

The Stuff You Will Actually Read3 Keys to Success in Studying Engineering:

- 1) Effort = Work Hard
- 2) Approach = Work Smart (Study Groups, 50% to 100% of the time you study)
- 3) Attitude = Think Positively

Auto-Forward your SBCC PipeLine E-mail: (to be kept up-to-date on important Engineering info)

Sign up for AlertU.org: (to be alerted via text messaging to your cell phone if SBCC is closed due to fire, power outage, etc. – easy to sign up on your PipeLine login page).

All Assignments will be submitted via email:

Submit assignments through my home E-mail, [njav2004@ieee.org](mailto:njav2004@ieee.org)

- For email, “Subject: **First & Last Name, ENGR 101, CW #1**”

- **NO ATTACHMENTS** PLEASE

- “Attention to detail” is an extremely important engineering concept.

**Santa Barbara City College**

1/25/2012

SYLLABUS:**Engineering 101, Introduction To Engineering**

2 Units, Spring 2012, Sect. #55494

Bring this syllabus to class **every day!!!**

If you lose your syllabus, check the Engineering web site (listed below).

INSTRUCTOR:

Dr. Nick Arnold

Office:

PS 118

Phone:

965-0581 x4253

E-mail:

[arnold@sbcc.edu](mailto:arnold@sbcc.edu)

Web Site:

<http://science.sbcc.edu/physics/engineering/>

Office Hours:

Tues.: 12:20-12:45 & 1:45-2:10 PM; Wed.: 2:05-2:55 PM;  
Thurs.: 12:20-12:45 & 1:45-2:10 PM; Fri.: 2:05-2:55 PM.

CLASS MEETINGS:

WF 12:45 – 2:05 PM in PS 128

(Short Course 1/25/2012 to 4/20/2012 → Week 12)

TEXT(S):

- Studying Engineering: A Road Map to a Rewarding Career, 3rd. Ed., Raymond B. Landis, Discovery Press, 2007.
- ENGR 101, Introduction to Engineering, Bookstore Packet, Nick Arnold

PREREQUISITES:

None

GRADING\*:

1. Class Participation	40 Points, Max	A:	90-100 Points
2. Book Assignments	30 Points, Max	B:	80-90 Points
3. Book Chapter Summaries	10 Points, Max	C:	70-80 Points
4. Computer/Assist/Extra Credit	10 Points, Max	D:	60-70 Points
5. <u>Final/Study Groups/Read Before Class</u>	10 Points, Max	F:	0-59 Points
Total	100 Points, Max		

\* See below for more detailed descriptions of some of these items.

1. Class Participation = 2 Points per class participation
2. Book Assignments = 3 Points each, or 2 Points if late
3. Book Chapter Summaries = 2 Points per one page summary of each chapter in the book.  
 Include:
  - 2-3 New ideas that you learned
  - 2-3 Things that were valuable to you
  - 2-3 Changes that you will implement
4. Computer/Assist/Extra Credit = 2 Points each + Extra Credit Points
5. Final/Study Groups/Read Before Class =
  - Final = 6 Points for presentation + 2 Points for Second Engineer (Optional) + 4 Points for Job Shadow (Optional)
  - Study Groups = 1 Point per assignment up to 2 Points Max
  - Read Book Before Class (for math or science classes) = 1 Point per assignment up to 2 Points Max

**ATTENDANCE POLICY:**

**ATTEND CLASS REGULARLY** – this is one of the highest indicators of student success! For this class, a **LARGE** portion of your grade is based on class participation. It is important for engineers to have a strong work ethic – for this class, if you show up and do your assignments → you get an ‘A’. If you decide to drop this class, it is your responsibility to withdraw prior to the deadlines shown below (note that the deadlines are different for a short course).

**COURSEWORK PRESENTATION:**

- All coursework shall be submitted on 8 1/2” X 11” paper, stapled in the upper left corner. Do not fold papers.
- All assignments **must be typed to receive credit** (a computer word processor works best).
- Late assignments will be penalized as follows:
 

<p><b>10%</b> if turned in <b>within one week</b> past the due date.</p> <p><b>20%</b> if turned in <b>within two weeks</b> past the due date (may not be corrected with comments).</p> <p><b>50%</b> if turned in <b>more than two weeks</b> late (will not be corrected with comments).</p>
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- All coursework must conform to the following standards: Name, class, and assignment number in the upper right corner of the page, and the problem assignment just above the top line of the page.  
 For example:

<b>First &amp; Last Name</b> <b>ENGR 101</b> <b>CW #1</b>
<b>Chapter 1: # 1, 2, 3, 4, 6, 9, 10.</b>
<b>#1</b> One of my teachers told me ....

- Note: **You may make your answers shorter.** For instance, when the book asks for a 200-1,000 word essay, you can choose to do a shorter answer (e.g., one paragraph) and you will still receive almost full credit – however, you will get more out of the class by doing the full assignment. Also, if you feel that a question is too personal, then write “Choose not to answer”, and no points will be deducted.

SCHEDULE (AT A GLANCE):

<u>Week</u>	<u>Chapters/Material Covered (Approx.)</u>	<u>Dates (2012)</u>
1	1	1/25, 1/27
2	1, 2	2/1, 2/3
3	2	2/8, 2/10
4	3, 4	2/15, <del>2/17</del>
5	4, 5	2/22, 2/24
6	5, 6	2/29, 3/2
7	6, Resumes (may be 4/11)	3/7, 3/9
8	6, Excel	3/14, 3/16
9	8, Excel	3/21, 3/23
	SPRING BREAK	<del>3/28, 3/30</del>
10	Excel, MatLab, Resumes	4/4, 4/6
11	MatLab, Interview an engineer oral reports	4/11, 4/13
12	Interview an engineer oral reports	4/21, 4/20

Final, Friday, 4/22/2012, 12:45 – 2:05 PM

## Deadlines:

Last day to add class	07 – FEB - 2012
Last day to drop <b>with</b> a refund	27 – JAN - 2012
Last day to drop <b>without</b> a 'W'	07 – FEB - 2012
Last day to drop <b>with</b> a 'W' and <b>no</b> grade	14 – MAR - 2012

COURSE DESCRIPTION:

Introduction to the engineering profession, including guest speakers from local engineering industry. Discussion of methods of engineering, current areas of interest, engineering in the Santa Barbara area community, four-year transfer programs and ethics. Introduction to engineering tools and skills, including group design projects, spreadsheets and word processing. Recommended for all engineering majors.

**SBCC students with disabilities who are requesting accommodations for classes, college activities or tests should use the following SBCC procedure. (NOTE: This also includes students who are requesting to bring service animals into classes. The animals will be registered in DSPTS. The procedure also includes requests to bring into classes personal service attendants who are not SBCC employees.)**

- [1] Contact Disabled Student Programs and Services (DSPTS).
- [2] Submit documentation of your disability to the DSPTS office.
- [3] Communicate with a DSPTS counselor regarding options for services and accommodations.
- [4] Reach written accommodation agreement with the DSPTS counselor and your instructor.

**SBCC requests you complete this process at least ten working days before your accommodation is needed, in order to allow DSPTS staff time to provide your accommodation.**

**Contact: DSPTS office (805) 965-0581 x 2364, SS Building, room 160, [dspshelp@sbcc.edu](mailto:dspshelp@sbcc.edu)**

**SCHEDULE (DETAILED) WITH ASSIGNMENT DUE DATES:**

Text: Studying Engineering: A Road Map to a Rewarding Career, 3rd. Ed, Raymond B. Landis, Discovery Press, 2007.

<u>CW#</u>	<u>Due Date</u>	<u>Sections</u>	<u>Problems</u>	<u>Class Discussion</u>
none	Wed. 1/25			(a) Name Game; field of study; hobby. Go over syllabus. (b) Purpose and philosophy of this course. What are the rewards and opportunities of an engineering degree. (c) Grade histogram, “work ethic”, “attention to detail”. Note: CW #1 “List of 20 Goals ...” in # or table format.
1	Fri. 1/27	Ch 1, Sections 1.1-1.2 (Also, read the Foreword and prefaces to the First and Third Editions, and read section 8.2 about community colleges)	Ch 1: # 1, 2, 3, 4, 6, 9, 10	(a) Review purpose and philosophy of this course; rewards and opportunities of an engineering degree; ENGR 101 = Professional Development + Academic Development + Personal Development. (b) How to get from “Here” to “There”. You should have a vision to get a degree in engineering. Small group discussions (Name Game): What do you need to do along the way (to make the right career decision/to better prepare you for when you graduate)? <b>Note: Part ‘c’ may be moved to the next class.</b> (c) Keys to success in engineering study. Form groups; introductions and 1-word association (for entire semester). Small group discussions of the 3 most important factors to be successful in studying engineering (page 1 and page 13): <ul style="list-style-type: none"> <li>• Effort (Work Hard)</li> <li>• Approach (Work Smart), and</li> <li>• Attitude (Think Positively)</li> </ul> Report out.
2	Wed. 2/1	Ch 1, Sections 1.3-1.5	Ch 1: # 11, 12, 13, 14 (no oral presentation), 15, 16, 26, 28	Discuss assigned problems. Goal setting. Structure your life situation. Don’t be hung up on the idea of seeking help. Collaborative learning and group study. Small group discussions of Ch 1: # 16 and 17, and report out.
3	Fri. 2/3	Ch 2, Sections 2.1-2.6	Ch 2: # 1, 3 (can be shorter), 6, 7	Learning about engineering. Rewards and opportunities of an engineering career. Small group discussions of Ch 2: #3 and report out. Fun Project #1 ( <b>camera</b> ).
4	Wed. 2/8	Ch 2, Sections 2.7-2.10	Ch 2: # 12, 16, 17* (just visit Career Center, no numbers), 25 (can be shorter)	<b>Note: Movie day with popcorn.</b> What is Engineering? Engineering as a Profession. <b>Videos.</b> Handouts (IEEE & ASME membership, article on “Creative Destruction”, “CA ENGR Majors” list, “Education Really Pays”, 2001-2003 Cal Poly courses, INSET flyer, Job Titles and Definitions, Types of Engineering.

\* Problems with \* are Extra Credit.

**COURSE WORK ASSIGNMENTS (Continued on next page):**

COURSE WORK ASSIGNMENTS (Continued):

<u>CW#</u>	<u>Due Date</u>	<u>Sections</u>	<u>Problems</u>	<u>Class Discussion</u>
5	Fri. 2/10	Ch 3, Sections 3.1-3.8	Ch 3: # 4, 5, 8, 9, 10 (Survey is on pages 138-140).	Expert Learners. Small group discussions of Ch 3: #4 and report out. Small group discussions of Ch 3: #5 and report out. Fun Project #2 ( <b>camera</b> ).
6	Wed. 2/15	Ch 4, Sections 4.1-4.3	Ch 4: # 1, 2, 3. (Ch 4, # 4, 5 and 6 are due in 2 weeks, but read the questions and start to implement now)	Guest Speaker.
7	Wed. 2/22	Ch 4, Sections 4.4-4.5	Ch 4: #10, 11, 13, 14, 16.	Making the Most Out of How You are Taught. Small group discussions of Ch 4: #1,2; report out. Small group discussions of Ch 4: #4,5,6; report out.
8	Fri. 2/24	Ch 5, Sections 5.1-5.2	Ch 5: # 2*, 3*, 4*, 6. (Ch 5, # 5 is due in 1 week, but read the question and start to implement now)	Guest Speaker.
9	Wed. 2/29	Ch 5, Sections 5.3-5.4	Ch 5: # 8. (Ch 5, # 9 and 10 are due in 1 week, but read the questions and start to implement now).	Making effective use of your professors. Using tutors and other campus resources. “Study Groups” vs. “Alone” in class assignment. ASSIST and IEP Assignment handout (due in 2 weeks, 3/17/10).
10	Fri. 3/2	Ch 6, Sections 6.1-6.2	Ch 6: # 2, 3, 5, 6, 7, 8. Also, Ch 4, # 4, 5 and 6 (these were assigned 2 weeks ago). Also, Ch 5, # 5 (this was assigned 1 week ago).	Guest Speaker. If class hasn't had group discussion of Ch 1 #17 yet: Recall 3 keys to success in studying engineering: 1) Effort; 2) Approach; and, 3) Attitude. Each group to pick their choice of top 4 attitudes which interfere the most with a student's success. How do you change it?
11	Wed. 3/7	Ch 6, Section 6.3	Ch 6: # 9, 10, 11, 12, 13, 14. Also, Ch 5, # 9 and 10 (these were assigned 1 week ago).	Class discussion of positive thoughts/actions vs. negative thoughts/actions. Small group discussions of Ch 6: #7 and report out. Small group discussions of Ch 6: #8 and report out.

\* Problems with \* are Extra Credit.

COURSE WORK ASSIGNMENTS (Continued on next page):

**COURSE WORK ASSIGNMENTS (Continued):**

<u>CW#</u>	<u>Due Date</u>	<u>Sections</u>	<u>Problems</u>	<u>Class Discussion</u>
12	Fri. 3/9	Ch 6, Section 6.4	Ch 6: # 17, 18, 19.	Guest Speaker.
13	Wed. 3/14	Ch 6, Sections 6.5-6.6	Ch 6: # 20, 21, 22, 24, 25, 27.  www.ASSIST/IEP	Hermann brain dominance instrument. Understanding others. Small group discussions of Ch 6 #19 and report out. Small group discussions of Ch 6: #20 (Astin's Student Model) and report out. Written communications. Small group discussions of Ch 6 #24 and report out. Small group discussions of Ch 6 #35 and report out. ASSIST and IEP Assignment handout due.
14	Fri. 3/16	Ch 6, Sections 6.7-6.8	Ch 6: # 30, 33. www.FastWeb	We <b><u>MIGHT</u></b> meet at H-244, Science Division Computer Lab (enter through H-245).
15	Wed. 3/21	Ch 7, Sections 7.1-7.4	Ch 7: # 12, 13* (E.C.), 20* (E.C.)	We <b><u>MIGHT</u></b> meet at H-244, Science Division Computer Lab (enter through H-245); or: PS 128: Counseling & Career Center: Scholarships, interviews, resumes, and transferring.
16	Fri. 3/23	Ch 8, Sections 8.1-8.8	Ch 8: # 10, 11, 17*	We <b><u>MIGHT</u></b> meet at H-244, Science Division Computer Lab (enter through H-245).
	Wed. 4/4			We <b><u>MIGHT</u></b> meet at H-244, Science Division Computer Lab (enter through H-245).
	Fri. 4/6			We <b><u>MIGHT</u></b> meet at H-244, Science Division Computer Lab (enter through H-245).
	Wed. 4/11			We <b><u>MIGHT</u></b> meet at H-244, Science Division Computer Lab (enter through H-245).
	Fri. 4/13			Back to PS 128 for Interview an engineer oral reports.
	Wed. 4/18			Back to PS 128 for Interview an engineer oral reports.
	Fri. 4/20		FINAL	Back to PS 128 for Interview an engineer oral reports.

Note: This syllabus is a guideline for how the course will be conducted. Changes to the syllabus will be kept to a minimum. However, the instructor may make changes as necessary.

Quotes from Chautauqua Short Course on Teaching an “Introduction to Engineering” course (Chautauqua: an educational and recreational assembly):

- “We see our role more to evaluate students than to develop them.”
- “Work is 100% success rate for college graduates: formal training, on the job training, progressive work assignments, rotating work assignments, mentors or guided work. However, students have traditionally been put in a swim-or-sink system, where we feel somewhat proud that not everyone will be successful as an engineering student.”
- “We’re not here to help students work on design projects in groups, nor how to use computers, how to solve math problems, etc. These are important subjects to which we devote 130 credit-hours.”
- “A lot of students who don’t make it could make it. We confuse what students do, with what they can do.”
- “It’s important for students to see what the real world of engineering is all about — internships after Freshman year are a great idea.”
- “The best and most important resource on this campus is each other.”
- “It’s okay to receive help — you don’t have to worry about being left out on a limb — this frees up your mind. Your attitude at the beginning of a task determines your success.”
- “If you’re going to be successful in life, you have to find the thing that you feel passionate about. Nothing will be able to stop you. You will navigate these obstacles. What is it about engineering that you are passionate about?”
- “Success is the progressive realization of a worthy goal.” (You can’t fail until you stop.)
- “Perseverance/persistence — it’s okay to be frustrated — stick with it.”
- “Almost everyone I knew wanted to drop out during their Junior year — once you get that engineering degree, you can do anything!”
- “It’s easy to spend more time worrying about not studying enough, than spending time on actually studying.”
- “Success in life is caused more by mental attitude than mental capacity. When we start to believe, we can achieve.”
- “How many of you want to get a Ph.D. in Anthropology? How many of you want to get a B.S. in Engineering? Why is it that you won’t get a Ph.D. in Anthropology? Because, you don’t have a vision/plan to get one. Therefore, you must have a vision/plan to get your B.S. in Engineering. You need to be oriented to the academic process.”
- “If you learn the names of the freshman class, you will know more people than 98% of the other students on this campus — very valuable.”
- “Write down 3 things that you would like to have, or could benefit from having, from other people in this group. Write down 3 things that you don’t want, or don’t need, from other people in this group.”
- “60% of owners of Fortune 500 companies have Engineering degrees.”
- “An engineering degree is the easiest route to a medical or law degree.”
- “This ENGR 101 course will teach you many life skills that you will carry with you.”
- “Many people who graduate with Engineering degrees switch to other areas.”
- “Can you name an object that was not worked on by an engineer?”
- “130 million people work in this country. 1.5 million (1.3%) are engineers. 98.7% are not engineers. What rewards come to the 1.3% who are engineers?”

**ENGR 101 Extra Credit Opportunities** (you may propose your own Extra Credit, subject to approval):

<u>Assignment</u>	<u>Extra Credit</u>
“Job Shadow” an engineer for a day, 1/2 day, 1/4 day, or even an hour	4 Points
Interview a 2nd engineer to include in your oral presentation assignment.	2 Points
Join an engineering professional society (see pages 104-105 in the textbook, 3 <sup>rd</sup> Edition). Show some proof of joining.	2 Points
Help arrange a guest Speaker (professional engineer, etc.)	1 Point
Choose one of the “Greatest Engineering Achievements of the 20 <sup>th</sup> Century” from Chapter 2, and write a 1 page report why it is important.	1 Point
Read a report about a case of engineering ethics from the National Institute for Engineering Ethics (NIEE) at Texas Tech University. web site: <a href="http://www.niee.org/cases/index.htm">http://www.niee.org/cases/index.htm</a> -- write a 1 page report.	1 Point
Read " <b><u>How to Win Friends and Influence People</u></b> " by Dale Carnegie – write a 1 page report. → <b><u>Highly Recommended!</u></b>	2 Points
Read "The World is Flat" by Thomas Friedman (the internet has made the rest of the world competitive with the U.S. in technology) – write a 1 page report.	1 Point
Read "Engineering and the Mind’s Eye" by Eugene Ferguson (the author makes a point that intuition and nonverbal thinking are just as important to good engineering as math) – write a 1 page report.	1 Point
Read "The Way Things Work" by C. Van Amerongen – write a 1 page report.	1 Point
Read "The New Way Things Work" by Macaulay – write a 1 page report.	1 Point
Read "Seven Habits of Highly Successful People" by Stephen Covey – write a 1 page report.	2 Points
Read "The Seven Spiritual Laws of Success" by Deepak Chopra – write a 1 page report.	1 Point
Read "The Common Denominator of Success" by Alfred E. Gray – write a 1 page report.	1 Point

Student Learning Outcomes (SLO’s) are results at the end of the semester that we want students to know after finishing the course (with a grade of ‘C’ or better), and for faculty to measure, for the sole purpose of improving student attainment of these desired competencies. SLO’s are to be over-arching – i.e., general ideas that usually cover more than one specific course topic.

SLO's for ENGR 101:

SLO #	Description	Measure
1	Identify the main branches of engineering, the education options, and the roles and responsibilities of engineering in society.	Textbook assignments, attending class to hear guest speakers and final oral presentations, and watch videos shown in class.
2	Demonstrate further knowledge of the professional aspect of engineering by interviewing and/or job shadowing an engineer.	Complete “Interview an Engineer” assignment, and give final oral presentation.
3	Evaluate your personal knowledge, skills, and attitudes and identify which strategies would be most effective in reaching your full academic and professional potential.	Textbook assignments.
4	Solve engineering problems using the engineering design process.	In-class design projects, MatLab and Excel computer assignments.

## ENGR 101 Beginning of the Semester Survey

1) How did you find out about **ENGR 101 Introduction to Engineering class** at **SBCC**: (check all that apply)

- \_\_\_\_\_ Heard about it in an **Engineering** class
- \_\_\_\_\_ Heard about it in a **Physics** class
- \_\_\_\_\_ Heard about it in a **Math** class
- \_\_\_\_\_ Saw the **advertisement** in the **schedule of classes**
- \_\_\_\_\_ Saw the **ENGR 101 class listed** in the **Schedule of Classes** or **Catalog**
- \_\_\_\_\_ Heard about it from **Academic Advisor / Academic Counselor**
- \_\_\_\_\_ **Other** (please state: \_\_\_\_\_)

2) **What** is your **Major**:

- \_\_\_\_\_ Engineering – please specify below which type of Engineering:
  - \_\_\_\_\_ Mechanical Engineering.
  - \_\_\_\_\_ Electrical Engineering.
  - \_\_\_\_\_ Computer Engineering.
  - \_\_\_\_\_ Civil Engineering.
  - \_\_\_\_\_ Chemical Engineering.
  - \_\_\_\_\_ Environmental Engineering.
  - \_\_\_\_\_ Aerospace Engineering.
  - \_\_\_\_\_ Industrial Engineering.
  - \_\_\_\_\_ Manufacturing Engineering.
  - \_\_\_\_\_ General Engineering.
  - \_\_\_\_\_ Materials Engineering.
  - \_\_\_\_\_ Nuclear Engineering.
  - \_\_\_\_\_ Bio-Engineering.
  - \_\_\_\_\_ Other (please state: \_\_\_\_\_)
- \_\_\_\_\_ Not Engineering (please state: \_\_\_\_\_)
- \_\_\_\_\_ Not Sure

3) **Where** did you attend **High School**:

- \_\_\_\_\_ the **Santa Barbara/Goleta/Carpinteria** area.
- \_\_\_\_\_ if not, then the **Santa Barbara county** area (including Lompoc, Santa Ynez, Santa Maria, etc.).
- \_\_\_\_\_ if not, then the **Tri-counties** area (including Ventura, San Luis Obispo, etc.).
- \_\_\_\_\_ if not, then somewhere else in **California**.
- \_\_\_\_\_ if not, then somewhere else in the **U.S.**
- \_\_\_\_\_ if not, then another **Country**.

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**OVER →**

NAME: \_\_\_\_\_.

[ ] **YES**, I want an **“A” grade** in the ENGR 101 class. To get an A, I understand that I must **attend** class all/most days, and that I must do all/most of the **textbook assignments**, which are a very meaningful and important part of this class.

I understand that the first chapter of the book is on the ENGR web page, and that includes the first two assignments, so that will allow me time to purchase the textbook to avoid any late penalties. I understand that the answers to the assignments can be very short, but that I will get more out of the class if I put more effort into my answers (the answers to the questions are useful for creating/updating my “Personal Statement”, that can be used for scholarship applications, internship applications, transfer applications, etc. I also have to right to list “Choose not to answer” on some of the assigned problems, and I will still receive full credit.

[ ] **NO**, I want an **“F” grade** in the ENGR 101 class. To get an F, I understand that **even** if I **attend** class all/most days, and do everything else in the class, that **by not doing** any of the **textbook assignments** I will receive an “F” in the ENGR 101 class.

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**OVER →**