**Del Mar College**  
**New Program Proposal**

1. Division  
**Business, Professional and Technology Education**

2. Department  
**Computer Science & Information Technology**

3. Program Name  
**Engineering**

4. Proposed Award  
**AS**

5. Does this program replace an existing program?  
**NO [X]**  
**YES [ ]**  
If **YES**, which program is proposed to be replaced?

6. College Mission Addressed by this Program:  
This program supports the college mission to provide quality pre-engineering training for Del Mar students planning to enter the engineering field and serve as a lower cost approach for these students to receive their first two years of engineering training.

7. How was the need for this program determined?  
The need for this program was determined by Texas engineering schools, the THECB, and Texas industry. This program is required to become a signatory to the THECB 10/02/2009 Mechanical Engineering Transfer Compact and therefore provide access to multiple Texas 4 year schools for Del Mar College pre-engineering students. TAMUCC & TAMUK have been briefed and support this degree.

8. Do similar programs exist at Del Mar College? At other Texas community colleges? If so, in which department, or at which college(s)?  
**No**, but many community colleges have already signed or plan on signing the THECB 10/02/2009 Mechanical Engineering Transfer Compact.

9. What is the projected enrollment in:  
<table>
<thead>
<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>15</td>
<td>15</td>
<td>20</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

**10. How were these projections developed?**  
These are estimates based on prior experience of 2 full professors and 1 associate professor starting new programs.

11. What are the funding costs associated with the implementation of this program for each of the 5 years projected above?  
<table>
<thead>
<tr>
<th>Year</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$60K</td>
</tr>
<tr>
<td>2</td>
<td>$185K</td>
</tr>
<tr>
<td>3</td>
<td>$150K</td>
</tr>
<tr>
<td>4</td>
<td>$50K</td>
</tr>
<tr>
<td>5</td>
<td>$50K</td>
</tr>
</tbody>
</table>

12. What criteria will be used to measure the progress and success of the program?  
**Standard criteria will be used such as retention statistics, students graduated, and students transferred prior to graduation for the years this course of study is offered.**

13. What, if any, limitations might the college face in implementing this program?  
The main limitations is recruiting interested and qualified students.

14. How will the department reach the enrollment objectives stated above?  
The department will aggressively recruit, provide quality training, and forge strong links with TAMUCC and TAMK to place Del Mar students into TAMUCC and TAMK engineering programs.

15. Signature of Department Chair:  
**[Signature]**  
**Date**: 11/11/2009

16. Signature of Dean / VPI:  
**[Signature]**  
**Date**: 11/11/2009
# Associate in Science Degree: Engineering (Suggested Transfer Plan)

## First Semester
- **ENGL 1301**: Composition I  
  - Lec: 3  
  - Lab: 1  
  - Sem. Hrs: 3
- **HIST 1301**: United States History I  
  - Lec: 3  
  - Lab: 0  
  - Sem. Hrs: 3
- **MATH 2413**: Calculus I  
  - Lec: 4  
  - Lab: 0  
  - Sem. Hrs: 4
- **CHEM 1411**: General Inorganic Chemistry and Lab  
  - Lec: 3  
  - Lab: 4  
  - Sem. Hrs: 4
- **ENGR 1201**: Introduction to Engineering  
  - Lec: 2  
  - Lab: 0  
  - Sem. Hrs: 2
- **Kinesiology Elective**: KINE/DANC 1100 – 1299 or 2100-2299  
  - Lec: 1  
  - Lab: 2  
  - Sem. Hrs: 1

**Sub-Total: 16**  
**Sem. Hrs:** 17

## Second Semester
- **ENGR 1304**: Engineering Graphics  
  - Lec: 2  
  - Lab: 3  
  - Sem. Hrs: 3
- **ENGL 1302**: Composition II  
  - Lec: 3  
  - Lab: 3  

**Sub-Total: 18**  
**Sem. Hrs:** 20

## Third Semester
- **ENGR 2304**: Programming for Engineers  
  - Lec: 2  
  - Lab: 3  
  - Sem. Hrs: 3
- **GOVT 2301**: American Government I: Federal and Texas Constitutions  
  - Lec: 3  
  - Lab: 0  
  - Sem. Hrs: 3
- **ENGR 2301**: Engineering Mechanics – Statics  
  - Lec: 3  
  - Lab: 1  
  - Sem. Hrs: 3
- **MATH 2415**: Calculus III  
  - Lec: 4  
  - Lab: 0  
  - Sem. Hrs: 4
- **PHYS 2425**: University Physics I  
  - Lec: 3  
  - Lab: 3  
  - Sem. Hrs: 4
- **HIST 1302**: United States History II  
  - Lec: 3  
  - Lab: 0  
  - Sem. Hrs: 3
- **Visual or Performing Arts Elective**:  
  - Lec: 3  
  - Lab: 0  
  - Sem. Hrs: 3

**Sub-Total: 18**  
**Sem. Hrs:** 20

## Fourth Semester
- **ENGR 2306**: Fundamentals of Circuit Analysis  
  - Lec: 3  
  - Lab: 0  
  - Sem. Hrs: 3
- **ENGR 2106**: Fundamentals of Circuit Analysis Laboratory  
  - Lec: 1  
  - Lab: 2  
  - Sem. Hrs: 3
- **MATH 2320**: Differential Equations  
  - Lec: 3  
  - Lab: 0  
  - Sem. Hrs: 3
- **ENGR 2302**: Engineering Mechanics – Dynamics  
  - Lec: 3  
  - Lab: 1  
  - Sem. Hrs: 3
- **GOVT 2302**: American Government I: Federal and Texas Topics  
  - Lec: 3  
  - Lab: 0  
  - Sem. Hrs: 3
- **ECON 2301**: Principles of Macroeconomics  
  - Lec: 3  
  - Lab: 0  
  - Sem. Hrs: 3
- **Sophomore Literature Elective**:  
  - Lec: 3  
  - Lab: 0  
  - Sem. Hrs: 3
- **Kinesiology Elective**: KINE/DANC 1100 – 1299 or 2100-2299  
  - Lec: 1  
  - Lab: 2  
  - Sem. Hrs: 1

**Sub-Total: 20**  
**Sem. Hrs:** 20

**Total:** 72  
**Sem. Hrs:** 77

*Required for AS degree at Del Mar College. **Required at most Texas 4 year schools.*
# PART 1:
PROPOSED DEGREE/CERTIFICATE REQUIREMENTS – CORE/GENERAL EDUCATION COURSES

**Degree Type and Title:** AS - Engineering

<table>
<thead>
<tr>
<th>REQUIRED COMPONENT AREA</th>
<th>COURSE PREFIX &amp; NUMBER</th>
<th>COURSE TITLE (INDICATE ELECTIVE IF NO SPECIFIC COURSE IS REQUIRED.)</th>
<th>CREDIT HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMUNICATIONS – 3 Courses (9 Credits)</td>
<td></td>
<td></td>
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<tr>
<td>English</td>
<td>ENGL 1301</td>
<td>Composition I</td>
<td>3</td>
</tr>
<tr>
<td>English</td>
<td>ENGL 1302</td>
<td>Composition II</td>
<td>3</td>
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<tr>
<td>Speech Course</td>
<td>SPCH 1315</td>
<td>Fundamentals of Public Speaking</td>
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<tr>
<td>HISTORY/GOVERNMENT – 4 Courses (12 Credits)</td>
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<tr>
<td>Government</td>
<td>GOVT 2301</td>
<td>American Government I: Federal and Texas Constitutions</td>
<td>3</td>
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<tr>
<td>Government</td>
<td>GOVT 2302</td>
<td>American Government II: Federal and Texas Topics</td>
<td>3</td>
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<tr>
<td>History</td>
<td>HIST 1301</td>
<td>United States History I</td>
<td>3</td>
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<tr>
<td>Government or History</td>
<td>HIST 1302</td>
<td>United States History II</td>
<td>3</td>
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<tr>
<td>HUMANITIES – Sophomore Literature Course (3 Credits)</td>
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<tr>
<td>Sophomore Literature</td>
<td>Elective</td>
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<tr>
<td>KINESIOLOGY – Two Courses (2 Credits)</td>
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</tr>
<tr>
<td>Kinesiology</td>
<td>Select 2 Credits from KINE 1100-1299 or 2100-2299 or DANC 1100-1299</td>
<td></td>
<td>2</td>
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<tr>
<td>MATHEMATICS – One Courses (3 to 4 Credits)</td>
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<tr>
<td>Mathematics</td>
<td>MATH 2413</td>
<td>Calculus I</td>
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<tr>
<td>NATURAL SCIENCE – Two Courses (7 to 8 Credits)</td>
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<tr>
<td>Natural Science</td>
<td>CHEM 1411</td>
<td>General Inorganic Chemistry</td>
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<tr>
<td>Natural Science</td>
<td>PHYS 2425</td>
<td>University Physics I</td>
<td>4</td>
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<tr>
<td>SOCIAL/BEHAVIORAL SCIENCE – One Course (3 Credits)</td>
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<td></td>
<td></td>
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<tr>
<td>Social/Behavioral Science</td>
<td>ECON 2301</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
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<tr>
<td>VISUAL OR PERFORMING ARTS – One Course (3 Credits)</td>
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<td></td>
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<tr>
<td>Visual or Performing Arts</td>
<td>Elective</td>
<td></td>
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</tbody>
</table>

| Total Core Credits | 44 |

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**Degree Type and Title:** AS - Engineering
## Degree Type and Title: AS - Engineering

<table>
<thead>
<tr>
<th>COURSE PREFIX &amp; NUMBER</th>
<th>COURSE TITLE (Indicate Elective if no specific course is required)</th>
<th>CREDIT HOURS</th>
</tr>
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<tbody>
<tr>
<td>ENGR 1201</td>
<td>Introduction to Engineering</td>
<td>2</td>
</tr>
<tr>
<td>ENGR 1304</td>
<td>Engineering Graphics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 2414</td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 2304</td>
<td>Programming for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 2301</td>
<td>Engineering Mechanics - Statics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 2415</td>
<td>Calculus III</td>
<td>4</td>
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<tr>
<td>PHYS 2426</td>
<td>University Physics</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 2306</td>
<td>Fundamentals of Circuit Analysis</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 2106</td>
<td>Fundamentals of Circuit Analysis Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>MATH 2320</td>
<td>Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 2302</td>
<td>Engineering Mechanics - Dynamics</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Non-Core Course: 33
CURRICULUM COMMITTEE COURSE ADDITION FORM  
2009-2010

DATE: 11/11/2009  
DEPARTMENT CHAIR: Warren H. Knox, Jr. (Interim)  
DEPARTMENT: Computer Science/Information Tech.  
DISCIPLINE WHERE COURSE RESIDES: Engineering  
(CHECK ALL THAT APPLY)

- [ ] ADD A NEW COURSE TO THE COURSE INVENTORY  
- [X] ADD A NEW COURSE TO THE CATALOG  
(Attach Course Syllabus and Learning Outcomes)

<table>
<thead>
<tr>
<th>Course Title:</th>
<th>Fundamentals of Circuit Analysis Laboratory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Prefix:</td>
<td>ENGR</td>
</tr>
<tr>
<td>Course Number:</td>
<td>2106</td>
</tr>
<tr>
<td>Course Description:</td>
<td>Basic laboratory experiments supporting theoretical principles presented in ENGR 2306 involving electrical and electronic components and circuits, including circuit analysis, network principles, motors, and steady-state and transient responses, and preparation of laboratory reports.</td>
</tr>
</tbody>
</table>

| Course Prerequisites: | Co-requisite: ENGR 2306 - Fundamentals of Circuit Analysis |

| Course REM Levels: | R 3 E 2 M 5 |
| Lecture Hours: | 1 |
| Lab Hours: | 2 |
| Other Type Hours: | |
| Semester Credit Hours: | 1 |
| Total Contact Hours: | 48 |

Core Course: [ ] Yes [X] No  
If yes, date approved by Core Curriculum Committee: 

Program(s) this course will support: Engineering  
Replacing a Course? [ ] Yes [X] No  
If yes, identify course: 

Will this be taught by existing and budgeted faculty positions? [X] Yes [ ] No  
Will this course require special equipment? [X] Yes [ ] No  
If yes, explain and address availability or need to purchase special equipment.

For Registrar’s Office Processing:  
CIP Code Number ___________________________  
Lab Fees ___________________________  
Insurance ___________________________  
Other Fees ___________________________

Signature Indicates Approval:  
Department Chair: ___________________________  
Date: 11/12/2009  
Dean: ___________________________  
Date: 11/12/07  
Curriculum Committee Approval: [ ] Yes [X] No  
Date: ________________  
Curriculum Committee Chair: ___________________________  
Date: ________________  
Vice President of Instruction: ___________________________  
Date: 11/24-09  
Distribution of Copies by the Office of the Vice President of Instruction:  
(Original remains in the Office of the Vice President of Instruction.)  
[ ] Curriculum Committee Website  
[ ] Division Dean  
[ ] Financial Aid Director  
[ ] Registrar  
[ ] Department Chair
<table>
<thead>
<tr>
<th>Title:</th>
<th>Fundamentals of Circuit Analysis Laboratory</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCCN:</td>
<td>ENGR 2106</td>
</tr>
</tbody>
</table>

### Draft Course Description

Basic laboratory experiments supporting theoretical principles presented in ENRG 2306 involving electrical and electronic components and circuits, including circuit analysis, network principles, motors, and steady-state and transient responses, and preparation of laboratory reports.

Co-requisite: ENGR 2306—Fundamentals of Circuit Analysis

### Draft Course Outcomes

Upon successful completion of this course, students will be able to:

1. Prepare laboratory reports that clearly communicate experimental information in a logical and scientific manner.
2. Conduct basic laboratory experiments involving electrical circuits.
3. Relate physical observations and measurements involving electrical circuits to theoretical principles.
4. Evaluate the accuracy of physical measurements and the potential sources of error in the measurements.
5. Design fundamental experiments involving principles of electrical circuits.
6. Identify appropriate sources of information for conducting laboratory experiments involving electrical circuits.

Note: Fundamentals of Circuit Analysis and Fundamentals of Circuit Analysis Laboratory can be taught as a single 4-SCH course.
CURRICULUM COMMITTEE COURSE ADDITION FORM
2009-2010

DATE: 11/11/2009
DEPARTMENT CHAIR: Warren H. Knox, Jr. (Interim)
DEPARTMENT: Computer Science/Information Tech.
DISCIPLINE WHERE COURSE RESIDES: Engineering
(CHECK ALL THAT APPLY)
☑ ADD A NEW COURSE TO THE COURSE INVENTORY
☑ ADD A NEW COURSE TO THE CATALOG
(Attach Course Syllabus and Learning Outcomes)

Course Title: Fundamentals of Circuit Analysis
Course Prefix: ENGR
Course Number: 2306
Course Description: Basic concepts of electrical engineering using calculus; the fundamentals of electrical and electronic components and circuits, circuit analysis, network principles, motors, and steady-state and transient responses; application of Laplace transforms; and use of computational software to solve network problems; application of the principles to the solution of electrical engineering problems; see attached...

Course Prerequisites: PHYS 2226 - University Physics, Co-req.: ENGR 2106 - Fund. Circuit Analysis Lab

Course REM Levels: R 3 E 2 M 3
Lecture Hours: 3
Lab Hours: 0
Other Type Hours: 0
Semester Credit Hours: 3
Total Contact Hours: 48

Core Course: ☑ Yes ☐ No
If yes, date approved by Core Curriculum Committee:

Program(s) this course will support:

Engineering
Replacing a Course? ☐ Yes ☑ No If yes, identify course:
Will this be taught by existing and budgeted faculty positions? ☑ Yes ☐ No
Will this course require special equipment? ☑ Yes ☐ No
If yes, explain and address availability or need to purchase special equipment.

For Registrar's Office Processing:
CIP Code Number ____________ Lab Fees ____________ Insurance ____________ Other Fees ____________

Signature Indicates Approval:
Department Chair: [Signature] Date: 11/12/2009
Dean: [Signature] Date: 11-13-09
Curriculum Committee Approval: ☑ Yes ☐ No Date: ____________
Curriculum Committee Chair: [Signature] Date: ____________
Vice President of Instruction: [Signature] Date: 11-24-09

Distribution of Copies by the Office of the Vice President of Instruction:
(Original remains in the Office of the Vice President of Instruction.)
☐ Curriculum Committee Website ☐ Division Dean ☐ Financial Aid Director
☐ Registrar ☐ Department Chair
<table>
<thead>
<tr>
<th><strong>Title:</strong></th>
<th>Fundamentals of Circuit Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TCCN:</strong></td>
<td>ENGR 2306</td>
</tr>
<tr>
<td><strong>Draft Course Description</strong></td>
<td>Basic concepts of electrical engineering using calculus; the fundamentals of electrical and electronic components and circuits, circuit analysis, network principles, motors, and steady-state and transient responses; application of Laplace transforms; and use of computational software to solve network problems; application of the principles to the solution of electrical engineering problems; relationship between basic principles and advanced applications.</td>
</tr>
<tr>
<td><strong>Co-requisite:</strong></td>
<td>ENGR 2106—Fundamentals of Circuit Analysis Laboratory</td>
</tr>
<tr>
<td><strong>Prerequisite:</strong></td>
<td>PHYS 2326—University Physics II</td>
</tr>
<tr>
<td><strong>Draft Course Outcomes</strong></td>
<td>Upon successful completion of this course, students will be able to:</td>
</tr>
<tr>
<td></td>
<td>1. Define basic electrical concepts, including electrical potential, electrical current, and electrical power.</td>
</tr>
<tr>
<td></td>
<td>2. Discuss concepts of electrical network topology, including nodes, branches, and loops.</td>
</tr>
<tr>
<td></td>
<td>3. State the characteristics of ideal independent and controlled voltage and current sources.</td>
</tr>
<tr>
<td></td>
<td>4. Define the relationship of voltage and current in resistors, capacitors, inductors, and mutual inductors.</td>
</tr>
<tr>
<td></td>
<td>5. Use Kirchhoff's laws in the analysis of electrical circuits.</td>
</tr>
<tr>
<td></td>
<td>6. Articulate the concepts of Thévenin and Norton equivalent circuits, and apply the concepts to circuit analysis.</td>
</tr>
<tr>
<td></td>
<td>7. Analyze first and second order AC and DC circuits for steady-state and transient response.</td>
</tr>
<tr>
<td></td>
<td>8. Analyze simple operational amplifier circuits using an ideal operational amplifier model.</td>
</tr>
<tr>
<td></td>
<td>9. Apply basic transformer models, including voltage and current relationships to turns ratio, circuit components, and reflected impedance calculations in engineering problems.</td>
</tr>
</tbody>
</table>

Note: Fundamentals of Circuit Analysis and Fundamentals of Circuit Analysis Laboratory can be taught as a single 4-SCH course.