UNDERGRADUATE CURRICULUM COMMITTEE
NEW PROGRAM/PROGRAM CHANGE PROPOSAL FORM

1. Which category (categories) best describes the curriculum change for this proposal:

- Newly established degree program
- Newly established major
- Newly established minor
- Newly established track/concentration/emphasis/certificate within an existing program
- Newly developed program offering no major or minor
- **Significant changes to an existing program's major/minor/ track/concentration/ emphasis/certificate**
- Termination of an existing program/major/minor/concentration/certificate/emphasis

2. Title of Program:

Bachelor of Science Degree in Computer Foundations, The Major in Applied Physics

Catalogue Description (including credits): (Required only for new catalogue descriptions or changes to current catalogue descriptions)

THE BACHELOR OF SCIENCE DEGREE IN COMPUTER FOUNDATIONS

This program is designed to prepare students in the foundations of computer hardware and software. Students in this program can choose to major in **Applied Physics** or **Computer Science**. In addition to requiring the successful completion of all general education and degree studies requirements (see index), the Bachelor of Science program in Computer Foundations requires the **successful completion of the common core courses, the major courses, and the support courses.**

Common Core Courses:

1) CPEN 214, 371W;
2) CPSC 125, 150/150L-250/250L;
3) MATH 140*, 240;
4) For applied physics: PHYS 201/201L*-202/202L*, 340;
5) For computer science: PHYS 151/151L*-152/152L* or PHYS 201/201L*-202/202L* and PHYS 340 or MATH 235 or 260;

* Courses bearing an asterisk may be used simultaneously to satisfy, in part, certain general education and degree studies requirements.

THE MAJOR IN APPLIED PHYSICS

The major in applied physics is oriented towards microelectronics and photonics (the basis of computer hardware) and provides a broad foundation in physics. The core courses provide a background in computer engineering, computer science, mathematics, and physics. The major and support courses continue this background in engineering, mathematics, and physics. Electives extend the student's knowledge in an area of his/her choice. Degree studies requirements are those of the Bachelor of Science degree.

Applied physics majors can choose their electives to develop expertise in one of the following three areas: instrumentation, condensed matter or optical physics, or computational physics. Focusing on **instrumentation** prepares graduates to design instrumentation and data acquisition systems. Graduates will be prepared for employment as researchers in high technology laboratories, as designers for firms which use microelectronic controls, and as designers and researchers in companies which produce control systems or their components. Students can focus on **condensed matter and optical physics** by studying the electronic and optical properties of matter and the interaction of electromagnetic radiation with matter, especially as these subjects are applied in the development of new sensors and new measurement techniques. Graduates will be prepared to move into positions which require precise measurements using electronic and photonic sensors, and development of optoelectronic data acquisition systems. To focus on **computational physics**, students should take courses that emphasize the integration of physics and software development. There they will learn how to implement software descriptions of physical systems including successful integration of applied numerical methods, graphics, user interfaces, and data visualization. Graduates will be prepared for further study in graduate school, or employment as scientific programmers capable of contributing to the development of physical models and simulations. See your advisor or departmental brochures for more details on the applied physics major.

Support Courses in Applied Physics:

1) ENGR 121;
2) MATH 250, 320.

Major Courses in Applied Physics:

1) ENGR 211/211L;
2) PHYS 303, 341, 351, 401, 404;
3) Two major electives from CPEN 315/315L, 422; ENGR 212/212L, PHYS 352, 402, 406, 421, 431, and either 441 or MATH 440.

See department guideposts for suggested focus areas.

Capstone Course: PCSE 499W (3 credits).

3. What are the objectives for this program?

Quoting from the catalog copy above: "The major in applied physics is oriented towards microelectronics and photonics (the basis of computer hardware) and provides a broad foundation in physics. The core courses provide a background in computer engineering, computer science, mathematics, and physics. The major and support courses continue this background in engineering, mathematics, and physics. Electives extend the student's knowledge in an area of his/her choice. Degree studies requirements are those of the Bachelor of Science degree.

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4. For whom is the new curriculum primarily intended? Explain why it should become part of the curriculum, and how this proposal relates to the University's mission.

This is a minor change to the requirements for the Major in Applied Physics.

5. What is the anticipated enrollment in the new curriculum for the next three years?

Roughly the same as currently, or approximately 3-5 graduating majors per year.

6. How will the new curriculum be staffed/administered?

No staffing changes are needed, as the curriculum changes are very minor.

7. Has this curriculum, or one closely related to it, been offered at CNU previously?
If so, is that curriculum currently being offered? How does the proposed curriculum differ? When is the last term the old curriculum will be offered?

Yes, this exact major has been offered at CNU for many years. We are submitting this program change proposal to the UCC as we are proposing three minor changes to the program. The first is the addition of PHYS 341 (Design and Analysis of Experiments – a new course but already approved by the UCC) to the list of major requirements. This course is important for our physics majors, and is also required for our Computer Engineering majors. The second change involves moving PHYS 402 (Thermodynamics) from the list of required courses to one of the elective choices. The third change is to modify the description of the capstone course to include the designation of three credits. This closes a loophole which has just recently been discovered and exploited by one of our majors.

8. Does the new curriculum or the change being proposed involve the creation of new courses, deletion of existing courses, or changes to existing courses? Please briefly list all changes here and indicate how these changes affect hours required for graduation.

For EACH new course being proposed, please complete the Undergraduate Curriculum Committee New Course Proposal Form and attach to this form. Remember to include a syllabus for each proposed course.

The only new course involved is PHYS 341, which has already been approved by the UCC.

9. Does the new curriculum involve special equipment or costs? If so, please explain.
No.

This program was reviewed by: *(Areas of Inquiry must be approved by BOTH academic Deans and both Curriculum Cttees)*	***Concur***	***Do Not Concur*****
Department(s): (1) _____ Date: _____	☐	☐
Department(s): (2) _____ Date: _____	☐	☐
CLAS Chairs: _____ Date: _____	☐	☐
SoB Curriculum Committee: _____ Date: _____	☐	☐
Dean: _____ Date: _____	☐	☐
Dean: _____ Date: _____	☐	☐
University Curriculum Committee: _____ Date: _____	☐	☐
Faculty Senate: _____ Date: _____	☐	☐
Provost: _____ Date: _____	☐	☐

President: _____ Date: _____

Board of Visitors: _____ Date: _____

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Distribution by the Provost Office following approval:
Department Chair(s), UCC Chair, Deans, Registrar

***If "Do Not Concur" is checked, please provide a statement of explanation.*