

**CALIFORNIA STATE UNIVERSITY SAN MARCOS
NEW PROGRAM PROPOSAL – P Form Signature**

For Academic Programs Office Use Only R.E. _____ Catalog _____ File _____
--

COLLEGE CHABSS CoBA CoEHHS CSM

TITLE OF PROGRAM Minor in Electronics

Discipline Applied Physics

This form is the signature sheet for new programs and new options/concentrations/emphases/tracks within existing programs. For all changes to existing programs (other than addition of new options/concentrations/emphases/tracks), use the Form P-2.

Check one: New Undergraduate Major or New Graduate Degree } Attach a completed New Program Template
 New Option/Concentration/Emphasis/Track } Attach a completed New Option/Concentration/
 New Minor } Special Emphasis, Teaching Credential and Minor
 New Teaching Credential } Attach a completed New Certificate Template
 New Certificate }

Does this proposal impact other disciplines? Yes No If yes, obtain signature(s).
 Any objections or concerns should be stated in writing and attached to this form. Please check the box to indicate whether a memo has been attached.

Discipline #1	_____ Support _____ Oppose
_____	<input type="checkbox"/> _____
Signature	Date

Discipline #2	_____ Support _____ Oppose
_____	<input type="checkbox"/> _____
Signature	Date

Discipline #3	_____ Support _____ Oppose
_____	<input type="checkbox"/> _____
Signature	Date

Discipline #4	_____ Support _____ Oppose
_____	<input type="checkbox"/> _____
Signature	Date

Discipline #5	_____ Support _____ Oppose
_____	<input type="checkbox"/> _____
Signature	Date



P-FORM PREPARATION

1a. Edward Price 10/8/2014
 Originator (Please print) Date

1b. [Signature] 4/2/15
 Librarian Liaison for Library Report* Date

1c. [Signature] _____
 IITS Liaison for IITS Report* Date

PROGRAM/DEPARTMENT-LEVEL REVIEW

2. Edward Price 3/23/15
 Program/Department - Director/Chair* Date

[Signature]

COLLEGE/SCHOOL-LEVEL REVIEW

3. [Signature] 3/26/15
 College/School Curriculum Committee* Date

REVIEW (Signatures must be obtained by proposer)

4a. [Signature] 4/7/15
 Vice President for Student Affairs* Date

4b. [Signature] 4/2/15
 Dean of Library* Date

4c. [Signature] 3/25/15
 Dean of Information and Instructional
 Technology Services* Date

4d. [Signature] 4-7-15
 Vice President for Finance and Administrative
 Services Date

4e. _____
 Dean of Graduate Studies (if applicable) * Date

COLLEGE/SCHOOL-LEVEL RECOMMENDATION

5. [Signature] 3/26/15
 College/School Dean/Director* Date

UNIVERSITY-LEVEL REVIEW

(May not begin until all signatures numbered 1-5 have been obtained.)

6a. _____ Date
 University Curriculum Committee^

6b. _____ Date
 Budget and Long-Range Planning Committee^

FACULTY APPROVAL

7. _____ Date
 Academic Senate

UNIVERSITY-LEVEL APPROVAL

8. _____ Date
 Provost

9. _____
 Date to Chancellor's Office

+ Please contact the liaisons at the beginning of the process and allow sufficient time for the liaisons to prepare the resource implication report. Upon completion of the report liaisons will sign.

* May attach a memo on program impact on the unit and the ability of the unit to support it.

^ Attach a memo summarizing the curricular and/or resource deliberations.

o summarizing the curricular and/or resource deliberations.



California State University
SAN MARCOS

Kellogg Library California State University San Marcos 333 S. Twin Oaks Valley Road San Marcos, CA 92096-0001
Tel: 760.750.4330 Fax: 760.750.3318 jfabbi@csusm.edu

Date: April 1, 2015
To: Dr. Edward Price
From: Dr. Jennifer Fabbi
Dean, Library
Subject: Library Review of the Proposal for a Minor in Electronics

Thank you for the opportunity to provide a to the proposal for a Minor in Electronics (Applied Physics). The following information reviews the current capacity and describes probable needs of the CSUSM Library to support this program. Talitha Matlin, STEM Librarian, has reviewed the program proposal. **There is no anticipated need for additional resources for this program, as no new courses will be created.**

Existing Collections

Collections relevant to the proposed program would be housed with the CSUSM Kellogg Library, or more likely, virtually accessible through the Library website, The California State University at San Marcos (CSUSM) Library (<http://biblio.csusm.edu>). CSUSM has no branch or satellite libraries on or off campus.

The CSUSM Library currently has monographs and journals to support undergraduate/graduate programs in Computer Science and Physics, which also appear to be relevant to significant aspects of the proposed Minor in Electronics. Relevant current holdings include:

- Safari eBooks collection (over 9,500 programming ebooks, with 1,000+ titles related to Electronics)
- Science Direct books and journals related to Applied Physics, Computing, and Engineering
- Wiley General & Introductory Computer Science, Computer Hardware, and Applied Physics journal collections/electronic books

Faculty may, at any time, contact Talitha Matlin regarding suggestions for acquisitions to the collection. Reports, assessment, and other analysis of library collections in all STEM subjects are done in response to program review by Talitha Matlin.

Reference and instruction by subject specialist librarians

A Minor in Electronics program bears much topical overlap with Computer Science and Applied Physics. As mentioned above, Talitha Matlin (STEM Librarian) is the subject specialist for the College of Science and Mathematics and will serve as liaison to the Minor in Electronics program.

The STEM Librarian has provided online and in-class instruction to students in the aforementioned fields. Most relevant to minor programs is online instruction through course guides and online tutorials.

Basic information about the Library's collections and services follows in the table below.

Library holdings	http://biblio.csusm.edu/external/about-the-library/collection-overview
Circulation	http://biblio.csusm.edu/external/policies/books-and-media-borrowing-policies
Inter-library loan services	http://biblio.csusm.edu/interlibrary-loan-borrowing-policies
Reference/Research help	https://biblio.csusm.edu/research-assistance
Information Literacy Program	http://biblio.csusm.edu/about/departments/337/info
E-thesis, project, and dissertation submission	http://biblio.csusm.edu/guides/subject-guide/193-CSUSM-ETD-Submission-Guide/

The Library looks forward to continued collaboration with those working on the proposed program and is happy to provide further information.

cc: Katherine Kantardjieff
Talitha Matlin
Laurie Schmelzer

CALIFORNIA STATE UNIVERSITY
SAN MARCOS

**Procedure for Submitting Proposals for New Options, Concentrations, Special Emphases
and Minors**

1. Name of the campus submitting the request, the full and exact title of the proposed aggregate of courses, and whether it is an option, concentration, special emphasis, or minor.

Campus: California State University San Marcos

Proposed Minor: Minor in Electronics

2. Full and exact title of the degree major program under which the aggregate of courses will be offered, where applicable.

Applied Physics

3. Options, concentrations, or special emphases already existing under the degree major program for which the new aggregate of courses is proposed.

Option in Applied Physics

Option in Applied Electronics

4. Department(s) to offer the aggregate courses.

Department of Physics

5. Purpose of the proposed aggregate of courses.

This minor will enable students to learn the theory and practice of analog and digital electronics, embedded systems, sensors, and signals and systems. The minor will prepare students to design, build, and troubleshoot electronics; with applications to experimental science, applied research, and careers in technology.

6. Need for the proposed aggregate of courses.

This Minor is primarily intended for students majoring in computer science (CS). Historically, CS students who have taken electronics courses (PHYS280, PHYS301, PHYS402, PHYS403), often as part of a Minor in Physics, have found these courses very useful in careers that require experience in hardware to complement their computer science background. Establishing a dedicated Minor in Electronics will unite these electronics-focused courses under a label that will accurately convey students' experience.

7. List of the courses, by catalog number, title, and units of credit, as well as total units to be required under the proposed aggregate of courses.

PHYS 201 Physics of Mechanics and Sound (4)

PHYS 202 Physics of Electromagnetism and Optics (4)
PHYS 280 Introduction to Electronics (3)
PHYS 301 Digital Electronics (4)
PHYS 402 Computer Interfacing and Control (4)
PHYS 403 Signals and Systems (3)

Up to three (3) units of upper-division coursework in other science majors may be counted, with the written approval of a physics advisor.

Total required units: 23

8. List of courses, by catalog number, title, and units of credit as well as total units to be required for the major in which the proposed aggregate of courses is to be included.

Preparation for the Applied Physics Option

Non-Physics Supporting Courses (24-25 units)

CHEM 150 (5)
CS 111 (4)
MATH 160 (5)
MATH 162 (4)
MATH 346 (3)

Lower-Division Physics Courses (15 units)

PHYS 201 (4)
PHYS 202 (4)
PHYS 203 (4)
PHYS 280 (3)

Choose one of the following courses:

MATH 260 (4)
MATH 362 (3)
MATH 270 or 370 (3)
MATH 374 (3)

Option Requirements

Upper-Division Physics Courses (25 units)

PHYS 320 (3)
PHYS 321 (3)
PHYS 323 (3)
PHYS 324 (3)
PHYS 421 (3)
PHYS 422 (3)
PHYS 423 (3)
PHYS 380 (2)
PHYS 499B (2)

Electives for the Major (10-11 units)

Select elective courses from the following list:

CHEM 402 (3)
PHYS 301 (4)
PHYS 380* (2)

PHYS 402 (4)
PHYS 403 (3)
PHYS 480* (2)

**PHYS 380 or PHYS 480 may be chosen as an elective, if it has not already been taken as part of the upper-division core.*

Students must take a sufficient number of elective units to bring the total number of units to a minimum of 120

9. New courses to be developed. Include proposed catalog descriptions.

None.

10. List of all present faculty members, with rank, appointment status, highest degree earned, date and field of highest degree, and professional experience, who would teach in the proposed aggregate of courses.

Michael J. Burin, Ph.D., physics
Charles J. De Leone, Ph.D., physics
Gerardo Dominguez, Ph.D., physics
Edward P. Price, Ph.D., physics
Stephen A. Tsui, Ph.D., physics

11. Additional instructional resources (faculty, space, equipment, library volumes, etc.) needed to implement and sustain the proposed aggregate of courses. List all resources needed for the first five years beyond those currently projected, including specific resource, cost, and source of funding.

All courses are currently offered. Additional enrollment in these courses would require additional laboratory supplies and equipment, but this can be supported by course fees that are currently in place. The Minor will not require new space. Currently, lecturer faculty teach PHYS301, PHYS402, and PHYS403. As its next hire, the Department intends to hire a tenure track faculty member who can teach these courses.

12. Proposed catalog description.

Program Offered:
Minor in Electronics

The minor in Electronics includes the theory and practice of analog and digital electronics, embedded systems, sensors, and signals and systems. It covers foundational concepts in physics, as well as building, testing, and troubleshooting electronic systems through a laboratory-intensive curriculum.

Students majoring in Applied Physics cannot minor in Electronics.

Requirements

Completion of a minimum of twenty-three (23) units, eleven (11) of which must be at the upper-division level. Students must earn a grade of C (2.0) or better in each class in the minor.

	Units
a. Required lower-division (11)	
PHYS 201	4
PHYS 202	4
PHYS 280	3
b. Required upper-division (11)	
PHYS 301 Digital Electronics	4
PHYS 402 Computer Interfacing and Control	4
PHYS 403 Signals and Systems	3
c. Upper division elective(s). Additional upper division coursework as required to account for the required minimum twenty-three (23) units. Up to three (3) units of upper-division coursework in other science majors may be counted, with the written approval of a physics advisor.	

Total Units 23