# Signature Page

## ELEC-2011

### I. Team Members

<table>
<thead>
<tr>
<th>Name</th>
<th>Member Type</th>
<th>Email</th>
<th>Contact Phone</th>
<th>Responsible for what part</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mark Barrall</td>
<td>Primary Team Member</td>
<td><a href="mailto:mark.barrall@marin.edu">mark.barrall@marin.edu</a></td>
<td></td>
<td>Majority of all</td>
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### II. Program Review Committee

<table>
<thead>
<tr>
<th>Name</th>
<th>Committee (Chairs)</th>
<th>Signature</th>
<th>Date</th>
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<tbody>
<tr>
<td>Chris Schultz</td>
<td>Curriculum Committee Chair</td>
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<tr>
<td>Blaze Woodlief</td>
<td>Educational Planning Committee</td>
<td></td>
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<tr>
<td>V-Anne Chernock and</td>
<td>Facilities Committee Co-Chairs</td>
<td></td>
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<tr>
<td>Erik Dunmire</td>
<td></td>
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<tr>
<td>Yolanda Bellisimo</td>
<td>Planning and Resource Allocation Committee Co-Chairs</td>
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<tr>
<td>Nick Chang</td>
<td>Planning and Resource Allocation Committee Co-Chairs</td>
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<tr>
<td>Sara McKinnon and</td>
<td>Program Review Committee Chair and SLO Coordinators</td>
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<tr>
<td>Becky Brown</td>
<td></td>
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<tr>
<td>Chris Schulz</td>
<td>Student Access and Success Committee Chair</td>
<td></td>
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<tr>
<td>Michael Irvine</td>
<td>Tech Committee Chair</td>
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### III. Vice President of Academic Affairs

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<thead>
<tr>
<th>Name</th>
<th>Signature</th>
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<tbody>
<tr>
<td>Nick Chang</td>
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### IV. Board of Trustees President

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<thead>
<tr>
<th>Name</th>
<th>Signature</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>Eva Long</td>
<td></td>
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Program Overview—Introduction

ELEC-2011

Instructions: Use this form to quickly outline your program at College of Marin. Briefly answer each of the questions and use bullet points whenever possible. Provide any attachments that substantiate or expand on the questions below.

I. Program Definition
Outline the unique qualities that define the importance of your program.

College of Marin offers an Electronics Technology Program at the Indian Valley Campus in Novato, California. This discipline is growing rapidly in Green Technology. The program has grown from one fundamentals class to six basic core classes. The courses are designed to provide opportunity for the development of skills, knowledge and experience for employment in the electrical, solar and automotive industries. Students in other majors may take these courses to enhance their technical skills and overall knowledge of electronics.

II. Program Purpose
Pathway:
Career Tech. Ed.

Briefly describe how your program fits into the pathways you have chosen.

Study in the field of Electronics Technology prepares students for entry into one or more of the many electronics, solar or automotive industries. Green Energy jobs are expected to comprise 30% of all jobs by 2025. All courses are transferable for baccalaureate degree credit at the California State University. Courses are designed to challenge all levels of expertise from the beginner student to the returning technician wishing to advance in the profession.

III. Students Served
Briefly outline what students are served in your program.

The courses typically attract a wide variety of students. Students right out of high school that are looking for career pathways in alternative energy; mid age students who typically want to upgrade their skills seeking a higher career level; and members of the community wishing to gain new skills and knowledge in electrical are all served in this program.

IV. Program History
Briefly outline the recent history of your program.

This is the first full program review for the Electronics Technology discipline. This discipline is growing rapidly in Green Technology. This program has grown from one fundamentals class to classes in Solar PV, Solar
Thermal and Electric Vehicle Conversion and Hybrid Maintenance. The primary goal of the Career Ed program is to help students gain employment.

The Career Ed programs work closely together to help students develop the skills necessary to meet this goal. Currently, the Electronics program is working with the ACRT program and the Environmental Landscaping department to study the feasibility to develop curriculum centered on alternative energy vehicles. The electronics program and the ACRT program have created an Electric Vehicle Conversion and Hybrid Maintenance class. Both of these type vehicles sales will grow in the next 10 years due to recent law changes.

Attachments:
List and briefly describe any attachments
# Faculty Members

**ELEC-2011**

## I. Program Faculty

List of Faculty Members and Total faculty Units separately for Fall, Spring and Summer

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>MI</th>
<th>Year Retired:</th>
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<tbody>
<tr>
<td>Barrall</td>
<td>Mark</td>
<td></td>
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**Status:** Adjunct, ETCUM

**Shared W/other program(s):** No

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<th>Summer TU</th>
<th>Fall TU</th>
<th>Spring TU</th>
<th>Reassigned (Total)</th>
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<td>8</td>
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**Years of Service:**

**Specialty:** Electronics, Electrical

**Leadership:** List involvement in committees or other service
Facilities Questionnaire

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What are the existing facilities issues that impact student access and success, or health and safety? (address any of the following: Size, location, conditions, maintenance, features, a/c, lighting, adjacencies, other.)

The Electronics Technology Program has shared class rooms with the ACRT and AUTO Technology Programs over the past years will great success. This sharing has reduced the numbers of meters, solder stations, and supplies etc. that all the programs needed.

We need help improving the "smartness" of Building 6, Room 108 classroom. We have managed to build a wooden stand for our projector and run cable so that we can connect our computers and not have to stand in the middle of the classroom. The image is not completely "square" because the projector needs to be mounted closer to the ceiling.
Student Access and Success

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I. Access

Demographic, enrollment and student success information is available in the Data Dashboard which can be accessed through ARGOS. Please use this information and your faculty’s own anecdotal experience to answer the following questions.

We have no access barriers. We offer classes in evenings and Saturdays to accommodate the needs of working students. Classes do not have prerequisites and are open to general enrollments. We generally do not have problem with limiting class size.

II. Student Success

Based on course completion rates and grades in your courses (available on the Data Dashboard), and more importantly, based on you and your colleagues experiences in class, what do faculty in your discipline feel are significant factors or barriers influencing student success in your courses or programs? Please begin with: Students who don’t succeed often struggle with_________,” and then analyze what you think are the reasons behind their difficulties which could range from socio-economic factors to issues more directly related to course work or presentation.

The majority of students enrolled in Electronics Technology are driven by job acquisition or advancement. They make adjustments to their "life schedule" to succeed in the class. Students have come from the Sacramento and South Bay areas for our classes.

Students who don’t succeed struggle with math skills. There is a growing need for a Work Force Development Math Skills Class. This would be a general math class open to ACRT, AUTO, Electronics, Landscape, EMT, etc. It would not be directed toward any one program, i.e. not directed toward Auto work orders, but a class raising the basic skills for all programs.

III. Improving Student Success and Retention

Please check off which of the following student support services your students used:

- Bookstore
- Computer Labs for student use
- Counseling
- DSPS
- Financial Aid
- Library
- Transfer Center
- Tutoring

What is their level of satisfaction? Are your students having any problems with any of these services? If so, please explain.

These students have not expressed any problems with any of the above.
IV. How do you make sure your students are able to get through your program in a timely fashion? (e.g. “Schedule all required classes every semester.”)

There are no Degrees yet in Electronic Technology.
Curriculum

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1. What is the focus of your program? (e.g. transfer, basic skills, career technical education, lifelong learning, etc.)

The focus of the Electronics Program is career technical education. It is designed for students entering the field and students wishing to improve and advance in their field.

2. Have there been changes in the field that might impact your course offerings or degrees? Please explain.

Unfortunately, all of the classes in the program are impacted with changes in the field. Both the Solar classes and Electrical Vehicle classes content need to be updated on a yearly basis.

3. Are you planning on changing, updating or revising degree or certificate requirements? Please explain.

There is no degree or certificates at this time.

4. If available, have you created a “degree for transfer” in your discipline according to SB 1440? If so, what is it?

No

5. Have you prioritized your courses according to department goals? (Please attach blueprint)

Not at this time with the number of course available.

6. Have all your courses been updated in the last 5 years? If not, please list all outdated courses and your plans for revising or deleting them.

All of the classes in the program have been updated in the last 5 years. On an
ongoing (monthly) basis the class content changes due to changes in the industry.

7. Do you plan to develop any new courses or degrees? If so, please describe briefly and explain.

New courses in Solar PV, Solar Thermal and Alternative Energy are being developed. The State of California has created a new rebate program for Solar Thermal installations. Our Solar Thermal course will assist those in this field. Our Solar PV class will address the needs of the residential consumer and small commercial owners.

8. Are you collaborating (or thinking about collaborating) with other departments to develop joint curriculum or make other programmatic changes? If so, please describe briefly and explain.

We have collaborated with the ACRT program to create a class for conversion to electrical vehicles. We have also included a section on Hybrid Maintenance and the electrical safety issues involved. In the next five years this class may grow with the current changes in both the State Emission laws and the Federal Emission laws.

9. Do you plan to develop any new Distance Ed courses or develop Distance Ed versions of existing courses? If so, please describe briefly and explain.

No

10. Do you plan to add or increase your material fees for any of your classes? If so, please list the classes and the proposed new or revised material fees for the respective classes.

No

11. Have you reviewed your pre-requisites and co-requisites in the last 5 years?

Yes
Student Learning Outcomes

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Five College Learning Outcomes:

1. **Written, Oral and Visual Communication:** Communicate effectively in writing, orally and/or visually using traditional and/or modern information resources and supporting technology.

2. **Scientific and Quantitative Reasoning:** Locate, identify, collect, and organize data in order to then analyze, interpret or evaluate it using mathematical skills and/or the scientific method.

3. **Critical Thinking:** Differentiate between facts, influences, opinions, and assumptions to reach reasoned and supportable conclusions.

4. **Problem Solving:** Recognize and identify the components of a problem or issue, look at it from multiple perspectives and investigate ways to resolve it.

5. **Information Literacy:** Formulate strategies to locate, evaluate and apply information from a variety of sources - print and/or electronic.

I. Degrees and Certificates

1. List your degree and certificate student learning outcomes. In which courses do students learn each one?

   | none at this time |

2. What are your assessment strategies? (e.g. essays, research papers, presentations, multiple choice tests, etc.)

   NA

II. General Education:

1. Does your discipline offer any classes which count for general education requirements?

   No

2. Have you assessed any of the GE SLOs in the last year in any of these courses? If so, please describe the assessment and who it was given to and then summarize the results.
3. GE Rubrics:
• If you used the shared GE rubrics, what did you learn? (Report your findings.)
• What do you hope to change in the curriculum, pedagogy, course outline, etc. as a result of what you have learned? (Or what have you already changed?)
• Will these changes require new resources or a reallocation of resources? If so, explain using data.
• How have changes (previously made) affected student learning? Use qualitative and quantitative data to support your response.

III. Course Level Outcomes:
1. Have you assessed any of the stated Student Learning Outcomes in your course outlines over the last year? If so, please describe the assessment and who what courses and sections it was given to in and then summarize the results.

Students in the current Solar Installation Course are eligible to take a National Solar Certification Test. After every course we review the outcomes of this National Test and review our course level goals. Unfortunately, we cannot discover the questions the students actually miss on the National Test but in discussions with the students get to areas where they feel they were weak. Based on those discussions the course content and outcome change. We also have to separate those students who take the National Test but are not ready. We encourage the students to take the test if they feel they are ready. We do advise those students in area they need to improve.

2. What improvements have you made or do you plan to make in the future based on the results of your SLO assessment?

Course content in specific areas is changed due to the SLO assessments. An example in the solar area - National Tests started to include many battery based units. These are used heavily in the mid-west and east. Since students may travel to different areas for work, we have increased our instruction in these systems.
Point of Improvement

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Instructions: after reviewing your data and reports from all other sections of your program review, use this form to briefly summarize all of the information you have provided by closing with your concluding remarks (e.g. an executive one-page summary) for your entire program review.

I. Program Excellence (Best Practices)

Please address any of the following areas:
Overall Program structure, contextualized learning/learning communities, reputation of faculty, faculty collaboration, staff, retention and success, how you maintain a supportive environment, how you address issues of diversity, any specific student learning outcomes.

The Electronics Technology Program has grown to provide a wide and comprehensive curriculum in the growing field of Green Technologies. This is preparing our students to join an industry that will continue to grow jobs in the near future. The instructor stays current with this rapid change through industry seminars and a Community College Energy Faculty Forum created by the instructors in Northern California.

The instructor uses PowerPoints, demonstrations, hands-on guided experiments, project based learning and real world installations. Students are taught a scientific method and a problem solving approach when working in the classroom.

II. SLOs

As a discipline, please look at your student learning outcome assessments at the program or degree/certificate level and consider the following questions:

Description & Current Goals; Analysis: Strengths and Constraints

Future Goals & Recommended Actions

1. What do you do to help student achieve particular outcomes?

There are no degrees or certificates at this time

2. How can you improve student performance on this outcome? Give specific strategies.

3. Pick one or two things that you will do to improve your program over the next 2-3 years. Outline your strategies for improvement. Detail any resources you will need to achieve this improvement. Note: You will be asked to comment on this plan for improvement in your next review in two to three years. Please save your responses so that you will have comparative evidence and data to submit at that time.
### III. Moving Forward Objectives (Planning)

What (qualitative and/or quantitative) data-driven coordinated planning has your department done to improve enrollment, student learning, access and success over the last two years?

With the addition of the new classes, the Electronics Technology Program will attract additional students to the program. We will attract existing COM students, members of the community and people in the industry looking to upgrade their skills. The additional Green Technology courses will continue to attract students as the need for such technology grows.

With collaboration from the ACRT and Machine and Metals Technology programs, we will also address the automotive future in electric power, hybrid and fuel cell technologies. All of these students will need a broad base of auto, collision, machining, electronics and electrical skills to work in the transportation industry. Both the State and Federal Governments are changing the evolution of the automobile. We plan to help train the technicians for this future.

We also plan to continue training students for the future Green jobs.

### IV. Assessment of Previous Program Reviews:

1. What resources have you been granted from your previous program reviews?
2. Please assess how these resources have been used to improve access, learning outcomes and student success in your program?
3. What changes have you implemented based on previous program reviews?
4. What results have you found?

This is the first full program review

### VI. Other concluding remarks.
Department Chair Comments

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1. Please make any comments on, Student Access and Success, Facilities, Curriculum and SLO sections.

The faculty and staff in the ELEC program typically work fairly well together. Their teaching philosophies and teaching styles are aligned with one another. The ELEC program works and operates smoothly. The ELEC staff is working with the ACRT and Machine Metals program on the electric vehicle and alternative fuels project which is a cross curricular activity.

2. Please comment on the Point of Improvement section.

The district supports all Career Education programs by sending any instructor who wishes to attend a conference to receive update training to help them stay current in their field. In addition, the district has hired a support staff to help with recruitment and student success. These positions have been funded by the district in response to Program Revitalization.

3. Other comments