Office Use Only: PP#

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

Institution Submitting Proposal	Capitol Technology University

Each action below requires a separate proposal and cover sheet.

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

Payment Submitted: (●) Yes ( ) No

Payment Type: ( ) R*STARS # ( ) Check # 98866

Payment Amount: $850

Date Submitted: 9/15/25

Department Proposing Program	Graduate School
Degree Level and Degree Type	Doctor of Philosophy (Ph.D.)
Title of Proposed Program	Architectural Engineering
Total Number of Credits	60
Suggested Codes	HEGIS: 0904 CIP: 14.0401
Program Modality	( ) On-campus (●) Distance Education (fully online) ( ) Both
Program Resources	(●) Using Existing Resources ( ) Requiring New Resources
Projected Implementation Date (must be 60 days from proposal submisison as per COMAR 13B.02.03.03)	(●) Fall ( ) Spring ( ) Summer Year: 2026
Provide Link to Most Recent Academic Catalog	URL: https://catalog.captechu.edu/
Preferred Contact for this Proposal	Name: Dr. Craig D. Capano Title: Director of Graduate Programs Phone: (301) 369-3612 Email: cdcapano@captechu.edu
President/Chief Executive	Type Name: Dr. Bradford Sims Signature: [signature] Date: 9/15/2025 Date of Approval/Endorsement by Governing Board: 9/15/2025

Revised 4/2025

MARYLAND HIGHER EDUCATION COMMISSION
217 East Redwood Street • Suite 2100 • Baltimore, MD 21202
T 410.767.3300 • 800.974.0203 • F 410.332.0270 • TTY for the Deaf 800.735.2258 www.mhec.maryland.gov

CAPITOL
Technology University

September 10, 2025

Dr. Sanjay K. Rai
Secretary of Maryland Higher Education
Maryland Higher Education Commission
217 East Redwood Street, Suite 2100
Baltimore, MD 21202

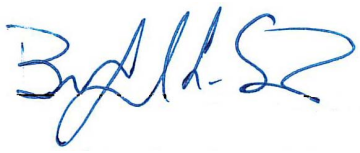
Dear Dr. Rai,

Capitol Technology University is requesting approval to offer a **Doctor of Philosophy (Ph.D.) in Architectural Engineering.** The degree curriculum will be taught using a significant number of existing faculty at our university and will be supplemented by new courses supporting the **Ph.D. in Architectural Engineering.** The mission of Capitol Technology University is to provide practical education in engineering, computer science, information technology, and business that prepares individuals for professional careers and affords the opportunity to thrive in a dynamic world. A central focus of the university's mission is to advance practical working knowledge in areas of interest to students and prospective employers within the context of Capitol's degree programs. The university believes that a **Ph.D. in Architectural Engineering** is consistent with this mission.

Educational organizations, design, and construction industries are reporting significant workforce shortages of trained personnel with an advanced degree and experience in leading organizations and expanding the body of knowledge in these areas. Moreover, the shortage is growing each year with increasing demand for understanding the advancement in technologies and engineering applications. There is also an annual departure of large numbers of existing architecture and engineering professionals who are reaching retirement age. This program is in response to that need; the **Ph.D. in Architectural Engineering** degree is for new master's level graduates and non-traditional students (i.e., experienced architects, construction engineers, architectural engineers, and managers/directors of the built environment) who desire to advance in their careers by gaining high-level research skills in the occupational field.

To respond to the needs, we respectfully submit for approval the Ph.D. in Architectural Engineering. The required proposal is attached, as is the letter from me as university president confirming the adequacy of the university's library to serve the needs of the students in this degree.

Respectfully,



Bradford L. Sims, PhD
President

CAPITOL
Technology University

September 10, 2025

Dr. Sanjay K. Rai.
Secretary of Maryland Higher Education
Maryland Higher Education Commission
217 East Redwood Street, Suite 2100
Baltimore, MD 21202

Dear Dr. Rai,

This letter is in response to the need for confirmation of the adequacy of the library of Capitol Technology University to support the proposed **Doctor of Philosophy (Ph.D.) in Architectural Engineering.** As president of the university, I confirm that the library resources, including support staff, are more than adequate to support the **Ph.D. in Architectural Engineering.** In addition, the university is dedicated to, and has budgeted for, continuous improvement of its library resources.

Respectfully,

Bradford L. Sims, PhD
President

PROPOSAL FOR:

X NEW INSTRUCTIONAL PROGRAM
_____ SUBSTANTIAL EXPANSION/MAJOR MODIFICATION
COOPERATIVE DEGREE PROGRAM
X WITHIN EXISTING RESOURCES or _____ REQUIRING NEW RESOURCES

CAPITOL Technology University

Institution Submitting Proposal

Fall 2026
Projected Implementation Date

Doctor of Philosophy	**Architectural Engineering**
Award to be Offered	Title of Proposed Program
0904	**140401**
Suggested HEGIS Code	Suggested CIP Code

Graduate School		**Dr. Craig Capano**
Department of Proposed Program		Name of Department Head
Dr. Christopher Linski	clinski@captech.edu	(301) 369-3612
Dean of Graduate School	Contact E-Mail Address	Contact Phone Number

Signature and Date — President Bradford Sims

9/15/2025
Date — Date Endorsed/Approved by Governing Board

Proposed PhD in Architectural Engineering
Graduate School
Capitol Technology University
Laurel, Maryland

A. Centrality to Institutional Mission and Planning Priorities:

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

Doctor of Philosophy in Architectural Engineering Program Description:

The **Doctor of Philosophy (Ph.D.) in Architectural Engineering** provides students with the opportunity to conduct extensive and sustained original research at the highest level in the field of Architectural Engineering. The **Ph.D. in Architectural Engineering** is a unique doctoral program designed to meet the demands of the highest-skilled professionals to become the leaders who will be involved in the advancement, expansion, and support of Architectural Engineering on large and small scales. The pressures for increased revenue, lower costs, sustained profit margins, higher quality, and resource planning are more demanding now in a competitive global environment than in the past. The **Ph.D. in Architectural Engineering** is for current professionals in this occupational field who desire to elevate their skills to the highest level and contribute to the body of knowledge in Architectural Engineering.

The **Ph.D. in Architectural Engineering** provides a path for personnel in management positions to explore new ground as the design and construction industries face revolutionary changes in highly competitive local, national, and global markets. The University is in a unique position to provide those students with an avenue to pursue a deep proficiency in this area using an interdisciplinary methodology, courses offered, and the skill set of the faculty. Graduates will contribute significantly to the Architectural Engineering field through the creation of new knowledge and ideas that are currently lacking, as the sector is rapidly evolving by employing new technology, techniques, and innovative thinking. The **Ph.D. in Architectural Engineering** program is designed as a doctorate by research, where students will quickly become able to engage in research and publishing without the need to navigate the limitations inherent in traditional coursework models. This degree is for current professionals in the Architectural Engineering and related occupations who desire to elevate their skills to the highest level and contribute to the body of knowledge in the field.

The **Ph.D. in Architectural Engineering** program is designed for experienced professionals in Architectural Engineering and related fields positions with an appropriate master's degree and multiple years of experience. During the program, students will conduct original research in an approved area of Architectural Engineering. Successful completion of the program culminates in the award of the **Doctor of Philosophy (Ph.D.) in Architectural Engineering** degree.

There are two options for completion of the **Ph.D. in Architectural Engineering** program. Under the dissertation option, the student will produce, present, and defend a doctoral dissertation after receiving the required approvals from the student's Chair and Committee and the Ph.D. Review Board. Under the PhD by Publication option, the student will produce an exegesis, present, and defend their original doctoral research after receiving the required approvals from the

student's Chair, Committee, and the Ph.D. Review Board. The student must also publish three works of original research in a scholarly peer-reviewed journal(s). One of the three published works may be in a peer-reviewed conference proceeding.

Relationship to Institutional Approved Mission:

The **Ph.D. in Architectural Engineering** is consistent with the University's mission to educate individuals for professional opportunities in engineering, computer science, information technology, and business. The University provides relevant learning experiences that lead to success in the evolving global community. Fundamental to the degrees in the Graduate School's Doctoral Programs are opportunities to pursue cutting-edge knowledge in technological applications, engineering principles, improved techniques, and modified procedures. The **Ph.D. in Architectural Engineering** is consistent with that philosophy. This same philosophy is supported by the University's existing degree programs and learning opportunities. In addition to many others, the University has a Ph.D. in Aeronautical Engineering, Ph.D. in Business Analytics and Data Science, Ph.D. in Construction Science, Ph.D. in Engineering Management, Ph.D. in Facilities Management, Ph.D. in Occupational and Risk Management, and Ph.D. in Real Estate Management. The Ph.D. in Architectural Engineering degree is an integral part of the new Strategic Plan for FY 2025-2026 and succeeding years. Funding to support the new degree has been included in the institutional and departmental budgets for FY 2026-2027 and forecasted budgets going forward.

The **Ph.D. in Architectural Engineering** degree will be offered online using the Canvas Learning Management System and Zoom. The result is the convenience required by the 21st-century learner and provides the interaction with faculty and fellow students that is critical to the high-level learning experience. The curriculum provides the doctoral student with the necessary learning tools that the University believes are critical to success in the Architectural Engineering sector. The degree is also consistent with the interdisciplinary nature of the University.

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

Capitol Technology University operates on five strategic goals:

1. **Expand and innovate enrollment strategies to attract new groups of prospective students and retain a robust student community.**
   - Implement data-informed enrollment tactics to target and attract students
   - Implement data-informed tactics to retain students, ensuring that all students, regardless of background, have the opportunity to succeed and thrive.
   - Strengthen brand awareness through bold and multi-channel marketing focused on affordability and ROI
   - Engage community and youth through intentional outreach

2. **Implement interactive, industry-focused, personalized learning, and co-curricular experiences aligned with student career goals.**
   - Enhance career readiness by aligning academic and co-curricular programs with student interests and industry needs
   - Implement evidence-based and data-driven pedagogical approaches and academic experiences to improve student outcomes.

- Promote interdisciplinary applied learning models to encourage curricular innovation and program growth

3. **Advance a vibrant learning community dedicated to creating meaningful career pathways in collaboration with industry.**
   - Build and maintain strategic partnerships across industries and sectors to ensure mutual benefit and alignment.
   - Create engaging campus and virtual learning environments that are attractive to students and promote success.

4. **Cultivate an environment that is welcoming, supportive, and attractive to a broad community representing local and global perspectives.**
   - Implement systems that support and sustain data-driven decision-making and are available to decision makers
   - Improve institutional efficiency by standardizing and streamlining operations while effectively leveraging technology
   - Implement data-informed practices to create a sustainable, high-performing workforce
   - Foster a vibrant culture to increase student engagement and retention

5. **Enhance and diversify revenue streams by leveraging campus resources, building strategic partnerships, and expanding non-tuition income opportunities.**
   - Maximize campus assets for mission-aligned revenue generation
   - Strengthen the culture of philanthropy and fundraising across the institution
   - Pursue grant opportunities that align with institutional priorities and existing programs.

The **Ph.D. in Architectural Engineering** program will support all the University's strategic goals. The proposed degree builds upon the already successful graduate areas of study. The University's terminal degree programs are structured to prepare students to provide critical expert leadership as well as technical and business expertise at the highest level to meet the needs of a modern technology and information-dependent design and construction organization. The University's programs have been preparing professionals for rapid advances in information and technology, intense global competition, and increasingly complex technological engineering and management environments for decades. The **Ph.D. in Architectural Engineering** will allow students to increase their knowledge to the extreme technological limits of Architectural Engineering and contribute to the body of knowledge in the field.

The new **Ph.D. in Architectural Engineering** is fully supported by the University's new Vision and Strategic Goals. Funding to support the degree has been included in forecasted budgets going forward.

The University has active partnerships (e.g., Leidos, Patton Electronics, Lockheed Martin, Northrup Grumman, Cyber Security Forum Initiative, IRS, and NCS, Associated Schools of Construction, Associated General Contractors of America, and American Institute of Constructors) in the private and public arenas. The **Ph.D. in Architectural Engineering** degree will provide new opportunities for partnerships as well as expanded research. The increase in partnerships and placement of our graduates in our partner institutions will serve to expand the University's enrollment and reputation. While additional enrollment will increase financial resources, additional partnerships and grants in the field of study will help diversify and increase

the University's financial resources.

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

   Capitol Technology University will support the proposed program through the same process and level of support as the University's existing programs. The University has also budgeted funds to support program and course development, online support, office materials, travel, professional development, and initial marketing. There is no substantial impact on the institution due to the advanced budgeting of these funds. If approved, the program will be self-sustaining going forward.

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

   a. **Ongoing administrative, financial, and technical support of the proposed program**

      The proposed degree is an integral part of the University's new Strategic Plan for FY 2025-2026 and forward. The institutional and departmental budgets for FY 2026-2027, as well as the forecasted budgets going forward, include funding for the administrative, financial, and technical support of the new degree.

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

      Capitol Technology University is fully committed to continuing the proposed **Ph.D. in Architectural Engineering** degree program for a sufficient period to allow enrolled students to complete the program.

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

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

   a. **The need for advancement and evolution of knowledge.**

      Architectural Engineering is the application of scientific, engineering principles, and technology to building design, construction, operation, and maintenance of buildings and other built environments. Architectural engineers work together with architects and civil engineers, but are unique in both their skills and role as part of the building design team. They help to ensure the maximization of system functionality and analysis through science, engineering, and technology. There are few more critical concerns facing the world than optimizing our built environments, and there is little pathway to achieve this currently at a research level. This proposal is to offer a solution based on the STEM knowledge needed for architecture and engineering professionals to acquire research skills to improve the body of knowledge.

The State of Maryland has a long history of fostering and blazing new trails with groundbreaking research. If approved, this new degree will build on that legacy with a groundbreaking new doctoral program in a field that is evolving due to rapidly changing technologies. The University's **Ph.D. in Architectural Engineering** program will produce the next generation of top leaders, designers, and engineers with the technological expertise needed now and in the future.

b. Societal needs, including expanding educational opportunities and choices for minorities and educationally disadvantaged students at institutions of higher education.

Capitol Technology University is a diverse, multiethnic, and multiracial institution with a long history of serving minority populations. The University has a 51% minority student population, with 7% undisclosed. The Black/African American population is 34%. The university has a military/veteran population of 22%. The University also has a 22% female population – a significant percentage given its status as a technology institution. If approved, the proposed **Ph.D. in Architectural Engineering** will expand the field of opportunities for minorities and disadvantaged students.

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

While Capitol Technology University is not a historically black institution, the university is a diverse, multiethnic, and multiracial institution with a long history of serving minority populations. The University has a 51% minority student population, with 7% undisclosed. The Black/African American population is 34%. The University has a military/veteran population of 22%. The university also has a 22% female population – a significant percentage given its status as a technology institution. If approved, the proposed **Ph.D. in Architectural Engineering** will expand the field of opportunities for minorities and disadvantaged students. Given the substantial minority population of Capitol Technology University, it is also reasonable to assert that the **Ph.D. in Architectural Engineering** program will add to the base of minority participation in the professions of design and construction.

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

The 2022 Maryland State Plan for Postsecondary Education articulates three goals for postsecondary education:

1. **Access:** Ensure equitable access to affordable and high-quality postsecondary education for all Maryland residents.
2. **Success:** Promote and implement practices and policies that will ensure student success.
3. **Innovation:** Foster innovation in all aspects of Maryland higher education to improve access and student success.

Goal 1: Access

"Ensure equitable access to affordable and quality postsecondary education for all Maryland residents."

Capitol Technology University is committed to ensuring equitable access to affordable post-secondary education for all Maryland residents. The University meets its commitment in this arena through its diverse campus environment, admissions policies, and academic rigor.

- Priority 1: Study the affordability of postsecondary education in Maryland.
- Priority 2: Examine and improve financial literacy programs for students and families to encourage financial planning to pay for postsecondary education.
- Priority 3: Analyze systems that impact how specific student populations access affordable and quality postsecondary education.

The Capitol Technology University community is committed to creating and maintaining a mutually respectful environment that recognizes and celebrates diversity among all students, faculty, and staff. The University values human differences as an asset and works to sustain a culture that reflects the interests, contributions, and perspectives of members of diverse groups. The University delivers educational programming to meet the needs of diverse audiences. We also seek to instill those values, understanding, and skills to encourage leadership and service in a global, multicultural society.

The racial and demographic composition of the University's student body reflects the institution's commitment to diversity. Over 48% of our undergraduate population is represented by persons of color, and 66% are from underrepresented student populations. Over 50% of our graduate population is represented by persons of color. Over 57% of our doctoral population is represented by persons of color. The University also has a 22% female population – a significant percentage given its status as a technology university.

Achievement gaps: The University provides leveling courses in support of individuals attempting a career change to a field of study not necessarily consistent with their current skills. There are situations where undergraduate courses best serve students' needs in subject areas. The University makes those courses available.

The University engages in diversity training for its institutional population, including students. Diversity and inclusiveness are built into the curriculum, allowing graduates to operate effectively in a global environment. The University supports multiple diversity-enhancing actions, including team projects and grants across degrees. This has proven effective at supporting numerous aspects of diversity.

Capitol Technology University does not discriminate on the basis of race, color, national origin, sex, age, sexual orientation, or handicap in admission, employment, programs, or activities.

Through its academic programs, Capitol Technology University seeks to prepare all of its graduates to demonstrate four primary characteristics:

- **Employability:** The ability to enter and advance in technical and managerial careers, appropriate to their level and area of study, immediately upon graduation.
- **Communications:** Mastery of traditional and technological techniques of communicating ideas effectively and persuasively.

- **Preparation of the Mind:** The broad intellectual grounding in technical and general subjects required to embrace future technical and managerial opportunities with success.
- **Professionalism:** Commitment to life-long learning, ethical practice, and participation in professions and communities.

The proposed **Ph.D. in Architectural Engineering** program and University financial aid will be available to all Maryland residents who qualify academically for admission. The University has successfully managed to support Financial Aid for its students since its founding in 1927.

The **Ph.D. in Architectural Engineering** program, with its academic rigor, will produce highly qualified architectural Engineering leaders with the highest level of skills and abilities to advance their careers. The University has a proven record of rigorous, high-quality education in all of its degrees. The University is fully accredited by five accrediting organizations. The University receives its regional accreditation from the Middle States Commission on Higher Education (MSCHE). The University also has specialized accreditation from the International Accreditation Council of Business Education (IACBE), Accreditation Board for Engineering and Technology (ABET), National Security Agency (NSA), and Department of Homeland Security (DHS). The **Ph.D. in Architectural Engineering** program is consistent with the MSCHE criteria for regional accreditation of the delivery of high-quality higher education.

Goal 2: Success

"Promote and implement practices and policies that will ensure student success."

The courses for the **Ph.D. in Architectural Engineering** degree will be offered in a synchronous manner, but will allow for real-time communication using the Canvas Learning Management System and Zoom. The University provides a tuition structure that is competitive with its competitors. The University tuition structure does not differentiate between in-state and out-of-state students. The University's Student Services provide advising, tutoring, virtual job fair attendance, and other activities supporting student completion and employment for both on-ground and online students.

Students receive information throughout the admissions process regarding the cost to attend the University. The information is also publicly available on the University website. The University's Admissions Office and Office of Financial Aid identify potential grants and scholarships for each student. The Office of Financial Aid also provides plans for each student to reduce potential student debt. The net cost versus gross costs is identified clearly for the student. Students receive advising from Financial Aid Advisors before enrolling in classes for the first time. Admissions personnel, Student Services Counselors, and Departmental Chairs advise students of the need for academic readiness as well as the degree requirements. Academic Advisors also develop a specific success pathway for each student.

The University's tuition increases have not exceeded 3%. The University also has a tuition guarantee for undergraduates, which means full-time tuition is guaranteed not to increase more than 1% per year above the rate at the time of initial enrollment. The tuition remains at this rate if the student remains enrolled full-time without a break in attendance.

The University provides services and learning tools to guide students to successful degree completion. Programs such as Early Alert give the University's faculty and staff opportunities for early student intervention on the pathway to graduation. This program applies to all students

regardless of the mode of course delivery or degree program. Capitol Technology University is also a transfer-friendly institution and participates in multiple programs for government and military credit transfer. Capitol Technology University participates in the Articulation System for Maryland Colleges and Universities (ARTSYS) and has numerous transfer agreements with local institutions at all degree levels.

The University has in place services, tutoring, and other tools to help ensure student graduation and successful job placement. The University hosts a career (job) fair twice a year. The University has an online career center available to all students covering such topics as career exploration, resume writing, job search techniques, social media management, mock interviews, and assistance in interpreting job descriptions, offers, and employment packages.

The University also works with its advisory boards, alumni, partners, and faculty to help ensure the degrees offered at the University are compatible with long-term career opportunities in support of the state's knowledge-based economy.

Goal 3: Innovation

"Foster innovation in all aspects of Maryland higher education to improve access and student success."

Capitol Technology University's past, present, and future are inextricably intertwined with innovation. The University has a long tradition of serving as a platform for the use of new and transformative approaches to delivering higher education. New technology and cutting-edge techniques are blended with proven strategies to enable student success in all classroom modalities as well as in a successful career after graduation. As a small institution, Capitol Technology University has the agility to rapidly integrate new technologies into the curriculum to better prepare students for the work environment. The University designs curriculum in alliance with its accreditation and regulating organizations and agencies.

Example: The University engages its students in fusion projects that allow students to contribute their skills in interdisciplinary projects such as those in our Astronautical Engineering and Cyber Labs. In those labs, students become designers, builders, and project managers (e.g., to send a CubeSat on a NASA rocket) and data analysts (e.g., to analyze rainforest data for NASA). The University's students recently launched their latest satellite aboard a NASA rocket from a location in Norway at the beginning of the 2019 Fall Semester. We are also recruiting additional partners for the proposed **Ph.D. Architectural Engineering,** for which real-world projects will provide students with integrative learning opportunities in the Architecture and Construction fields.

The University also supports prior learning assessment. Portfolio analysis is available. The University accepts professional certifications for credit for specific courses. The University also allows students to take a competency exam for credit for required courses up to the current state limits. These are all on an individual basis, and approval is needed from the Dean of the Graduate School. Credit can be given for published research specific to the degree.

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

Leaders in the Architecture and Construction environments are facing an ever-increasing need to expand the application of new engineering principles, methods, and technology to their industry

in order to remain competitive, efficient, and viable now and in the future. Companies today depend and thrive on timely, accurate, and relevant information. As technology enables the creation and capture of ever-increasing amounts of data, the effective leadership, management, and understanding of resource needs is becoming an enormous challenge. Architectural Engineering has far-reaching implications in the global, environmental, integration, and security aspects of society. The leaders at the highest levels in companies are now being driven to develop new solutions and techniques to survive and thrive. Effective leadership in this industry can only be achieved with a holistic approach and the advanced skills that will be covered in this proposed degree.

The State of Maryland has a long history of fostering and encouraging business ventures as well as blazing new trails with groundbreaking research. If approved, this new degree will build on that legacy with a groundbreaking new doctorate program in a field that is evolving due to rapidly changing technology, management theories, and building engineering advancements. The University's **Ph.D. in Architectural Engineering** program will be producing the next generation of top leaders and engineers with the technological and management expertise needed now and in the future.

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

   Graduates with the **Ph.D. in Architectural Engineering** will be expected to fill mid and senior level management positions in commercial design/construction, military design/construction, civil design/construction, construction companies, and academia with titles such as:

   - Director of Architecture
   - Director of Engineering
   - VP Project Design and Construction
   - VP Research and Development
   - Architectural Engineer Consultant
   - Instructor, Professor

   Graduates from the proposed **Ph.D. in Architectural Engineering** will possess research knowledge in Architecture and Engineering with the ability to serve as leaders in their field. Graduates will also possess the required knowledge to serve as a subject matter expert and work in private companies or government agencies. In addition to supporting those related to the nation’s defense and infrastructure development, this degree will serve.

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

   The Occupational Outlook Handbook (OOH), one key resource produced by the Bureau of Labor Statistics (BLS), tracks the profession of Architecture and Engineering as a specific occupation. To best analyze and project academic and occupational opportunities for our metropolitan area, the University selected the location quotient of Architecture and Engineering to illustrate the demand and need for Architectural Engineering education in the Maryland and District of Columbia region. According to the BLS, Maryland and the District of Columbia have relatively high location quotients for the Architecture and Engineering professions in the U.S.A. See below

for data.

States with the high concentration of jobs and location quotients in Architecture and Engineering:

State	Employment	Employment per thousand jobs	Location quotient	Hourly mean wage	Annual mean wage
Maryland	6,630	2.40	2.49	$ 62.27	$ 129,520
District of Columbia	2,640	3.99	3.81	$ 75.51	$ 157,060
Virginia	5,980	1.47	1.51	$ 68.46	$ 142,400
California	26,500	1.47	1.50	$ 66.01	$ 137,300

https://www.bls.gov/ooh/management/architectural-and-engineering-managers.htm (visited *August 03, 2025)*

Further, the state of Maryland projects the Architecture and Engineering profession within the state of Maryland will grow by 5.37%, adding at least an additional 3,998 positions by 2033.

(https://www.dllr.state.md.us/lmi/iandoproj/maryland.shtml: accessed 8-27-2025

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

   According to the Bureau of Labor Statistics Occupational Outlook Handbook, Overall employment in architecture and engineering occupations is projected to grow faster than the average for all occupations from 2024 to 2034. About 186,500 openings are projected each year, on average, in these occupations due to employment growth and the need to replace workers who leave the occupations permanently.

   The median annual wage for this group was $97,310 in May 2024, which was higher than the median annual wage for all occupations of $49,500.

   (Source: https://www.bls.gov/ooh/architecture-and-engineering/; accessed 8-27-2025)

3. **Data showing the current and projected supply of prospective graduates.**

   Deloitte Touche Tohmatsu Limited, through its DataUSA initiative, reported the following regarding Architectural Engineering student demands.

   1. Total degrees awarded in 2023 (BS, MS, and PhD) – 1090, growing at 0.184%
   2. Total People in Workforce – 4.98 million, growing at 2.96%
   3. Average Employee Age – 43, declining by .0985%

   There is a significant and growing demand for Architectural Engineer skills in the US job market, with over 5.5 million jobs needed by 2027. However, there is expected to be a significant shortage of qualified talent due to the shortage of graduates and retirements. This talent gap could

result in major economic losses if the shortfall is not addressed. The Deloitte report encourages more people to enter the profession to meet future demand.

(https://datausa.io/profile/cip/architectural-engineering/: Accessed 8-27-2025)

The future of Architectural Engineering (AE) is bright, driven by innovations in sustainability, smart technologies, AI, and modular construction. As these trends evolve, graduate students who embrace and develop these new tools and methodologies will be well-positioned to lead the way in designing the buildings of tomorrow.

D. Reasonableness of Program Duplication

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

   There is no **Ph.D. in Architectural Engineering** degree in Maryland. The proposed degree would be the first. If approved, Capitol Technology University's **Ph.D. in Architectural Engineering** will position its graduates to fill the requirement for senior leaders and top experts in Architecture and Engineering research in Maryland and the United States, plus allied nations.

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

   The proposed **PhD. in Architectural Engineering** program is strongly aligned with the University's strategic priorities and is supported by adequate resources. The proposed **Ph.D. in Architectural Engineering** degree will strengthen and expand upon the existing technology, engineering, management, and applied degree programs at the University. In addition, the **Ph.D. in Architectural Engineering** program will be an option for all students as the field integrates well with the market needs of the University's other programs. There is a thorough discussion of the need for the program in Sections B and C of this document.

E. Relevance to high-demand programs at Historically Black Institutions (HBIs):

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

   The University does not anticipate any impact on the implementation or maintenance of high-demand programs at HBIs. There are no Ph.D. programs in Architectural Engineering in the state or regionally.

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

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

   The University does not anticipate any impact on the implementation or maintenance of high-demand programs at HBIs. There are no Ph.D. programs in Architectural Engineering in the state or regionally.

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

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

The University established the proposed program through a rigorous review of unmet needs. The group includes selected representation from the University's faculty, administrators, and Executive Council, and Industry partners. Please see Section I for a detailed list of the faculty's backgrounds and qualifications. Capitol Technology University is a primary teaching university at the Undergraduate, Master's, and Doctoral levels. This degree adds a specific focus to our core theory.

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

Learning Objectives:

1. Students will evaluate the need for the applications of Architectural Engineering research.
2. Students will recognize areas of research needed to maintain the industry.
3. Students will demonstrate advanced knowledge and competencies needed in quantitative and qualitative methodologies.
4. Students will investigate Architectural Engineering issues
5. Students will plan a research topic in Architectural Engineering.

Learning Outcomes:

Upon graduation:

1. Graduates will incorporate the theoretical basis and practical applications of Architectural Engineering into their professional work.
2. Graduates will apply research and advance problem-solving skills to their career field.
3. Graduates will be versed in the science to offer economic solutions.
4. Graduates will demonstrate the highest mastery of the needs of Architectural Engineering globally.

3. Explain how the institution will:

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

Capitol Technology University will assess student achievement of the learning outcomes per the regulations specified by the University's regional accreditation organization: the Middle States Commission on Higher Education (MSCHE).

Under MSCHE, the University will use Standard V, Educational Effectiveness Assessment, of the Standards for Accreditation and Requirements of Affiliation. Standard V requires:

Assessment of student learning and achievement demonstrates that the institution's students have accomplished educational goals with their program of study, degree level, the institution's mission, and appropriate expectations for institutions of higher education.

(Source: https://www.msche.org/standards/, retrieved 8/27/2025)

Per the MSCHE's accreditation requirements, Capitol Technology University will measure Standard V by using the following criteria:

An accredited institution possesses and demonstrates the following attributes or activities:

1. Clearly stated student learning outcomes at the institution and degree/program levels, which are interrelated with one another, with relevant educational experiences, and with the institution's mission;

2. Organized and systematic assessments, conducted by faculty and/or appropriate professionals, evaluating the extent of student achievement of institutional and degree/program goals. Institutions should:

a. Define meaningful curricular goals with defensible standards for evaluating whether students are achieving those goals;
b. Articulate how they prepare students in a manner consistent with their mission for successful careers, meaningful lives, and, where appropriate, further education. They should collect and provide data on the extent to which they are meeting these goals.
c. Support and sustain assessment of student achievement and communicate the results of this assessment to stakeholders;

3. consideration and use of disaggregated assessment results for all student populations for the improvement of student learning outcomes, student achievement, and institutional and program-level educational effectiveness;

4. If applicable, adequate and appropriate institutional review and approval of assessment services designed, delivered, or assessed by third-party providers; and

5. Periodic assessment of the effectiveness of assessment processes utilized by the institution for the improvement of educational effectiveness.

The University will also evaluate student achievement of the learning outcomes using the Quality Assurance Agency for Higher Education (QAA) Framework for Higher Education Qualifications and its related assessment tools. The following tables provide a high-level view of the QAA Qualification Frameworks for doctoral programs. This model is used as it is a research degree program:

QAA Qualifications Framework for Ph.D.

The Ph.D. is a research degree, and that is the basis for the assessment and evaluation of the knowledge and attainment. It is intended to be at a high level of achievement using data, applied or pure, based on research methodologies.

4.18 Descriptor for a higher education qualification at level 8 on the FHEQ and SCQF level 12 on the FQHEIS: doctoral degree

The descriptor provided for this level of the frameworks is for any doctoral degree which should meet the descriptor in full. This qualification descriptor should also be used as a reference point for other level 8/level 12 qualifications.

Doctoral degrees are awarded to students who have demonstrated:

- the creation and interpretation of new knowledge, through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of the discipline, and merit publication
- a systematic acquisition and understanding of a substantial body of knowledge which is at the forefront of an academic discipline or area of professional practice
- the general ability to conceptualise, design and implement a project for the generation of new knowledge, applications or understanding at the forefront of the discipline, and to adjust the project design in the light of unforeseen problems
- a detailed understanding of applicable techniques for research and advanced academic enquiry.

Typically, holders of the qualification will be able to:

- make informed judgements on complex issues in specialist fields, often in the absence of complete data, and be able to communicate their ideas and conclusions clearly and effectively to specialist and non-specialist audiences
- continue to undertake pure and/or applied research and development at an advanced level, contributing substantially to the development of new techniques, ideas or approaches.

And holders will have:

- the qualities and transferable skills necessary for employment requiring the exercise of personal responsibility and largely autonomous initiative in complex and unpredictable situations, in professional or equivalent environments.

QAA Qualifications Framework for Ph.D.. (Continued)

4.18.1 Doctoral degrees are awarded for the creation and interpretation, construction and/or exposition of knowledge which extends the forefront of a discipline, usually through original research.

4.18.2 Holders of doctoral degrees are able to conceptualise, design and implement projects for the generation of significant new knowledge and/or understanding. Holders of doctoral degrees have the qualities needed for employment that require both the ability to make informed judgements on complex issues in specialist fields and an innovative approach to tackling and solving problems.

4.18.3 Doctoral programmes that may have a substantial taught element in addition to the research component (for example, professional doctorates), lead usually to awards which include the name of the discipline in their title (for example, EdD for Doctor of Education or DClinPsy for Doctor of Clinical Psychology). Professional doctorates aim to develop an individual's professional practice and to support them in producing a contribution to (professional) knowledge.

4.18.4 The titles PhD and DPhil are commonly used for doctoral degrees awarded on the basis of original research.

4.18.5 Achievement of outcomes consistent with the qualification descriptor for the doctoral degree normally requires study equivalent to three full-time calendar years.

4.18.6 Higher doctorates may be awarded in recognition of a substantial body of original research undertaken over the course of many years. Typically a portfolio of work that has been previously published in a peer-refereed context is submitted for assessment. Most degree awarding bodies restrict candidacy to graduates or their own academic staff of several years' standing.

(Source: UK Quality Code for Higher Education, Part A: Setting and Maintaining Academic Standards, The Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies, October 2014)

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

Program description, as it will appear in the catalog:

The **PhD. in Architectural Engineering** degree provides students with the opportunity to conduct extensive and sustained original research at a high level in the field of Architectural Engineering. This unique doctoral program is designed to meet the demands of skilled professionals to become the leaders and researchers who will be involved in the advancement, expansion, and support of large- and small-scale projects. Driven by innovations in sustainability, smart technologies, AI, and modular construction. As these trends evolve, graduate students who embrace and develop these new tools and methodologies will be well-positioned to lead the way in designing the buildings of tomorrow.

The program is for current professionals in the field who desire to elevate their skills to a higher level and contribute to the body of knowledge in Architectural Engineering. Additionally, it is designed as a doctoral degree by research, where students will quickly become able to engage in leadership, research, and publishing.

Description of program requirements:

Entrance Requirements

To be accepted into the **Ph.D. in Architectural Engineering** program, students must have completed an appropriate master's degree with a cumulative GPA of no less than 3.0 on a 4.0 scale. Students must also possess a high level of experience in the field, or a closely related field, and show the academic promise of their future ability to produce original research of publishable quality (suitable for a scholarly peer-reviewed journal or publication and presentation of high stature). Licensed as an Architect or Engineer is preferred.

Students must also provide a prospectus of at least 750 words that details their existing expertise and preparation for success in conducting original research within Capitol Technology University's **Ph.D. in Architectural Engineering** program. International students are required to take the TOEFL and score at least 550 on the paper-based test or 79 on the internet-based test.

Degree Requirements:

The **Ph.D. in Architectural Engineering** program is designed for students with an appropriate master's degree and significant years of field experience. During the program, students will conduct original research in an approved area of study. Successful completion of the program culminates in the award of the **Doctor of Philosophy (Ph.D.) in Architectural Engineering** degree.

There are two options for completion of the **Ph.D. in Architectural Engineering** program. First, under the dissertation option, the student will produce, present, and defend a doctoral dissertation after receiving the required approvals from the student's Committee and the Ph.D. Review Board. Second, under the publication option, the student will produce, present, and defend their original doctoral research after receiving the required approvals from the student's Committee and the Ph.D. Review Board. The student must also publish three works of original research in a

scholarly peer-reviewed journal(s). One of the three published works may be in a peer-reviewed conference proceeding. An Exegesis document and defense is also required with this option.

Degree Course Requirements:

The following is a list of courses for the **Ph.D. in Architectural Engineering** degree. Students expecting to complete this degree must meet all prerequisites for the courses listed below.

Doctor of Philosophy in Architectural Engineering
Courses
Total Credits: 60

60 CREDITS

ARCHITECTURAL ENGINEERING DOCTORAL CORE: 30 CREDITS

ARE-800 Architectural Engineering Research & Writing - Selected Topics (6 Credits)
This course introduces doctoral research and writing expectations, including APA format and CITI certification. Students will be paired with their Dissertation Chair following approval of the topic, problem, and purpose (TPP) at the end of the course.

ARE-810 Architectural Engineering Research Methodologies - Selected Topics (6 Credits)
In this foundational doctoral writing class, students work toward completing their Academic Review Board (ARB) proposal and its approval in collaboration with their Dissertation Chair.

ARE-820 Architectural Engineering Future Demands - Selected Topics (6 Credits)
In Future Demands Selected Topics, the Doctoral Proposal Writing I course, students will research, write, and revise their dissertation proposal with their Dissertation Chair.

ARE-830 Architectural Engineering Strategies - Selected Topics (6 Credits)
In the Strategies -Selected Topics course, students will continue to research, write, and revise their dissertation proposal in collaboration with their Dissertation Chair. Students will complete a drafted dissertation proposal (Chapters 1, 2, and 3) for successful completion of this course.

ARE-840 Architectural Engineering Research Proposal - Selected Topics (6 Credits)
In the Research Proposal-Selected Topics course, students will work toward proposal approval of Chapters 1, 2, and 3 of the dissertation in collaboration with their Dissertation Chair and Committee Member in order to begin work on the IRB application.

ARCHITECTURAL ENGINEERING DOCTORAL RESEARCH AND WRITING: 30 CREDITS

ARE-900 Architectural Engineering Doctoral Writing I - Selected Topics (6 Credits)
In the Doctoral Writing I-Selected Topics course, students will continue to work toward completing their Institutional Review Board (IRB) application and getting approval on this document in collaboration with their Dissertation Chair. Once approved, students will collect data according to what was outlined in the IRB application.

ARE-910 Architectural Engineering Doctoral Writing II - Selected Topics (6 Credits)

In the Doctoral Writing II Selected Topics course, students will analyze data and begin to write their dissertation manuscript in collaboration with their Dissertation Chair.

ARE-920 Architectural Engineering Doctoral Writing III - Selected Topics (6 Credits)
In the Doctoral Writing III-Selected Topics course, students will continue to analyze data and complete their dissertation manuscript in collaboration with their Dissertation Chair.

ARE-930 Architectural Engineering Doctoral Writing IV- Selected Topics (6 Credits)
In the Doctoral Writing IV-Selected Topics course, students will utilize their final dissertation manuscript to compile their defense presentation in collaboration with their Dissertation Chair.

ARE-940 Architectural Engineering Doctoral Defense - Selected Topics (6 Credits)
In the Doctoral Defense-Selected Topics course, students will utilize their final dissertation manuscript to complete their defense presentation in collaboration with their Dissertation Chair. Students will submit their Request to Defend and defend their dissertation work through an oral presentation.

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

N/A. This is a graduate program.

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

The program will be accredited regionally by the Middle States Commission on Higher Education (MSCHE).

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

The University will not be contracting with another institution or non-collegiate organization.

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

The **Ph.D. in Architectural Engineering** program will provide students with clear, complete, and timely information on the curriculum, course and degree requirements, nature of faculty/student interaction, assumptions about technology competence and skills, technical equipment requirements, Learning Management System, availability of academic support services and financial aid resources, and costs and payment policies.

Curriculum, course, and degree information will be available on the university website and via e-mail as well as regular mail (by request). The expectations on faculty/student interaction are available to students during virtual open house events, literature, website, etc. In addition, this information is part of the material distributed for each course. Students receive guidance on

proper behavior/interaction with their Chair and Ph.D. Committee members, as well as the online environment, are used to facilitate a high-level doctoral learning experience. Technology competence, skills, and technical equipment requirements are part of the material distributed for each course. The technical equipment requirements are also listed on our website and provided to students in the welcome package.

The University's academic support services, financial aid resources, costs and payment policies, and learning management system are covered in the university's open houses, application process, welcome aboard process, orientation, student town halls, and individual counseling.

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

   The **Ph.D. in Architectural Engineering** program's advertising, recruiting, and admissions materials will clearly and accurately represent the proposed program and the services available. The content for every new program is derived from the new program request sent to the Maryland Higher Education Commission is the source of the content for every new program at the University.

H. Adequacy of Articulation:

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

   This program does not currently have articulation partners. However, the articulation process will work as it does for the University's current degrees. The University is very active with its transfer partners throughout the state and beyond. The goal of the University is to work with partners to make the transfer as seamless as possible and to maximize the student's transfer credits as much as possible. There are University transfer admissions personnel to guide the student through the process.

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

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

   Almost all of the faculty listed below have been engaged with the University for several years. Dr. Capano, Dr. Chi, and Dr. Connor are full-time faculty members. All of the faculty members hold terminal degrees. The University leadership is confident in the quality of the faculty and their abilities to provide a learning environment supportive of the University's goals for student success. Additional Ph.D.-qualified faculty will be added as needed.

   Instructors whom we anticipate will be engaged with the **Ph.D. in Architectural Engineering** are:

INSTRUCTOR	BACKGROUND	COURSES ALIGNED TO BE TAUGHT

Dr. Tariq Abughazaleh Adjunct	Ph.D. Technology M.Sc. Quality Engineering B.S Mechanical Engineering	All PM 900 Courses
Dr. Craig D. Capano Full time	Ph.D. Civil Engineering with Concentration in Construction Engineering and Management and a focus on Business M.C.S.M. (Master of Construction Science and Management) B.S. Construction Management & Architectural Engineering	All PM 800 and 900 Courses
Dr. Andrew Carruthers Adjunct	Ph.D. Engineering M.S. Engineering Management B.S. Engineering Technology	All PM 900 Courses
Dr. Jeff Chi Full Time	Ph.D. Project Management M.S. Construction Science B.S. Structural Engineering	All PM 900 Courses
Dr. Charles Connor Full time	Ph.D. Electrical Engineering M.S. Electrical Engineering B.S. Electrical Engineering	All PM 800 and 900 Courses

Program Champion: Dr. Craig D. Capano

Dr. Capano earned his Ph.D. in Civil Engineering from Marquette University and a Master of Construction Science and Management from Clemson University. He also holds a dual undergraduate degree in Architectural Engineering and Construction Management from Wentworth Institute of Technology. He completed post-doctorate work at Harvard University's College of Education, focusing on Higher Education Administration.

He brings an extensive academic and professional resume to the position at Capitol Tech and has over 30 years of previous experience in academic program leadership at the Milwaukee School of Engineering, Western Carolina University, Wentworth Institute of Technology, Mississippi State, and Florida Gulf Coast University.

His many honors include National Outstanding Educator Awards from both the American Institute of Constructors and Associated General Contractors of America. He serves on the Board of Trustees with the American Council of Construction Education, the accreditation body for CM programs. He is a Certified Construction Professional by the American Institute of Constructors. He was also a member of the American Society of Civil Engineers' Architectural Engineering Institute.

Professionally, Dr. Capano has more than 50 years of experience in the construction industry, where he started as a union construction laborer and worked his way up to Director of Engineering for an ENR top 500 company. He also currently serves as principal of The Capano Group, a consulting firm for contractors and construction education.

Dr. Capano's research interests are in Construction Technologies, Prefabrications, and Construction Analytics.

2. Demonstrate how the institution will provide ongoing pedagogy training for faculty in evidence-based best practices, including training in:

a) Pedagogy that meets the needs of the students

The primary pedagogy for faculty at Capitol Technology University is the Active Learning model. The university believes strongly in a highly interactive, thinking, and hands-on experience for students in each class to the maximum extent possible.

> It was two Missouri State professors, historian Charles Bonwell and psychologist James Eison, who coined the term "active learning." In their 1991 book on the subject, Active Learning: Creating Excitement in the Classroom, they offered this definition of the concept: "active learning involves students in doing things and thinking about the things they are doing."
>
> The definition, though it seems circuitous, marks a definitive pedagogical shift in college teaching and learning. Rather than think about what they are watching, hearing, or reading, students are first encouraged to be "doing" something in class, and then to apply critical thought and reflection to their own classroom work and activity. Their argument was backed up by research. Even Bligh, 20 years earlier, had pointed out that the immediate rehearsal of new information and knowledge had a significant impact on learning.
>
> This approach is as helpful in the sciences as it is in the arts or humanities: whether it's organic chemistry, creative writing, or behavioral economics, concepts are all best understood through repeated practice and open, social exploration. The central tenet of active learning is that practice matters, and that classroom time is better spent giving students opportunities to work with concepts over and over, in a variety of ways and with opportunities.
>
> The central tenet of active learning — that practice and interaction matters— can be applied across disciplines for immediate feedback, so that knowledge can take hold in their own minds.
>
> (Source: Preville, P. Active Learning: The Perfect Pedagogy for the Digital Classroom: An Essential Guide for the Modern Professor)

All faculty receive regular periodic and recurring pedagogical training during the academic year. Those training sessions occur in a hybrid format – simultaneously live online and live on-ground in the classroom. The sessions are designed to reach all faculty, both full-time and adjunct, in order to ensure everyone receives the training. Additionally, the sessions are recorded for those faculty who are unable to attend the live training session due to other professional and teaching commitments.

b) The Learning Management System

The University's Department of Online Learning and Information Technology Division supports the online program needs of faculty and students. The Department of Online Learning and IT

Help Desk provides 24-hour support to the faculty. Canvas is the University's online Learning Management System. When a new faculty member is assigned to teach an online course, the Department of Online Learning provides formal training for the instructor. New faculty are assigned an experienced faculty mentor to ensure a smooth transition to the online environment as well as to ensure compliance with the institution's online teaching pedagogy. The University believes this provides the highest-level learning experience for the faculty member and, in turn, students attending online classes.

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

Faculty at Capitol Technology University receive training in Keller's ARCS Motivational Model and its associated strategies for distance education/online learning.

> A model used in the online delivery of teaching and learning to increase learner motivation is Keller's ARCS motivational model. This model has been considered an important element in online education because of its implications for increased learner motivation and learning outcomes. The Keller's model consists of motivating students by maintaining and eliciting attention (A), such as virtual clinical simulations; making the content and format relevant (R), by modeling enthusiasm or relating content to future use; facilitating student confidence (C), by providing "just the right challenge"; and promoting learner satisfaction (S), by providing reinforcement and praise when appropriate. Examples of Keller's model include increasing motivation, including the arousal of curiosity in students, making the connection between learning objectives and future learning goals, autonomous thinking and learning, and fostering student satisfaction. Keller's ARCS model has been researched by various educational online programs to analyze student motivation and learning outcomes. Keller's model serves as an example and guide for instructors to motivate and increase online engagement with their students, as well as for research purposes.
>
> A qualitative study by Chan Lin investigated online student learning and motivation. Discussion boards, student projects, and reflection data were collected and analyzed from a 12-week web-based course. Respondents indicated the importance of online feedback from the instructor and peer modeling of course tasks to visualize learning progress. The study revealed that using Keller's ARCS strategies fosters greater student online engagement by fostering self-efficacy and a sense of accomplishment.
>
> In a mixed-method study assessing the use of Keller's ARCS on instructional design, the use of educational scaffolding fostered positive levels of student motivation. Relevance, attention, confidence, and satisfaction were all common factors associated with student success in the course and course completion.
>
> (Source: Pinchevsky-Font T, Dunbar S. Best Practices for Online Teaching and Learning in Health Care Related Programs. The Internet Journal of Allied Health Sciences an Practice. January 2015. Volume 13 Number 1.)

All faculty receive regular periodic and recurring training on evidence-based practices for distance education/online learning during the academic year. Those training sessions occur in multiple formats: asynchronous, synchronous (i.e., live online), hybrid (i.e., simultaneously live online and live on-ground), and on-ground in the classroom. The sessions are designed to reach

all faculty, both full-time and adjunct, to ensure all members receive the training. Additionally, the live sessions are recorded for those faculty who are unable to attend the live training session due to other professional commitments or who are teaching classes at the training delivery time.

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

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

   Library Services: The Puente Library offers extensive services and a wide collection for Capitol Technology University students to be academically successful. Library resources are available digitally. The library also provides a mailing service for materials borrowed through the Maryland system.

   The library is currently supporting the following degrees at the undergraduate level: B.S. in Astronautical Engineering, B.S. in Aviation Professional Pilot, B.S. in Computer Engineering, B.S. in Computer Technology, B.S. in Computer Science, B.S. in Construction Information Technology and Cybersecurity, B.S. in Construction Management and Critical Infrastructure, B.S. in Construction Safety, B.S. in Human Factors, B.S. in Cyber Analytics, B.S. in Cybersecurity, B.S. in Data Science, B.S. in Electrical Engineering, B.S. in Electrical, B.S. in Technology, B.S. in Facilities Management and Critical Infrastructure, B.S. in Information Technology, B.S in Management of Cyber and Information Technology, B.S. in Mechatronics Engineering, B.S. in Mechatronics and Robotics, B.S. in Software Engineering, and B.S. in Technology and Business Management, B.S in Unmanned and Autonomous Systems, and B.S. in Web Development.

   The library is currently supporting the following degrees at the graduate level: Master of Business Administration (M.B.A.), Master of Science (M.S.) in Astronautical Engineering, M.S. in Aviation, M.S. in Aviation Cybersecurity, M.S. in Computer Science, M.S. in Construction Cybersecurity, M.S. in Construction Safety, M.S. in Critical Infrastructure, M.S. in Cyber Analytics, M.S. in Cybersecurity, M.S. in Information Systems Management, , M.S. in Internet Engineering, M.S. in Unmanned and Autonomous Systems Policy and Risk Management, Technical Master of Business Administration (T.M.B.A.) in Business Analytics and Data Science, and T.M.B.A. in Cybersecurity, Doctor of Science (D.Sc.) in Cybersecurity, Master of Research(M.Res.) in Artificial Intelligence, M.Res. in Aviation, M.Res. in Business Analytics and Data Sciences, M.Res. in Construction Science, M.Res. in Critical Infrastructure, M.Res. in Emergency and Protective Services, M.Res. in Human Factors, M.Res. in Manufacturing, M.Res. in Occupational Health and Safety, M.Res. in Product Management, M.Res. in Quantum Computing, M.Res. in Technology, M.Res. in Technology/M.S. Research Methods Combination Program, M.Res. in Unmanned Systems Applications.

   Also Doctorate degrees in the following areas; Aeronautical Science (PhD), Artificial Intelligence (PhD), Astronautical Engineering (PhD), Business Analytics and Data Science (PhD), Computer Science (PhD), Construction Science (PhD), Counterterrorism (PhD), Critical Infrastructure (PhD), Cyber Leadership (PhD), Cyber Science (EdD), Cyberpsychology (PhD), Cybersecurity (DSc), Educational Data Analytics (EdD), Emergency and Protective Services (PhD), Engineering Management (PhD), Facilities Management (PhD), Financial Cybersecurity

(PhD), Forensic Cyberpsychology (PhD), Forensic Linguistic Engineering (PhD), Forensic Linguistic Technology (PhD), Healthcare Cybersecurity (PhD), Healthcare Technology (PhD), Human Factors (PhD), Industrial Hygiene (PhD), Intelligence and Global Security (PhD), Machine Learning (PhD), Manufacturing (PhD), Military Leadership (PhD), Occupational Health and Safety (PhD), Occupational Risk Management (PhD), Offensive Cyber Engineering (PhD), Product Management (PhD), Project Management (PhD), Quantum Computing (PhD), Real Estate Management (PhD), Space Cybersecurity (PhD), Space Operations (PhD), Supply Chain Management (D.B.A.), Sustainability (PhD), Systems Engineering (PhD), Technology Combination Program (MS/PhD), Technology (PhD), Uncrewed Systems Applications (PhD)

Therefore, the library is fully prepared to support a **Ph.D. in Architectural Engineering.**

Services provided to online students include:

- "Ask the Librarian"
- Research Guides
- Tutorials
- Videos
- Online borrowing

The John G. and Beverley A. Puente Library provides access to management, decision science, and research methods materials through its 10,000-title book collection, e-books, and its 90 journal subscriptions. The library will continue to purchase new and additional materials in the management, decision science, and research methods area to maintain a strong and current collection in the subject area. Students can also access materials through the library's participation in Maryland's Digital eLibrary Consortium. This online electronic service provides access to numerous databases (Access Science, NetLibrary) that supply students with the documents they need. Available databases include ProQuest, EBSCO, ACM, Lexis Nexis, Taylor Francis, and Sage Publications.

The Puente Library can provide access to historical management and decision science materials through its membership in the Maryland Independent College and University Association (MICUA) and the American Society of Engineering Education (ASEE). Reciprocal loan agreements with fellow members of these organizations provide the library access to numerous research facilities that house and maintain archives of management and decision science documents. The proximity of the University of Maryland, College Park, and other local area research and academic libraries provides the Puente Library with quick access to these materials as well.

The library currently supports the needs of students at the undergraduate, master's, and doctoral levels.

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

1. Provide an assurance that the physical facilities, infrastructure, and instructional equipment are adequate to initiate the program, particularly as related to spaces for classrooms, staff and faculty offices, and laboratories for studies in the technologies and sciences. If the program is to be implemented within existing institutional resources, include

a supportive statement by the President regarding adequate equipment and facilities to meet the program's needs.

No new facilities are required for the program. The online class platform is web-based and requires no additional equipment for the institution. The current Learning Management System, Canvas, and Zoom meet the needs of the degree program. The Business and Technology Lab, Computer Science Lab, Cyber Lab, Robotics Lab, and Unmanned Systems Lab meet the potential research needs of the students. The labs provide both local and virtual support.

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

a. An institutional electronic mailing system

Capitol Technology University provides an institutional electronic mailing system to all students and faculty. The University requires the use of the email system by all students and faculty in all the institution's modalities of course delivery. Capitol Technology University students and faculty are required to use the institution's email addresses (e.g., xxxxxxxx@captechu.edu) in all University matters and communications. The University uses the email capabilities in Microsoft Office 365 and Microsoft Outlook.

b. A Learning Management System that provides the necessary technological support for distance education

Capitol Technology University provides a robust Learning Management System (LMS) through the use of the Canvas LMS by Instructure (www.canvaslms.com). The University pairs Canvas with Zoom (zoom.us) to provide a platform for every student and faculty member to meet face-to-face in a synchronous "live" mode of communication. The University requires Canvas for every class; as a result, every course has a classroom on Canvas and Zoom. All syllabi, grades, and assignments must be entered into Canvas on a timely basis throughout the semester.

Canvas provides the world's most robust LMS. It is a 21st-century LMS; Canvas is a native cloud, Amazon Web Services-hosted system. The system is adaptable, reliable, and customizable. Canvas is easy to use for students and faculty. The system is fully mobile and has proven to be time-saving when compared to other systems. The following list provides the features of the system:

<u>Time and Effort Savings</u>

- CANVAS DATA
  Canvas Data parses and aggregates more than 280 million rows of Canvas usage data generated daily.
- CANVAS COMMONS
  Canvas Commons makes sharing a whole lot easier.
- SPEEDGRADER ANNOTATIONS
  Preview student submissions and provide feedback all in one frame.
- GRAPHIC ANALYTICS REPORTING ENGINE

Canvas Analytics helps you turn rich learner data into meaningful insights to improve teaching and learning.

- INTEGRATED MEDIA RECORDER
  Record audio and video messages within Canvas.
- OUTCOMES
  Connect each learning outcome to a specific goal, so results are demonstrated in clearly measurable ways.
- MOBILE ANNOTATION
  Open, annotate, and submit assignments directly within the Canvas mobile app.
- AUTOMATED TASKS
  Course management is fast and easy with automated tasks.
- NOTIFICATION PREFERENCES
  Receive course updates when and where you want - by email, text message, even Twitter or LinkedIn.
- EASE OF USE
  A familiar, intuitive interface means most users already have the skills they need to navigate, learn, and use Canvas.
- IOS AND ANDROID
  Engage students in learning anytime, anywhere from any computer or mobile device with a Web-standard browser.
- USER-CUSTOMIZABLE NAVIGATION
  Canvas intelligently adds course navigation links as teachers create courses.
- RSS SUPPORT
  Pull feeds from external sites into courses and push out secure feeds for all course activities.
- DOWNLOAD AND UPLOAD FILES
  Work in Canvas or work offline—it's up to you.
- SPEEDGRADER
  Grade assignments in half the time.

<u>Student Engagement</u>

- ROBUST COURSE NOTIFICATIONS
  Receive course updates when and where you want—by email, text message, and even Facebook.
- PROFILE
  Introduce yourself to classmates with a Canvas profile.
- AUDIO AND VIDEO MESSAGES
  Give better feedback and help students feel more connected with audio and video messages.

- MULTIMEDIA INTEGRATIONS
  Insert audio, video, text, images, and more at every learning contact point.
- EMPOWER GROUPS WITH COLLABORATIVE WORKSPACES
  By using the right technologies in the right ways, Canvas makes working together easier than ever.
- MOBILE
  Engage students in learning anytime, anywhere from iOS or Android, or any mobile device with a Web-standard browser.
- TURN STUDENTS INTO CREATORS
  Students can create and share audio, video, and more within assignments, discussions, and collaborative workspaces.
- WEB CONFERENCING
  Engage in synchronous online communication.
- OPEN API
  With its open API, Canvas easily integrates with your IT ecosystem.
- BROWSER SUPPORT
  Connect to Canvas from any Web-standard browser.
- LTI INTEGRATIONS
  Use the tools you want with LTI integrations.
- MODERN WEB STANDARDS
  Canvas is built using the same Web technologies that power sites like Google, Facebook, and Twitter.

  Lossless Learning

- CANVAS POLLS
  Gauge comprehension and incorporate formative assessment without the need for "clicker" devices.
- MAGICMARKER
  Track in real-time how students are performing and demonstrating their learning.
- QUIZ STATS
  Analyze and improve individual assessments and quiz questions.
- LEARNING MASTERY FOR STUDENTS
  Empower students to take control of their learning.

(Source: https://www.canvaslms.com/higher-education/features)

Capitol Technology University has been using Canvas for over 7 years. Canvas has proven to be a wholly reliable LMS system that provides the necessary technological support for distance education/online learning.

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

1. Table 1: Resources.

TABLE 1: RESOURCES

Resource Categories	Year 1	Year 2	Year 3	Year 4	Year 5
1. Reallocated Funds	$0	$0	$0	$0	$0
2. Tuition/Fee Revenue (c + g below)	$35,100	$71,640	$109,620	$149,040	$190,080
a. Number of F/T Students	0	0	0	0	0
b. Annual tuition/Fee rate	$0	$0	$0	$0	$0
c. Total F/T Revenue (a x b)	$0	$0	$0	$0	$0
d. Number of P/T Students	2	4	6	8	10
e. Credit Hour Rate	$975	$995	$1,015	$1,035	$1,056
f. Annual Credit Hour	18	18	18	18	18
g. Total P/T Revenue (d x e x f)	$35,100	$71,640	$109,620	$149,040	$190,080
3. Grants, Contracts and Other External Sources	0	0	0	0	0
4. Other Sources	0	0	0	0	0
TOTAL (Add 1 – 4)	**$35,100**	**$71,640**	**$109,620**	**$149,040**	**$190,080**

A. Provide a narrative rationale for each of the resource categories. If resources have been or will be reallocated to support the proposed program, briefly discuss those funds.

1. **Reallocated Funds**
   The University will not need to reallocate funds for the program.
2. **Tuition and Fee Revenue**
   Tuition is calculated to include an annual 2.5% tuition increase. A 20% attrition rate has been calculated.
3. **Grants and Contracts**
   There are currently no grants or contracts.
4. **Other Sources**
   There are currently no other sources of funds.
5. **Total Year**
   No additional explanation or comments needed.

2. Table 2: Program Expenditures.

TABLE 2: EXPENDITURES

Expenditure Category	Year 1	Year 2	Year 3	Year 4	Year 5
1. Faculty (b + c below)	$6,000	$12,000	$18,000	$24,000	$30,000
a. #FTE	1	1	1	1	1
b. Total Salary ($1000/semester/student)	$6,000	$12,000	$18,000	$24,000	$30,000
c. Total Benefits (20% of salaries) No Benefits	$0	$0	$0	$0	$0
2. Admin Staff (b + c below)	$960	$989	$1,017	$1,047	$1,078
a. #FTE	.01	.01	.01	.01	.01
b. Total Salary	$800	$824	$848	$873	$899
c. Total Benefits	$160	$165	$169	$174	$179
3. Support Staff (b + c below)	$780	$802	$826	$850	$875
a. #FTE	.01	.01	.01	.01	.01
b. Total Salary	$650	$669	$689	$708	$729
c. Total Benefits	$130	$133	$137	$142	$146
4. Technical Support and Equipment	$500	$515	$530	$545	$561
5. Library	$0	$0	$0	$0	$0
6. New or Renovated Space	$0	$0	$0	$0	$0
7.Other Expenses	$0	$0	$0	$0	$0
TOTAL (ADD 1-7)	**$8,240**	**$14,306**	**$20,373**	**$26,442**	**$32,514**

A. Provide a narrative rationale for each expenditure category. If expenditures have been or will be reallocated to support the proposed program, briefly discuss those funds.

a. Faculty
Table 2 reflects the faculty hours in total, but this does not necessarily imply that these are new hire requirements.

b. Administrative Staff
Capitol Technology University will continue with the current administrative staff through the proposed time period.

c. Support Staff
Capitol Technology University will add additional support staff to facilitate the program.

d. Equipment
Software for courses is available free to students or is freeware. Additional licenses for the LMS will be purchased by the University at the rate of $70 per student in Year 1. The rate is estimated to increase by $5 per year.

e. Library
Money has been allocated for additional materials to be added to the on-campus and virtual libraries to ensure the literature remains current and relevant. However, it has been determined that the current material serves the needs of this degree due to the extensive online database.

f. New or Renovated Space
No new or renovated space is required.

g. Other Expenses
Funds have been allocated for office materials, travel, professional development, course development, marketing, and additional scholarships.

h. Total Year
No additional explanation or comments needed.

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

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

The assessment process at the University consists of a series of events throughout the Academic Year. The results of each event are gathered by the University Assessment Team and stored in Canvas for analysis and use in annual reports, assessments, etc. The University Assessment Team analyzes the results, develops any necessary action plans, and monitors the implementation of the action plans.

Academic Year Assessment Events:

Fall Semester:

- At the August Faculty Retreat, the faculty reviews any outstanding student learning challenges that have not been adequately addressed. The issues are brought to the Academic Dean for review and development of implementation plans.
- Faculty submit performance plans consistent with the mission and goals of the University and department. The documents are reviewed and approved by the Academic Dean.
- Department Chairs and the Academic Dean review the Graduating Student Survey data.
- Department Chairs and the Academic Dean review student internship evaluations.
- Department Chairs and the Academic Dean review grade distribution reports from the spring and summer semesters.
- Department Chairs and the Academic Dean review student course evaluations from the Summer Semester.
- Departments conduct Industrial Advisory Board meetings to review academic curriculum recommendations. The Advisory Board meets to begin curriculum review or address special

issues that may arise related to the curriculum. Based on an analysis and evaluation of the results, the Academic Dean, faculty, and the advisory boards will develop the most effective strategy to move the changes forward.

- NOTE: A complete curriculum review for degrees occurs every two years. In most cases, the changes only require that the Academic Dean inform the Vice President of Academic Affairs and the University President and provide a report that includes a justification and the impact of the changes, as well as a strategic plan. Significant changes typically require the approval of the Executive Council.

- The Academic Dean attends the Student Town Hall and reviews student feedback with Department Chairs.
- Department Chairs conduct interviews with potential employers at our Career Fair.
- Post-residency, the Academic Dean meets with the faculty to review the student learning progress and discuss needed changes.

Spring Semester:

- Faculty Performance Plans are reviewed with faculty to identify issues of divergence and to adjust the plan as needed.
- Department Chairs and the Academic Dean review grade distribution reports from the Fall Semester.
- Department Chairs and the Academic Dean review the Graduating Student Survey data.
- Department Chairs and the Academic Dean review student course evaluations from the Fall Semester and the Spring Semester (in May, before the Summer Semester begins).
- Department Chairs and the Academic Dean meet to review the content of the graduating student, alumni, and course surveys to ensure the surveys continue to meet the university's assessment needs.
- At the Annual Faculty Summit in May, the faculty review and discuss student learning challenges from the past academic year and provide recommendations to the Academic Dean. The results also lead to implementation plans for improvement.
- Department Chairs conduct interviews with potential employers at our Career Fair.
- Departments conduct Industrial Advisory Board meetings to review academic curriculum recommendations.

In addition to these summative assessments, the Academic Dean meets with the Department Chairs every week to review current student progress. This formative assessment allows for immediate minor changes, which increase faculty effectiveness and, ultimately, student outcomes.

The Faculty Senate meets monthly from August through April. The Faculty Senate addresses issues that impact student outcomes as those issues emerge. The leadership of the Faculty Senate then provides a report on the matter to the Academic Dean. The report may include a recommendation or a request to move forward with a committee to examine the issue further. In most cases, the changes only require the Academic Dean to inform the Vice President of Academic Affairs and the University President and provide a report that includes a justification and the impact of changes, as well as a strategic plan. Significant changes typically require the approval of the Executive Council.

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

satisfaction, and cost-effectiveness.

Student Learning Outcomes:

Student learning outcomes for the proposed **Ph.D in Architectural Engineering** will be measured using the instruments identified in Section G and Section M, as well as the assessment measures dictated by the accreditation requirements of the University's regional accreditor [i.e., Middle States Commission on Higher Education (MSCHE)]. This program is designed to meet the requirements of MSCHE. The University will also evaluate student achievement of the learning outcomes using the UK Quality Assurance Agency for Higher Education (QAA) Framework for Higher Education Qualifications and its related assessment tools. The University is in good standing with all its accrediting bodies.

Student Retention:

The University maintains a comprehensive student retention program under the Vice President for Student Engagement. The program assesses student retention at all levels, including the individual course, major, and degree. During the semester and term, the University's Drop-Out Detective capability, within its Learning Management System (i.e., Canvas), provides an early alert at the course level to potential issues related to retention. Within the Office of Student Life, Academic Advisors monitor Drop-Out Detective and contact students who appear to have problems with their academic performance. The Academic Advisors work with each student to create a plan to remove any barriers to success. The Academic Advisors also work with the course instructors as needed to gain additional insight that may help correct the situation.

Each student also meets with their Academic Advisor each semester to evaluate their progress toward degree completion. An updated plan of action is developed for each student for their next semester's registration and each following semester through degree completion.

The Vice President for Student Engagement also meets regularly with the Vice President of Academic Affairs and the Academic Dean to review student retention within each degree program and address any issues that appear to be impediments to degree completion.

Student and Faculty Satisfaction:

Evaluations and assessments of Student and Faculty satisfaction occur every semester. Faculty members are evaluated every semester by students enrolled in their courses. Students are required to complete a course evaluation online within a specified time frame at the end of the semester for every enrolled course, or they are locked out of Canvas (the University's Learning Management System) until they complete each survey. Every faculty member is also required to review each of their courses after each semester; the goal is to ensure up-to-date content, effective and efficient methods of delivery, and appropriate outcomes.

The Department Chairs and the Academic Dean review the student evaluations for every course offered at the University. The Department Chairs and the Academic Dean also review faculty satisfaction every semester. If changes are needed at the course level, the changes are developed and implemented by the faculty upon approval of the Department Chairs and the Academic Dean. If changes are required at the faculty level, the Department Chairs will make the changes. At the end of the following semester, appropriate stakeholders analyze the results of a follow-on evaluation for the effectiveness of the changes. This cycle is an ongoing process.

Cost Effectiveness:

Based on the year-long inputs, evaluations, and reviews described in Section M.1, the Department Chairs and Academic Dean prepare the proposed academic budget for each program for the upcoming year. Budget increases are tied to increasing student learning and performance as well as critical strategic initiatives.

The Interim Vice President of Finance and Administration also monitors each academic program throughout every semester and term for its cost-effectiveness. Additionally, the revenue and costs of every University program are reviewed annually by the Executive Council and Board of Trustees before approving the next year's budget.

N. Consistency with the State's Minority Student Achievement goals (as outlined in COMAR 13B.02.03.05 and the State Plan for Post-Secondary Education):

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

   Capitol Technology University is a majority-minority school. Our programs attract a diverse set of students who are multiethnic and multicultural. The University actively recruits minority populations for all undergraduate and graduate-level degrees. Special attention is also provided to recruit females into the STEM and multidisciplinary programs at all degree levels – undergraduate, master's, and doctoral. The University will use the same approach for the **Ph.D. in Architectural Engineering.**

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

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

   This program is not associated with a low productivity program identified by the Commission.

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

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

   Capitol Technology University is fully eligible to provide distance education. The University has a long history of providing high-quality distance education. The University is accredited regionally by the Middle States Commission on Higher Education (MSCHE) and through four specialized accrediting organizations: the International Accreditation Council of Business Education (IACBE), the Accreditation Board for Engineering and Technology (ABET), the National Security Agency (NSA, and the Department of Homeland Security (DHS. All five accrediting organizations have reviewed the University's distance education program as part of their accreditation process. Capitol Technology University is fully accredited by MSCHE, IACBE, ABET, NSA, and DHS. The University is in good standing with all its accrediting bodies.

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

   Capitol Technology University has a long history of providing high-quality distance education/online learning that complies with the Council of Regional Accrediting Commissions (C-RAC) Interregional Guidelines for the Evaluation of Distance Education. The University will also continue to abide by the C-RAC guidelines with the proposed **Ph.D. in Architectural Engineering.**

   a. **Council of Regional Accrediting Commissions (C-RAC) Interregional Guidelines for the Evaluation of Distance Education.**

      1. **Online learning is appropriate to the institution's mission and purposes.**

         Online learning is consistent with the institution's mission, purpose, and history. Please refer to Section A of this proposal.

      2. **The institution's plans for developing, sustaining, and, if appropriate, expanding online learning offerings are integrated into its regular planning and evaluation processes.**

         All programs at the University – online, hybrid, and on-ground – are subject to the same regular planning, assessment, and evaluation processes. Please see Section M of this proposal for the detailed process.

      3. **Online learning is incorporated into the institution's systems of governance and academic oversight.**

         All programs at the University – online, hybrid, and on-ground – are subject to the same regular planning, assessment, and evaluation processes. Please see Section M of this proposal for the detailed process.

      4. **Curricula for the institution's online learning offerings are coherent, cohesive, and comparable in academic rigor to programs offered in traditional instructional formats.**

         Online programs/courses meet the same accreditation standards, goals, objectives, and outcomes as traditional instruction at the University. The online course development process incorporated the Quality Matters research-based set of standards for quality online course design to ensure the academic rigor of the online course is comparable to the traditionally offered course. The University Academic Dean, chairs, and faculty review the curriculum annually. Courses are reviewed at the end of each term of course delivery. This process applies to online and traditional classes. In addition, advisory boards are engaged in the monitoring of course quality to ensure quality standards are met, regardless of the delivery platform.

      5. **The institution evaluates the effectiveness of its online learning offerings, including the extent to which the online learning goals are achieved, and uses the results of its evaluations to enhance the attainment of the goals.**

Online programs/courses meet the same accreditation standards, goals, objectives, and outcomes as traditional classroom delivery. The University selects the learning platforms to ensure the high standards of the technical elements of each course. The Academic Dean monitors any course conversion from in-class to online to ensure the online course is academically equivalent to the traditionally offered course and that the technology is appropriate to support the expected rigor and breadth of the course.

6. **Faculty responsible for delivering the online learning curricula and evaluating the students' success in achieving the online learning goals are appropriately qualified and effectively supported.**

   The Graduate School, where this degree will be sponsored, is staffed by a qualified University Academic Dean, Dr. Chris Linski. Other appropriately credentialed faculty with multi-disciplinary level skills will be part of the delivery process.

   The evaluation of the courses in the program will be done using the same processes as all other programs at the University. (Please see Section M.) All Capitol Technology University faculty teach in the traditional classroom environment and online. (Please see faculty qualifications in Section I of this document.)

7. **The institution provides effective student and academic services to support students enrolled in online learning offerings.**

   Students can receive assistance in using online learning technology via several avenues. Student aides are available to meet with students and provide tutoring support in both subject matter and the use of the technology. Tutors are available in live, real-time sessions using Zoom or other agreed-upon tools. Pre-recorded online tutorials are also available.

   In addition to faculty support, on-ground and online tutoring services are available to students in a one-on-one environment.

   Library services and resources are appropriate and adequate. Please refer to Section J of this document and the attached letter from the University President. The library adequately supports the students' learning needs.

8. **The institution provides sufficient resources to support and, if appropriate, expand its online learning offerings.**

   The University has made the financial commitment to the program (please refer to Section L). The University has a proven record of accomplishment in supporting degree completion.

9. **The institution assures the integrity of its online offerings.**

   Current faculty serve on internal advisory boards that examine possible program changes, including course and program development. All faculty are selected on domain expertise and program-related teaching experience.

When new faculty or outside consultants are necessary for the design of courses offered, the University's Human Resource Department initiates a rigorous search and screening process to identify appropriate faculty to design and teach online courses. Again, all faculty are selected on domain expertise and program-related teaching experience

The University's online platforms offer several avenues to support instructors engaged in online learning. The Director of the Online Learning Division is highly skilled and trained in faculty development. Several seminars and online tutorials are available to the faculty every year. Mentors are assigned to new faculty. Best practice sharing is facilitated through the Academic Dean, Department Chairs, and formal meetings.

The assessment for online learning classes/students is the same as for all academic programs at the University. Faculty provide the required data on student achievement. The Learning Management System includes data on student achievement. Proof of these assessments is available during the class and following class completion to the Academic Dean and Department Chairs. On an annual basis, the information is reported to the University's accreditation authorities, such as MSCHE and NSA/DHS.

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CAPITOL TECHNOLOGY UNIVERSITY

INVOICE NUMBER	INVOICE DATE	DESCRIPTION	GROSS AMOUNT	DISCOUNT/ADJUSTMENTS	PAYMENT AMOUNT
09122025	09/12/2025	Application PHD Architectural ENG	850.00	0.00	850.00
			850.00	0.00	850.00

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