost and Philip Regier (Executive Vice Provost and Dean) is required to offer programs through ASU Online. Please contact Ed Plus then complete the ASU Online Offering form in Curriculum ChangeMaker to begin this request.

5. **Campus/Locations** *indicate **all** locations where this program will be offered.*

   ☐ Downtown Phoenix   ☒ Polytechnic   ☐ Tempe   ☐ Thunderbird   ☐ West   ☐ Other: _____

6. **Career Opportunities & Concentration(s)**
   Provide a brief description of career opportunities available for this degree program with the proposed concentration. (150 words maximum)

   According to the LinkedIn 2020 Emerging Jobs Report*, full-stack engineer is number 4 of the top 15 emerging jobs in 2020. Since 2015, hiring growth for the full-stack engineer profession has been 35% every year. Indeed** ranked full-stack developer as the 2nd best job for 2020, with the percentage of growth from 2018-2019 at more than 161%. The future is bright for those with full-stack developer skills.

Indeed*** also listed the top 10 skills for a full-stack developer, nine of which are taught within the B.S. in Graphic Information Technology (Full-Stack Web Development) curriculum. The program goes beyond these as well, giving students opportunities to learn additional technologies, further preparing them for jobs upon graduation.

According to LinkedIn*, the top industries where graduates land include computer software, IT, financial services and higher education. Glassdoor**** lists Google, eBay, Verizon, IBM and Capital One among the top companies hiring full-stack developers.

Sources:

*https://business.linkedin.com/content/dam/me/business/en-us/talent-solutions/emerging-jobs-report/Emerging_Jobs_Report_U.S._FINAL.pdf

**https://www.indeed.com/lead/best-jobs-2020

***https://www.hiringlab.org/2020/01/09/right-skills-right-tech-job/

****https://www.glassdoor.com/Explore/browse-companies.htm?overall_rating_low=3.5&page=1&isHiringSurge=0&occ=Full%20Stack%20Developer

7. **Additional Freshman Admission Requirements**
   If applicable, list any freshman admission requirements that are higher than and/or in addition to the university minimum undergraduate admission requirements.

   N/A

8. **Additional Transfer Admission Requirements**
   If applicable, list any admission requirements for transfer students that are higher than and/or in addition to the university minimum undergraduate transfer admission requirements.

   N/A

9. **Change of Major Requirements**
   Standard change of major text is as follows: A current ASU student has no additional requirements for changing majors. Students should refer to https://students.asu.edu/changingmajors for information about how to change a major to this program.

   If applicable, list any additional requirements for students who may change their major into this program.

   N/A

10. **Keywords**
    List all keywords used to search for this program (limit 10). Keywords should be specific to the proposed program.

    Web development, full stack, web design, HTML, CSS, JavaScript, databases, Python, Java

11. **Advising Committee Code**
    List the existing advising committee code associated with this degree.

    UGES 68/77

    Note: If a new advising committee needs to be created, please complete the following form:
    Proposal to create an undergraduate advising committee

12. **Change of Major E-mail Address**
    List the contact email address to direct students who are interested in changing to this major.

    polyadvising@asu.edu

13. **Western Undergraduate Exchange (WUE) Eligible**
    Has a request been submitted to the University Provost by the Dean to consider this degree program as eligible for WUE?

No

*Note: **No** action will be taken during the implementation process with regards to WUE until approval is received from the University Provost.*

14. First Required Math Course
List the first math course required in the major map.

MAT 170

15. Math Intensity

a. List the highest math required on the major map. (This will not appear on Degree Search.)

MAT 170

b. What is the math intensity as indicated by the highest math required on the major map? Math intensity categorization can be found here: https://catalog.asu.edu/mathintensity

Moderate

16. ONET Codes
Identify ONET/SOC codes that should be displayed on Degree Search. ONET/SOC codes can be found at:
http://www.onetonline.org/crosswalk/SOC/. Alternate titles displayed on Degree Search may vary and can be found at:
https://catalog.asu.edu/alternate-career-titles.

15-1254.00	Web Developers	
13-1161.01	Search Marketing Strategists	
15-1252.00	Software Developers	
15-1251.00	Computer Programmers	
15-1299.09	Information Technology Project Managers	

17. Area(s) of Interest

A. Select **one** (1) primary area of interest from the list below that applies to this program.

☐	**Architecture & Construction**	☐	**Health & Wellness**
☐	**Arts**	☐	**Humanities**
☐	**Business**	☐	**Interdisciplinary Studies**
☐	**Communications & Media**	☐	**Law, Justice & Public Service**
☐	**Computing & Mathematics**	☐	**STEM**
☐	**Education & Teaching**	☐	**Science**
☒	**Engineering & Technology**	☐	**Social and Behavioral Sciences**
☐	**Entrepreneurship**	☐	**Sustainability**

☐ **Exploratory**

B.   Select **one (1)** secondary area of interest from the list below that applies to this program.

☐   **Architecture & Construction**   ☐   **Health & Wellness**

☐   **Arts**   ☐   **Humanities**

☐   **Business**   ☐   **Interdisciplinary Studies**

☐   **Communications & Media**   ☐   **Law, Justice & Public Service**

☐   **Computing & Mathematics**   ☒   **STEM**

☐   **Education & Teaching**   ☐   **Science**

☐   **Engineering & Technology**   ☐   **Social and Behavioral Sciences**

☐   **Entrepreneurship**   ☐   **Sustainability**

☐   **Exploratory**

The following fields are to be completed by the Office of the University Provost.
CIP Code: _____
Plan Code: _____

BS in Graphic Information Technology (Full-Stack Web Development)

Mission

Project-based learning, teamwork, and authentic client experience, create innovative problem solvers, prepared for leading roles and entrepreneurship opportunities in the rapidly evolving design industry. We are Graphic Information Technology, the intersection of design and technology.

Outcome 1

Apply the most appropriate design and coding techniques to web design and development solutions.

Concepts

appropriate industry-standard tools and techniques in web design, appropriate industry-standard tools and techniques in web development, appropriate industry-standard evaluation tools

Competencies

evaluating appropriate design techniques for solutions, evaluating appropriate coding techniques for solutions, analyzing proposed designs against accepted standards, analyzing proposed code against accepted standards, presenting viable solutions in visual and/or validly coded format

Assessment Process: Assessment process includes assignments with rubric items that demonstrate knowledge of the learning outcome. Population of courses involves anywhere from 30 to 60 students per session, ASU Online and on-ground. Faculty for the three courses are part of the assessment team and data is analyzed each year. All 3 measures are final projects in each course, so assignments demonstrate students' abilities to evaluate and apply appropriate techniques learned. GIT 215 feeds into GIT 340 and GIT 414, so assessing 215 is crucial in success of students in the program. GIT 215 is a beginning course, whereas 340 and 414 are upper-division, with 414 being the final web design/coding course in the program. All 3 courses deal with accepted industry-standard tools and techniques that change on a regular basis, so new information is added each year and assignments could change. The assessment plan will continue to evolve with those changes.

Measure 1
Final Assignment in GIT414

Performance Criterion 1
75% of students will attain a score of 80% or higher on a responsively designed 3-page website that displays consistently in each major browser as well as mobile and tablet devices. Assessment rubric items include: HTML and CSS code is appropriate, validates and is accessible; media queries appropriate for devices; breakpoints appropriate for content; pages display consistently across different browsers; layout responds appropriately to different devices; screenshots from major browsers submitted; errors from past assignments corrected; content and design meets minimum requirements; Behance project is complete, well-designed, and appropriate; and in-person presentation demonstrates project design process knowledge and improvements for future projects. Criteria represent 100% of the assignment rubric score.

Measure 2
Site Comps Assignment in GIT340

Performance Criterion 2

BS in Graphic Information Technology (Full-Stack Web Development)

75% of students will attain a score of 80% or higher on creating website design comps based on all testing results throughout the website user experience process, as well as using the data to justify design decisions. Assessment rubric items include: comps designed for a home page and two interior pages based on results from all UX/usability testing throughout the semester, layout appropriate and facilitates finding information easily, ensuring design is appropriate to brand and is accessible, matching the information architecture to testing results, using text and images from actual site, submitting in correct format, writing a 500-word design write-up that justifies design decisions with testing data. These criteria represent 100% of the assignment grade.

Measure 3
Final Project in GIT215

Performance Criterion 3
75% of the students will attain a score of 80% or higher on coding and styling 2 html pages to create a professional looking website using provided content and provided wireframe for one page. The assessment rubric items include: Using provided text and images; choosing a wireframe option for home page; hand-drawing wireframe for contact page; coding semantic, properly-indented HTML with appropriate tags; navigation and logo links are appropriate; contact page contains coded form with appropriate input tags and content; single CSS stylesheet contains 3 font options, visual link cues; pages are centered with a fixed width; styling is consistent from page to page; all HTML and CSS validate; URL and screenshots submitted. These criteria represent 100% of the assignment grade.

Outcome 2

Demonstrate ability to guide a project through a development cycle using industry standard tools and techniques.

Concepts

industry-standard web mark-up, industry-standard web programming, industry-standard evaluation tools, code validation techniques, website development life cycle

Competencies

evaluating options for solutions, presenting viable solutions to web design and development problems

Assessment Process: Assessment process includes assignments with rubric items that demonstrate knowledge of the learning outcome. Population of courses involves anywhere from 30 to 60 students per session, ASU Online and on-ground. Faculty for the three courses are part of the assessment team and data is analyzed each year. All 3 courses are upper-division, so success in these courses depend on proper assessment of lower-division courses. All 3 courses are part of the degree core. GIT 337 is crucial for success in GIT 414 (see Outcome 1), as it introduces additional techniques (such as responsive design) from GIT 215. GIT 450 and GIT 480 are courses that "cross over" all of the GIT disciplines, and the data from these are used to assess where the students are as they are nearing the end of their degree. GIT 480 is the culminating "capstone" course for the degree. This gives us data to assess any gaps in the curriculum based on student capstone projects, which can be used to adjust courses earlier in the program.

Measure 1
Responsive recipe page assignment in GIT337

Performance Criterion 1

BS in Graphic Information Technology (Full-Stack Web Development)

75% of students will attain a score of 80% or higher on utilizing user data to create data-based personas. Assessment rubric items include: create a mood board for recipe webpage design; sketch analog and digital sketches for design ideas; iterate a mockup for webpage; code responsive layout design with semantic, validated HTML5 and CSS3; validate code and fix any errors; upload page to web host. These criteria represent 100% of the assignment grade.

Measure 2
Final assignment in GIT450

Performance Criterion 2
75% of students will attain a score of 80% or higher on reviewing a past project and performing a "post-mortem," then reimagining the project given the skills and techniques learned in the course. Assessment rubric items are: describing the project and the process used; performing a post-mortem on the process used; reimagining the project utilizing methodology, techniques and skills learned in course; and creating a video presentation discussing the above. These criteria represent 100% of the assignment grade.

Measure 3
Final assignment from GIT480

Performance Criterion 3
75% of students will attain a score of 80% or higher on their final assignment submission in the course. Rubric items include: complexity, completeness and creativity of project; appropriateness of content; layout/design; connection to Design Process Documentation; all design process section headings present and phases discussed (Brainstorm, Identify, Define, Ideate, Prototype, Test, Refine, Implement); MLA in-text citations and Works Cited page formatted correctly; both project and documentation free of typos, spelling and grammatical errors; and Behance graphic and URL submitted. These rubric items represent 100% of the assignment grade.

Outcome 3

Apply individual and collaborative skills to engineer solutions to web design and development challenges

Concepts
leadership, communication, conflict resolution, teamwork, individual work in team environment, digital accessibility

Competencies
collaborating with others, proactively approaching tasks, fostering teamwork, being accountable for individual contributions, constructively resolving conflict, presenting viable solutions as a team

Assessment Process: Assignments with rubric items that demonstrate knowledge of the learning outcome. Population of courses involves anywhere from 25 to 60 students per session, ASU Online and on-ground. Faculty for the three courses are part of the assessment team and data is analyzed each year. Both courses provide students with team-based assignments, which allow faculty to assess how students perform in team environments. Various team techniques are used in each course to find the right balance of team involvement and individual performance. Both courses deal with tools and techniques that change on a regular basis, in addition to new developments in assistive technologies,

BS in Graphic Information Technology (Full-Stack Web Development)

so new information is added each year and assignments could change, as can the approach to the team environment of each course.

Measure 1
Final Assignment in GIT337

Performance Criterion 1
75% of students will attain a score of 80% or higher on the assessment rubric items, including collaborating on website development from a provided design contained in a zip file and Adobe Library (industry-standard workflow). This represents 100% of the assignment grade and includes

Measure 2
User Research and Personas Assignment in GIT340

Performance Criterion 2
75% of students will attain a score of 80% or higher on assessment rubric items, including: (individually) performing user research with at least two representative users, writing appropriate questions to get the demographic and psychographic information needed, submitting all documentation from surveys; (team) designing at least three personas that are consistent with user research. These criteria represent 100% of the assignment grade.

Measure 3
Data Analysis and Presentation of Findings assignment in GIT340

Performance Criterion 3
75% of students will attain a score of 80% or higher on assessment rubric items, specifically: as a team, analyzing data from observation-based usability testing; creating professional presentation to give in front of class that reports major findings from data (user experience, usability/accessibility results). These criteria represent 100% of the assignment grade.

Measure 4
N/A

Performance Criterion 4
N/A

Outcome 4

Display ability to build and evaluate effective user interactions in web-based systems.

Concepts

interaction design, user research, data analysis, industry-standard web mark-up, industry-standard web programming, industry-standard evaluation techniques, industry-standard evaluation tools

Competencies

analyzing designs against interaction-design best practices, determining appropriate tool(s) and technique(s) for project, synthesizing researched data, evaluating options for solutions, presenting user-centered solutions in an interactive format

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Assessment Process: Assignments with rubric items that demonstrate knowledge of the learning outcome. Population of courses include anywhere from 10 to 60 students per session, ASU Online and on-ground. Faculty for the three courses are part of the assessment team and data is analyzed each year. All 3 courses are upper-division and allow faculty to assess different aspects of learning. GIT 417 is a programming course that brings together everything learned in GIT 215, 337 and 414 (see Outcomes 1 and 2), and adds in techniques to further user interactivity. Both 340 and 435 are analysis and application courses; students analyze systems for issues and apply techniques to improve them. All 3 courses deal with tools and techniques that change on a regular basis, so new information is added each year and assignments could change, so the assessment plan can change with it.

Measure 1
Wireframes assignment in GIT435

Performance Criterion 1
75% of students will achieve 80% or higher on assessment rubric items, specifically: Homepage wireframe proposal is detailed and appropriate; Cart and Checkout wireframe proposal is detailed and appropriate; submitted current homepage/cart/checkout examples via screenshots; wireframes are created using computer software tool; write up is at least 500 words and describes the decision process and justifications of your placements; sources, citations and bibliography are included; assignment professional and thorough. Criteria represent 100% of assignment rubric score.

Measure 2
Final assignment in GIT417

Performance Criterion 2
75% of students will achieve 80% or higher on a one-page coded website with user interaction features. The assessment rubric items include: semantic HTML, appropriate CSS and functional JavaScript; user interaction allowing users to choose light or dark mode, complete a form with at least three inputs with ability to submit and return a message; a Behance project explaining student's process; and presentation of project where student talks through the process and gives a demo of the site. Criteria represent 100% of assignment rubric score.

Measure 3
Usability Testing assignment in GIT 340

Performance Criterion 3
75% of students will achieve 80% or higher on performing usability testing (for user experience and usability/accessibility) on a specified website. The assessment rubric items include: utilizing prepared usability testing materials for testing with at least two participants, and submitting all questionnaire and raw data in an easy-to-read format. Criteria represent 100% of assignment rubric score.

General Education Knowledge Areas

Composition, Communication & Rhetoric	Measure	O2M2;O2M3
Mathematics/ quantitative reasoning	Measure	O3M3;O3M2
		All students also will complete general studies in the area of

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ES-Ira A Fulton
Schools of Engineering
Mathematics/Quantitative
Reasoning in the courses
required in the category of
Mathematical Studies (MA).

Literature, Fine Arts & Humanities

	Narrative	All students will complete general studies in the area of Literature, Fine Arts & Humanities in the courses required in the category of Humanities, Arts & Design (HU).

Social/ behavioral sciences

	Narrative	All students also will complete general studies in the area of Social-Behavioral Sciences in the category of Social-Behavioral Sciences (SB).

Natural sciences

	Narrative	All students will complete general studies in the area of Natural Sciences in the courses required in the category of Natural Sciences - General (SG) and Natural Sciences - Quantitative (SQ).

American Institutions, Economics & History

	Narrative	All students will complete general studies in the area of Natural Sciences in the courses required in the category of Historical Awareness (H) and Literacy & Critical Inquiry (L).

Ethics and Ethical Reasoning

	Narrative	All students will complete general studies in the area of Literature, Fine Arts & Humanities in the courses

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Revise

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required in the category of Humanities, Arts & Design (HU) and Literacy & Critical Inquiry (L), and Social-Behavioral Sciences (SB).

Civil Discourse/ Civic Knowledge	Measure	O3M3;O1M1;O3M2

Global Awareness, Diversity & Inclusion

	Narrative	All students also will complete general studies in the area of Global Awareness in the courses required in the category of Global Awareness (G). In addition, students will learn of diversity and inclusion in the courses required in the category of Cultural Diversity in the U.S. (C).

2021 - 2022 Major Map

Graphic Information Technology (Full-Stack Web Development), (Proposed)

School/College:
KCQNBVE

Term 1 - A 0 - 7 Credit Hours Critical course signified by ⬥	Hours	Minimum Grade	Notes
⬥ ASU 101-TPS: The ASU Experience OR FSE 310: Transfer Success in Engineering	1		• ASU 101 is required of all first-year students; FSE 310 is required for all new transfer students; LIA 294 is highly recommended for all new veteran students.
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	C	• Prep for success using the First-Year Student Guide.
GIT 135: Graphic Communications	3	C	• Join a Fulton community.
Term hours subtotal:	7		• Explore engineering and technical professions.

Term 1 - B 7 - 16 Credit Hours Critical course signified by ⬥	Hours	Minimum Grade	Notes
⬥ GIT 210: Creative Thinking and Design Visualization	3		• View ASU Online first-year student registration information here.
MAT 170: Precalculus (MA)	3	C	
Humanities, Arts and Design (HU) AND Historical Awareness (H)	3		
Term hours subtotal:	9		

Term 2 - A 16 - 25 Credit Hours Critical course signified by ⬥	Hours	Minimum Grade	Notes
⬥ GIT 230: Digital Illustration in Publishing	3	C	• Create a Handshake profile.
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	C	• Get involved with EPICS, the Generator Labs, and the Fulton Start-Up Center.
HSE 101: Introduction to Human Systems Engineering (SB)	3	C	
Term hours subtotal:	9		

Term 2 - B 25 - 32 Credit Hours Critical course signified by ⬥	Hours	Minimum Grade	Notes
GIT 250: Introduction to Commercial Print	3		
Natural Science - Quantitative (SQ)	4		
⬥ Complete ENG 101 OR ENG 105 OR ENG 107 course(s).			
Term hours subtotal:	7		

Term 3 - A 32 - 42 Credit Hours	Hours	Minimum Grade	Notes
IFT 101: Information Technology Programming Logic	3	C	• Prep for success using the Sophomore Guide.
TMC 110: Understanding the Enterprise	3		
Natural Science - General (SG) OR Natural Science - Quantitative (SQ)	4		
Term hours subtotal:	10		

Term 3 - B 42 - 48 Credit Hours Critical course signified by ⬥	Hours	Minimum Grade	Notes
HSE 230: Statistics for Human Systems Research I (CS)	3	C	
Humanities, Arts and Design (HU) AND Global Awareness (G)	3		
⬥ Complete GIT 135 AND GIT 210 course(s).			
⬥ Complete Mathematics (MA) requirement.			
Term hours subtotal:	6		

Term 4 - A 48 - 54 Credit Hours Critical course signified by ⬥	Hours	Minimum Grade	Notes
⬥ GIT 215: Introduction to Web Authoring	3	C	• Pursue an undergraduate research experience.
IFT 200: Information Modeling, Storage and Retrieval	3	C	• Apply for internships.
Term hours subtotal:	6		• Attend career fairs and events.

Term 4 - B 54 - 63 Credit Hours	Hours	Minimum Grade	Notes
Literacy and Critical Inquiry (L) (HSE 290 recommended)	3		
Social-Behavioral Sciences (SB) AND Cultural Diversity in the U.S. (C)	3		
Elective	3		
Term hours subtotal:	9		

Term 5 - A 63 - 72 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes
⭐ GIT 337: Web Content Design	3		• Plan for success using the Junior Guide.
GIT 303: Digital Publishing	3		• Network at student organization competitions or professional societies.
IFT 210: Introduction to Java Technologies	3	C	
Term hours subtotal:	9		

Term 5 - B 72 - 78 Credit Hours	Hours	Minimum Grade	Notes
GIT 315: Digital Video Techniques	3		
GIT 384: Commercial Photography	3		
Term hours subtotal:	6		

Term 6 - A 78 - 84 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes
⭐ GIT 314: Multimedia Design, Planning and Storyboards	3		• Thinking about graduate school? Consider registering for a grad school test prep course.
GIT 414: Web Site Design and Internet/Web Technologies	3		• Develop a professional profile online.
Term hours subtotal:	6		

Term 6 - B 84 - 93 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes
IFT 458: Middleware Programming and Database Security	3	C	
TWC 451: Copyright and Intellectual Property in the Electronic Age	3		
Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB)	3		
⭐ Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s).			
Term hours subtotal:	9		

Term 7 - A 93 - 102 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes

Term 7 - A continued	Hours	Minimum Grade	Notes
⭐ GIT 450: Digital Workflow in Graphic Industries	3		• Plan for success using the Senior Guide. • Use Handshake to apply for full-time positions.
GIT 417: Advanced Web Markup and Scripting	3		
GIT 480: Senior Project	3		
Term hours subtotal:	9		

Term 7 - B 102 - 108 Credit Hours	Hours	Minimum Grade	Notes
Upper Division Full-Stack Elective	3		
Upper Division Literacy and Critical Inquiry (L)	3		
Term hours subtotal:	6		

Term 8 - A 108 - 114 Credit Hours	Hours	Minimum Grade	Notes
GIT 432: Graphic Industry Business Practices	3		• Complete an in person or virtual practice interview.
GIT 418: Multimedia Authoring, Scripting and Production	3		
Term hours subtotal:	6		

Term 8 - B 114 - 120 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes
⭐ GIT 413: Professional Portfolio Design and Presentation	3		
Elective	3		
Term hours subtotal:	6		

Hide Course List(s)/Track Group(s)

Full-Stack Elective
GIT 340: Information Design and Usability
GIT 435: Website and E-Commerce Strategies
IFT 300: Intermediate Database Management Systems
IFT 365: Applied Programming Language for Information Technology
IFT 494: Appl Multi Tier End to End Application Development

Notes:

- • First-Year Composition: All students are placed in ENG 101 unless submission of SAT, ACT, Accuplacer, IELTS, or TOEFL score, or college-level transfer credit or test credit equivalent to ASU's first-year composition course(s), determine otherwise. Students on Polytechnic, Downtown Phoenix and West Campuses are encouraged to complete the Directed Self-Placement survey to choose the first-year composition option they believe best suits their needs. Visit: https://cisa.asu.edu/DSP
  - • Mathematics Placement Assessment score determines placement in first mathematics course.

Total Hours: 120
Upper Division Hours: 45 minimum
Major GPA: 2.00 minimum
Cumulative GPA: 2.00 minimum
Total hrs at ASU: 30 minimum

General University Requirements Legend

General Studies Core Requirements:

- • Literacy and Critical Inquiry (L)
- • Mathematical Studies (MA)

Hrs Resident Credit for
Academic Recognition: 56 minimum
Total Community College Hrs: 64 maximum

- Computer/Statistics/Quantitative Applications (CS)
- Humanities, Arts and Design (HU)
- Social-Behavioral Sciences (SB)
- Natural Science - Quantitative (SQ)
- Natural Science - General (SG)

General Studies Awareness Requirements:

- Cultural Diversity in the U.S. (C)
- Global Awareness (G)
- Historical Awareness (H)

First-Year Composition

General Studies designations listed on the major map are current for the 2021 - 2022 academic year.

2021 - 2022 Major Map

Graphic Information Technology (Full-Stack Web Development), (Proposed)

School/College:
CTFTPXV

Term 1 0 - 16 Credit Hours Critical course signified by ⚠	Hours	Minimum Grade	Notes
⚠ ASU 101-TPS: The ASU Experience OR FSE 310: Transfer Success in Engineering	1		• ASU 101 is required of all first-year students; FSE 310 is required for all new transfer students. LIA 294 is highly recommended for all new veteran students.
⚠ GIT 210: Creative Thinking and Design Visualization	3		• Prep for success using the First-Year Student Guide.
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	C	• Join a Fulton community. • Explore engineering and technical professions.
GIT 135: Graphic Communications	3	C	
MAT 170: Precalculus (MA)	3	C	
Humanities, Arts and Design (HU) AND Historical Awareness (H)	3		
Term hours subtotal:	16		

Term 2 16 - 32 Credit Hours Critical course signified by ⚠	Hours	Minimum Grade	Notes
⚠ GIT 230: Digital Illustration in Publishing	3	C	• Create a Handshake profile.
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	C	• Get involved with EPICS, the Generator Labs, and the Fulton Start-Up Center.
GIT 250: Introduction to Commercial Print	3		
HSE 101: Introduction to Human Systems Engineering (SB)	3	C	
Natural Science - Quantitative (SQ)	4		
⚠ Complete ENG 101 OR ENG 105 OR ENG 107 course(s).			
Term hours subtotal:	16		

Term 3 32 - 48 Credit Hours Critical course signified by ⚠	Hours	Minimum Grade	Notes
HSE 230: Statistics for Human Systems Research I (CS)	3	C	• Prep for success using the Sophomore Guide.
IFT 101: Information Technology Programming Logic	3	C	
TMC 110: Understanding the Enterprise	3		
Humanities, Arts and Design (HU) AND Global Awareness (G)	3		
Natural Science - General (SG) OR Natural Science - Quantitative (SQ)	4		
⚠ Complete GIT 135 AND GIT 210 course(s).			
⚠ Complete Mathematics (MA) requirement.			
Term hours subtotal:	16		

Term 4 48 - 63 Credit Hours Critical course signified by ⚠	Hours	Minimum Grade	Notes

⚠ GIT 215: Introduction to Web Authoring	3	C
IFT 200: Information Modeling, Storage and Retrieval	3	C
Literacy and Critical Inquiry (L) (HSE 290 recommended)	3	
Social-Behavioral Sciences (SB) AND Cultural Diversity in the U.S. (C)	3	
Elective	3	
Term hours subtotal:	15	

- Pursue an undergraduate research experience.
- Apply for internships.
- Attend career fairs and events.

Term 5 63 - 78 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes
⭐ GIT 337: Web Content Design	3		
GIT 303: Digital Publishing	3		
GIT 315: Digital Video Techniques	3		
GIT 384: Commercial Photography	3		
IFT 210: Introduction to Java Technologies	3	C	
Term hours subtotal:	15		

- Plan for success using the Junior Guide.
- Network at student organization competitions or professional societies.

Term 6 78 - 93 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes
⭐ GIT 314: Multimedia Design, Planning and Storyboards	3		
GIT 414: Web Site Design and Internet/Web Technologies	3		
IFT 458: Middleware Programming and Database Security	3	C	
TWC 451: Copyright and Intellectual Property in the Electronic Age	3		
Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB)	3		
⭐ Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s).			
Term hours subtotal:	15		

- Thinking about graduate school? Consider registering for a grad school test prep course.
- Develop a professional profile online.

Term 7 93 - 108 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes
⭐ GIT 450: Digital Workflow in Graphic Industries	3		
GIT 417: Advanced Web Markup and Scripting	3		
GIT 480: Senior Project	3		
Upper Division Full-Stack Elective	3		
Upper Division Literacy and Critical Inquiry (L)	3		
Term hours subtotal:	15		

- Plan for success using the Senior Guide.
- Use Handshake to apply for full-time positions.

Term 8 108 - 120 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes
⭐ GIT 413: Professional Portfolio Design and Presentation	3		
GIT 418: Multimedia Authoring, Scripting and Production	3		
GIT 432: Graphic Industry Business Practices	3		
Elective	3		
Term hours subtotal:	12		

- Complete an in person or virtual practice interview.

Hide Course List(s)/Track Group(s)

Full-Stack Elective
GIT 340: Information Design and Usability

GIT 435: Website and E-Commerce Strategies

IFT 300: Intermediate Database Management Systems

IFT 365: Applied Programming Language for Information Technology

IFT 494: Appl Multi Tier End to End Application Development

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- Literacy and Critical Inquiry (L)
- Mathematical Studies (MA)
- Computer/Statistics/Quantitative Applications (CS)
- Humanities, Arts and Design (HU)
- Social-Behavioral Sciences (SB)
- Natural Science - Quantitative (SQ)
- Natural Science - General (SG)

General Studies Awareness Requirements:

- Cultural Diversity in the U.S. (C)
- Global Awareness (G)
- Historical Awareness (H)

First-Year Composition

General Studies designations listed on the major map are current for the 2021 - 2022 academic year.

Erin DeBrino

From: Susan Squire
Sent: Monday, November 30, 2020 8:38 AM
To: Erin DeBrino
Subject: GIT (Full Stack Web Development) BS Proposal

Hello Erin-

The Full-Stack Web Development concentration has been discussed in multiple faculty meetings and no concerns or issues have been raised by the faculty. The GIT Program has approximately 1400 students and has the resources to support any growth due to the concentration.

Regards,
Susan

Susan Squire
Program Chair
FSE | The Polytechnic School | GIT Program
Arizona State University

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Technology Center, 102A
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email: susan.squire@asu.edu

ASU top 1% of world's most prestigious universities
—Times Higher Education

ASU #1 in the U.S. for innovation
—U.S. News & World Report