PROPOSAL TO ESTABLISH A NEW UNDERGRADUATE DEGREE PROGRAM

This template is to be used only by programs that have received specific written approval from the Provost's office to proceed with internal proposal development and review. The proposal template should be completed in full and submitted to the University Provost's Office [mailto: curriculumplanning@asu.edu]. It must undergo all internal university review and approval steps including those at the unit, college and university levels. A program **may not** be implemented until the Provost's Office notifies the academic unit that the program may be offered.

College/School/Institute:	The College of Liberal Arts and Sciences
Department/Division/School:	Dean's Office
Proposing faculty group (*if applicable*):	
Are two or more academic units collaborating on this program?	No, this is not a joint 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.

Degree type:	BS-Bachelor of Science
If other; provide degree type title and proposed abbreviation:	
Name of degree program (major):	Technological Leadership
Are any concentrations to be established under this degree program?	No, concentrations will not be established.
Is a program fee required?	Yes, a program fee is required
What is the first catalog year available for students to select on the undergraduate application for this this program?	2020-2021

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 (all 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:	Lindy Elkins-Tanton	**Title:**	School Director & Professor
Phone number:	480/727-2451	**Email:**	lelkinst@asu.edu

DEAN APPROVAL(S)

This proposal has been approved by all necessary unit and College/School levels of review. I recommend implementation of the proposed organizational change.

College/School/Division Dean name: Paul LePore

Signature: _____ **Date:** / /20

College/School/Division Dean name:
(if more than one college involved)

Signature: _____ **Date:** / /20

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

1. Purpose and Nature of Program

Provide a brief program description. Include the distinctive features of the program that make it unique.

The focus of the BS in Technological Leadership: Training in leadership thinking and solving science- and technology-related open problems, which is a skill required for the new fields of the future, for successful leadership, and for graduate school.

The need: The United States and the world has a great need for workforce in science, technology, engineering, and math. Further, the key 21st-century skills of complex interdisciplinary problem-solving, goal-setting, team collaboration, creativity, persuasion, and analytic reasoning are those that humans uniquely bring to the workforce, that robotics and AI complement but cannot replace. People are "hired for the hard skills and fired for the soft skills" -- so we will train students in both. Further, those 21st-century skills of critical thinking, collaborative problem-solving, and giving and receiving critique will allow our students to learn and succeed on the job right from day one.

The approach: The Technological Leadership Bachelor of Science is a scalable three-year degree program using Exploration Learning techniques in the classroom and having students spend summers connecting directly with the community and employers in intensive internship experiences. Every student will learn statistics, calculus, and coding, in addition to collaborative problem-solving, team communication, and critical thinking.

The heart of this major is two classes that every student takes every semester. We are calling them "thinking" and "making." In the thinking classes, students practice researching and stepping along a solution path of a big science- or technology-oriented question. Examples from past planetary-focused classes include "What will the Moon look like after settlement?" "How can humankind use biomimicry to help design planetary transports?" "How will we discover life off of the Earth and what should we do when we discover it?" They learn to ask productive questions, do research, and distill information for the team. In their final year, they pursue their own topic with a goal of creating new knowledge. In the making classes, students use a similar process but in the creation of a physical object: an engineering project, an art and design project, technology-enhanced community service.

The degree's interdisciplinary vision of education will forward ASU's commitment to the economic, social and cultural health of our communities by producing graduates able to recognize and solve complex problems in a variety of real-world contexts not limited to a single disciplinary focus. By changing education, we can solve a full range of problems facing society today.

Content is no longer the differentiator in education, as many college graduates require additional training after securing employment. In the BS in Technological Leadership, students gain the leadership, analytical and design skills necessary to solve the problems facing today's world. The program will help make the transition from school to workforce continuous, with life-improving skills for every arena.

2. Student Learning Outcomes and Assessment Methods

Assessment Plan

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.

3. Academic Curriculum and Requirements

A. Major Map

Attach a copy of the "proposed" major map for this degree program. 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. Instructions on how to create a "proposed major map" in BAMM can be found in the Build a Major Map Training Guide.

B. Summary of Credit Hours Required for this Program

Total credit hours must be 120 and include first year composition, general studies, core/required courses, program specific electives, and any additional requirements (e.g., concentration credits).

Requirements	Credit Hours
First Year Composition	**6**
ASU 101 (or equivalent)	**1**

General Studies	**22**
Core/required courses	**67**
Program specific electives	**0**
Additional requirements – Internship, Science & Society	**18**
Other; please explain - university electives	**6**
Total	**120**

C. Core/Required Courses

i. Total required and/or core course credit hours

67

ii. List the prefix, number, name and credit hours for each required/core course for this program

AME 230 Programming for the Media Arts (3) OR CSE 110 Principles of Programming (3)

AME 240 Introduction to Physical Computing (3)

AME 330 Digital-Physical Systems (3)

COM 230 Small Group Communication (3)

FIS 432 Problem Solving through Strategic Thinking (3)

HDA 296 Creative Futures: Studio (3)

HDA 496 Creative Futures: Advanced Studio (3)

MAT 265 Calculus for Engineers I (3) OR MAT 270 Calculus with Analytic Geometry I (4)

IPI 296 Inquiry (3)

IPI 296 Inquiry (3) OR HUL 250 Intro to Problem-Based Interdisciplinary Research (3)

IPI 496 Advanced Inquiry (12)

LSE 305 Conceptualizing Learning: Theories in Practice (3)

PHY 111 General Physics (3) AND PHY 113 General Physics Laboratory (1)

PSY 101 Introduction to Psychology (3)

PSY 302 The Psychology of Positive Leadership (3)

SES 307 Space Works I - Design, Model, Build, Test (3)

SES 407 Space Works II - Model, Fabricate and Test (3)

STP 226 Elements of Statistics (3)

WPC 300 Problem Solving and Actionable Analytics (3)

D. Program Specific Electives

i. Total required program elective credit hours

List the prefix, number, name and credit hours for any program specific electives for this program

E. Additional Program Requirements, if any:

List and describe any capstone experiences, milestone, and/or additional requirements.

Science and Society requirement (6)

IPI 484 Internship (12)

4. New Course Development

A. Will a new course prefix (es) be required for this degree program? Yes
If yes, list prefix name(s) (i.e. ENG- English): IPI- Interplanetary Initiative

Note: A request for a New Prefix form must be completed for each new prefix required and submitted with this proposal: New prefix request form.

B. New Courses Required for Proposed Degree Program
List all new courses required for this program, including course prefix, number and course description.

AME 240 Introduction to Physical Computing (3)
Students will learn the basic skills required to build physical-computing systems through a series of practical tutorials and design challenges. These skills will include basic fabrication with hand and CNC tools, electronic design fundamentals, circuit construction techniques, introductory microcontroller programming and the use of simple sensors and actuators. The primary difference between this introductory level course and the advanced course (AME 330: Digital-Physical Systems) is that students in this introductory course are not expected to invent original projects. Projects with clear engineering and design challenges will be assigned. Within the scope of these projects there will be significant opportunities for creativity but the emphasis will be on learning basic skills.

FIS 432 Problem Solving through Strategic Thinking (3)
In "Problem Solving Through Strategic Thinking," students will learn how to ask questions, brainstorm and communicate ideas, while dealing with uncertain outcomes and unpredictable risks caused by the ideas and solutions they propose. In understanding which ideas and solutions stick and which don't, students will learn how different factors influence the birth, life and death of ideas and the socio-technical systems ideation exists in. Does it matter who asks the questions and proposes the ideas, who is trying to participate, who was there first, if there is a profit or other conflicting motive and the context and the interests that will result in certain solutions being picked over others? This course will use exploration learning approaches, where students follow a progression through what they discover, from understanding who they are as individuals, to how ideas are formed and hypothesis made about proposed solutions.

HDA 296 Creative Futures: Studio (3)
Offers students the chance to develop skills in creating fully realized design ideas and creative ventures, while consciously developing skills in self-analysis, cultural competencies, and communication. Through the coursework, readings, and projects, students develop new methods and systems of thought for dealing with challenging, complex, collaborative projects. Designed as a sequence with HDA 496, this course and its sequel are designed as a critical “making” component of the BS in Technological Leadership.

HDA 496 Creative Futures: Advanced Studio (3-6)
Offers students the chance to develop advanced skills in creating fully realized design ideas and leading creative ventures, while consciously developing skills in self-analysis, cultural competencies, and communication. Through the coursework, readings, and projects, students develop new methods and systems of thought for dealing with challenging, complex, collaborative projects. Designed as a sequence with 296, these courses are designed as a critical “making” component of the BS in Technological Leadership.

HUL 250 Intro to Problem-Based Interdisciplinary Research (3)
This course has two main purposes: 1) introduce undergraduate students to transdisciplinary and interdisciplinary academic inquiry so that they may expand their understanding of and capacity to tackle the grand social challenges facing the world today; 2) to equip students to engage in the interdisciplinary and intergenerational collaborative inquiry through the pedagogy of the Humanities Lab, which explores and seeks to address those grand social challenges.

IPI 296 Inquiry (3)
To be most effective in work and life, we need to learn how to recognize and solve problems, and to work in teams. In this class we will work together to reach understanding on a large goal associated with human society and space exploration. An example from a previous class is, What will the Moon be like after human settlement? As a class, we use a weekly inquiry cycle to step toward our goal: read some content, ask a “natural next question” that takes us one step farther toward the goal,

seek content to help answer that question, and repeat. Students will learn how to understand a complex problem through multiple steps, to approach challenging primary content, to productively critique each other's work, and to think critically. Students will meet for 2 hours per week but will work extensively outside of class. This course is in a sequence with IPI 496 and is a critical "thinking" component to the BS in Technological Leadership.

IPI 496 Advanced Inquiry (3)
To be most effective in work and life, we need to learn how to recognize and solve problems, and to work in teams. We will work together to reach understanding on a large goal associated with human society and space exploration. An example from a previous class is, What will the Moon be like after human settlement? As a class, we use a weekly inquiry cycle to step toward our goal: read some content, ask a "natural next question" that takes us one step farther toward the goal, seek content to help answer that question, and repeat. In IPI 496 the students are each running an independent research project using the techniques taught throughout. In the final year of the major each student must complete their independent research project with some knowledge creation – that is, development of ideas, supported hypotheses, observations, and the like, that add to the mass of human knowledge rather than just restating it. This course follows IPI 296 and is a critical "thinking" component to the BS in Technological Leadership.

LSE 305 Conceptualizing Learning: Theories in Practice (3)
Explore a variety of learning theories. Explore the role of the educator, the role of the student, and how tools and systems can help facilitate teaching and learning opportunities. Students will design learning experiences for a specific need or opportunity using current research-based learning theories.

PSY 302 The Psychology of Positive Leadership (3)
To thrive in the 21st century world will require innovation, collaboration, and the ability to lead during times of change and complexity. There is increasing demand for leaders who can combine a high level of technical ability with the social skills that are necessary for groups of people to live and work productively and in harmony with each other. This course focuses on helping students to understand and apply key psychological and social processes that create the conditions for leaders and teams to thrive in dynamic, collaborative environments. Students will become familiar with foundational research insights through an "action learning" format that integrates theory with structured opportunities for self-reflection and individual- and group-level practice.

SES 307 Space Works I – Design, Model, Build, Test (3)
This course will provide an introduction to: 1) project design and fabrication, including the application of SolidWorks, training and use of the ASU Student Machine Shop, and the implementation of a project from prototype through completion within a dedicated maker space; 2) analytical modeling and its application to planetary exploration; 3) space mission design and implementation; and 4) leadership training, including project organization, schedules, budgets, and proposal writing. A key element of the course will be interacting with and learning from engineers and scientists working on space projects.

SES 407 Space Works II – Model, Fabricate, and Test (3)
This course will provide students with: 1) Experience in complex project design and fabrication, including the application of NX software for thermal and structural modeling, use of the ASU Student Machine Shop, and the testing of a team project within space-like conditions; 2) Training in cleanroom protocol; 3) Electrostatic discharge training; and 4) Preparation of a Preliminary Design Review document with will include a team presentation. A key element of the course will be interacting with and learning from engineers and scientists working on space projects.

Note: New course requests must be submitted electronically via Curriculum ChangeMaker and undergo all internal university review and approval steps including those at the unit, college, and university levels.

5. Program Need

Explain why the university needs to offer this program (include target audience and market).

The Journal of Higher Education reports that 60 percent of managers say new college graduates lack the critical thinking skills they are looking for. This program explicitly targets development of advanced skills in critical thinking, collaborative problem-solving and leadership that transfer to any job, but especially to careers as managers, analysts, administrators and executives, a job market that ONETonline.org estimates to increase by 10% or more between 2016 and 2026.

This major represents a significant step toward a more modern form of university education: focused on teaching the processes of thinking, problem-solving, collaborative work, and designing and building in the lab, and created to produce a smooth

transition to the workforce via internships, targeted training, and formative assessments that are relevant to employers. The innovative learning techniques used in this major have been tested in the classroom for five years, and research papers backing their efficacy are forthcoming. Students will be engaged in team research and team engineering and design in the lab. Students will learn how to learn on their own, and learn to question assertions and check concepts. These are the skills needed in any job: The ability to recognize an unsolved problem and take steps to solve it, the ability to think critically about information and find your own, and the ability to give and receive productive critiques.

6. Impact on Other Programs

List other academic units that might be impacted by the proposed program and describe the potential impact (e.g., how the implementation of this program might affect student headcount/enrollment, student recruitment, faculty participation, course content, etc. in other programs). Attach letters of collaboration/support from impacted programs.

The following units will provide courses for this major. We do not anticipate that this major will impact these units.

School of Earth and Space Exploration, Department of Psychology, W.P. Carey School of Business, Herberger Institute for Design and the Arts, Hugh Downs School of Human Communication, and the School for the Future and Innovation in Society.

7. Projected Enrollment

How many new students do you anticipate enrolling in this program each year for the next five years?

5-YEAR PROJECTED ANNUAL ENROLLMENT					
	1st Year	**2nd Year** (Yr 1 continuing + new entering)	**3rd Year** (Yr 1 & 2 continuing + new entering)	**4th Year** (Yrs 1, 2, 3 continuing + new entering)	**5th Year** (Yrs 1, 2, 3, 4 continuing + new entering)
Number of Students Majoring (Headcount)	10	25	50	75	100

8. Accreditation or Licensing Requirements

If applicable, provide the names of the external agencies for accreditation, professional licensing, etc. that guide your curriculum for this program, if any. Describe any requirements for accreditation or licensing.

NA

9. Faculty & Staff

A. Current Faculty

List the name, rank, highest degree obtained, and area of specialization or expertise of all current faculty who will teach in the program, and estimate their level of involvement.

Person teaching	Rank	Deg.	Specialization	Level of Involvement and what they are
Lindy Elkins-Tanton	Fdn Prof.	PhD	Planetary geophysics	Major designer and builder, steering committee, Teaching one semester each year IPI296 Inquiry, IPI496 Advanced Inquiry, IPI484: Internship at II partner
Evgenya Shkolnik	Asst. Prof.	PhD	Astrophysics	Major designer and builder, steering committee, Teaching one semester each yearIPI296 Inquiry, IPI496 Advanced Inquiry, IPI484: Internship at II partner
Jake Pinholster	Assoc. Prof.	MFA	Performance design	Steering committee, Teaching one semester each year HDA296 Creative

				Futures Studio, HDA496 Creative Futures Studio
Byron Lahey	Clinical Asst. Prof.	PhD	Digital Culture	Teaching one semester each year AME240 Intro to Physical Computing
Timi Aganaba-Jeanty	Asst. Prof.	PhD, LLM	Space law	Steering committee, Teaching one semester per year starting in year 3: FIS432 Problem-solving Through Strategic Thinking
Teresa Foulger	Assoc. Prof.	EdD	Educational transformation	Steering committee, Teaching one semester per year starting in year 3: LSE305 Conceptualizing Learning
Sally Kitch	Reg. Prof.	PhD	Gender studies	Teaching one semester per year: HUL250 Introduction to Problem-Based Interdisciplinary Research
Phil Christensen	Reg. Prof.	PhD	Planetary instrumentation	Teaching two semesters per year: SES294 Spaceworks, SES394 Spaceworks
Nancy Gonzales	Fdn Prof.	PhD	Psychology of family resiliency	Steering committee, Teaching one semester per year starting year 2: PSYXXX The Psychology of Positive Leadership

B. New Faculty

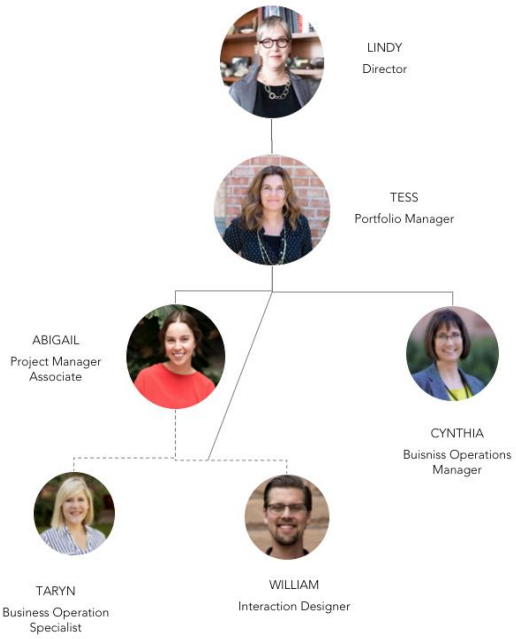
Describe the new faculty hiring needed during the next three years to sustain the program. List the anticipated hiring schedule and financial sources for supporting the addition of these faculty members.

None needed.

C. Administration of the Program

Explain how the program will be administered for the purposes of admissions, advising, course offerings, etc. Discuss the available staff support.

Interplanetary Initiative is co-chaired by Michael Crow and Lindy Elkins-Tanton. The major will be administered by the Interplanetary Initiative, which is a pan-university program, and by The College of Liberal Arts and Sciences, because they have the capacity to support students. The current organization chart for the Interplanetary Initiative is shown below. We are adding a Curriculum Coordinator, supported by Interplanetary Initiative and embedded in The College of Liberal Arts and Sciences.



10. Resources (necessary to launch and sustain the program)

A. Required Resources

Describe any new resources required for this program's success, such as new support staff, new facilities, new library resources, new technology resources, etc.

The existing Interplanetary Initiative budget will support the new Curriculum Coordinator. Both Tess Calvert, Portfolio Manager, and Abigail Weibel, Project Manager Associate, are supporting the major.

In December 2018 Interplanetary Initiative moved into PEBW, now renamed Sun Devil Hall, thanks to support from ASU administration and the repainting and preparation of the space.

We are working with architects now on creating the Interplanetary Lab for knowledge building and intellectual property creation. The Lab will include both a *hardware factory* for students and faculty to create space hardware and software, and an *ideation studio*, to research and promote "exploration learning", and including a classroom especially appropriate for Inquiry classes and under the scheduling control of Interplanetary. This classroom will be completed by the end of spring, 2019.

Procurement is sending out an RFP during the week of January 28, 2019, for the software support needed for the classes. This also allows us to prepare more thoroughly for taking the major online in future.

B. Resource Acquisition

Explain how the resources to support this program will be obtained.

Interplanetary Initiative's financial projections and plans are reviewed by President Crow, Exec. VP Panchanathan, Dean Kenny and Dean Gonzales. We will not receive any overhead return for grants obtained through our projects. Our path to financial sustainability will therefore have three parts:

- Corporate partnerships, science program fee, and philanthropy.

Interplanetary Initiative path to sustainability:

Stage 1: Fall 2016 through Fall 2018

- Demonstrate success in making research teams, managing them, producing results
- Demonstrate university-wide as well as external interest and support for Interplanetary Initiative
- Plan major and lab space

Stage 2: Spring 2019 through Spring 2021

- Build up corporate partnerships to augment Strategic Initiative Fund support
- Launch BS in Technological Leadership
- Launch MS in Technological Leadership
- Form university partnerships for education and research in the II model

For the remainder of FY2019

- Events: Washington D.C. panel March 3, 2019. Annual convening April 5-6, 2019.
- Technological Leadership major should be officially approved. Online modules will begin development with EdPlus by February 1st, 2019.
- Exploration Learning: Spring workshop will be held in May 2019, classes using EL across ASU will be identified, EL marketing strategy will be in place with video, website, and growing resources.
- Financial sustainability: Create and launch corporate partnership plan. Create and launch a donor program plan.

For FY2020

- Sun Devil Hall space is completed for interdisciplinary teamwork and for visitors to experience.
- Launch the II major.
- Two corporate partnerships confirmed.
- Advisory Council formed.

Stage 3: Fall 2021

- ASU is the thought leader on the future of humans in space.
- The II is an exemplar for a new paradigm for the structure of the university, showing that research and education can be more effective when connected and motivated by the biggest questions.
- Exploration Learning is widespread within and outside of ASU, led by II, the ETX Center, and multiple education pioneers throughout the university and beyond.
- The Interplanetary Initiative has funding partners across the private sector and government sufficient to fund capstones, research teams, and the Interplanetary Lab, our physical space on campus made up of the Hardware Factory and the Ideation Studio.

APPENDIX
OPERATIONAL INFORMATION FOR UNDERGRADUATE PROGRAMS
(This information is used to populate the Degree Search/catalog website.)

1. **Program Name (Major):** Technological Leadership

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

Think, make and lead in interdisciplinary courses designed to train successful leaders and problem-solvers for science- and technology-related fields of the future. This program will teach the skills needed to transform students into master learners: someone ready to adapt to an ever-changing and ever-growing workforce.

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

In ASU's three-year BS degree program in technological leadership, students learn complex problem-solving, critical thinking and leadership through an interdisciplinary blend of classroom learning and research. Creative, hands-on problem-solving, team-based collaboration, critical thinking, intensive summer internships and fundamental skills in writing, math and coding prepare graduates to succeed in a wide range of endeavors, from tech or finance industries to think tanks and consulting firms to earning an advanced degree. This three-year program provides a direct path into the workforce, towards an empowered career.

The heart of this major consists of "thinking" and "making" classes taken each semester. In "thinking" classes, students learn to solve big questions both independently and in teams; examples include "What will the Moon look like after human settlement?" and "What is the future of cars?" In "making" classes, students use similar processes with software and lab tools to create a physical product.

4. **Contact and Support Information**

Building code and room number: *(Search ASU map)*	ARM 162
Program office telephone number: (*i.e. 480/965-2100*)	480/965-6506
Program Email Address:	thecollege@asu.edu
Program Website Address:	https://thecollege.asu.edu

5. **Delivery/Campus Information Options:** On-campus and Online (ground courses and/or iCourses)

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.

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

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

7. **Additional Program Description Information**

A. Additional program fee required for this program? Yes
B. Does this program have a second language requirement? No

8. **Career Opportunities**
Provide a brief description of career opportunities available for this degree program. (150 words maximum)

Graduates of this degree will have opportunities to enter career fields focused on solving complicated problems in a variety of disciplines. With a heavy program focus on critical thinking, collaborative problem-solving and leadership, graduates will have the tools to be successful in fields such as technology, business, law, human services and even education.

9. **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.

None

10. 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.

None

11. 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.

None

12. Global Experience

The following text is standard global experience text. If applicable, edit or add to the text to tailor it to your program.

With over 250 programs in more than 65 countries (ranging from one week to one year), study abroad is possible for all ASU students wishing to gain global skills and knowledge in preparation for a 21st century career. Students earn ASU credit for completed courses, while staying on track for graduation, and may apply financial aid and scholarships toward program costs. https://mystudyabroad.asu.edu/

13. Keywords

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

Problem-solving, analytics, collaboration, creativity, computing, systems, coding, makerspace, teamwork, interdisciplinary

14. Advising Committee Code

List the existing advising committee code to be associated with this degree.

A new advising committee will be created.

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

15. First Required Math Course

List the first math course required in the major map.

MAT 265

16. WUE Eligible

Has a request been submitted to the 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 Provost.

17. Math Intensity

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

MAT 265

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

Substantial

18. 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.

11-1021.00	General and Operations Managers		
13-2099.01	Financial Quantitative Analysts		
19-2099.00	Physical Scientists, All Other		
23-1023.00	Judges, Magistrate Judges, and Magistrates		
11-1011.00	Chief Executives		

19. Area(s) of Interest

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

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

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

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

2019 - 2020 Major Map
Technological Leadership, (Proposed)

School/College:
QGSBGRQ

Term 1 0 - 16 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
AME 240: Introduction to Physical Computing OR HDA 296: Creative Futures: Studio	3	C	• An SAT, ACT, Accuplacer, IELTS, or TOEFL score determines placement into first-year composition courses • Mathematics Placement Assessment score determines placement in mathematics course. • ASU 101 or college-specific equivalent First-Year Seminar required of all freshman students • Select your career interest areas and play me3@ASU
ENG 101: First-Year Composition or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107: First-Year Composition or ENG 108: First-Year Composition	3	C	
IPI 296: Inquiry	3	C	
LIA 101: Student Success in The College of Liberal Arts and Sciences	1		
MAT 265: Calculus for Engineers I (MA) OR MAT 270: Calculus with Analytic Geometry I (MA)	3-4	C	
PSY 101: Introduction to Psychology (SB)	3	C	
Term hours subtotal:	16-17		

Term 2 16 - 32 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
AME 240: Introduction to Physical Computing OR HDA 296: Creative Futures: Studio	3	C	• Students who complete ENG 105 in Term 1 should complete ENG 215 or ENG 216 to complete one of the two "L" General Studies requirements. • Create a first draft resume
ENG 101: First-Year Composition or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107: First-Year Composition or ENG 108: First-Year Composition	3	C	
IPI 296: Inquiry OR HUL 250: Introduction to Problem-Based Interdisciplinary Research	3	C	
Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C)	3		
Natural Science - General (SG) OR Natural Science - Quantitative (SQ)	4		
Complete ENG 101 or ENG 105 or ENG 107 course(s)	0		
Term hours subtotal:	16		

Summer 2 32 - 44 Credit Hours	Hours	Minimum Grade	Notes
IPI 484: Internship	6	Y	
CLAS Science and Society Elective	3	C	
Humanities, Arts and Design (HU)	3		
Term hours subtotal:	12		

Term 3 44 - 62 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
IPI 496: Advanced Inquiry	3	C	• Develop your skills
SES 307: Space Works I: Design, Model, Build, Test	3	C	
AME 230: Programming for the Media Arts (CS) OR CSE 110: Principles of Programming (CS)	3	C	
STP 226: Elements of Statistics (CS)	3	C	

Global Awareness (G) AND Historical Awareness (H)	3	
Elective	3	
Complete Mathematics (MA) requirement	0	
Complete First-Year Composition requirement.		
Term hours subtotal:	18	

Term 4 62 - 78 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
AME 330: Digital-Physical Systems OR HDA 496: Creative Futures: Advanced Studio OR SES 407: Space Works II: Model, Fabricate, and Test	3	C	• Explore an internship
IPI 496: Advanced Inquiry	3	C	
COM 230: Small Group Communication (SB)	3	C	
PHY 111: General Physics (SQ) AND PHY 113: General Physics Laboratory (SQ)	4	C	
WPC 300: Problem Solving and Actionable Analytics	3	C	
Term hours subtotal:	16		

Summer 4 78 - 90 Credit Hours	Hours	Minimum Grade	Notes
IPI 484: Internship	6	Y	
Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB)	3		
Literacy and Critical Inquiry (L)	3		
Term hours subtotal:	12		

Term 5 90 - 105 Credit Hours Necessary course signified by	Hours	Minimum Grade	Notes
AME 330: Digital-Physical Systems OR HDA 496: Creative Futures: Advanced Studio OR SES 407: Space Works II: Model, Fabricate, and Test	3	C	• Develop your professional online presence • Use Handshake to research employment opportunities
IPI 496: Advanced Inquiry	3	C	
PSY 302: The Psychology of Positive Leadership	3	C	
Upper Division Literacy and Critical Inquiry (L)	3		
Elective	3		
Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s)	0		
Term hours subtotal:	15		

Term 6 105 - 120 Credit Hours Necessary course signified by	Hours	Minimum Grade	Notes
AME 330: Digital-Physical Systems OR HDA 496: Creative Futures: Advanced Studio OR SES 407: Space Works II: Model, Fabricate, and Test	3	C	• Gather professional references
IPI 496: Advanced Inquiry	3	C	
FIS 432: Problem-Solving Through Strategic Thinking	3	C	
LSE 305: Conceptualizing Learning: Theories in Practice	3	C	
Upper Division CLAS Science and Society Elective	3	C	
Term hours subtotal:	15		

- All students pursuing a B.S. or B.S.P. degree in The College of Liberal Arts and Sciences must complete two courses from the Science and Society list found atÂhttps://thecollege.asu.edu/resources/science-society. At least one of the two courses must be upper-division and students must earn a C or better in the courses.ÂBoth Science and Society courses (i.e., all six credits) may count towards any major, minor, related fields, and ASU General Studies requirements.

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

Notes:

- Please keep in mind that the applicability of a specific transfer course toward an ASU degree program depends on the requirements of the department, division, college or school in which you are enrolled at ASU. Transfer agreements that guarantee the completion of university level requirements do not necessarily meet college and major requirements. Please consult with an advisor for more information.

Total Hours: 120
Upper Division Hours: 45 minimum
Major GPA: 2.00 minimum
Cumulative GPA: 2.00 minimum
Total hrs at ASU: 30 minimum
Hrs Resident Credit for Academic Recognition: 56 minimum
Total Community College Hrs: 64 maximum
Total College Residency Hrs: 12 minimum

General University Requirements Legend

General Studies Core Requirements:

- 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 2019 - 2020 academic year.

2019 - 2020 Major Map

Technological Leadership (ONLINE) , (Proposed)

School/College:
OABFXRP

Term 1 - A 0 - 7 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
ENG 101: First-Year Composition or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107: First-Year Composition or ENG 108: First-Year Composition	3	C	• An SAT, ACT, Accuplacer, IELTS or TOEFL score determines placement into first-year composition courses. • Mathematics Placement Assessment score determines placement in mathematics course. • ASU 101 or college-specific equivalent First-Year Seminar is required for all freshman students. • Select your career interest area and play me3@ASU.
IPI 296: Inquiry	3	C	
ASU 101-UC: The ASU Experience	1		
Term hours subtotal:	7		

Term 1 - B 7 - 16 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
AME 240: Introduction to Physical Computing OR HDA 296: Creative Futures: Studio	3	C	• View ASU Online first-time freshmen registration information here.
MAT 265: Calculus for Engineers I (MA) OR MAT 270: Calculus with Analytic Geometry I (MA)	3-4	C	
PSY 101: Introduction to Psychology (SB)	3	C	
Term hours subtotal:	9-10		

Term 2 - A 16 - 26 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
ENG 101: First-Year Composition or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107: First-Year Composition or ENG 108: First-Year Composition	3	C	
IPI 296: Inquiry OR HUL 250: Introduction to Problem-Based Interdisciplinary Research	3	C	
Natural Science - General (SG) OR Natural Science - Quantitative (SQ)	4		
Term hours subtotal:	10		

Term 2 - B 26 - 32 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
AME 240: Introduction to Physical Computing OR HDA 296: Creative Futures: Studio	3	C	• Students who complete ENG 105 in Term 1 should complete ENG 215 or ENG 216 to complete one of the two "L" General Studies requirements. • Create a first draft resume
Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C)	3		
Complete ENG 101 or ENG 105 or ENG 107 course(s)	0		
Term hours subtotal:	6		

Summer 2 32 - 44 Credit Hours	Hours	Minimum Grade	Notes
IPI 484: Internship	6	Y	
CLAS Science and Society Elective	3	C	
Humanities, Arts and Design (HU)	3		

Term hours subtotal:	12

Term 3 - A 44 - 53 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
IPI 496: Advanced Inquiry	3	C	
SES 307: Space Works I: Design, Model, Build, Test	3	C	
Elective	3		
Term hours subtotal:	9		

Term 3 - B 53 - 62 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
AME 230: Programming for the Media Arts (CS) OR CSE 110: Principles of Programming (CS)	3	C	• Develop your skills
STP 226: Elements of Statistics (CS)	3	C	
Global Awareness (G) AND Historical Awareness (H)	3		
Complete Mathematics (MA) requirement			
Complete First-Year Composition requirement.			
Term hours subtotal:	9		

Term 4 - A 62 - 69 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
IPI 496: Advanced Inquiry	3	C	
PHY 111: General Physics (SQ) AND PHY 113: General Physics Laboratory (SQ)	4	C	
Term hours subtotal:	7		

Term 4 - B 69 - 78 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
AME 330: Digital-Physical Systems OR HDA 496: Creative Futures: Advanced Studio OR SES 407: Space Works II: Model, Fabricate, and Test	3	C	• Explore an internship
COM 230: Small Group Communication (SB)	3	C	
WPC 300: Problem Solving and Actionable Analytics	3	C	
Term hours subtotal:	9		

Summer 4 78 - 90 Credit Hours	Hours	Minimum Grade	Notes
IPI 484: Internship	6	Y	
Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB)	3		
Literacy and Critical Inquiry (L)	3		
Term hours subtotal:	12		

Term 5 - A 90 - 99 Credit Hours Necessary course signified by	Hours	Minimum Grade	Notes
IPI 496: Advanced Inquiry	3	C	
Upper Division Literacy and Critical Inquiry (L)	3		
Elective	3		
Term hours subtotal:	9		

Term 5 - B 99 - 105 Credit Hours Necessary course signified by	Hours	Minimum Grade	Notes

★ AME 330: Digital-Physical Systems OR HDA 496: Creative Futures: Advanced Studio OR SES 407: Space Works II: Model, Fabricate, and Test	3	C	• Develop your professional online presence • Use Handshake to research employment opportunities
PSY 302: The Psychology of Positive Leadership	3	C	
★ Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s)	0		
Term hours subtotal:	6		

Term 6 - A 105 - 114 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ IPI 496: Advanced Inquiry	3	C	
FIS 432: Problem-Solving Through Strategic Thinking	3	C	
LSE 305: Conceptualizing Learning: Theories in Practice	3	C	
Term hours subtotal:	9		

Term 6 - B 114 - 120 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ AME 330: Digital-Physical Systems OR HDA 496: Creative Futures: Advanced Studio OR SES 407: Space Works II: Model, Fabricate, and Test	3	C	• Gather professional references
Upper Division CLAS Science and Society Elective	3	C	
Term hours subtotal:	6		

- All students pursuing a B.S. or B.S.P. degree in The College of Liberal Arts and Sciences must complete two courses from the Science and Society list found at https://thecollege.asu.edu/resources/science-society. At least one of the two courses must be upper-division and students must earn a C or better in the courses. Both Science and Society courses (i.e., all six credits) may count towards any major, minor, related fields, and ASU General Studies requirements.

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

Notes:

- Please keep in mind that the applicability of a specific transfer course toward an ASU degree program depends on the requirements of the department, division, college or school in which you are enrolled at ASU. Transfer agreements that guarantee the completion of university level requirements do not necessarily meet college and major requirements. Please consult with an advisor for more information.

Total Hours: 120
Upper Division Hours: 45 minimum
Major GPA: 2.00 minimum
Cumulative GPA: 2.00 minimum
Total hrs at ASU: 30 minimum
Hrs Resident Credit for Academic Recognition: 56 minimum
Total Community College Hrs: 64 maximum
Total College Residency Hrs: 12 minimum

General University Requirements Legend

General Studies Core Requirements:

- 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 2019 - 2020 academic year.

BS in Technological Leadership

Status:UOEEE Provisional Approval

Comments:Provisionally approved.

Element	Outcome	Measure	Description
Outcome	1		Graduates of the BS in Technological Leadership will be able to recognize and describe unsolved problems, and they will be able to identify relevant steps needed to solve those problems. Students will learn steps for progress toward solving questions in any topic, but will often focus on science and technology-related topics. Steps include library research, assessment of the information source, and understanding how reading, observation, theory, and experimentation might help to make progress.
Plan_1GenEd	1		Creative Thinking;Critical Thinking;Information Literacy;Inquiry and Analysis;Problem Solving;Quantitative Reasoning/Literacy;Verbal Communication;Written Communication;
Plan_2Concepts	1		Students will demonstrate expertise in linked tasks of question-asking and problem-solving; information assessment; creative thinking in physical, mathematical or social contexts.
Plan_3Competencies	1		Graduates will demonstrate expertise in tools used in Maker spaces, mathematics, computer programming, and software skills required for successful coding to create products and solutions to social problems.
Measure	1	1	In Thinking class students will define and solve a large problem by iteratively asking Natural Next Questions in every class, leading to the content of the next class. These questions create the practice of critical thinking and finding steps to solve a problem. Instructors will help and the students' work will not go forward until this step is complete.
PC	1	1	Improved question-asking will be measured using the Beagle Learning Question Productivity Index in Thinking classes IPI 296, IPI 496, and HUL 250. The rubric for this index includes the relevance of the question, the articulation of the question, and the scale of the question. 80% of students will show 30% improvement in their QPI in IPI 296 and IPI 496.
Measure	1	2	In every Making class the students step through professionally-recognized problem-solving techniques that will result either in creating a physical object, a software product, or solution to a social problem.
PC	1	2	The outcomes of these projects will be evaluated during HDA 296 and HDA 496 using a faculty- developed rubric on critical thinking, rigor, completeness, and creativity of problem-solving. 80% of students will be graded as satisfactory.
Measure	1	3	Graduates will demonstrate mathematics, computer programming, and software skills required for successful coding to create products and solutions to social problems.
PC	1	3	In Thinking and Making, students will demonstrate math, coding, and software skills gained in AME 240, AME 300, and in other standard coding classes required in the major, and these demonstrations will be judged as satisfactory or excellent using a faculty-developed rubric and will be added to their digital portfolios. 100% of students will include technical tool demonstrations in their portfolios.
Measure	1	4	Library and online research methods: In Thinking classes IPI 296 and IPI 496 all students demonstrate library and online research and create their own research projects, adding material to their research maps each week.

Element	Outcome	Measure	Description
PC	1	4	The material found by the students is assessed for its relevance to their research questions, and the students will be assessed on their summary of the content: do they understand whether the material is primary or secondary? Can they question its completeness, and note what is missing? This information is graded each week from students' summaries. 80% of students will show 30% improvement over the semester.
Outcome	2		Graduates will be able to communicate effectively and collaborate in teams over a range of topics, from scientific and engineering to organizational and managerial, and engage in civil discourse when disagreement and dissent occur.
Plan_1GenEd	2		Creative Thinking;Critical Thinking;Ethical Reasoning;Information Literacy;Inquiry and Analysis;Problem Solving;Quantitative Reasoning/Literacy;Teamwork and Collaboration;Verbal Communication;Written Communication;
Plan_2Concepts	2		Students will develop skills in collaboration; strategic problem solving; small group communication; written communication; oral communication; civil discourse; and organizational theory.
Plan_3Competencies	2		Graduates will demonstrate expertise in giving and receiving critiques of their work, and they will understand a range of natural science and engineering topics, along with aspects of organizational management.
Measure	2	1	Peer review: In Thinking classes IPI 296 and IPI 496 and Making classes HDA 296 and HDA 496, the students will critique each others'work and respond to critiques, modeling what happens in the workplace.
PC	2	1	The reviewers will review content using a faculty-designed rubric, and the author of the content will respond using a faculty-designed rubric. These rubrics will produce scores for the students in (for the reviewers) how detailed and rigorous the review feedback was, and how much positive action resulted from the author, and (for the authors) how positively they receive review, how much positive action they took as a result of the review. 80% of students will have 30% or more improvement of their peer reviews scores over the semester.
Measure	2	2	Effective written communication: As measured in IPI 296 and IPI 496 and Making classes HDA 296 and HDA 496, using three students artifacts that can include reports, students are asked to produce written products that include reports, reading summaries, critiques, literature reviews, and press releases.
PC	2	2	Chosen artifacts are graded on content, format, effectiveness, and grammar. 80% of students will earn satisfactory or higher on a faculty-developed rubric.
Measure	2	3	Effective oral communication, including presentation, and speaking up in meetings: In IPI 296 and IPI 496 and HDA 496, students are expected to speak in every class and to present their results at key junctures.
PC	2	3	Student speaking is graded on clarity, content, effectiveness of communication, confidence, manner (communicating clearly and positively in meetings, especially). Some of this grading occurs in response to a presentation, and some is formative, as the class progresses. 80% of students will improve over the semester.

Element	Outcome	Measure	Description
Outcome	3		Graduates will demonstrate work experience skills necessary for success in future employment and professional goals. These work experience skills will include problem-solving, goal-setting, team collaboration, creativity, persuasion, analytic reasoning, technical tool use, and time management (see https://learning.linkedin.com/blog/top-skills/the-skills-companies-need-most-in-2019--and-how-to-learn-them). Graduates will demonstrate an understanding of technological leadership as foundational to American enterprise and institutions in local, national and global contexts.
Plan_1GenEd	3		Creative Thinking;Critical Thinking;Ethical Reasoning;Information Literacy;Inquiry and Analysis;Language and Literacy;Problem Solving;Quantitative Reasoning/Literacy;Teamwork and Collaboration;Verbal Communication;Written Communication;
Plan_2Concepts	3		Metacognition; learned methodologies in new circumstances; team culture; leadership; career readiness. Ingenuity; innovation; contemporary technologies; the role of invention in American society; ethics of invention and ethics of production and distribution; types of leaders; leadership styles; culture; global enterprise.
Plan_3Competencies	3		Graduates will demonstrate leadership and communication skills in a team context.
Measure	3	1	Student applies learned methodology to work experience during internship experiences, including oral and written communication, team collaboration, and problem-solving.
PC	3	1	The internship mentor will assess the student using a faculty-developed rubric. 80% of students will demonstrate mastery of methodologies applied to internship activities by their second year.
Measure	3	2	At the end of each of the two summers of internship experience, students can articulate their employment goals using concepts from the program, including a big problem or goal, work and team culture, tools being used, and topics and content.
PC	3	2	Students will self-assess during the end of each internship, using a faculty developed rubric. Assessment topics will include both their preference for and their performance in the internship, in the areas of work topic, team structure and culture, tools being used, and management processes.
Measure	3	3	Within their internship experiences, students will present their research, requiring them to distill their existing knowledge, and present it to a new audience, at the internship.
PC	3	3	As assessed by students and internship managers, a hallmark report, presentation, or other student artifact meeting satisfactory or above criteria will be produced by 80% or more of students during each internship.

If you have questions, please e-mail assessment@asu.edu or call UOEEE at (480) 727-1731.

Jenny Smith

From: Linda Elkins-Tanton <ltelkins@gmail.com>
Sent: Wednesday, March 13, 2019 8:29 AM
To: Kimberly Beckert; Jenny Smith
Subject: Fwd: Might you write a letter of support for the BS in Technological Leadership?

---------- Forwarded message ---------
From: **Kyle Squires** <squires@asu.edu>
Date: Wed, Mar 13, 2019 at 8:27 AM
Subject: RE: Might you write a letter of support for the BS in Technological Leadership?
To: Lindy Elkins-Tanton <lelkinst@asu.edu>

Dear Lindy,

Thank you for sending the proposal to establish a BS in Technological Leadership. It is very interesting and FSE is happy to support. Moving forward, we also look forward to exploring how FSE can further contribute to its success. Thanks,

-- Kyle

From: Lindy Elkins-Tanton <lelkinst@asu.edu>
Sent: Tuesday, March 12, 2019 4:36 PM
To: Kyle Squires <squires@asu.edu>
Subject: Might you write a letter of support for the BS in Technological Leadership?

Dear Kyle,

Might you write a letter of support for our proposed major? We've been approved by CLAS and are moving on to faculty senate and ABOR.

We are including your CSE 110 as one alternative to fulfill a coding requirement.

Thank you so much for your support!

Sending my best —

Lindy

Lindy Elkins-Tanton
Principal Investigator, NASA Psyche mission
Director, School of Earth and Space Exploration, ASU
Co-Chair, Interplanetary Initiative, ASU
Co-founder, Beagle Learning

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Lindy Elkins-Tanton
Principal Investigator, , NASA Psyche mission

Co-chair, ASU Interplanetary Initiative
Director, ASU School of Earth and Space Exploration
Co-founder, Beagle Learning

Due to my own scheduling balance, you may get emails from me outside of normal working hours. Please do not feel pressure to respond outside of your own working pattern — if there is urgency I will indicate in the subject line.

ASU HUGH DOWNS SCHOOL of HUMAN COMMUNICATION
ARIZONA STATE UNIVERSITY
An academic unit of the College of Liberal Arts and Sciences

To: Lindy Elkins-Tanton <lelkinst@asu.edu
Support for BS in Technological Leadership
Date: March 13, 2019

Dear Lindy

It is my pleasure, on behalf of the Hugh Downs School of Human Communication, to support the exciting new BS in Technological Leadership. The program looks dynamic and exciting, and we are glad that our course in small group communication is one of those you want your students to have.

We wish you and your faculty the best with this new venture.

Sincerely,

Linda Lederman

PO Box 871205, Tempe, AZ 85287-1205
480-965-5095 Fax: 480-965-4291
www.humancommunication.clas.asu.edu

Jenny Smith

From: Linda Elkins-Tanton <ltelkins@gmail.com>
Sent: Monday, March 11, 2019 9:54 AM
To: Kimberly Beckert
Subject: Fwd: BS in technological leadership

---------- Forwarded message ---------
From: **Steven Tepper** <Steven.Tepper@asu.edu>
Date: Mon, Mar 11, 2019 at 9:06 AM
Subject: BS in technological leadership
To: Lindy Elkins-Tanton <lelkinst@asu.edu>

Lindy:

The Herberger Institute for Design and the Arts is pleased to support the proposed BS in Technological Leadership. This degree will help prepare students to navigate in a complex technologically enabled environment – using skills of creativity, problem solving, pattern recognition, and critical analysis. Students will develop these skills through project based learning and summer internships.

We are excited to offer several courses from HIDA to support the curriculum.

Steven

Steven Tepper

Dean and Director

Foundation Professor

Herberger Institute for Design and the Arts

See our recent annual magazine – *Disrupt* – to learn more about how the Herberger Institute is transforming how artists and designers work in the world.

--

Lindy Elkins-Tanton
Principal Investigator, , NASA Psyche mission

Co-chair, ASU Interplanetary Initiative
Director, ASU School of Earth and Space Exploration
Co-founder, Beagle Learning

Due to my own scheduling balance, you may get emails from me outside of normal working hours. Please do not feel pressure to respond outside of your own working pattern — if there is urgency I will indicate in the subject line.

Mary Lou Fulton Teachers College
Arizona State University

March 11, 2019

To Whom It May Concern:

The proposed major, Bachelor of Science in Technological Leadership, is an incredible opportunity for faculty and students to begin reframing the future of learning and leadership. As Dean of the Mary Lou Fulton Teachers College (MLFTC), I fully support this work and look forward to seeing how it grows and develops over time. This major highlights the importance of providing a degrees that are experiential in nature and provide students with opportunities to develop new sets of skills that help them posit, design, build, and test new ideas for some of the world's most difficult challenges. The outcomes are clearly stated and the emphasis on competencies and expertise in new areas that align to learning science, design, communication, etc. give this an interdisciplinary focus that could lead to incredible new thinking. Looking forward to the results!

Sincerely,

Carole G. Basile

Carole G. Basile
Dean

Arizona State University
Mary Lou Fulton Teachers College
PO Box 871811, Tempe, AZ 85287-1811
(480) 965-6053 Fax: (480) 965-4849
education.asu.edu

Jenny Smith

From: Linda Elkins-Tanton <ltelkins@gmail.com>
Sent: Tuesday, March 19, 2019 4:00 PM
To: Jenny Smith; Kimberly Beckert
Subject: Fwd: Letter of support for BS in Technological Leadership

Phew, got in the last one! I know, a day too late...

L
---------- Forwarded message ---------
From: **Gary Grossman** <GARY.GROSSMAN@asu.edu>
Date: Tue, Mar 19, 2019 at 3:48 PM
Subject: Letter of support for BS in Technological Leadership
To: Lindy Elkins-Tanton <lelkinst@asu.edu>

Dear Lindy,

On behalf of the School for the Future of Innovation in Society (SFIS), it is with pleasure that I express our support for your proposal to establish the Bachelor of Science in Technology. After review, I find it a program that can provide great value to ASU's undergraduate students, creatively leveraging the curriculum inside and outside of CLAS, and fully embraces the aspect of innovation ASU promises. In addition, it would be an excellent contribution to the intellectual space that SFIS encourages in both our undergraduate and graduate programs. I see this proposed program as nothing but positive for CLAS, SFIS, and ASU.

Thank you for the opportunity to respond and we continue to look forward to working with our partners at CLAS. Let me know if you need further information.

Best,

Gary

Gary M. Grossman, Ph.D.
Associate Director, Academic Programs
School for the Future of Innovation in Society
Arizona State University

Jenny Smith

From: Linda Elkins-Tanton <ltelkins@gmail.com>
Sent: Monday, March 11, 2019 10:25 AM
To: Kimberly Beckert
Subject: Fwd: support for BS in Technological Leadership

---------- Forwarded message ---------
From: **Albert Boggess** <boggess@asu.edu>
Date: Sat, Mar 9, 2019 at 2:34 PM
Subject: support for BS in Technological Leadership
To: Lindy Elkins-Tanton <lelkinst@asu.edu>
Cc: Donald Jones <dajones@asu.edu>, Joseph Davis <Joseph.W.Davis@asu.edu>

Dear Lindy,
With this email, I support the efforts of the proposed BS degree program in Technological Leadership. This program involves an eclectic mix of interdisciplinary subject areas with an emphasis on critical thinking. It should provide training for a multitude of career opportunities.

The degree program involves two courses, STP 226 and MAT 265, which are taught by the School of Mathematical and Statistical Sciences in both on-ground and on-line formats. We will provide the needed seats in sections of these courses for students in this degree program.

I wish you good luck in obtaining university approval for this degree program.

Sincerely,
Al Boggess, Director of School of Mathematical and Statistical Sciences

--

Lindy Elkins-Tanton
Principal Investigator, , NASA Psyche mission

Co-chair, ASU Interplanetary Initiative
Director, ASU School of Earth and Space Exploration
Co-founder, Beagle Learning

Jenny Smith

From: Kimberly Beckert
Sent: Monday, March 11, 2019 7:24 AM
To: Jenny Smith; Amanda Smith
Subject: Fw: Might you write a letter of support for the BS in Technological Leadership?

From: Linda Elkins-Tanton <ltelkins@gmail.com>
Sent: Sunday, March 10, 2019 9:29:39 PM
To: Kimberly Beckert
Subject: Fwd: Might you write a letter of support for the BS in Technological Leadership?

---------- Forwarded message ---------
From: **Amy Hillman (DEAN)** <AMY.HILLMAN@asu.edu>
Date: Sun, Mar 10, 2019 at 5:11 AM
Subject: Re: Might you write a letter of support for the BS in Technological Leadership?
To: Lindy Elkins-Tanton <ltelkins@gmail.com>

Hello Lindy,

The W. P. Carey School of Business supports your BS in Technological Leadership and are pleased to include WPC300.

Amy

Amy J. Hillman, PhD
Charles J. Robel Dean's Chair
W. P. Carey School of Business
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On Mar 8, 2019, at 2:22 PM, Lindy Elkins-Tanton <ltelkins@gmail.com> wrote:

> Dear Amy,
>
> Might you write a letter of support for our proposed major? We've been approved by CLAS and are moving on to faculty senate and ABOR.
>
> Kay Faris and I have had some great conversations about this, and we are including your WPC 300 Problem-solving course as required for the major.
>
> Thank you so much for your support!
>
> Sending my best —