LSU STEM PATHWAYS MEMORANDUM OF UNDERSTANDING

Thank you for joining the LSU STEM Pathways. The purpose of this agreement is to make sure that the course is taught with rigor, fidelity, and appropriate level of school site support.

School Name:_____

This document serves as a Memorandum of Understanding (MoU) between the Louisiana State University and Agricultural and Mechanical College (LSU) and the above-named high school regarding student enrollment in LSU STEM Pathway courses. This MoU is effective from July 1, 2021, until June 30, 2022. The criteria of this MoU are subject to change only by the written agreement of both parties.

I. Responsibilities

A. Teacher Responsibilities

1. The teacher must have completed the required LSU Pathways course training for the specific course to be offered and successfully earned a certification. If a teacher completed the training but earned only a provisional certification, the teacher and school agree to follow the individual action plan to earn the complete certification by the end of the current school year.

2. Previously certified teachers implementing a course must attend a one-day refresher training session annually during the summer, date and time to be determined for each course.

3. There will be 28 hours of *Community of Practice Sessions* throughout the teaching cycle of the course, date and time TBA and varies by course. Participation in this Community of Practice is mandatory for teachers in their first year of implementation. If the teacher cannot attend a session, the teacher commits to working with the LSU course instructor individually. There will be no charge for these sessions; stipends for participating teachers will be determined and paid for by school districts.

4. The teacher will participate in virtual collaborations throughout the academic school year as outlined in the individual course specifications beginning on page 6.

5. The teacher will work with the LSU Pathway Point-of-Contact (see below for Point-of-Contact information) to schedule in-person or virtual classroom observations (minimum 2 per course).

6. The teacher agrees to share student work/data with LSU STEM Pathways Point-of-Contact for educational research purposes in accordance with all applicable laws and regulations.

7. The teacher must submit a student roster with demographic data to LSU STEM Pathways Point-of-Contact for Fall only and for full year courses by **October 1st, 2021** and for Spring only courses by **February 1st, 2022**.

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8. The teacher will facilitate the administration of course content, pre/post-test, and research instruments as outlined in the individual course specifications beginning on page 6. Additional instruments may be added for educational research purposes.

9. The teacher will facilitate the signature of consent and assent forms from students/parents to be able to incorporate the student data for educational research purposes in accordance with all applicable laws and regulations.

10. The teacher will facilitate the signature of artifact release forms from students/parents to be able to incorporate the materials developed in their classrooms to the open-source Pathway curriculum.

11. A minimum of 75% of the LSU course curriculum must be implemented in order for students to be eligible for certification. Students must also earn a passing grade to be eligible for certification. If a significant disruption of school services/class teaching time occurs, the teacher will contact the LSU STEM Pathway curriculum lead in order to adjust instruction. LSU staff will aid in the adjustment of course content, teaching alignment to virtual/online instruction, and providing guidance on instructional techniques to allow students to remain eligible for certification.

12. Teachers will sign individual course specification pages for courses he/she/they will be teaching and agree to implement the course as specified.

B. School and District Responsibilities

1. The school will provide a teacher in the classroom to facilitate the LSU STEM Certification Pathway course. The teacher must be certified in accordance with Sections I.A.1 and I.A.2 above. If that teacher becomes unable to continue throughout the semester, the school will contact the LSU Pathways Point-of-Contact (see chart below) immediately to work out a solution to the problem.

2. The school agrees to provide the required classroom supplies as listed on the individual course specification pages beginning on page 6, including appropriate technology and access.

3. The school agrees to allow the LSU Pathway Point-of-Contact to schedule in-person or virtual classroom observations (minimum 2 per course).

4. The school agrees to share student work/data with LSU STEM Pathways Point-of-Contact for educational research purposes in accordance with all applicable laws and regulations.

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5. The school agrees to allow the teacher to submit a student roster with demographic data to the LSU STEM Pathways Point-of-Contact for Fall only and for full year courses by **October 1st, 2021** and for Spring only courses by **February 1st, 2022**.

6. High School Only (not applicable to LSU pathway courses offered to middle school students)

    a) LSU charges districts a $96 administrative fee for each high school student for whom LSU issues a Pathway Certificate of Course Completion and for whom the school district is eligible to receive up to $482 in Career Development Funds/Career Technical Funds. This fee will not be charged for students receiving Dual Enrollment credit from LSU for taking a Pathway course. Invoices will be sent by **May 13th, 2022** to the person designated in Section IV below and will include a roster of students who are eligible to receive a certificate of course completion, pending passing grade in the course. Invoices must be paid by **June 30th, 2022.**

    b) To ensure your district receives the full funding per student per course in Career Development Funds/Career Technical Funds, you must submit your student rosters to your district LEA using the approved LSU course codes. The LSU course code list can be found on the Course Specifications page. You must submit your student rosters to your district LEA and to your LSU STEM Pathways Point-of-Contact with the correct course codes by **October 1st, 2021** for fall and **February 1st, 2022** for spring.

C. LSU Responsibilities

1. LSU will provide access to course curriculum, course training to teachers for the specific course, and Community of Practice Sessions throughout the teaching cycle of the course.

2. LSU will send high school invoices to districts by **May 13th, 2022** for students who are eligible to receive a certificate of course completion, pending passing grade in the course.

3. LSU will send student Certification of Course Completion to schools by **May 13th, 2022.**

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II. Summary of Dates

Event	Deadline
School returns signed MOU	June 25th, 2021
Teacher submits roster to LSU POC for Fall 4x4 courses or Full Year courses	October 1, 2021
Teacher submits roster to LSU POC for Spring 4x4 courses	February 1, 2022
LSU mails High School Student Certification Invoices for Fall 4x4, Spring 4x4, and Full Year courses	May 13th, 2022
LSU mails Pathway Certificate of Course Completion for Fall 4x4, Spring 4x4, and Full Year courses	May 13th, 2022
School/District High School Student Certification Invoice Due Date	June 30th, 2022

III. LSU Point of Contact Information

Pathway	Name	Email
Program Director	Frank Neubrander	fneubr1@lsu.edu info@lsupathways.org
Biomedical Sciences	Stephen Kampen Sharon Cilano	skampen1@lsu.edu scilan1@lsu.edu
Computing	Fernando Alegre Juana Moreno	falegre@lsu.edu moreno@phys.lsu.edu
Digital Design and Emergent Media	Jesse Allison Scott Nelson	jtallison@lsu.edu snels45@lsu.edu
Middle School	Fernando Alegre Juana Moreno Nicole Foster	falegre@lsu.edu moreno@phys.lsu.edu info@pathways.org
Pre-Engineering	Vanessa Begat	vbegat@lsu.edu

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IV.   Pathway Fee Payment Contact Information (High School Only)

Instructions: Complete the following information for the person who is to receive invoices or send checks.

Name _____

District_____

Position_____

Email _____

Phone # _____

Mailing Address   _____

V.   School Point of Contact (POC)

The POC should be a school administrator who accepts the responsibility of receiving all LSU Pathways information from LSU and disseminating it to the appropriate high school personnel in a timely manner.

Name _____

Title _____

Email _____

Phone # _____

VI.   Signatures

SCHOOL:

As an authorized representative of _____ , I agree to the conditions of this MOU.

Signature of authorized representative_____ Date _____

Name _____   Title _____

Email _____   Phone # _____

DISTRICT (only if required by district):

As an authorized representative of _____ , I agree to the conditions of this MOU.

Signature of District Representative _____ Date _____

Name _____   Title _____

Email _____   Phone # _____

LSU:

As an authorized representative of LSU, I agree to the conditions of this MOU.

LSU Cain Center Executive Director _____ Date _____

Dr. Frank Neubrander

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COURSE SPECIFICATIONS

The LSU STEM Pathways project is delighted to have you and your teacher(s) as a part of a cutting edge program. The pathways offer unique opportunities for students to learn, grow, and develop 21st century skills that will lead to many great future careers. The pathways are centered on technology and require that each student **have access to a computer on a daily basis** (i.e., 1 to 1 technology utilization).

Additionally, each course will have its own unique materials that are needed to successfully start the class. The materials as well as other course specific requirements are listed below. If one set per classroom is specified, this assumes a class size of 20 students.

These course specifications are essential to the course operation and need to be agreed upon. If you have questions about specific requirements, please contact Dr. Frank Neubrander at 225-772-7252 or info@lsupathways.org.

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LDOE & LSU Partnership Approved Course Codes
Fall Enrollment

Course Title	Course Code	Pg. #	Est. Fall Enrllmt.	Course Title	Course Code	Pg. #	Est. Fall Enrllmt.
Advanced Robotics (LSU Partnership)	150731	9		Interactive Digital Media Capstone (LSU Partnership)	040245	24	
Basic Film & TV Production (LSU Partnership) / Advanced Film & TV Production (LSU Partnership)	080023/ 080024	10		Introduction to Biomedical (LSU Partnership)	090811	26	
Biomedical Capstone (LSU Partnership)	090812	11		Introduction to Computational Thinking (LSU Partnership)	061140	27	
Coding for the Web (LSU Partnership)	040244	12		Introduction to Engineering Design (LSU Partnership)	110801	28	
Comparative Anatomy & Physiology (LSU Partnership)	312095	13		Introduction to STEM Pathways and Careers (LSU Partnership)*	061139	29	
Cybersecurity (LSU Partnership)	040217	14		Motion Graphics	080816	31	
Data Manipulation and Analysis (LSU Partnership)	080532	16		Principles of Engineering (LSU Partnership)	110864	32	
Digital Image (LSU Partnership)	080021	17		Programming for Digital Media (LSU Partnership)	040243	33	
Digital Storytelling (LSU Partnership)	040241	18		Programming for STEM/Engineering (LSU Partnership)	144300	34	
Engineering Design & Development (LSU Partnership)	110861	19		Introduction to Robotics (LSU Partnership)	150780	36	
Engineering Economy (LSU Partnership)	144200	20		Sound Design (LSU Partnership)	080020	37	
Forensic Science (LSU Partnership)	312096	21		Survey of Computer Science*	061179	38	
Interactive Computing (LSU Partnership)	061180	22					

*Available for Middle School

☐ **Check here if your school is a year-long schedule and skip to page 9**

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LDOE & LSU Partnership Approved Course Codes -
Spring Enrollment - Fill this table for the courses that are only taught in Spring

Course Title	Course Code	Pg. #	Est. Sprg Enrllmt.	Course Title	Course Code	Pg. #	Est. Sprg Enrllmt.
Advanced Robotics (LSU Partnership)	150731	9		Interactive Digital Media Capstone (LSU Partnership)	040245	24	
Basic Film & TV Production (LSU Partnership) / Advanced Film & TV Production (LSU Partnership)	080023/ 080024	10		Introduction to Biomedical (LSU Partnership)	090811	26	
Biomedical Capstone (LSU Partnership)	090812	11		Introduction to Computational Thinking (LSU Partnership)	061140	27	
Coding for the Web (LSU Partnership)	040244	12		Introduction to Engineering Design (LSU Partnership)	110801	28	
Comparative Anatomy & Physiology (LSU Partnership)	312095	13		Introduction to STEM Pathways and Careers (LSU Partnership)*	061139	29	
Cybersecurity (LSU Partnership)	040217	14		Motion Graphics	080816	31	
Data Manipulation and Analysis (LSU Partnership)	080532	16		Principles of Engineering (LSU Partnership)	110864	32	
Digital Image (LSU Partnership)	080021	17		Programming for Digital Media (LSU Partnership)	040243	33	
Digital Storytelling (LSU Partnership)	040241	18		Programming for STEM/Engineering (LSU Partnership)	144300	34	
Engineering Design & Development (LSU Partnership)	110861	19		Introduction to Robotics (LSU Partnership)	150780	36	
Engineering Economy (LSU Partnership)	144200	20		Sound Design (LSU Partnership)	080020	37	
Forensic Science (LSU Partnership)	312096	21		Survey of Computer Science*	061179	38	
Interactive Computing (LSU Partnership)	061180	22					

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ADVANCED ROBOTICS (VEX)

1. Materials
   A desktop or laptop computer, access to 1-to-1 daily, and Internet. Chromebooks will not work.

Hardware/Reusable Material	Recommended Unit	Cost/Unit
V5 Competition Super Kit	1 per 3-4 students	1699.99
Storage Bin, Lid & Tray	1 per 3-4 students	34.99
Tool Kit V2	1 per 3-4 students	8.99
Software (Each student needs access to a computer)		
VEX Code V5 (Must include Text Based Programming)	1 per student	Free

2. Required software, networking access, and access to LSU servers
   VEXCode software will need to be installed in computers. *It will not work on chromebooks.*

3. Required teacher collaborations
   Teachers will communicate with LSU instructors via email and shared Google Drive folder.

4. Required administration of course content, pre/post test, and research instruments
   All required materials and instruments will be either posted in a Google drive or their location announced via the Google group for this course.

5. Other
   As this is a project-based learning class, we strongly suggest that each section of the course be limited to a *maximum* of 20 students. If the course is overloaded with students, they will not receive adequate instruction.

_____   _____   _____

Teacher Signature   Printed Name   Date

_____

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BASIC / ADVANCED FILM AND TV PRODUCTION

1. Materials
   A desktop or laptop computer, access to 1-to-1 daily, and Internet. Chromebooks will not work.

Hardware/Reusable Material	Rec. Unit	Cost/Unit
Green Screen & Lighting	1/Classroom	$180
Audio Recording Gear	1 per 3-4 students	$1,000
DSLR cameras *price alternatives at link below	1 per 3-4 students	$850*
Tripod	1 per camera	$130
16 GB (minimum) SD Card	1/camera	$10
Software (Each student needs access to a computer)		
Adobe Suite Licenses. (Adobe Premiere, Photoshop, After Effects - Required for IBC tests) (for schools of at least 100 users: $142/yr per transferable user) OR Davinci Resolve + Adobe Alternatives (IBC's not available)	1 License per student	(a) $240/yr per student (b) $330/yr per shared device OR Free

*Complete supply list with purchase links: https://app.milanote.com/1JaeW61mHyW48h?p=H0atI09wAyw

2. Required software, networking access, and access to LSU servers
   ● Teachers will need to be able to share documents via Google Drive with LSU instructors.
   ● Software to install on each computer: Adobe Creative Suite.
   ● Principals will need to communicate with the district's information technology department to ensure that there are no technological restrictions that block access to servers in the lsu.edu or lsupathways.org domains. In addition, students must be able to access the following websites:

adobe.com	youtube.com	freesound.org	vimeo.org	archive.org

3. Required teacher collaborations
   Teachers will communicate with LSU instructors via a Google group set up for this purpose.

4. Required administration of course content, pre/post test, and research instruments
   All required materials and instruments will be either posted in a Google drive or their location announced via the Google group for this course.

5. Other
   As this is a project-based learning class, we strongly suggest that each section of the course should be limited to a *maximum* of 20 students.

_____   _____ _____

Teacher Signature   Printed Name   Date

_____

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BIOMEDICAL CAPSTONE

1. Materials
   Students will need to make arrangements for their own transportation to and from internship locations. If students are unable to find a location to participate in experiential learning, funds for their individual research project should be made available to them.
   All students will earn a HIPAA certification, at a cost of approximately $30 per student.

2. Required software, networking access, and access to LSU servers:
   None

3. Required teacher collaborations
   Teachers will communicate with LSU Biomedical Pathway instructors via a Google group set up for this purpose. Teachers will need to network with local biomedical businesses in their area to facilitate student internship placements and monitor student participation.

4. Required administration of course content, pre/post test, and research instruments
   All required materials and instruments will be either posted in a Google drive or their location announced via the Google group for this course.

5. Other
   As this is a project-based learning class, we strongly suggest that each section of the course should be limited to a *maximum* of 30 students. If the course is overloaded with students, they will not receive adequate instruction.

_____   _____   _____

Teacher Signature   Printed Name   Date

_____

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CODING FOR THE WEB

1. Materials

   A desktop or laptop computer, access to 1-to-1 daily, and Internet. Chromebooks are acceptable but PC's preferred.

Software (Each student needs access to a computer)	Recommended Unit	Cost per Unit
Visual Studio Code (VSCode)	1 per student	Free

2. Required software, networking access, and access to LSU servers
   - Teachers will need to be able to share documents via Google drive with LSU Instructors.
   - Each laptop must be installed with a text editor. We recommend Visual Studio Code (VSCode)
   - Principals will need to communicate with the district's information technology department to ensure that there are no technological restrictions that block access to servers in the lsu.edu or lsupathways.org domains. In addition, students must be able to access the following websites:

stackoverflow.com	codepen.io	tonejs.github.io
alpha.editor.p5js.org	w3schools.com	developer.mozilla.org
ezgif.com/sprite-cutter	youtube.com	github.com

3. Required teacher collaborations
   Teachers will communicate with LSU instructors via a Google group set up for this purpose.

4. Required administration of course content, pre/post-test, and research instruments
   All required materials and instruments will be either posted in a Google drive or their location announced via the Google group for this course.

5. Other
   As this is a project-based learning class, we strongly suggest that each section of the course be limited to a *maximum* of 20 students. If the course is overloaded with students, they will not receive adequate instruction

_____   _____   _____

Teacher Signature   Printed Name   Date

_____

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COMPARATIVE ANATOMY AND PHYSIOLOGY

1. Materials
   A desktop or laptop computer, access to 1-to-1 daily, and Internet. Chromebooks will not work for the virtual dissection software.

   There are two options for this class.

   Option 1: Actual Dissection

Hardware/Reusable Material	Recommended Unit	Cost/Unit
Complete Dissection kit (scalpel, blades, forceps)	1 per Classroom	$175
Dissection trays	1 per 6 students	$72
Consumable Material	**Recommended Unit**	**Cost/Unit**
Materials necessary for project	1 per Classroom	$400-600*

   *Consumable one time uses items = Cost dependent on chosen dissection specimens

   Option 2: Virtual Dissection

Software	Recommended Unit	Cost/Unit
Virtual dissection software and equipment	1 per 10 students	$250- $560*

   *These range in price depending if you want supplemental material to be included or not and how many animals you want to dissect. The cost shown is for one animal for 10 individual activation codes

2. Required software, networking access, and access to LSU servers
   No software is required for option 1. If using the virtual dissection, the software that is purchased will need to be available to the students.

3. Required teacher collaborations
   Teachers will communicate with LSU Biomedical Pathway instructors via a Google group set up for this purpose.

4. Required administration of course content, pre/post test, and research instruments
   All required materials and instruments will be either posted in a Google drive or their location announced via the Google group for this course.

5. Other
   As this is a project-based learning class, we strongly suggest that each section of the course should be limited to a *maximum* of 30 students. If the course is overloaded with students, they will not receive adequate instruction.

_____   _____   _____

Teacher Signature   Printed Name   Date

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CYBERSECURITY

1. Materials
   A desktop or laptop computer, access to 1-to-1 daily, and Internet. Chromebooks will not work.

Hardware/Reusable Material	Recommended Unit	Cost/Unit
Raspberry Pi 3 Model B+ Starter Kit - 16 GB (CanaKit)	1 per 3-4 students	$79.95
Mouse/Keyboard/Monitors for at least 1 Raspberry Pi	1 or more (RPis can be used remotely)	Varies*
Wireless Access Point (TP-Link)	1 per classroom	$24.99
Any adapters for using existing school hardware (for monitors): HDMI/VGA adapter or DVI/HDMI adapter	1 per Raspberry Pi	$6-8

*Varies depending on the number of components needed ($20 for mouse/keyboard - $200 if monitor is also needed)_____

2. Required software, networking access, and access to LSU/BRBytes servers
   ● Students will need to sign up with online development and testing environments, including but not limited to those listed below.
   ● Students will need access to YouTube instructional videos relevant to the course, as well as other educational video repositories.
   ● Teachers will need to be able to access the LSU/BRBytes servers using several Internet protocols including but not limited to HTTPS and SSH.
   ● Students and teachers will access the curriculum and teaching materials through the LSU and BRBytes servers.
   ● Teachers will need to share student data with their designated LSU Pathway Point-of-Contact.
   ● Principals will need to communicate with the district's information technology department to ensure that there are no technological restrictions that block access to the LSU/BRBytes servers in the lsu.edu, brbytes.org or lsupathways.org domains on any port.
   ● Teachers must supervise student internet usage and activities. Teachers are encouraged to teach students their district's responsible usage of technology policy. Teachers are encouraged to get student and parent signatures on a contract of ethical computer usage.
   ● In addition to the sites mentioned above, students will need web access to:

Businessinsider.com	ubuntu.com	datagenetics.com	factitious.augamestudio.com
CNBC.com	overthewire.org	cryptochallenge.io	howsecureismypassword.net
www.canakit.com	www.cs.cmu.edu	Snopes.com	Commonsense.org
Wikipedia	W3schools.com	Wireshark.org	Cybersecurityventures.com
www.picoctf.org	www.cyberstartamerica.org	www.ready.gov	us-cert.cisa.gov

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3. <u>Required teacher collaborations</u>
   Teachers will communicate with LSU instructors via emails and apps hosted on the LSU/BRBytes servers.

4. <u>Required administration of course content, pre/post test, and research instruments</u>
   All required materials and instruments will be either posted in the LSU/BRBytes server, or their location announced via email with the teacher/instructor group for this course.

5. <u>Course Work</u>
   Teachers must present the course material in sequence or as approved by collaboration with the LSU Pathway Point-of-Contact. The teacher is responsible for utilizing the LSU/BRBytes servers based system to release, acknowledge, provide student feedback, and grade student work. The LSU/BRBytes servers will track and notify the teacher as students near the required 75% attainment mark for certification.

6. <u>Other</u>
   As this is a project-based learning class, we strongly suggest that each section of the course be limited to a *maximum* of 20 students. The course is dependent on the teacher providing feedback and reviewing student code. The course requires that teachers have adequate time to interact with each student.

_____   _____ _____

Teacher Signature   Printed Name   Date

_____

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DATA MANIPULATION AND ANALYSIS

1. **Materials**
   Internet access, 1-to-1 computer use daily, and access to LSU/BRBytes servers. A chromebook will not work.

2. **Required software, networking access, and access to LSU/BRBytes servers**
   - Students will need to sign up with online development and testing environments, including but not limited to codesandbox.io, jsfiddle.net, scratch.mit.edu and others.
   - Students will need access to YouTube instructional videos relevant to the course, as well as other educational video repositories.
   - Teachers will need to be able to access the LSU/BRBytes servers using several Internet protocols including but not limited to HTTPS and SSH.
   - Students and teachers will access the curriculum and teaching materials through the LSU and BRBytes servers.
   - Teachers will need to share student data with their designated LSU Pathway Point-of-Contact.
   - Principals will need to communicate with the district's information technology department to ensure that there are no technological restrictions that block access to the LSU/BRBytes servers in the lsu.edu, brbytes.org or lsupathways.org domains on any port.

3. **Required teacher collaborations**
   Teachers will communicate with LSU instructors via emails and apps hosted on the LSU/BRBytes servers.

4. **Required administration of course content, pre/post test, and research instruments**
   All required materials and instruments will be either posted in the LSU/BRBytes servers or their location announced via email with the teacher/instructor group for this course.

5. **Course Work**
   Teachers must present the course material in sequence or as approved by collaboration with the LSU Pathway Point-of-Contact. The teacher is responsible for utilizing the LSU/BRBytes servers based system to release, acknowledge, provide student feedback, and grade student work. The LSU/BRBytes servers will track and notify the teacher as students near the required 75% attainment mark for certification.

6. **Other**
   As this is a project-based learning class, we strongly suggest that each section of the course be limited to a *maximum* of 20 students. The course is dependent on the teacher providing feedback and reviewing student code. The course requires that teachers have adequate time to interact with each student.

_____   _____   _____
Teacher Signature   Printed Name   Date

_____
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DIGITAL IMAGE

(If teaching both Digital Image and Motion Graphics, see Motion Graphics sheet below)

1. Materials
   A desktop or laptop computer, access to 1-to-1 daily, and Internet. Chromebooks will not work.

Hardware/Reusable Material	Recommended Unit	Cost/Unit
Wacom Tablets	1 per student	$100
DSLR camera (Needed only for the motion graphics unit)	1 per 3-4 students	$550
Tripod	1/camera	$130
16 GB (minimum) SD Card	1/camera	$10
Software (Each student needs access to a computer)		
Subscription to Adobe Creative Cloud (Required for IBC's and for Dual Enrollment) (for schools of at least 100 users: $142/yr per transferable user) **OR** Davinci Resolve + Adobe alternatives (No IBC's available)	1 License per student	(a) $240/yr per student (b) $330/yr per shared device **OR** Free
Consumable		
Art supplies (clay, construction paper, stands, remotes, etc.)	1 per student	$10-20

2. Required software, networking access, and access to LSU servers
- Teachers will need to be able to share documents via Google Drive with LSU instructors.
- Software to install on each computer: Adobe Creative Suite.
- Principals will need to communicate with the district's information technology department to ensure that there are no technological restrictions that block access to servers in the lsu.edu or lsupathways.org domains. In addition, students must be able to access the following websites:

adobe.com	youtube.com	freesound.org	vimeo.org	archive.org

3. Required teacher collaborations
   Teachers will communicate with LSU instructors via a Google group set up for this purpose.

4. Required administration of course content, pre/post test, and research instruments
   All required materials and instruments will be either posted in a Google drive or their location announced via the Google group for this course.

5. Other
   As this is a project-based learning class, we strongly suggest that each section of the course should be limited to a *maximum* of 20 students.

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Teacher Signature   Printed Name   Date

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DIGITAL STORYTELLING

1. Materials
   A desktop or laptop computer, access to 1-to-1 daily, and Internet. Chromebooks will not work.

Hardware/Reusable Material	Recommended Unit	Cost/Unit
DSLR cameras (Recommend: Canon EOS Rebel T5i DSLR Cameras with 18-55mm Lens*)	1 per 3-5 students	$550*
16 GB (minimum) SD Card	1/camera	$10

   * Pricing alternatives for DSLR cameras:
   https://docs.google.com/document/d/1Fands0Zo8qmDgdGkxRkgpxii4j6kJ4JCDSg2yIY0h1U/edit?usp=sharing

2. Required software, networking access, and access to LSU servers
   - Teachers will need to be able to share documents via Google drive with instructors.
   - Free software to install on each computer: Google Chrome, Twinery, Openshot, VLC Player and Audacity.
   - Principals will need to communicate with the district's information technology department to ensure that there are no technological restrictions that block access to servers in the lsu.edu or lsupathways.org domains. In addition, students must be able to access the following websites:

twinery.org	youtube.com	freesound.org	audacity.org
vimeo.org	https://convertio.co/audio-converte		openshot.org

3. Required teacher collaborations
   Teachers will communicate with LSU instructors via a Google group set up for this purpose.

4. Required administration of course content, pre/post test, and research instruments
   All required materials and instruments will be either posted in a Google drive or their location announced via the Google group for this course.

5. Other
   As this is a project-based learning class, we strongly suggest that each section of the course should be limited to a *maximum* of 30 students. If the course is overloaded with students, they will not receive adequate instruction.

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Teacher Signature   Printed Name   Date

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ENGINEERING DESIGN AND DEVELOPMENT

1. Materials
   A desktop or laptop computer, access to 1-to-1 daily, and Internet. Chromebooks will not work.

Hardware/Reusable Material	Recommended Unit	Cost/Unit
3D Printer (Optional)	1 per 5-7 students	Varies*
Software (Each student needs access to a computer)		
Autodesk Inventor (2020 or Latest version)	1 License per student	Free

*There are a variety of 3D printers from $500 up to $5,000. Purchase the one that best suits the needs of your school and students

2. Required software, networking access, and access to LSU servers
   - Teachers will need to be able to share documents via Google drive with instructors.
   - Free software to install on each computer: Autodesk Inventor 2020 or higher

3. Required teacher collaborations
   Teachers will communicate with LSU instructors via email and shared Google Drive folder.

4. Required administration of course content, pre/post test, and research instruments
   All required materials and instruments will be either posted in a Google drive or their location announced via the Google group for this course. Schools will need to coordinate with the Career Tech Education Manager to schedule the Inventor Industry Based Certification Exam issue through Certiport.

5. Other
   As this is a project-based learning class, we strongly suggest that each section of the course be limited to a *maximum* of 20 students. If the course is overloaded with students, they will not receive adequate instruction.

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Teacher Signature   Printed Name   Date

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ENGINEERING ECONOMY

1. <u>Materials</u>
   Textbook: Blank, L., & Tarquin, A. (2018). Engineering economy. WCB/McGraw-Hill,. 8th edition

2. <u>Required software, networking access, and access to LSU servers</u>
   Teachers will need to be able to share documents via Google drive and Moodle with LSU Instructors.

3. <u>Required teacher collaborations</u>
   Teachers will communicate with LSU instructors via email and shared Google Drive folder.

4. <u>Required administration of course content, pre/post test, and research instruments</u>
   All required materials and instruments will be either posted in a Google drive or their location announced via the Google group for this course.

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Teacher Signature   Printed Name   Date

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1. Materials

   Most modules use typical lab equipment found in science classrooms (beakers, flasks, pipettes, scales, plastic well plates, graduated cylinders, goggles), but some require specialized equipment. The items below are reusable one-time purchases. Consult with the trained teachers to better determine what materials are necessary for their chosen modules.

Hardware/Reusable Material	Recommended Unit	Cost/Unit
Microscope (with 100X objective) with 100 glass slides/cover-slips	1 per 4-5 students	$210
Bullet comparison set	1 per 4-5 students	$25
Fingerprint kit	1 per 4-5 students	$75
Mortar and Pestle	1 per 4-5 students	$5
Meter Stick	1 per 2 students	$5
Consumables		
Various consumables for experiments	1 per student	$20*

   *Complete supply list with purchase links: Forensic Science Supply List

2. Required teacher collaborations:

   Teachers will communicate with LSU Biomedical pathway instructors via a Google group set up for this purpose.

3. Required administration of course content, pre/post test, and research instruments

   All required materials and instruments will be either posted in a Google drive or their location announced via the Google group for this course.

4. Other

   As this is a project-based learning class, we strongly suggest that each section of the course should be limited to a *maximum* of 30 students. If the course is overloaded with students, they will not receive adequate instruction.

_____   _____   _____
Teacher Signature   Printed Name   Date

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INTERACTIVE COMPUTING

1. Materials
   Internet access, 1-to-1 device (chromebook acceptable), and access to LSU/BRBytes servers.

Hardware/Reusable Material	Recommended Unit	Cost/Unit
Raspberry Pi 3 Model B+ Starter Kit - 16 GB (CanaKit)	1 per 3-4 students	$79.95
Mouse/Keyboard/Monitor for each Raspberry Pi	1 per Raspberry Pi	Varies*
Wireless Access Point (TP-Link)	1 per classroom	$24.99
Any adapters for using existing school hardware (for monitors): HDMI/VGA adapter or DVI/HDMI adapter	1 per Raspberry Pi	$6-8
Micro Bit kits	1 per 1-2 students	$30
Micro Bit-compatible robot car	1 per 3-4 students	$30-70

*Varies depending on the number of components needed ($20 for mouse/keyboard - $200 if monitor is also needed)▁

2. Required software, networking access, and access to LSU/BRBytes servers
   ● Students will need to sign up with online development and testing environments, including but not limited to codesandbox.io, jsfiddle.net, scratch.mit.edu and others.
   ● Students will need access to YouTube instructional videos relevant to the course, as well as other educational video repositories.
   ● Teachers will need to be able to access the LSU/BRBytes servers using several Internet protocols including but not limited to HTTPS and SSH.
   ● Students and teachers will access the curriculum and teaching materials through the LSU and BRBytes servers.
   ● Teachers will need to share student data with their designated LSU Pathway Point-of-Contact.
   ● Principals will need to communicate with the district's information technology department to ensure that there are no technological restrictions that block access to the LSU/BRBytes servers in the lsu.edu, brbytes.org or lsupathways.org domains on any port. In addition to the sites mentioned above, students will need web access to other web sites, including, but not limited to, the following:

20q.net	aboutmyinfo.org	allthingsd.com	apcentral.collegeboard.org
Code.org	checkpagerank.net	Computer.howstuffworks.com	crypto.interactive-maths.com
Policy.hu	m.wikihow.com	www.colorcodepicker.com	Libguides.mit.edu
Repl.it	thingful.net	tonystrains.com	www.barefootcomputing.org
www.braingle.com	Pingtool.org	www.digitalattackmap.com	www.inventwithpython.com
bjc.edc.org	curriculum.csmatters.org	rapidtables.com	www.bbc.com
www.iplocation.net	www.dummies.com	www.googlefight.com	www.mediashift.org
www.ftc.gov	www.e-cartouche.ch	www.informationisbeautiful.net	www.nationalarchives.gov.uk

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www.pbs.org	www.explainthatstuff.com	www.mathsisfun.com	www.nytimes.com
www.ted.com	www.geogebra.org	www-math.ucdenver.edu	www.us.norton.com
www.time.com	www.prchecker.info	www.sorting-algorithms.com	www.string-functions.com
www.youtube.com	www.w3schools.com	www.webgamesonline.com	www.worksheetworks.com
zdnet.com	www.zooniverse.com		

3. Required teacher collaborations
   Teachers will communicate with LSU instructors via emails and apps hosted on the LSU/BRBytes servers.

4. Required administration of course content, pre/post test, and research instruments
   All required materials and instruments will be either posted in the LSU/BRBytes servers or their location announced via email with the teacher/instructor group for this course.

5. Course Work
   Teachers must present the course material in sequence or as approved by collaboration with the LSU Pathway Point-of-Contact. The teacher is responsible for utilizing the LSU/BRBytes servers based system to release, acknowledge, provide student feedback, and grade student work. The LSU/BRBytes servers will track and notify the teacher as students near the required 75% attainment mark for certification.

6. Other
   As this is a project-based learning class, we strongly suggest that each section of the course be limited to a *maximum* of 20 students. The course is dependent on the teacher providing feedback and reviewing student code. The course requires that teachers have adequate time to interact with each student.

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INTERACTIVE DIGITAL MEDIA CAPSTONE

1. Materials:
   A desktop or laptop computer, access to 1-to-1 daily, and Internet. Chromebooks will not work with free Arduino software.

Hardware/Reusable Material	Recommended Unit	Cost/Unit
DSLR cameras (Recommend Canon EOS Rebel T5i DSLR Cameras with 18-55mm Lens)	1 per 3-5 students	$550
16 GB (minimum) SD Card	1/camera	$10
Cordless Power Drill	1/Classroom	$50
Hacksaw	1/Classroom	$20
Box Cutters	1 per 3-4 students	$15
Hot Glue Gun and Glue Sticks	1 per 3-4 students	$15
Storage Bins	1 per 3-4 students	$30
Arduino Starter Kits (Sunfounder Basic Starter Kit with Arduino Uno Board) https://www.sunfounder.com (Cannot be shared between sections)	1 per 2 students	$50
Consumable Material		
These items are essential to the course and may take the form of pvc, bolts, spray paint, etc. Teachers will help students specify what is needed upon definition of the projects.	1/Classroom	$500-$1000
Software		
Arduino IDE	1 per student	Free on PC; $1/month for Chromebook

2. Required software, networking access, and access to LSU servers
   - Teachers will need to be able to share documents via Google drive with LSU instructors.
   - Principals will need to communicate with the district's information technology department to ensure that there are no technological restrictions that block access to servers in the lsu.edu or lsupathways.org domains. In addition to the sites mentioned above, students will need web access to other web sites, including, but not limited to, the following:

developer.mozilla.org	stackoverflow.com	www.w3schools.com
p5play.molleindustria.org	codepen.io	tonejs.github.io
alpha.editor.p5js.org	create.arduino.cc	lunapic.com
https://ezgif.com/sprite-cutter	youtube.com	github.com
twinery.org	audacity.org	openshot.org

3. Required teacher collaborations
   Teachers will communicate with LSU instructors via a Google group set up for this purpose.

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4. <u>Required administration of course content, pre/post test, and research instruments</u>
   All required materials and instruments will be either posted in a Google drive or their location announced via the Google group for this course.

5. <u>Other</u>
   As this is a project-based learning class, we strongly suggest that each section of the course should be limited to a *maximum* of 20 students. If the course is overloaded with students, they will not receive adequate instruction.

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Teacher Signature   Printed Name   Date

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INTRODUCTION TO BIOMEDICAL

1. Materials
   Most modules use typical lab equipment found in science classrooms (beakers, flasks, pipettes, scales, rings and ring stands, graduated cylinders, goggles), but some require specialized equipment. The items below are reusable one-time purchases. Consult with the trained teachers to better determine what materials are necessary for their chosen modules.

Hardware/Reusable Material	Recommended Unit	Cost/Unit
Microscope (with 100X objective) with 100 glass slides/cover-slips	1 per 4 students	$210
Laboratory incubator	1 per classroom	$300
Vacuum filtration apparatus	1 per 4 students	$50
Mortar and Pestle	1 per 4 students	$5
Plastic pill bottles	1 per student	$2
Dissection pans	1 per 4 students	$15
Dissection tools	1 per classroom	$110
Bar magnets (pack of 12)	1 per classroom	$15
Cold compresses (packs of 2)	1 per 4 students	$16
Hot compresses	1 per 4 students	$19
Hemostats	1 per 2 students	$3
Consumables		
Various consumables for experiments	1 per student	$20*

*Traditional classroom supplies such as markers, colored pencils, and small item purchases.

2. Required teacher collaborations
   Teachers will communicate with LSU Biomedical pathway instructors via a Google group set up for this purpose.

3. Required administration of course content, pre/post test, and research instruments
   All required materials and instruments will be either posted in a Google drive or their location announced via the Google group for this course.

4. Other
   As this is a project-based learning class, we strongly suggest that each section of the course should be limited to a *maximum* of 30 students. If the course is overloaded with students, they will not receive adequate instruction.

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Teacher Signature   Printed Name   Date

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INTRODUCTION TO COMPUTATIONAL THINKING

1. <u>Materials</u>
   Internet access, 1-to-1 computer use daily, and access to LSU/BRBytes servers.

2. <u>Required software, networking access, and access to LSU/BRBytes servers:</u>
   - Students will need to sign up with online development and testing environments, including but not limited to codesandbox.io, jsfiddle.net, scratch.mit.edu and others.
   - Students will need access to YouTube instructional videos relevant to the course, as well as other educational video repositories.
   - Teachers will need to be able to access the LSU/BRBytes servers using several Internet protocols including but not limited to HTTPS and SSH.
   - Students and teachers will access the curriculum and teaching materials through the LSU and BRBytes servers.
   - Teachers will need to share student data with their designated LSU Pathway Point-of-Contact.
   - Principals will need to communicate with the district's information technology department to ensure that there are no technological restrictions that block access to the LSU/BRBytes servers in the lsu.edu, brbytes.org or lsupathways.org domains on any port.

3. <u>Required teacher collaborations</u>
   Teachers will communicate with LSU instructors via emails and apps hosted on the LSU/BRBytes servers.

4. <u>Required administration of course content, pre/post test, and research instruments</u>
   All required materials and instruments will either be posted in the LSU/BRBytes servers, or their location announced via email with the teacher/instructor group for this course.

5. <u>Course Work</u>
   Teachers must present the course material in sequence or as approved by collaboration with the LSU Pathway Point-of-Contact. The teacher is responsible for utilizing the LSU/BRBytes servers based system to release, acknowledge, provide student feedback, and grade student work. The LSU/BRBytes servers will track and notify the teacher as students near the required 75% attainment mark for certification.

6. <u>Other</u>
   As this is a project-based learning class, we strongly suggest that each section of the course be limited to a *maximum* of 20 students. The course is dependent on the teacher providing feedback and reviewing student code. The course requires that teachers have adequate time to interact with each student.

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Teacher Signature   Printed Name   Date

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INTRODUCTION TO ENGINEERING

1. Materials
   A desktop or laptop computer, access to 1-to-1 daily, and Internet. Chromebooks will not work with the free Arduino software.

Reusable Hardware/Material	Recommended Unit	Cost/Unit
Various reusable material and hardware for projects	1 per classroom	$1,000
Consumables		
Various consumables for projects	1 per classroom	$500
Software		
Arduino IDE	1 per student	Free on PC; $1/month for Chromebook

   *Complete supply list with purchase links can be found here.

2. Required software, networking access, and access to LSU servers
   - Teachers will need to be able to share documents via Google drive with LSU Instructors.
   - Arduino software will need to be installed on computers. It is free to download on computers. There is a cloud based version that is also available but requires drivers to be downloaded and will not work on Chromebooks. There is also a Chrome App that can be purchased for $1/student per month (only required for one month). However, IT would have to install it on student chromebooks.

3. Required teacher collaborations
   Teachers will communicate with LSU instructors via email and shared Google Drive folder.

4. Required administration of course content, pre/post test, and research instruments
   All required materials and instruments will be either posted in a Google drive or their location announced via the Google group for this course.

5. Other
   As this is a project-based learning class, we strongly suggest that each section of the course be limited to a *maximum* of 20 students. If the course is overloaded with students, they will not receive adequate instruction.

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Teacher Signature   Printed Name   Date

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INTRODUCTION TO STEM PATHWAYS AND CAREERS

1. <u>Materials</u>
   Internet access, one-to-one computer use daily, and access to the LSU/BRBytes servers. Chromebooks will not work with the free Arduino software.

Reusable Hardware/Material	Recommended Unit	Cost/Unit
Various reusable material and hardware for projects	1 per classroom	$1,500
Consumables		
Various consumables for projects	1 per classroom	$500
Software		
Arduino IDE	1 per computer	Free on computer, $1/ month for chromebook

*Complete supply list can be found [here](#).

2. <u>Required software, networking access, and access to LSU/BRBytes servers</u>
   - Students will need to sign up with online development and testing environments, including but not limited to codesandbox.io, jsfiddle.net, scratch.mit.edu and others.
   - Students will need access to YouTube instructional videos relevant to the course, as well as other educational video repositories.
   - Teachers will need to be able to access the LSU/BRBytes servers using several Internet protocols including but not limited to HTTPS and SSH.
   - Students and teachers will access the curriculum and teaching materials through the LSU and BRBytes servers, and through Google Drive.
   - Arduino software will need to be installed on computers. It is free to download on computers. There is a cloud based version that is also available but requires drivers to be downloaded and will not work on Chromebooks. There is also a Chrome App that can be purchased for $1/student per month (only required for one month). However, IT would have to install it on student chromebooks.
   - Teachers will need to share student data with their designated LSU Pathway Point-of-Contact.
   - Principals will need to communicate with the district's information technology department to ensure that there are no technological restrictions that block access to the LSU/BRBytes servers in the lsu.edu, brbytes.org or lsupathways.org domains on any port.In addition to the sites mentioned above, students will need web access to:

khanacademy.org	ericakochi.tumblr.com	www.oilfieldjobshop.com	www.hospitalitynet.org
Money.cnn.com	www.culinaryschools.org	Computer.howstuffworks.com	www.ada.org
brainpop.com	www.careerbuilder.com	peopleofcolorintech.com	petroleum.louisiana.edu
vimeo.com	blueprint.cs4all.nyc	www.coolmathgames.com	Catmediatheagency.com
www.kcs2019.com	En.scratch-wiki.info	www.mynextmove.org	www.raise.me
offices.omv.la.gov	www.w3schools.com	www.environmentalscience.org	Nurse.org

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www.bls.gov	www.wlf.louisiana.gov	www.louisianabelieves.com	study.com
www.ucas.com	www.careerexplorer.com	Bigfuture.collegeboard.org	www.teacher.org
kizoa.com	www.edumaritime.net	www.beautyschoolsdirectory.com	www.belltec.com
wevideo.com	masafetyservices.com	crypto.interactive-maths.com	Doc.louisiana.gov
www.nicholls.edu	www.sowela.edu	www.ebi.ac.uk	www.lsp.org
www.fletcher.edu	www.archdaily.com	study.com	www.hvacclasses.org
www.bpcc.edu	Thebestschools.org	Animaker.com	www.careerexplorer.com
weebly.com	www.housecallpro.com	airandspace.si.edu	GoFormative
wix.com	Arduino.cc	www.teachersoftomorrow.org	band.us app

3. Required teacher collaborations
   Teachers will communicate with LSU instructors via emails, apps hosted on the LSU/BRBytes servers, and the band.us app.

4. Required administration of course content, pre/post test, and research instruments
   All required materials and instruments will be either posted in the LSU/BRBytes servers or their location announced via email with the teacher/instructor group for this course.

5. Course Work
   Teachers must present the course material in sequence or as approved by collaboration with the LSU Pathway Point-of-Contact. In the fall semester, teachers will report post-test results for each unit to the Point-of-Contact. In the spring semester, the teacher is responsible for utilizing the LSU/BRBytes servers based system to release, acknowledge, provide student feedback, and grade student work. The LSU/BRBytes servers will track and notify the teacher as students near the required 75% attainment mark for certification.

6. Other
   As this is a project-based learning class, we strongly suggest that each section of the course be limited to a *maximum* of 25 students. The course is dependent on the teacher providing feedback and reviewing student code. The course requires that teachers have adequate time to interact with each student.

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MOTION GRAPHICS

1. Materials
   A desktop or laptop computer, access to 1-to-1 daily, and Internet. Chromebooks will not work.

Hardware/Reusable Material	Recommended Unit	Cost/Unit
Wacom Tablets	1/student	$100
DSLR camera (Needed only for the motion graphics unit)	1 per 3-4 students	$550
Tripod	1/camera	$130
16 GB (minimum) SD Card	1/camera	$10
Software (Each student needs access to a computer)		
Subscription to Adobe Creative Cloud (Required for IBC's and for Dual Enrollment) (for schools of at least 100 users: $142/yr per transferable user) **OR** Davinci Resolve + Adobe alternatives (No IBC's available)	1 License per student	(a) $240/yr per student (b) $330/yr per shared device **OR** Free
ToonBoom Harmony (Needed only for the motion graphics unit)	1 License/student	$100/ student
Consumable		
Art supplies (clay, construction paper, stands, remotes, etc.)	1/student	$10-20

2. Required software, networking access, and access to LSU servers
● Teachers will need to be able to share documents via Google Drive with LSU instructors.
● Software to install on each computer: Adobe Creative Suite and ToonBoom Harmony.
● Principals will need to communicate with the district's information technology department to ensure that there are no technological restrictions that block access to servers in the lsu.edu or lsupathways.org domains. In addition, students must be able to access the following websites:

adobe.com	youtube.com	freesound.org	vimeo.org	archive.org

3. Required teacher collaborations
   Teachers will communicate with LSU instructors via a Google group set up for this purpose.

4. Required administration of course content, pre/post test, and research instruments
   All required materials and instruments will be either posted in a Google drive or their location announced via the Google group for this course.

5. Other
   As this is a project-based learning class, we strongly suggest that each section of the course should be limited to a *maximum* of 20 students.

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PRINCIPLES OF ENGINEERING

1. Materials:
   A desktop or laptop computer, access to 1-to-1 daily, and Internet. Chromebooks will not work with the free Arduino software.

Reusable Hardware/Material	Recommended Unit	Cost/Unit
Various reusable material and hardware for projects	1 per classroom	$2,000
Consumables		
Various consumables for projects	1 per classroom	$800
Software		
Arduino IDE	1 per student	Free on PC; $1/month for Chromebook

   *Complete supply list with purchase links can be found here.

2. Required software, networking access, and access to LSU servers
   - Teachers will need to be able to share documents via Google drive with LSU Instructors.
   - Arduino software will need to be installed on computers. Arduino software will need to be installed on computers. It is free to download on computers. There is a cloud based version that is also available but requires drivers to be downloaded. There is also a Chrome App that can be purchased for $1/student per month (only required for one month). However, IT would have to install it on student chromebooks.

3. Required teacher collaborations
   Teachers will communicate with LSU instructors via email and shared Google Drive folder.

4. Required administration of course content, pre/post test, and research instruments
   All required materials and instruments will be either posted in a Google drive or their location announced via the Google group for this course.

5. Other
   As this is a project-based learning class, we strongly suggest that each section of the course be limited to a *maximum* of 20 students. If the course is overloaded with students, they will not receive adequate instruction.

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Teacher Signature   Printed Name   Date

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PROGRAMMING FOR DIGITAL MEDIA

1. Materials
   A desktop or laptop computer, access to 1-to-1 daily, and Internet. Chromebooks will not work.

Hardware/Reusable Material	Recommended Unit	Cost/Unit
Arduino Starter Kits (Sunfounder Basic Starter Kit with Arduino Uno Board) https://www.sunfounder.com (Cannot be shared between sections)	1 per student	$50
Consumable Material		
Annual consumable materials to replenish Arduino supplies.	1/Classroom	$150
Software		
Arduino IDE	1 per student	Free on PC

2. Required software, networking access, and access to LSU servers
   - Teachers will need to be able to share documents via Google drive with LSU Instructors.
   - Free software to install on each computer: VS Code, Arduino IDE, P5SerialControl, and Arduino Create Plugin.
   - Principals will need to communicate with the district's information technology department to ensure that there are no technological restrictions that block access to servers in the lsu.edu or lsupathways.org domains. In addition, students must be able to access the following websites:

p5play.molleindustria.org	codepen.io	tonejs.github.io
editor.p5js.org	create.arduino.cc	lunapic.com
ezgif.com/sprite-cutter	youtube.com	github.com
freesound.org	p5js.org	www.spriters-resource.com

3. Required teacher collaborations
   Teachers will communicate with LSU instructors via a Google group set up for this purpose.

4. Required administration of course content, pre/post-test, and research instruments
   All required materials and instruments will be either posted in a Google drive or their location announced via the Google group for this course.

5. Other
   As this is a project-based learning class, we strongly suggest that each section of the course be limited to a *maximum* of 20 students.

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PROGRAMMING FOR STEM/ENGINEERING

1. <u>Materials</u>
Internet access, 1-to-1 computer use daily, and access to the LSU/BRBytes servers.

Hardware/Reusable Material	Recommended Unit	Cost/Unit
Arduino Starter Kits (Sunfounder Basic Starter Kit with Arduino Uno Board) https://www.sunfounder.com (Cannot be shared between sections)	1 per student	$50
Consumable Material		
Annual consumable materials to replenish Arduino supplies.	1/Classroom	$150
Software		
Arduino IDE	1 per student	Free on PC; $1/month for Chromebook

2. <u>Required software, networking access, and access to LSU/BRBytes servers</u>
   - Students will need to sign up with online development and testing environments, including but not limited to codesandbox.io, jsfiddle.net, scratch.mit.edu and others.
   - Students will need access to YouTube instructional videos relevant to the course, as well as other educational video repositories.
   - Teachers will need to be able to access the LSU/BRBytes servers using several Internet protocols including but not limited to HTTPS and SSH.
   - Students and teachers will access the curriculum and teaching materials through the LSU and BRBytes servers.
   - Teachers will need to share student data with their designated LSU Pathway Point-of-Contact.
   - Principals will need to communicate with the district's information technology department to ensure that there are no technological restrictions that block access to the LSU/BRBytes servers in the lsu.edu, brbytes.org or lsupathways.org domains on any port. In addition to the sites mentioned above, students will need web access to:

w3schools.com	codepen.io	tonejs.github.io
editor.p5js.org	create.arduino.cc	lunapic.com
elm-lang.org	youtube.com	github.com
freesound.org	p5js.org	stackoverflow.com

3. <u>Required teacher collaborations</u>
Teachers will communicate with LSU instructors via emails and apps hosted on the LSU/BRBytes servers.

4. <u>Required administration of course content, pre/post test, and research instruments</u>
All required materials and instruments will be either posted in the LSU/BRBytes servers or their location announced via email with the teacher/instructor group for this course.

5. <u>Course Work</u>
Teachers must present the course material in sequence or as approved by collaboration with the LSU Pathway Point-of-Contact. The teacher is responsible for utilizing the LSU/BRBytes servers based system

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to release, acknowledge, provide student feedback, and grade student work. The LSU/BRBytes servers will track and notify the teacher as students near the required 75% attainment mark for certification.

6. Other

As this is a project-based learning class, we strongly suggest that each section of the course be limited to a *maximum* of 20 students. The course is dependent on the teacher providing feedback and reviewing student code. The course requires that teachers have adequate time to interact with each student.

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INTRODUCTION TO ROBOTICS (VEX)

1. Materials
   A desktop or laptop computer, access to 1-to-1 daily, and Internet. Chromebooks will not work.

Hardware/Reusable Material	Recommended Unit	Cost/Unit
V5 Classroom Super Kit	1 per 3-4 students	1299.99
Storage Bin, Lid & Tray	1 per 3-4 students	34.99
Tool Kit V2	1 per 3-4 students	8.99
Software (Each student needs access to a computer)		
VEX Code V5 (Must include Text Based Programming)	1 per student	Free

2. Required software, networking access, and access to LSU servers
   VEXCode software will need to be installed in computers. *It will not work on chromebooks.*

3. Required teacher collaborations
   Teachers will communicate with LSU instructors via email and shared Google Drive folder.

4. Required administration of course content, pre/post test, and research instruments
   All required materials and instruments will be either posted in a Google drive or their location announced via the Google group for this course.

5. Other
   As this is a project-based learning class, we strongly suggest that each section of the course be limited to a *maximum* of 20 students. If the course is overloaded with students, they will not receive adequate instruction.

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SOUND DESIGN

1. <u>Materials</u>

   A desktop or laptop computer, access to 1-to-1 daily, and Internet. Chromebooks will not work.

Hardware and Software (Each student needs access to a computer)		
Midi Keyboard/Controller (such as Arturia mkII Slim Key Controller)	1 per student	99.99
PreSonus iTwo Bundle or PreSonus AudioBox Bundle Recording Kit (Microphone, Headphones, Audio Interface, DAW Software: PreSonus Studio One)*	1 per student	$259/kit or $209/kit

*Other DAW Software options to purchase: Reaper (Budget option), Ableton Live, Logic, ProTools
Pro versions provide the best experience (video editing, DSP plugins, instruments)

2. <u>Required software, networking access, and access to LSU servers</u>
   - Teachers will need to be able to share documents via Google drive with LSU instructors.
   - Software to install on each computer: Audacity & DAW Software purchased above. (Studio One)
   - Principals will need to communicate with the district's information technology department to ensure that there are no technological restrictions that block access to servers in the lsu.edu or lsupathways.org domains. In addition, students must be able to access the following websites:

codepen.io	gibber.cc	earsketch.gatech.edu
freesound.org	audacity.org	openshot.org
youtube.com & vimeo.com	soundcloud.com	musictheory.net

3. <u>Required teacher collaborations</u>
   Teachers will communicate with LSU instructors via a Google group set up for this purpose.

4. <u>Required administration of course content, pre/post test, and research instruments</u>
   All required materials and instruments will be either posted in a Google drive or their location announced via the Google group for this course.

5. <u>Other</u>
   As this is a project-based learning class, we strongly suggest that each section of the course should be limited to a *maximum* of 20 students. If the course is overloaded with students, they will not receive adequate instruction.

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SURVEY OF COMPUTER SCIENCE

1. Materials

   Internet access, 1-to-1 computer use daily, and access to the LSU/BRBytes servers.
   - index cards (4 packs of 100 count)
   - m&m packets (1 for every 2 students)
   - chocolate bars (1 for every 2 students)
   - paperclips (8 packs 100 count)
   - playing cards (1 deck for every 4 students)
   - sticky notes (12 packs 100 count)
   - envelopes (5 boxes 100 count)
   - copy/ printer paper throughout the year
   - set of pens (black, blue, red) per student
   - pack of colored pencils (per group of 4 students)

2. Required software, networking access, and access to LSU/BRBytes servers:
   - Students will need to sign up with online development and testing environments, including but not limited to codesandbox.io, jsfiddle.net, scratch.mit.edu and others.
   - Students will need access to YouTube instructional videos relevant to the course, as well as other educational video repositories.
   - Teachers will need to be able to access the LSU/BRBytes servers using several Internet protocols including but not limited to HTTPS and SSH.
   - Students and teachers will access the curriculum and teaching materials through the LSU and BRBytes servers.
   - Teachers will need to share student data with their designated LSU Pathway Point-of-Contact.
   - Principals will need to communicate with the district's information technology department to ensure that there are no technological restrictions that block access to the LSU/BRBytes servers in the lsu.edu, brbytes.org or lsupathways.org domains on any port. In addition to the sites mentioned above, students will need web access to:

   - 20q.net
   - aboutmyinfo.org
   - allthingsd.com
   - apcentral.collegeboard.org
   - bjc.edc.org
   - checkpagerank.net
   - Code.org
   - Computer.howstuffworks.com
   - crypto.interactive-maths.com
   - curriculum.csmatters.org
   - Libguides.mit.edu
   - m.wikihow.com
   - Pingtool.org
   - policy.hu

   - rapidtables.com
   - Repl.it
   - thingful.net
   - tonystrains.com
   - www.barefootcomputing.org
   - www.bbc.com
   - www.braingle.com
   - www.colorcodepicker.com
   - www.digitalattackmap.com
   - www.dummies.com
   - www.e-cartouche.ch
   - www.explainthatstuff.com
   - www.ftc.gov
   - www.geogebra.org

   - www.googlefight.com
   - www.informationisbeautiful.net
   - www.inventwithpython.com
   - www.iplocation.net
   - www.mathsisfun.com
   - www-math.ucdenver.edu
   - www.mediashift.org
   - www.nationalarchives.gov.uk
   - www.nytimes.com
   - www.pbs.org
   - www.prchecker.info
   - www.sorting-algorithms.com
   - www.string-functions.com

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- www.ted.com
- www.time.com
- www.us.norton.com

- www.w3schools.com
- www.webgamesonline.com
- www.worksheetworks.com

- www.youtube.com
- www.zooniverse.com
- zdnet.com

3. Required teacher collaborations
   Teachers will communicate with LSU instructors via emails and apps hosted on the LSU/BRBytes servers.

4. Required administration of course content, pre/post test, and research instruments
   All required materials and instruments will be either posted in the LSU/BRBytes servers or their location announced via email with the teacher/instructor group for this course.

5. Course Work
   Teachers must present the course material in sequence or as approved by collaboration with the LSU Pathway Point-of-Contact. The teacher is responsible for utilizing the LSU/BRBytes servers based system to release, acknowledge, provide student feedback, and grade student work. The LSU/BRBytes servers will track and notify the teacher as students near the required 75% attainment mark for certification.

6. Other
   As this is a project-based learning class, we strongly suggest that each section of the course be limited to a *maximum* of 25 students. The course is dependent on the teacher providing feedback and reviewing student work. The course requires that teachers have adequate time to interact with each student.

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