Proposal for a New Degree Program

I. Information and Rationale

A. Primary Contact Information

Institution: Troy University

Contact: Dr. Mary Anne Templeton

Title: Associate Provost, Dean of the Graduate School

Email: mtempleton@troy.edu

Telephone: (334) 670-3189

B. Program Information

Date of Proposal Submission: 12/2/2024

Award Level: Bachelor's Degree

Award Nomenclature (e.g., BS, EEE): BS

Field of Study/Program Title: Engineering (Concentration in Electrical and Electronics)

CIP Code (6-digit): 14.0101, Engineering

C. Administration of the Program

Name of Dean and College: Dr. Govind Menon, College of Arts and Sciences

Name of Department/Division: Department of Chemistry and Physics

Name of Chairperson: Dr. Zhiyong Wang

D. Implementation Information

Proposed Program Implementation Date: Click or tap to enter a date.

Anticipated Date of Approval from Institutional Governing Board: Click or tap to enter a date.

Anticipated Date of ACHE Meeting to Vote on Proposal: Click or tap to enter a date.

SACSCOC Sub Change Requirement (Notification, Approval, or NA): Notification

Other Considerations for Timing and Approval (e.g., upcoming SACSCOC review): NA

E. Concise Program Description

Include general opportunities for work-based and/or experiential learning, if applicable.

The BS in Engineering (Electrical and Electronics) program offers a comprehensive foundation in electronics and electrical systems, with hands-on experimental learning to meet workforce needs. It encourages students to pursue internships and gain practical experience through 6-credit hours capstone courses.

F. Specific Rationale (Strengths) for the Program

List 3 – 5 strengths of the proposed program as specific rationale for recommending approval of this proposal.

1. **Comprehensive Technical Foundation.** The proposed Engineering program in Electrical and Electronics offers a well-rounded technical education that covers essential areas such as circuits, electromagnetics, digital control systems, and semiconductor electronics. This comprehensive curriculum ensures that students gain in-depth knowledge and skills in the field, preparing them to tackle real-world engineering challenges effectively.
2. **Hands-On Learning and Workforce Readiness.** The program integrates hands-on experimental learning experiences through laboratories and capstone projects, ensuring students develop practical skills that are directly applicable to industry needs. This focus on experiential learning helps bridge the gap between theoretical knowledge and practical application, making graduates more workforce-ready.
3. **Career Specialization Opportunities.** The program provides students with the opportunity to specialize in various high-demand fields such as robotics and automation, photonics, smart systems, and the Internet of smart Things (IoT). These specialization options align with evolving industry trends, allowing students to tailor their studies to match their career aspirations and industry demands.
4. **Emphasis on Internships and Practical Experience.** The program actively encourages students to pursue internships, providing them with valuable industry exposure and professional development opportunities. The curriculum is designed to support experiential learning through capstone projects and internships, ensuring that students gain relevant experience and establish connections in the industry.
5. **Development of Soft Skills.** Alongside technical expertise, the program emphasizes the development of essential soft skills, such as communication, problem-solving, and teamwork, through a liberal arts component. This holistic approach not only prepares students for technical roles but also equips them with the skills needed for leadership and collaborative positions in the engineering field

II. Background with Context

A. Student Learning Outcomes

List four (4) to seven (7) of the student learning outcomes of the program.

1. **Apply Core Engineering Principles:** Students will demonstrate the ability to apply fundamental engineering principles in electrical circuits, electromagnetics, and semiconductor electronics to solve real-world problems.

2. **Design and Analyze Systems:** Graduates will be able to design, analyze, and optimize electrical and electronic systems, including digital control systems, microcontrollers, and automation solutions.
3. **Hands-On Experimental Skills:** Students will gain hands-on experience with laboratory equipment and techniques, enabling them to perform experimental procedures, analyze data, and interpret results accurately.
4. **Knowledge in Emerging Fields:** Students will acquire knowledge in areas such as semiconductors, robotics and automation, photonics, and the Internet of smart Things (IoT), preparing them to innovate in these rapidly evolving fields.
5. **Integrate Multidisciplinary Skills:** Graduates will demonstrate the ability to integrate knowledge from mathematics, science, and technology to address complex engineering challenges.
6. **Effective Communication and Teamwork:** Students will develop strong communication and teamwork skills, enabling them to collaborate effectively in multidisciplinary teams and convey technical information to diverse audiences.

B. Similar Programs at Other Alabama Public Institutions

List programs at other Alabama public institutions of the same degree level and the same (or similar) CIP codes. If no similar programs exist within Alabama, list similar programs offered within the 16 SREB states. If the proposed program duplicates, closely resembles, or is similar to any other offerings in the state, provide justification for any potential duplication.

CIP Code	Degree Title	Institution with Similar Program	Justification for Duplication
14.0101	Engineering Design	UAB	While there is some duplication, the service areas for the institutions are not the same. Offering this program in the Wiregrass region will make engineering accessible to those in this region who do not wish to move.
14.0101	Engineering	UNA	While there is some duplication, the service areas for the institutions are not the same. Offering this program in the Wiregrass region will make engineering accessible to those in this region who do not wish to move.
14.1001	Electrical Engineering	AAM	The proposed program has a concentration in electrical engineering, but the goal will be to add other concentrations in the future to serve the southeast portion of the state. While there is some duplication, the service areas for the institutions are not the same. Offering this program in the Wiregrass region will make engineering

			accessible to those in this region who do not wish to move.
14.1001	Electrical Engineering	Auburn	The proposed program has a concentration in electrical engineering, but the goal will be to add other concentrations in the future to serve the southeast portion of the state. While there is some duplication, the service areas for the institutions are not the same. Offering this program in the Wiregrass region will make engineering accessible to those in this region who do not wish to move.
14.1001	Electrical Engineering	UA	The proposed program has a concentration in electrical engineering, but the goal will be to add other concentrations in the future to serve the southeast portion of the state. While there is some duplication, the service areas for the institutions are not the same. Offering this program in the Wiregrass region will make engineering accessible to those in this region who do not wish to move.
14.1001	Electrical Engineering	UAB	The proposed program has a concentration in electrical engineering, but the goal will be to add other concentrations in the future to serve the southeast portion of the state. While there is some duplication, the service areas for the institutions are not the same. Offering this program in the Wiregrass region will make engineering accessible to those in this region who do not wish to move.
14.1001	Electrical Engineering	UAH	The proposed program has a concentration in electrical engineering, but the goal will be to add other concentrations in the future to serve the southeast portion of the state. While there is some duplication, the service areas for the institutions are not the same. Offering this program in the Wiregrass region will make engineering accessible to those in this region who do not wish to move.
14.1001	Electrical Engineering	USA	The proposed program has a concentration in electrical engineering, but the goal will be to add other concentrations in the future to serve the southeast portion of the state. While there is some duplication, the service areas for the institutions are not the same. Offering this program in the Wiregrass region will make engineering accessible to those in this region who do not wish to move.

C. Relationship to Existing Programs within the Institution

1. Is the proposed program associated with any existing offerings within the institution, including options within current degree programs? **Yes ☒ No ☒**

(Note: Most new programs have some relationship to existing offerings, *e.g.*, through shared courses or resources). If yes, complete the following table. If this is a graduate program, list any existing undergraduate programs which are directly or indirectly related. If this is a doctoral program, also list related master's programs.

Related Degree Program Level	Related Degree Program Title	Explanation of the Relationship Between the Programs
BS	EET	Course overlap but the goal is to replace EET with a more traditional engineering program

2. Will this program replace any existing programs or specializations, options, or concentrations? **Yes** ☒ **No** ☐

   This degree will replace the BS in Electrical Engineering Technology to better fit the job market.

3. Will the program compete with any current internal offerings? **Yes** ☐ **No** ☒

   If yes, please explain.

D. Collaboration

Have collaborations with other institutions or external entities been explored? **Yes** ☐ **No** ☒

If yes, provide a brief explanation indicating those collaboration plan(s) for the proposed program.

Have any collaborations within your institution been explored? **Yes** ☐ **No** ☒

If yes, provide a brief explanation indicating those collaboration plan(s) for the proposed program.

E. Specialized Accreditation

1. Will this program have any external accreditation requirements in addition to the institution's SACSCOC program requirements? **Yes** ☒ **No** ☐

   If yes, list the name(s) of the specialized accrediting organization(s) and the anticipated timeframe of the application process.

This program aims to secure external accreditation from ABET. As per ABET requirements, at least one graduate is needed before applying. We plan to initiate the ABET application process within 3 to 4 years of establishing the program.

2. Does your institution intend to pursue any other non-required accrediting organizations for the program?* **Yes** ☐ **No** ☒

   If yes, list the name(s) of the organization(s) and the purpose of the pursuit.

   If there are plans to pursue non-required external accreditation at a later date, list the name(s) and why the institution is not pursuing them at this time.

   Note: Check *No* to indicate that non-required external accreditation will not be pursued, which requires no explanation.

F. Professional Licensure/Certification

Please explain if professional licensure or industry certification is required for graduates of the proposed program to gain entry-level employment in the occupations selected. Be sure to note which organization(s) grants licensure or certification.

Not applicable.

G. Additional Education/Training

Please explain whether further education/training is required for graduates of the proposed program to gain entry-level employment in the occupations selected.

Not applicable.

H. Admissions

Will this program have any additional admissions requirements beyond the institution's standard admissions process/policies for this degree level? **Yes** ☐ **No** ☒

If yes, describe any other special admissions or curricular requirements, including any prior education or work experience required for acceptance into the program.

I. Mode of Delivery

Provide the planned delivery format(s) (*i.e.*, in-person, online, hybrid) of the program as defined in policy along with the planned location(s) at which the program will be delivered (*i.e.*, on-campus and/or at specific off-campus instructional site(s)). Please also note whether any program requirements can be completed through competency-based assessment.

The proposed program will be delivered primarily through in-person instruction on the main campus in Troy, AL, ensuring a hands-on, interactive learning environment. All program requirements must be fulfilled through traditional coursework, with no components available for completion via competency-based assessment. This approach reinforces practical skills development and comprehensive learning through face-to-face instruction.

J. Projected Program Demand (Student Demand)

Briefly describe the primary method(s) used to determine the level of student demand for this program using evidence, such as enrollments in related coursework at the institution, or a survey of student interest conducted (indicate the survey instrument used), number and percentage of respondents, and summary of results.

Students were surveyed across Fall 2024 sections of EET 2200 Electrical Circuits I and among high school participants of the Specialized Technology Day, a recruitment event organized by Troy University's enrollment and admissions team. Additional participants included high school students from the Fall 2024 Boy Scouts of America Robotics and Electricity Merit Badge program. The survey consisted of three primary yes-or-no questions.

Of the 75 student participants, 77.6% indicated an interest in pursuing a Bachelor of Science in Engineering with a concentration in Electrical and Electronics, reflecting a strong inclination toward STEM majors. When asked if they would consider attending Troy University for this program, 76.1% responded with “yes” or “likely.” Lastly, 91% of students expressed a preference for programs with hands-on learning and internship opportunities, aligning with Troy University’s plan to offer an industry-focused, practical curriculum. This comprehensive survey strongly indicates substantial student interest in the proposed program.

This survey provides valuable insights into the projected demand and potential enrollment for Troy University’s proposed Bachelor of Science in Engineering with a concentration in Electrical and Electronics. By directly assessing student interest, it gauges not only the likelihood of students pursuing a STEM-related major but also their intent to select Troy University as their institution of choice.

The survey results underscore strong interest in hands-on learning and internship opportunities, elements which are central to the proposed program’s design. This data helps in estimating the potential student intake and indicates that the program aligns well with student expectations and industry demand for practical, job-ready skills. Moreover, the high percentage of students interested in Troy specifically suggests that the program could play a significant role in boosting enrollment, further reinforcing the feasibility and relevance of this program to meet current and future industry workforce needs.

The Alabama Wiregrass and Black Belt regions, historically underserved in terms of access to advanced STEM education and technology-focused workforce training, are uniquely positioned to benefit from a new Bachelor of Science in Engineering program focused on Electrical and Electronics. These regions have been experiencing a shift in industrial growth, increasingly tied to the technology sector and the rise of semiconductor needs, aligning closely with the objectives of the CHIPS and Science Act. This federal initiative aims to strengthen America’s semiconductor industry, creating opportunities for regions like Wiregrass and Black Belt to contribute to the development of a specialized workforce that supports semiconductor manufacturing and innovation.

Implementing a program with a practical, hands-on curriculum is particularly critical, given that Alabama’s educational institutions in these areas can play a significant role in cultivating a skilled workforce to attract and support companies in the semiconductor supply chain. This could bolster regional economic development, increase job opportunities, and fulfill a high-demand labor market aligned with national initiatives. Establishing a locally rooted engineering

program can directly contribute to meeting the goals of the CHIPS Act by preparing the next generation of engineers needed to sustain the growth of advanced manufacturing, particularly in the semiconductor sector.

K. Standard Occupational Code System

Using the federal Standard Occupational Code (SOC) System, indicate the top three occupational codes related to post-graduation employment from the program. A full list of SOCs can be found at https://www.onetcodeconnector.org/find/family/title#17.

A list of Alabama's In-Demand Occupations is available at https://www.ache.edu/index.php/policy-guidance/.

SOC 1 (**required**): 17-2199 Engineers, General

SOC 2 (optional): 17-2071 Electrical engineers (Listed on Alabama Demand Occupations 2023-2024)

SOC 3 (optional): 17-3023 Electrical and Electronics Engineering Technologists and Technicians (Listed on Alabama Demand Occupations 2023-2024)

Briefly describe how the program fulfills a specific industry or employment need for the

The need for engineers nationwide, regionally, and within the state of Alabama is growing. According to the Occupational Outlook Handbook, the field is expected to grow "much faster than average" at 9% nationwidewith a median annual salary of $106,000 -$119,000 (https://www.bls.gov/ooh/architecture-and-engineering/electrical-and-electronics-engineers.htm#tab-1). This percentage means approximately 19,000 jobs annually.

The proposed program is associated with SOC codes listed on the Alabama Demand Occupations list. Further, this program would appeal to international students who wish to pursue STEM degrees. With that designation, they would be able to work in the US longer than those earning non-STEM degrees. With the general engineering designation and foundation course work, the option to add concentrations over time will extend the reach of this degree.

III. Curriculum Information for Proposed Degree Program

A. Program Completion Requirements: Enter the credit hour value for all applicable components (enter N/A if not applicable).

Curriculum Overview of Proposed Program	
Credit hours required in **general education**	30
Credit hours required in **mathematics and basic sciences**	34
Credit hours in **common engineering courses**	17
Credit hours in **program core courses**	36
Credit hours in **free electives**	7
Credit hours in **required Capstone/project/thesis**	6
Total Credit Hours Required for Completion	**130**

Note: The above credit hours **MUST** match the credit hours in the *Curriculum Components of Proposed Program* table in Section V.G.

B. Maximum number of credits that can be transferred in from another institution and applied to the program:

90 – 25% of the degree must be earned at Troy University.

C. Intended program duration in semesters for full-time students:

4 years

D. Intended program duration in semesters for part-time students:

6-7 years

E. Does the program require students to demonstrate industry-validated skills, specifically through an embedded industry-recognized certification, structured work-based learning with an employer partner, or alignment with nationally recognized industry standards? **Yes ☐ No ☒**

If yes, explain how these components fit with the required coursework.

F. Does the program include any concentrations? **Yes ☐ No ☒**

If yes, provide an overview and identify these courses in the *Electives/Concentrations/Tracks* section in the Curriculum Components of Proposed Program Table in Section V.G.

G. Please provide all course information as indicated in the following table. Indicate new courses with "Y" in the associated column. If the course includes a required work-based learning component, such as an internship or practicum course, please indicate with a "Y" in the WBL column.

Program Name:	**Electrical and Electronics Engineering**			
Program Level:	**Undergraduate**			
Curriculum Components of Proposed Program				
Course Number	**Course Title**	**Credit Hours**	**New? (Y)**	**WBL? (Y)**
General Education Courses *(Undergraduate Only)*				
ENG 1101	Composition and Modern English I	3		
ENG 1102	Composition and Modern English II	3		
	Any 1000-2000 level course in Literature	3		
	Any 1000-2000 level course with an expanded historical and cultural scope in the Fine Arts, including the disciplines of Art, Music, Theatre, Film, or other Fine Arts area	3		
	Any two 1000-2000 level courses with an expanded historical and cultural scope in the Humanities/Fine Arts disciplines, including Classics, Communication, Dance, English, World Languages, Interdisciplinary Studies, Music, Nursing, Philosophy, Religion, Sign Language, Theatre, or other Humanities/ Fine Arts areas	6		
	Any 1000-2000 level course with a primary focus in History	3		
	Three 1000-2000 Level Course From The Following Social Science Disciplines: Anthropology, Business, Criminal Justice, Economics, Geography, History, Human Services, Leadership, Interdisciplinary Studies, Nursing, Political Science, Psychology, Religion, Social Work, Sociology, Or Other Social Science Areas. Science Disciplines: Anthropology, Business, Criminal Justice, Economics, Geography, History, Human Services, Leadership, Interdisciplinary Studies, Nursing, Political Science, Psychology, Religion, Social Work, Sociology, Or Other Social Science Areas	9		
Mathematics and Basic Sciences				
MTH 1125	Calculus I	4		
MTH 1126	Calculus II	4		
MTH 2227	Calculus III	4		
STAT-2210	Introductory Statistics	3		
Choose one between the following three courses:				
MTH 2215	Applied Discrete Mathematics	3		

MTH-2230	Applied Linear Algebra	3		
MTH 3311	Differential Equations	3		
PHY 2262	Physics I With Calculus	3		
PHY L252	Physics I Lab	1		
PHY 2263	Physics II with Calculus	3		
PHY L253	Physics II Lab	1		
CHM 1142	General Chemistry -I	3		
CHM L142	General Chemistry -I Lab	1		
CHM 1143	General Chemistry -II	3		
CHM L143	General Chemistry -II Lab	1		
Program Courses				
Engineering Common Courses				
EGI XXXX	Introduction to Engineering	3	Y	
CS 2250	Computer Science I	3		
CS-2220	Numerical Methods in Computing	3		
EET 2220	DC Circuit Analysis	3		
EET L220	DC Circuit Analysis Lab	1		
EET 3315	Digital Electronics & Logics Circuits	3		
EET L315	Digital Electronics & Logics Circuits Lab	1		
Electrical and Electronics Courses				
EET 2221	AC Circuit Analysis	3		
EET L221	AC Circuit Analysis Lab	1		
EET 3311	Semiconductor Devices – I	3		
EET L311	Semiconductor Devices – I Lab	1		
EET 3312	Semiconductor Devices – II	3		
EET L312	Semiconductor Devices – II Lab	1		
EEE XXXX	Electronic Properties of Materials	3	Y	
EEE XXXX	Electronic Properties of Materials Lab	1	Y	
EET 4420	Fundamental of Embedded Systems	3		
EET L420	Fundamental of Embedded Systems Lab	1		
EET 4421	Intelligent Robotics and Automation	3		
EET L421	Intelligent Robotics and Automation Lab	1		
EET 4444	Fundamentals of Optics	3		
EET L444	Fundamentals of Optics Lab	1		

EET 4445	Optoelectronics	3		
EET L445	Optoelectronics Lab	1		
EET XXXX	Telecommunication Electronics	3	Y	
EET XXXX	Telecommunication Electronics Lab	1	Y	
Research/Thesis/Capstone Project				
EET 4480	Capstone Project I	3		
EET 4481	Capstone Project II	3		
***Total Credit Hours Required for Completion**		**130**		

***Note**: The total credit hours should equal the total credit hours in the Curriculum Overview table (V.B, p. 9).

IV. Program Resource Requirements

A. Proposed Program Faculty*

Current Faculty and Faculty to Be Hired

Complete the following **New Academic Degree Proposal Faculty Roster** to provide a brief summary and qualifications of current faculty and potential new hires specific to the program.

***Note**: Institutions must maintain and have current as well as additional faculty curriculum vitae available upon ACHE request for as long as the program is active, but CVs are **not** to be submitted with this proposal.

Current Faculty			
1	**2**	**3**	**4**
CURRENT FACULTY NAME (FT, PT)	**COURSES TAUGHT including Term, Course Number, Course Title, & Credit Hours (D, UN, UT, G, DU)**	**ACADEMIC DEGREES and COURSEWORK Relevant to Courses Taught, including Institution and Major; List Specific Graduate Coursework, if needed**	**OTHER QUALIFICATIONS and COMMENTS Related to Courses Taught and Modality(ies) (IP, OL, HY, OCIS)**
***Note*:** At Troy University, Term 1 and Term 2 overlap the Fall semester; Term 3 and Term 4 overlap the Spring semester. The Term/Semester designations below reflect AY 2024-2025 current and projected teaching assignments. These assignments reflect a typical academic year.			
EEE Core Courses: Faculty in this section are from the proposed program Department.			
Raj Vinnakota (FT)	**EET 4420**, Fundamental of Embedded Systems, 3 credit hours, Fall semester **EET 4480** Capstone Project I, 3 credit hours, Fall semester **EET 4421**, Intelligent Robotics and Automation, 3 credit hours, Spring semester **EET 4445** Optoelectronics, 3 credit hours, Spring semester **EET L445** Optoelectronics Lab, 1 credit hour, Spring semester **EET 4481** Capstone Project II, 3 credit hours, Spring semester	PhD in Engineering (Engineering Physics concentration), Louisiana Tech University, USA M.S. in Microsystems Engineering, Louisiana Tech University, USA M.S. in Applied Physics, Louisiana Tech University, USA M.S. in Engineering (Electrical Engineering concentration), Louisiana Tech University, USA Bachelors in Electronics and Communications, Jawaharlal Nehru Technological University, India	

Current Faculty			
1	2	3	4
CURRENT FACULTY NAME (FT, PT)	**COURSES TAUGHT including Term, Course Number, Course Title, & Credit Hours (D, UN, UT, G, DU)**	**ACADEMIC DEGREES and COURSEWORK Relevant to Courses Taught, including Institution and Major; List Specific Graduate Coursework, if needed**	**OTHER QUALIFICATIONS and COMMENTS Related to Courses Taught and Modality(ies) (IP, OL, HY, OCIS)**
Shaimum Shahriar (FT)	**EET 3311** Semiconductor Devices – I, 3 credit hours, Fall semester **EET L311** Semiconductor Devices – I Lab, 1 credit hour, Fall semester **EET XXXX** Electronic Properties of Materials, 3 credit hours, Fall semester **EET LXXX** Electronic Properties of Materials Lab, 1 credit hour, Fall semester **EET XXXX** Telecommunication Electronics, 3 credit hours, Spring semester **EET LXXX** Telecommunication Electronics Lab, 1 credit hour, Spring semester	Ph.D. in Electrical and Computer Engineering, The University of Texas at El Paso, USA M.Sc. in Electrical Engineering, The University of Texas at El Paso, USA B.Sc. in Electrical and Electronics Engineering, East West University, Bangladesh	
Bruno Arderucio Costa (FT)	**EET 4444** Fundamentals of Optics, 3 credit hours, Fall semester **EET L444** Fundamentals of Optics Lab, 1 credit hour, Fall semester	Ph.D. in Physics, The University of British Columbia, Canada M.Sc. in Physics, Universidade de São Paulo, Brazil B.Sc. in Physics, Universidade de São Paulo, Brazil	
Common Engineering Courses:			
Shaimum Shahriar (FT)	**EET 3315** Digital Electronics & Logics Circuits, 3 credit hours, Spring semester	Ph.D. in Electrical and Computer Engineering, The University of Texas at El Paso, USA M.Sc. in Electrical Engineering, The University of Texas at El Paso, USA B.Sc. in Electrical and Electronics Engineering, East West University, Bangladesh	

Current Faculty			
1	2	3	4
CURRENT FACULTY NAME (FT, PT)	**COURSES TAUGHT including Term, Course Number, Course Title, & Credit Hours (D, UN, UT, G, DU)**	**ACADEMIC DEGREES and COURSEWORK Relevant to Courses Taught, including Institution and Major; List Specific Graduate Coursework, if needed**	**OTHER QUALIFICATIONS and COMMENTS Related to Courses Taught and Modality(ies) (IP, OL, HY, OCIS)**
Arun Ghosh (FT)	**EGN XXXX** Introduction to Engineering, 3 credit hours, Fall semester	Ph.D. in Engineering (Engineering Physics concentration), Louisiana Tech University, USA M.S. in Microsystems Engineering, Louisiana Tech University, USA M.S. in Applied Physics, Louisiana Tech University, USA M.S. in Engineering (Electrical Engineering concentration), Louisiana Tech University, USA Bachelors in Electronics and Communications, Jawaharlal Nehru Technological University, India	
Richard Fulton (FT)	**CS-2220** Numerical Methods in Computing, 3 credit hours, Spring semester, Term I, Term III, Term IV	M.S., Illinois State University B.S., Eastern Illinois University	
Yanjun Zhao (FT)	**CS-2250** Computer Science I, 3 credit hours, Term I, Term III, Term IV, Spring and Fall semester	Ph.D., Georgia State University M.S., Georgia State University M.E., Southwest JiaoTong University B.S., Jilin University	
General Education Courses: Faculty in this section are from *outside* the proposed program Department.			
Amanda Kennell (FT)	**PHY 2262** Physics I With Calculus, 3 credit hours, Fall Semester **PHY L253** Physics I Lab, 1 credit hours, Spring, Summer, Fall semester	Ph.D. in Physics, University of Alabama at Birmingham M.Sc. in Physics, University of Alabama at Birmingham B.Sc. in Physics, University of North Georgia	
Michael Smith (PT)	**PHY 2262** Physics I With Calculus, 3 credit hours, Spring Semester	M.Sc. in Physics, Auburn University B.Sc. in Physics and Mathematics, Jacksonville State University	
Bruno Arderucio Costa (FT)	**PHY L252** Physics I Lab, 1 credit hours, Spring, Summer, Fall Semester, Term I, Term III	Ph.D. in Physics, The University of British Columbia, Canada M.Sc. in Physics, Universidade de São Paulo, Brazil B.Sc. in Physics, Universidade de São Paulo, Brazil	

Current Faculty			
1	2	3	4
CURRENT FACULTY NAME (FT, PT)	**COURSES TAUGHT including Term, Course Number, Course Title, & Credit Hours (D, UN, UT, G, DU)**	**ACADEMIC DEGREES and COURSEWORK Relevant to Courses Taught, including Institution and Major; List Specific Graduate Coursework, if needed**	**OTHER QUALIFICATIONS and COMMENTS Related to Courses Taught and Modality(ies) (IP, OL, HY, OCIS)**
Yafet Erasmo Sanchez (FT)	**PHY-2263** Physics II with Calculus, 3 credit hours, Fall Semester, Spring Semester **PHY L252** Physics I Lab, 1 credit hours, Spring, Summer, Fall Semester, Term I, Term III **PHY L253** Physics I Lab, 1 credit hours, Spring, Summer, Fall semester		
Quratulann Ijaz (PT)	**PHY L252** Physics I Lab, 1 credit hours, Spring, Summer, Fall Semester, Term I, Term III	Ph.D. in Engineering Physics, Mississippi State University	
Michael Smith (PT)	**PHY-2263** Physics II with Calculus, 3 credit hours, Fall Semester, Spring Semester **PHY L253** Physics I Lab, 1 credit hours, Spring, Summer, Fall semester	M.Sc. in Physics, Auburn University B.Sc. in Physics and Mathematics, Jacksonville State University	
Brooke Otten (FT)	**CHM 1142** General Chemistry I, 3 credit hours, Fall, Spring, Summer semester, Term I, II, III, V **CHM L142** General Chemistry I Lab, 1 credit hours, Fall, Spring, Summer semester, Term I, II, III, V **CHM L143** General Chemistry II Lab, 1 credit hours, Summer, Fall, Spring semester	Ph.D. in Chemistry, The University of North Texas B.Sc. in Chemistry, The University of North Texas	
Mojtaba Enayati (FT)	**CHM 1142** General Chemistry I, 3 credit hours, Fall, Spring, Summer semester, Term I, II, III, V **CHM L142** General Chemistry I Lab, 1 credit hours, Fall, Spring, Summer semester, Term I, II, III, V **CHM L143** General Chemistry II Lab, 1 credit hours, Summer, Fall, Spring semester	Ph.D. in Polymer Chemistry, The University of Tehran M.Sc. in Chemistry, The University of Tehran	

Current Faculty			
1	2	3	4
CURRENT FACULTY NAME (FT, PT)	**COURSES TAUGHT including Term, Course Number, Course Title, & Credit Hours (D, UN, UT, G, DU)**	**ACADEMIC DEGREES and COURSEWORK Relevant to Courses Taught, including Institution and Major; List Specific Graduate Coursework, if needed**	**OTHER QUALIFICATIONS and COMMENTS Related to Courses Taught and Modality(ies) (IP, OL, HY, OCIS)**
Arun Ghosh (FT)	**CHM 1142** General Chemistry I, 3 credit hours, Fall, Spring, Summer semester, Term I, II, III, V **CHM L142** General Chemistry I Lab, 1 credit hours, Fall, Spring, Summer semester, Term I, II, III, V **CHM 1143** General Chemistry II, 3 credit hours, Summer, Fall, Spring semester **CHM L143** General Chemistry II Lab, 1 credit hours, Summer, Fall, Spring semester	Ph.D. in Polymer Science, The Indian Institute of Technology Kharagpur M.Sc. in Chemistry, The University of North Bengal B.Sc. in Chemistry, The University of North Bengal	
Shaoyang Liu (FT)	**CHM 1142** General Chemistry I, 3 credit hours, Fall, Spring, Summer semester, Term I, II, III, V **CHM L142** General Chemistry I Lab, 1 credit hours, Fall, Spring, Summer semester, Term I, II, III, V	Ph.D. in Analytical Chemistry, University of Science and Technology of China B.S. in Applied Chemistry, University of Science and Technology of China	
Suzanne Lukjan (FT)	**CHM 1142** General Chemistry I, 3 credit hours, Fall, Spring, Summer semester, Term I, II, III, V **CHM L142** General Chemistry I Lab, 1 credit hours, Fall, Spring, Summer semester, Term I, II, III, V **CHM L143** General Chemistry II Lab, 1 credit hours, Summer, Fall, Spring semester	Ph.D. in Biochemistry, The University of Florida	
Michelle Armstrong (FT)	**MTH 1125** Calculus I, 4 credit hours, Summer, Fall, Spring semester, Term I, II, III, V	MS in Secondary Mathematics Education, Troy University	
Patrick Rossi (FT)	**MTH 1125** Calculus I, 4 credit hours, Summer, Fall, Spring semester, Term I, II, III, V **MTH 1126** Calculus II, 4 credit hours, Summer, Fall, Spring semester, Term II, III, IV, V	Ph.D. in Mathematics, Auburn University	
Sergey Belyi (FT)	**MTH 1126** Calculus II, 4 credit hours, Summer, Fall, Spring semester, Term II, III, IV, V	Ph.D. in Mathematics, University of South Florida	
Hoa Dinh (FT)	**MTH 1126** Calculus II, 4 credit hours, Summer, Fall, Spring semester, Term II, III, IV, V **MTH 2227** Calculus III, 4 credit hours, Summer, Fall, Spring semester, Term I, IV, V	Ph.D. in Mathematics, Kazan Federal University	

Current Faculty			
1	**2**	**3**	**4**
CURRENT FACULTY NAME (FT, PT)	**COURSES TAUGHT including Term, Course Number, Course Title, & Credit Hours (D, UN, UT, G, DU)**	**ACADEMIC DEGREES and COURSEWORK Relevant to Courses Taught, including Institution and Major; List Specific Graduate Coursework, if needed**	**OTHER QUALIFICATIONS and COMMENTS Related to Courses Taught and Modality(ies) (IP, OL, HY, OCIS)**
Ken Roblee (FT)	**MTH 2227** Calculus III, 4 credit hours, Summer, Fall, Spring semester, Term I, IV, V	Ph.D. in Mathematics, Auburn University	
Danush Wijekularathna (FT)	**STAT 2210** Introductory Statistics, 3 credit hours, Summer, Fall, Spring semester, Term I, II, III, IV, V	Ph.D. in Mathematics, Texas Tech University	
Nicholas Newman (FT)	**MTH 3311** Differential Equations, 3 credit hours, Spring Semester	Ph.D. in Discrete Mathematics, Auburn University	
Trang Dinh (FT)	**MTH 2230** Applied Linear Algebra, 3 credit hours, Spring Semester	Ph.D. in Mathematics, The University of Alabama in Tuscaloosa	
Huijun Yi (FT)	**MTH 2215** Applied Discrete Mathematics, 3 credit hours, Spring Semester, Fall Semester, Term I, IV, V	Ph.D. in Statistics, Southern Illinois University Carbondale	
Additional Faculty (To Be Hired)			
1	**2**	**3**	**4**
FACULTY POSITION (FT, PT)	**COURSES TO BE TAUGHT including Term, Course Number, Course Title, & Credit Hours (D, UN, UT, G, DU)**	**ACADEMIC DEGREES and COURSEWORK Relevant to Courses Taught, including Institution and Major; List Specific Graduate Coursework, if needed**	**OTHER QUALIFICATIONS and COMMENTS Related to Courses Taught and Modality(ies) (IP, OL, HY, OCIS)**
FT	**EET 2220**, DC Circuit Analysis, 3 credit hours, Fall semester **EET L220** DC Circuit Analysis Lab, 1 credit hour, Fall semester **EET 2221**, AC Circuit Analysis, 3 credit hours, Spring semester **EET L221** AC Circuit Analysis Lab, 1 credit hour, Spring semester **EET L420** Fundamental of Embedded Systems Lab, 1 credit hour, Fall semester **EET L315** Digital Electronics & Logics Circuits Lab, 1 credit hour, Spring semester **EET L421** Intelligent Robotics and Automation Lab, 1 credit hour, Spring semester	Ph.D. in Engineering/ M.S. in Engineering	

Abbreviations: (FT, PT): Full-Time, Part-Time; (D, UN, UT, G, DU): Developmental, Undergraduate Nontransferable, Undergraduate Transferable, Graduate, Dual: High School Dual Enrollment
Course Modality: (IP, OL, HY, OCIS): In-Person, Online, Hybrid, Off-Campus Instructional Site
Courses Taught/To be Taught – For a substantive change prospectus/application, list the courses *to be taught*, not historical teaching assignments.

B. All Proposed Program Personnel

Provide all personnel counts for the proposed program.

Employment Status of Program Personnel		Personnel Information		
		Count from Proposed Program Department	Count from Other Departments	Subtotal of Personnel
Current	Full-Time Faculty	11	11	22
	Part-Time Faculty	2		2
	Administration			
	Support Staff			
**New To Be Hired	Full-Time Faculty			
	Part-Time Faculty			
	Administration			
	Support Staff			
		Personnel Total		**24**

****Note**: **Any new funds** designated for compensation costs (Faculty (FT/PT), Administration, and/or Support Staff to be Hired) **should be included** in the **New Academic Degree Program Business Plan Excel file**. Current personnel salary/benefits (Faculty (FT/PT), Administration, and/or Support Staff) **should not be included** in the **Business Plan**.

Provide justification that the institution has proposed a sufficient number of faculty (full-time and part-time) for the proposed program to ensure curriculum and program quality, integrity, and review.

This program will eventually replace the EET program and many of the courses are duplicative. For that reason, we know the Engineering courses in particular can be covered successfully. We anticipate adding a lecturer for this program using an existing faculty line. Courses from other departments are currently offered and have enough remaining seats to accommodate students from this program.

C. Equipment

Will any special equipment be needed specifically for this program? **Yes** ☐ **No** ☒

If *yes*, list the special equipment. Special equipment cost should be included in the **New Academic Degree Program Business Plan Excel file.**

D. Facilities

Will any new facilities be required specifically for the program? **Yes ☐ No** ☒

If *yes*, list only **new** facilities. New facilities cost should be included in the **New Academic Degree Program Business Plan Excel file.**

Will any renovations to any existing infrastructure be required specifically for the program? **Yes ☐ No** ☒

If *yes*, list the renovations. Renovation costs should be included in the **New Academic Degree Program Business Plan Excel file.**

E. Assistantships/Fellowships

Will the institution offer any assistantships specifically for this program? **Yes ☐ No** ☒

If *yes*, how many assistantships will be offered?

The expenses associated with any *new* assistantships should be included in the **New Academic Degree Program Business Plan Excel file.**

F. Library

Provide a brief summarization (one to two paragraphs) describing the current status of the library collections supporting the proposed program.

Will additional library resources be required to support the program? **Yes ☐ No ☒**

The Library provides full indexing and selected full-text access to top-tier databases with coverage of electrical engineering (EE)—these databases include Sage Journals, ScienceDirect, Scopus, Taylor & Francis Online, and Wiley Online. While the MathSciNet database is primarily dedicated to pure mathematics, it offers valuable resources for electrical engineers, particularly those working in areas such as signal processing, control theory, optimization, applied mathematics in electrical engineering, and systems theory and analysis. Additional databases and the Discovery search platform offer access to a broad range of comprehensive resources with extensive full-text holdings and coverage of EE.

G. Accreditation Expenses

Will the proposed program require accreditation expenses? **Yes ☐ No** ☒

If *yes*, briefly describe the estimated cost and funding source(s) and include cost in the **New Academic Degree Program Business Plan Excel file.**

H. Other Costs

Please explain any other costs to be incurred with program implementation, such as marketing or recruitment costs. Be sure to note these in the **New Academic Degree Program Business Plan Excel file.**

No additional costs are expected.

I. Revenues for Program Support

Will the proposed program require budget reallocation? **Yes** ☐ **No** ☒

If *yes*, briefly describe how any deficiencies will be remedied and include the revenue in the **New Academic Degree Program Business Plan Excel file.**

Will the proposed program require external funding (*e.g.*, Perkins, Foundation, Federal Grants, Sponsored Research, etc.)? **Yes** ☐ **No** ☒

If *yes*, list the sources of external funding and include the revenue in the **New Academic Degree Program Business Plan Excel file.**

Please describe how you calculated the tuition revenue that appears in the **New Academic Degree Program Business Plan Excel file.** Specifically, did you calculate using cost per credit hour or per term? Did you factor in differences between resident and non-resident tuition rates?

Calculations were made based on the credit hour cost assuming students take 15 hours per semester) and paid the resident rate.

ACADEMIC DEGREE PROGRAM PROPOSAL SUMMARY

INSTITUTION:	**Troy University**		
PROGRAM NAME:	**BS in Engineering**	**CIP CODE:**	**14.0101**
SELECT LEVEL:	**UNDERGRADUATE (BACHELOR'S)**		

ESTIMATED *NEW* EXPENSES TO IMPLEMENT PROPOSED PROGRAM

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	TOTAL
FACULTY	$0	$0	$0	$0	$0	$0	$0	$0
ADMINISTRATION/STAFF	$0	$0	$0	$0	$0	$0	$0	$0
EQUIPMENT	$0	$0	$0	$0	$0	$0	$0	$0
FACILITIES	$0	$0	$0	$0	$0	$0	$0	$0
ASSISTANTSHIPS/FELLOWSHIPS	$0	$0	$0	$0	$0	$0	$0	$0
LIBRARY	$0	$0	$0	$0	$0	$0	$0	$0
ACCREDITATION AND OTHER COSTS	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL EXPENSES	$0	$0	$0	$0	$0	$0	$0	**$0**

NEW REVENUES AVAILABLE FOR PROGRAM SUPPORT

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	TOTAL
REALLOCATIONS	$65,000	$65,000	$65,000	$65,000	$65,000	$65,000	$65,000	$455,000
EXTERNAL FUNDING	$0	$0	$0	$0	$0	$0	$0	$0
TUITION + FEES	$63,600	$95,400	$159,000	$159,000	$190,800	$222,600	$222,600	$1,113,000
TOTAL REVENUES	$128,600	$160,400	$224,000	$224,000	$255,800	$287,600	$287,600	**$1,568,000**

ENROLLMENT PROJECTIONS

Note: "New Enrollment Headcount" is defined as unduplicated counts across years.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	AVERAGE
FULL-TIME ENROLLMENT HEADCOUNT	No data reporting	15	25	25	30	35	35	**27.50**
PART-TIME ENROLLMENT HEADCOUNT		0	0	0	0	0	0	**0.00**
TOTAL ENROLLMENT HEADCOUNT		15	25	25	30	35	35	**27.50**
***NEW* ENROLLMENT HEADCOUNT**		10	10	10	15	15	15	**12.50**
Validation of Enrollment			**YES**	**YES**	**YES**	**YES**	**YES**	

DEGREE COMPLETION PROJECTIONS

Note: Do not count Lead "0"s and Lead 0 years in computing the average annual degree completions.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	AVERAGE
DEGREE COMPLETION PROJECTIONS	No data reporting	0	5	10	10	12	13	**10.00**