guide to academic success in

SCIENCE
- Astronomy • Biochemistry • Biology •
- Computer Science • Chemistry • Geology • Physics •

TECHNOLOGY
- GIS (Geographical Information Systems) • Geospatial •
- Engineering Technician • Electronmicroscopy •

ENGINEERING
- Aerospace • Biomedical • Civil • Chemical • Computer •
- Construction • Electrical & Mechanical Engineering •

MATHEMATICS
- Applied and Pure •

WRITTEN, DEVELOPED AND EDITED BY

Armando Rivera-Figueroa
and Marina Rueda
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MISSION STATEMENT

EAST LOS ANGELES COLLEGE

East Los Angeles College is dedicated to facilitating student learning through the highest quality of transfer, career technical, basic skills, and community service courses and programs. We serve a culturally diverse community of lifelong learners in a dynamic urban setting by supporting student success in achieving associate degrees, general education, certificates, and personal development. To develop the potential of each student, the college provides access, to innovative teaching methods, alternative modes of course delivery, the latest in educational technology, and comprehensive support services.

MATHEMATICS, ENGINEERING AND SCIENCE ACHIEVEMENT

The MESA program at ELAC enables educationally disadvantaged students to prepare for and graduate from a four-year college or university with a math-based degree in areas such as engineering, the sciences, computer science, and mathematics. Through MESA students develop academic and leadership skills, increase educational performance, and gain confidence in their ability to compete professionally. MESA has particular interest in and focuses on students from those groups who historically have had the lowest levels of attainment to four-year and graduate level programs. By closing this achievement gap, MESA students and graduates will be better able to make significant contributions to the socioeconomic well-being of their families and their communities.
MESSAGE FROM THE DIRECTOR

Dear MESA and STEM Student,

It is with great enthusiasm and pleasure I share with you the “Guide to Academic Success in STEM” resource manual. We at MESA and STEM Programs have been working hard to put this manual together with the goal of helping you succeed, while navigating the intricate higher education system. I trust you will find a variety of resources in this manual that will help you excel not only during your years at ELAC but, furthermore, during your academic journey wherever your hard work may take you.

Reaching college is an achievement that will change your life. It marks a moment in your life where your academic maturity, responsibility, and leadership talents begin to truly flourish. Moreover, choosing to pursue a major in Science, Technology, Engineering or Mathematics (STEM) is a bold decision, which you should be proud of. You will notice that often the perception of those surrounding you may change for better, and definitely with that, higher expectations will arise. As a STEM major you are diving into high unit course loads and long lab hours—a decision that takes maturity, commitment and clear academic goals. It also represents the start of many hours of studying, often depriving you from participating in social functions with family and friends. This is all OK, as you will realize sooner than later, that these sacrifices are worth it, and the results of your hard—often bitter—work can be as sweet as honey. Even though the ones you love may not understand why you work so hard and consequently, do not give you the support you want, it is still OK. Again, sooner than later, they will see how important is what you are doing, and the difficulties you face in the journey you have chosen to embark upon—in order to improve not only your quality of life, but that of those who surround you and your community.

It is my personal goal to help you succeed not only while at ELAC, but also in transferring and completing a bachelor’s degree at the institution of your choice. My team and I are here to provide you with the necessary academic means to assist you in your journey. MESA and ELAC are more than academics… it is familia, and I urge you to take full advantage of the many benefits that MESA and ELAC provide. We are here to support each other, watch out for each other, grow and learn from each other…but furthermore, to enjoy each other’s successes and achievements.

I hope you will find that joining MESA is one of the best decisions you make in college. Looking forward to see you soon!

En hora buena!

Dr. Armando M. Rivera-Figueroa
Associate Professor of Chemistry
MESA and STEM Programs Director

“I believe that everything happens for a reason. People change so that you can learn to let go; things go wrong so that you learn to appreciate them when they’re right. You believe lies so you eventually learn to trust no one but yourself... and sometimes good things fall apart so better things can fall together.”

MARILYN MONROE
ACADEMIC CALENDAR

The academic calendar of every institution changes EACH year (semester and quarter). To access an up to date ELAC academic calendar for the current academic year, download it at the ELAC website. Remember to revise/change it every semester.

HOW TO FIND ELAC’S ACADEMIC CALENDAR ON THE WEB

1. Go to www.elac.edu
2. Click “Academic Calendar” in the right hand margin for the most current version.

“Live as if you were to die tomorrow. Learn as if you were to live forever.”

GANDHI

IMPORTANT ACADEMIC DATES AND DEADLINES

TRANSFER ADMISSION GUARANTEE | TAG

https://actag.universityofcalifornia.edu/
For UC’s only: excludes UC Los Angeles, UC Berkeley and UC San Diego (Fall 2014) September 3-30
May only apply for only one (1) TAG.
Must still submit general application
Specific requirements apply, and vary by campus.

UNIVERSITY OF CALIFORNIA | UC

www.universityofcalifornia.edu/admissions/undergraduate.html
Fall Semester or Quarter  November 1–November 30 (all campuses)
Winter Quarter  December 1–February 28 (open)
Spring Semester or Quarter  March 1–May 31 (open)

CALIFORNIA STATE UNIVERSITY | CSU

www.csumentor.edu
Fall Semester or Quarter  October 1–November 30 (all campuses)
Winter Quarter  December 1–February 28 (quarter schools only)
Spring Semester or Quarter  March 1–May 31 (quarter schools only)
Summer Quarter  June 1–August 31 (quarter schools only)

“Live as if you were to die tomorrow. Learn as if you were to live forever.”

GANDHI
**INDEPENDENT/ PRIVATE UNIVERSITIES | common local options**

www.commonapp.org

California Institute of Technology  
FALL  
**FEBRUARY 15**  
SPRING  
N/A

Loyola Marymount  
FALL  
**NOVEMBER 1 - MARCH 15**  
FINANCIAL AID  
**APRIL 1**  
SPRING  
**OCTOBER 15**

Mount St. Mary  
FALL  
**MARCH 1, deadlines vary by program**  
SPRING  
**DECEMBER 1**

Occidental College  
FALL  
**MARCH 15**  
SPRING  
**OCTOBER 15**

University of La Verne  
FALL  
**APRIL 1 (priority deadline)**  
SPRING  
**DECEMBER 1 (priority deadline)**

University of Southern California  
FALL  
**OCTOBER 15, PART I (Recommended)**  
February 1, Part II  
SPRING  
**APRIL 15**  
**DECEMBER 1**

**EXTENDED OPPORTUNITY PROGRAM & SERVICES | EOPS**

Fall Semester  
Inquire day after prior spring semester ends

Spring Semester  
Inquire during finals week of prior fall

**FINANCIAL AID**

http://www.elac.edu/admission/finaid/  
ELAC deadline(s)  
Dates vary by term (see website)

**MESA SCHOLARSHIP**

http://mesa.ucop.edu/home.html  
Second week of March (when available)

**ELAC FOUNDATION SCHOLARSHIPS**

http://www.elac.edu/admission/finaid/elacScholarships.htm  
Deadline  
Second week of March

**OSHER SCHOLARSHIP**

http://www.elac.edu/admission/finaid/elacScholarships.htm  
Deadline  
Fourth week of September

**NOTE:** All above information may change year to year. Check on the appropriate websites accordingly and for independent/private options, please refer to the individual campus websites.

**Some college campuses listed and some majors may be open for Fall term only.**

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**TRANSFER TIMELINE**

<table>
<thead>
<tr>
<th>UC</th>
<th>CSU</th>
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<tbody>
<tr>
<td><strong>June</strong></td>
<td>Begin brainstorming a response to UC personal statement questions</td>
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<td>CSLU application priority filing period (Winter quarter applicants, if open)</td>
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<tr>
<td><strong>July</strong></td>
<td>UC application priority filing period (Winter quarter applicants, if open)</td>
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<tr>
<td></td>
<td>Begin scholarship research and applications (work on autobiographical essay)</td>
</tr>
<tr>
<td><strong>August</strong></td>
<td>Begin scholarship research and applications (work on autobiographical essay)</td>
</tr>
<tr>
<td></td>
<td>CSLU application priority filing period (Spring semester/quarter applicants, if open)</td>
</tr>
<tr>
<td><strong>September</strong></td>
<td>Submit online UC TAG Application. Continue to work on UC Personal Statement</td>
</tr>
<tr>
<td></td>
<td>Continue scholarship research and application.</td>
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</tbody>
</table>
| **October** | UC application priority filing period (Fall semester/quarter applicants)  
Continue scholarship research and applications through the transfer Center |
| | CSLU application priority filing period (Fall semester/quarter applicants)  
Continue scholarship research and applications through the transfer Center |
| **November** | For Fall UC applicants update UC application including Fall grades and Spring coursework  
For Fall CSLU applicants send your official transcripts showing Fall grades and Spring coursework |
| **January** | Submit online FAFSA application for Financial Aid at www.fafsa.ed.gov (list up to 10 UC/CSU/Private Universities you have applied for)  
Inquire about summer research/ internships |
| | Submit online FAFSA application for Financial Aid at www.fafsa.ed.gov (list up to 10 UC/CSU/Private Universities you have applied for)  
Inquire about summer research/ internships |
| **February** | By submitting the FAFSA form and the G.P.A. Verification Form by March 2, you may be eligible to receive a Cal Grant. For more information go to http://elac.edu/admissions/financialaid/ |
| | By submitting the FAFSA form and the G.P.A. Verification Form by March 2, you may be eligible to receive a Cal Grant. For more information go to http://elac.edu/admissions/financialaid/ |
| **March** | Admissions letters sent or check online at campus websites for fall semester/quarter applicants  
Admissions letters sent or check online at campus websites for fall semester/quarter applicants |
| | Inquire about summer research/ internships |
| **April** | Admissions letters sent or check online at campus websites for fall semester/quarter applicants  
Admissions letters sent or check online at campus websites for fall semester/quarter applicants |
| | By submitting the FAFSA form and the G.P.A. Verification Form by March 2, you may be eligible to receive a Cal Grant. For more information go to http://elac.edu/admissions/financialaid/ |
| **May** | Submit Statement of Intent to Register to UC of choice once admitted to all UC's  
Apply for scholarships |
| | For Fall UC applicants update UC application including Fall grades and Spring coursework  
For Fall CSLU applicants send your official transcripts showing Fall grades and Spring coursework |
| **June** | Statement of Intent to Register by June 1st. Once admitted - request IGETC certification from Admissions & Records for the INTENDED UC campus  
Summer research or internship |
| | Fall semester/quarter applicants send another official transcript with Spring grades to CSLU campus you plan to attend; once admitted - request CSLU/IGETC GE certification from Admissions & Records for the INTENDED CSLU campus  
Summer research or internship |
| **July** | Fall semester/quarter applicants submit transcripts from all institutions attended to UC campus of choice to include spring grades |
| | Summer research or internship |
STEM DEPARTMENT DIRECTORY
CAMPUS PROGRAMS & SERVICES
LIBRARIES AND THEIR IMPORTANCE
ASSOCIATED STUDENT UNION (ASU)
STEM CLUBS
STEM PROFESSIONAL ORGANIZATIONS
MESA PROGRAM
<table>
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<tr>
<th>DEPARTMENT</th>
<th>DEAN</th>
<th>CHAIR</th>
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</thead>
<tbody>
<tr>
<td>Anthropology, Geography &amp; Geology</td>
<td>Dr. Carol Kozeracki</td>
<td>Dr. Robert West</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:kozeraaca@elac.edu">kozeraaca@elac.edu</a></td>
<td><a href="mailto:westrb@elac.edu">westrb@elac.edu</a></td>
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<td>323-280-8175</td>
<td>323-260-8115</td>
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<td></td>
<td>Location: G1-207</td>
<td>Location: AA-3</td>
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<tr>
<td>Business Administration (Computer Science)</td>
<td>Gayle Brosseau</td>
<td>Farzaneh Larijani</td>
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<td></td>
<td><a href="mailto:brosseaud@gac.edu">brosseaud@gac.edu</a></td>
<td><a href="mailto:larijani@gac.edu">larijani@gac.edu</a></td>
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<td>323-280-8185</td>
<td>323-285-8644</td>
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<tr>
<td>Chemistry</td>
<td>Kerrin McManus</td>
<td>Alan Khue</td>
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<td><a href="mailto:mcmahan@elac.edu">mcmahan@elac.edu</a></td>
<td><a href="mailto:khue@gac.edu">khue@gac.edu</a></td>
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<td>323-415-4135</td>
<td>323-265-8849</td>
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<tr>
<td>Engineering &amp; Technologies</td>
<td>Gayle Brosseau</td>
<td>Jose C. Ramirez</td>
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<td><a href="mailto:brosseaud@gac.edu">brosseaud@gac.edu</a></td>
<td><a href="mailto:ramirez@gac.edu">ramirez@gac.edu</a></td>
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<tr>
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<td>323-280-8185</td>
<td>323-285-8756</td>
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<tr>
<td>Life Sciences</td>
<td>Dr. Carol Kozeracki</td>
<td>Alison Davis</td>
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<td><a href="mailto:kozeraaca@elac.edu">kozeraaca@elac.edu</a></td>
<td><a href="mailto:davisaa@elac.edu">davisaa@elac.edu</a></td>
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<tr>
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<td>323-415-4137</td>
<td>323-265-8877</td>
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<tr>
<td>Mathematics</td>
<td>Dr. Ryan M. Cornier</td>
<td>Dr. Joseph Kazimir</td>
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<td><a href="mailto:cornmrg@gac.edu">cornmrg@gac.edu</a></td>
<td><a href="mailto:kazimr@gac.edu">kazimr@gac.edu</a></td>
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The service hours and information provided in here are only for offices located at ELAC main campus. Please visit the ELAC website for information on these offices at our satellites campuses South Gate and Rosemead.

**Adelante Program**
**Location**: B2-107
**Phone**: 323-415-4128
**Hours of Operation**: Monday - Tuesday, 9:00am - 5:00pm; Wednesday - Thursday, 9:00am - 3:00pm

The Adelante First Year Experience is committed to the educational success of students. Adelante is a comprehensive program involving student services, linked courses, a stimulating learning environment, and committed faculty which together provide all Adelante first-year students with the very best opportunities to succeed in transferring to a four-year university.

**Career and Job Services**
**Location**: E1-176
**Phone**: 323-415-4126
**Hours of Operation**: Monday - Thursday, 8:00am - 7:00pm; Friday, 8:00am - 3:30pm

Job and internship listings are updated weekly. Visit for employer contact information. Create effective Resumes and cover letters. Get helpful interview tips and practice interviewing.

**Counseling Department**
**Location**: E1-437
**Phone**: 323-415-8741
**Hours of Operation**: Monday - Thursday, 8:00am - 7:00pm; Friday, 8:00am - 3:30pm

Develop a plan to reach your goals whether you want to transfer from ELAC to a university, earn an Associate degree or career certificate, or take courses for your own personal development. STEM counselors designated specifically for STEM students may be requested.

“Sit down before fact as a little child, be prepared to give up every conceived notion, follow humbly wherever and whatever abysses nature leads, or you will learn nothing.”

THOMAS HUXLEY
The mission of the Learning Assistance Center at East Los Angeles College is to help ELAC students become independent, responsible learners. To this end, we do our best to provide each student with the help needed.

The East Los Angeles College Libraries promote student learning and faculty teaching by providing relevant print, audio-visual and electronic resources, information competency instruction, and educational technology.

The Student Health Center is to promote students’ physical, emotional, spiritual and social well-being.
LIBRARIES AND THEIR IMPORTANCE

Libraries play a very important role in promoting the progress of knowledge; it is not the exception for STEM students and professionals. Libraries not only provide textbooks and books of interest in diverse topics, but also provide access to peer-reviewed academic journals, world newspapers, electronic materials, interviews, and much more! Furthermore, the access that libraries provide to expensive STEM peer-reviewed journals is a valuable benefit.

At ELAC, the library is an advantage for students who cannot afford to buy textbooks or other books of interest. Please, make sure to ask your instructor to place a copy of your textbook on reference. Then you can borrow these books and read or study them at ease in the library; if they are placed in the general collection, you can then take the books home.

In recent years the Internet has revolutionized the concept of a library, and information technology now plays an important role in improving the library facilities. Therefore, with the growing popularity of Internet, one may pause to think about the decreasing relevance and importance of a library in today’s world. However, as a STEM major, please always think about the academic validity of the information you are obtaining – just because it is accessible on the Internet, does not mean it is true or correct. Moreover, one should keep in mind that a person goes to a library not only to search and get information from books but also to sit and study there. The ambience and the peaceful and scholarly atmosphere help one to concentrate more on one’s work and study. Thus, libraries will always be there to indicate the presence of a well-read and educated society.

Here we offer a list of libraries around ELAC, in parenthesis you will find the distance of each library from ELAC’s main campus. These libraries are great sources, not only because often you can find extended hours and use their group study rooms, but also because they often offer larger number of books in circulation and more choices when in need of specialized databases.

TRANSFER CENTER
LOCATION  E1-176
PHONE  313.265.8623
HOURS OF OPERATION  MONDAY - THURSDAY, 8:00AM - 7:00PM  |  FRIDAY, 8:00AM - 4:00PM
Provides assistance with the transfer process: on campus visits from university representatives; college fairs; transfer workshops - CSU, UC and private college applications, personal statements, fin. aid, steps to transfer, admissions, etc.

VETERANS PROGRAM
LOCATION  E1-107
PHONE  313.265.8650
HOURS OF OPERATION  MONDAY - FRIDAY, 8:30AM - 4:30PM
The Veterans Services Department is dedicated to providing veterans and active military personnel with assistance to enroll in East Los Angeles College and obtain access to benefits and resources.

WRITING CENTER
LOCATION  F5-201
PHONE  313-415-4477
FOR WRITING CENTER HOURS PLEASE VISIT  http://elacwritingcenter.org
The Writing Center provides free tutoring for all ELAC students as well as free writing and grammar workshops. Students also have access to a computer lab to type or print essays or work on writing and grammar programs.
The East Los Angeles College Libraries promote student learning and faculty teaching by providing relevant print, audio-visual and electronic resources, information competency instruction, and educational technology.
Leadership has traditionally been seen as a distinctly interpersonal phenomenon demonstrated in the interactions between leaders and subordinates. However, Barnard Bass has defined leadership as "an interaction between two or more members of a group that often involves a structuring or restructuring of the situation and the perception and expectations of the members. Leaders are agents of change – persons whose acts affect other people more than other people’s acts affect them. Leadership occurs when one group member modifies the motivation or competencies of others in the group... It should be clear that with this broad definition, any member of the group can exhibit some amount of leadership, and the members will vary in the extent to which they do so."

Nevertheless, effective leadership behavior fundamentally depends upon the leader’s ability to solve the kinds of complex social problems that arise in organizations. The skills that make this type of complex social problem solving possible are many and diverse in nature. Students that pursue a STEM degree often showcase the skills required to be a successful leader; focusing in organization, team-work, critical thinking, and methodic problem solving.

However, the contrary is also often true. Students that showcase, practice and work in their leadership skills often demonstrate high organization, teamwork, critical thinking and methodic problem-solving skills. The applications of these skills, among others, will certainly provide students with an edge, and help them better succeed academically.

References

ASSOCIATED STUDENT UNION

East Los Angeles College Associated Student Union (ASU) advocates the needs of the student body at the college, district, and state levels. ASU mainly focuses on being a source of encouragement and responsibility that will promote and increase the intellectual, physical, social, and cultural growth of East Los Angeles College.

LOCATION ➔ G8-119
PHONE ➔ 313.265.8742
HOURS OF OPERATION ➔ Monday - Thursday, 8:00am - 6:30pm | Friday, 8:00am - 4:00pm

LEADERSHIP AND ACADEMIC SUCCESS

LEADERSHIP ➔ implies the organization or mobilization of people and resources (economic, political and other) in pursuit of particular ends.

LEADERSHIP ➔ must always be understood contextually, occurring within a given indigenous configuration of power, authority and legitimacy, shaped by history, institutions, goals and political culture.

LEADERSHIP ➔ regularly involves forging formal or informal coalitions, vertical or horizontal, of leaders and elites, in order to solve the pervasive collective action problems which largely define the challenges of growth and development.
The purpose of the ELAC Physics and Astronomy Club is to facilitate the formation of study groups, promote awareness of Physics and Astronomy department news and events, enable students to network among others with similar majors and/or interests, and become a central source of physics and astronomy resources on East Los Angeles College campus.

**Priory of Biology and Chemistry**

**Advisor**

Dr. Armando Rivera | riveraam@elac.edu  
Dr. Kirk Olsen | olsenkn@elac.edu

The goals of POBC include: increase the number of ELAC students in the STEM fields by creating professional and academic opportunities for our members; promote exposure of the science fields through community education in underrepresented communities; create, promote, and participate in science related community service through volunteer activities; provide a forum for the exchange of information pertinent for all science students enrolled at ELAC; and provide information for students transferring to a university.

**Society of Hispanic Professional Engineers (SHPE)**

**Advisor**

Brian Vazquez | vazqueb@elac.edu

SHPE is the leading social-technical organization whose primary function is to enhance and achieve the potential of Hispanics in engineering, math and science. The national organization website is www.shpe.org.

**United Students of Engineering Club**

**Advisor**

Brian Vazquez | vazqueb@elac.edu

Our primary mission is to act as a liaison between engineering students and the Department of Engineering. We seek to encourage an active engagement in the engineering field above and beyond the experience of the classroom. We inform students not only about the resources available within, but also about the many opportunities available outside of the college setting that are essential for success. Aside from our academic goals, we seek to create a comfortable social atmosphere for our members to surround themselves with others in their majors to establish networking and interact with students likewise influencing each other to create study groups or tutoring sessions.
STEM PROFESSIONAL ORGANIZATIONS

AAAS (American Association for the Advancement of Science)
www.aaas.org
AAAS seeks to “to advance science, engineering, and innovation throughout the world for the benefit of all people.” To fulfill this mission, the AAAS Board has set the following broad goals: enhance communication among scientists, engineers, and the public; promote and defend the integrity of science and its use; strengthen support for the science and technology enterprise; provide a voice for science on societal issues; promote the responsible use of science in public policy; strengthen and diversify the science and technology workforce; foster education in science and technology for everyone; increase public engagement with science and technology; and advance international cooperation in science.

ACS (American Chemical Society)
www.acs.org
The American Chemical Society (ACS) is the world’s largest scientific society and one of the world’s leading sources of authoritative scientific information. A nonprofit organization, chartered by Congress, ACS is at the forefront of the evolving worldwide chemical enterprise and the premier professional home for chemists, chemical engineers and related professions around the globe. They are dynamic and visionary, committed to “improving people’s lives through the transforming power of chemistry.”

AGU (American Geophysical Union)
www.agu.org
The Union is now a nonprofit corporation chartered under the laws of the District of Columbia, which is dedicated to the furtherance of the geophysical sciences through the individual efforts of its members and in cooperation with other national and international scientific organizations, having as a main purpose to promote discovery in Earth and space science for the benefit of humanity.

AISES (American Indian Science And Engineering Society)
www.aises.org
AISES has worked to substantially increase American Indian and Alaska Native representation in science, technology, engineering, and math (STEM) fields — as students, professionals, mentors, and leaders. AISES employs a “full circle of support” model that begins with pre-college programs, progresses into collegiate life, and then into the professional years of members and on into retirement.

AMS (American Mathematical Society)
www.ams.org
Founded to further the interests of mathematical research and scholarship, serves the national and international community through its publications, meetings, advocacy and other programs, which promote mathematical research, its communication and uses, encourage and promote the transmission of mathematical understanding and skills, support mathematical education at all levels, advance the status of the profession of mathematics, encouraging and facilitating full participation of all individuals, foster an awareness and appreciation of mathematics and its connections to other disciplines and everyday life.

AMSA (American Medical Students Association)
http://www.amsa.org
AMSA, with a half-century history of medical student activism, is the oldest and largest independent association of physicians-in-training in the United States. AMSA is a student-governed, national organization committed to representing the concerns of physicians-in-training. AMSA members are medical students, premedical students, interns, residents and practicing physicians. Founded in 1950, AMSA continues its commitment to improving medical training and the nation’s health.

ASM (American Society for Microbiology)
www.asm.org
The ASM is the world’s largest scientific society of individuals interested in the microbiological sciences. Their mission is to advance the microbiological sciences as a vehicle for understanding life processes and to apply and communicate this knowledge for the improvement of health and environmental and economic well being worldwide.
APS (American Physical Society)

www.aps.org

APS is a non-profit membership organization working to advance and diffuse the knowledge of physics through its research journals, scientific meetings, and education, outreach, advocacy and international activities. The Society’s objective is the advancement and diffusion of the knowledge of physics, in the firm belief that an understanding of the nature of the physical universe will be of benefit to all humanity.

ASME (American Society of Mechanical Engineering)

www.asme.org

Its mission is to serve diverse global communities by advancing, disseminating and applying engineering knowledge for improving the quality of life; and communicating the excitement of engineering.

LMSA (Latino Medical Students Association)

www.west.lmsa.net

LMSA was founded to increase the number of Latinos and other underrepresented students in medical schools throughout the country. It is our belief that allowing a diverse array of students into medical school will ensure that all sectors of society receive quality access to healthcare.

NSBE (National Association of Black Engineers)

www.nsbe.org

NSBE’s mission is “to increase the number of culturally responsible black engineers who excel academically, succeed professionally and positively impact the community.” NSBE is a 501(C)(3) non-profit association that is owned and managed by its members. The organization is dedicated to the academic and professional success of African-American engineering students and professionals. NSBE offers its members leadership training, professional development, mentoring opportunities, career placement services and more.

NOBCChE (National Organization for the Professional Advancement of Black Chemists and Chemical Engineers)

www.nobcche.org

The primary purpose of NOBCChE is to initiate and support local, regional, national, and global programs that assist people of color in fully realizing their potential in academic, professional, and entrepreneurial pursuits in chemistry, chemical engineering, and related fields.

SACNAS (Society for Advancement of Chicanos and Native Americans in Science)

www.sacnas.org

SACNAS is a society of scientists dedicated to fostering the success of Hispanic/Chicano and Native American scientists—from college students to professionals—to attain advanced degrees, careers, and positions of leadership in science.

SHPE (Society of Hispanic Professional Engineers)

www.shpe.org

SHPE is a national organization of professional engineers to serve as role models in the Hispanic community, and engineers in formation and training. SHPE changes lives by empowering the Hispanic community to realize its fullest potential and to impact the world through STEM awareness, access, support and development.
MEETING WITH MESA DIRECTOR

The MESA students may need or be required to meet with Dr. Armando Rivera for different reasons including Research Opportunities, Grade Point Average, Recommendation Letter and/or Advisement. You may call (323) 780-6730 to schedule an appointment with Dr. Rivera.

TUTORING SERVICES

The program provides tutoring services by MESA students or Alumni in the fields of mathematics, engineering, chemistry, physics, biology, and environmental sciences. The tutors’ schedules and information is placed outside of the MESA office two weeks after the school semester has begun. There is a tutoring binder in the MESA Study Center that is used by the staff to book appointments. Although we encourage students to make appointments, walk-ins are also welcomed. You may book an appointment in person in the study center or by phone by calling (323) 780-6838.

Academic Excellence Workshops (AEW), when available, are facilitated by ELAC instructors who are currently teaching mathematics, chemistry and physics. The purpose of the workshops are to provide students with assistance outside of the classroom in specific courses.

ACCESS TO THE MESA LOAN PROGRAM

The MESA Loan Program provides MESA students the opportunity to borrow school materials for the academic semester. These materials include textbooks, scientific/graphing calculators, educational films, and laptops. Depending on availability, there may be a limit of materials a student may borrow; usually it is one of each material (i.e. 1 book, 1 calculator, etc.). There may be exceptions, for further questions regarding this rule, please contact the MESA office staff at (323) 780-6730. The loan program will be first come first served.

ACCESS TO THE MESA STUDY CENTER

The MESA Study Center is a place where MESA students come to study in a unique environment provided by a family oriented setting and the on-site staff. MESA students are able to focus on their academics by using the study center as location to study with other MESA students and to take advantage of what the study center has to offer. The MESA Study Center has 8 computers, four white boards, a study space furnished of study tables, one couch, and a television. Students are provided with dry erase markers and dry erasers during their study sessions, limitless scratch paper, and printing privileges. The study center is a privilege to MESA students, and there are a set of rules the students must follow in order to use these services.

Dry erase markers and erasers are to be loaned out by the MESA staff on-site and must be returned at the end of their use.

The study center must be kept clean at all times, and thus, we ask that you be courteous to others and pick up after yourself, keep your voice level down, and wipe the white boards after each use.

MATHEMATICS, ENGINEERING AND SCIENCE ACHIEVEMENT (MESA) PROGRAM

The MESA program at ELAC enables educationally disadvantaged students to prepare for and graduate from a four-year college or university with a math-based degree in areas such as engineering, the sciences, computer science, and mathematics. Through MESA students develop academic and leadership skills, increase educational performance, and gain confidence in their ability to compete professionally. MESA has particular interest in and focuses on students from those groups who historically have had the lowest levels of attainment to four-year and graduate level programs. By closing this achievement gap, MESA students and graduates will be better able to make significant contributions to the socioeconomic well being of their families and their communities.

LOCATION  »  F7-210B
PHONE  »  323.780.6730
HOURS OF OPERATION  »  Monday - Friday, 8:30am - 5:00pm

MESA AND STEM PROGRAM STUDENT BENEFITS

ACADEMIC ADVISEMENT

The MESA and STEM programs have their own academic counselor and advisor to help students develop their educational plans and provide transfer guidance. The counselor and academic advisor also assists students with personal statements, scholarship applications, and resumes. Appointments must be made in order to meet with them. You may call (323) 780-6837 to schedule an appointment with the counselor or academic advisor.
The students are allowed to make non-color prints and copies of 10 pages each, for 10 cents a page and color prints and copies of 5 pages each, for 50 cents a page. However, this may only be done when it is school related and is cleared by staff before printing.

SCHOLARSHIPS, INTERNSHIPS, AND RESEARCH OPPORTUNITIES

Weekly e-mails inform the students about scholarships, internships, and research opportunities. If the student would like more information regarding a particular opportunity, they are encouraged to contact the MESA staff at (323) 780-6730. MESA staff is continuously looking for opportunities for students. Whenever there are scholarships, internships, or research opportunities, MESA students are promptly informed via e-mail or phone calls.

E-MAIL AND INFORMATION UPDATES

MESA students are notified about campus events, transfer information, student services, and other related information through weekly e-mails. MESA students have the advantage of knowing what services are offered throughout the campus ahead of time by through e-mails. It is the student’s responsibility to provide the staff with an accurate and up to date working e-mail address. This will facilitate the weekly e-mailing process for the advantage of the student. If the student does not receive e-mails, it is the student’s responsibility to notify the staff about the issue.

SCIENCE TRANSFER DAY

During the fall semester, MESA hosts a group of representatives from local universities who come and share information about majoring in mathematics, science or engineering at their institution. This event is a great opportunity to learn about different schools and what they have to offer. All MESA students are encouraged to attend this event. Whether you are applying to transferring during the same academic year or in the future, it is a great opportunity to learn about your major and local schools.

FIELD TRIPS AND MESA RETREAT

MESA students are invited on educational field trips with the MESA staff as well as other staff on campus. In addition, once a year, MESA students are encouraged to participate in the MESA Retreat. The retreat is an opportunity to learn about green practices, develop leadership skills and get to know fellow MESA members. Field trips will be announced with sufficient time in advance for the students to plan ahead if interested. The MESA Retreat is dependent on funding and is done once a year. Sign-ups for the field trips and retreat are typically done a month in advance. For more information regarding field trips and the retreat, please contact the MESA staff at (323) 780-6730.
MASTER THY MATH!
READING AND WRITING IN STEM
STEM STUDY SKILLS
STEM STUDY TECHNIQUES
STEM MENTOR
TEST TAKING STRATEGIES
TIME MANAGEMENT
HOW A COLLEGE STUDENT BECOMES ORGANIZED
HOW WELL DO YOU PLAN?
FINANCIAL AID TO DO LIST AND TIPS
FINANCIAL PLANNING
Math is a useful skill to have in real life. For instance, math skills are used to balance a family budget, keep track of the funds in a checkbook, estimate the cost of a purchase, and determine the mileage of a driving trip, or figure out the cost of a shirt that is on sale without the help of math. In short, there are countless ways that a person of any age uses math skills in daily life.

A thorough understanding of basic math skills can certainly benefit a person who wants to pursue a career in math. Math teachers, computer programmers, statisticians, engineers, and meteorologists all use mathematics in their work. In addition, a person who owns a business needs math skills as well. A business owner must estimate taxes as well as keep track of expenses and profits. Alternatively, a person who is interested in a career in science should begin with a basic understanding of the subject and move onto further study. A doctor or physician, a veterinarian, a biologist, and a chemist are just a few of the occupations that require a background in science with a strong math foundation.

WHY IS CALCULUS IMPORTANT?

The best reason is that it is used in every branch of the physical sciences (chemistry, earth sciences, physics and astronomy), computer science, statistics, engineering, economics, business, and medicine. In physics, which is a prerequisite for just about any kind of career in science or engineering, all concepts in mechanics and electromagnetism are interrelated through calculus. In many of the laws were derived using calculus and many of the problems will need to be solved by using calculus.

An example of the use of calculus in mechanics is Newton's second law of motion. Commonly expressed today as Force = Mass x Acceleration, this law involves differential calculus because acceleration is the time derivative of velocity or second time derivative of the position. Differential calculus is also used to express Einstein's theory of general relativity and Maxwell's theory of electromagnetism, among many others.

In chemistry, calculus is used in determining reaction rates and radioactive decay; whereas in biology, it is used in reproduction and death rates to model population changes. It is also often used to carry out analysis in the laboratory.

In medicine, calculus can be used to find the optimal branching angle of a blood vessel so as to maximize flow. From the decay laws for a particular drug's elimination from the body, it's used to derive dosing laws. In nuclear medicine, it's used to build models of radiation transport in targeted tumor therapies.

Calculus can be used in other mathematical disciplines. For example, it can be used in probability theory to determine the probability of a continuous random variable from an assumed density function. In analytic geometry, the study of graphs of functions, calculus is used to find maxima and minima, slope, concavity and inflection points.

Green's Theorem, which gives the relationship between a line integral around a simple closed curve C and a double integral over the plane region D bounded by C, is used in an instrument known as a planimeter to calculate the area of a flat surface on a drawing. For example, it can be used to calculate the amount of area taken up by an irregularly shaped swimming pool when designing the layout of a property.

Calculus is also used in any other field to find approximate solutions to equations. Examples are methods such as Newton's method, fixed-point iteration, and linear approximation. For instance, spacecraft use a variation of the Euler method to approximate curved courses within zero gravity environments.
RECOMMENDATIONS

1. Read slowly and thoughtfully. Be prepared to stop and think as you read. Reading just to “get through the material” is a waste of time.

2. “Pre-read” a section at a more rapid pace just to get a sense of the overall picture; then return to the beginning and re-read at least once in a more meticulous fashion.

3. Read the book with a pencil in your hand and make notes - everywhere! - about things you don’t understand. Draw lines connecting tables and graphs and equations and words to show the connections. Use the large margins in texts to write to yourself.

4. Read the text with a dictionary close by. It’s expected that you’ll run into words that you don’t know; make sure to figure them out before continuing.

5. Grab your textbook, a dictionary, some pens/pencils and go to a quiet place where you won’t be distracted. Read, re-read, and re-read!

WRITING

Adapted from Reading and Writing in the Science Classroom by Dr. Patricia Bowers

Science and reading complement each other well because of the similarities between reading skills and science process skills. The meshing of the skills in both subject areas makes them natural partners for integration. For some skills, such as identifying main ideas and details and classifying, different terms are used to describe the same process. For other skills, such as drawing conclusions, the terms and processes are the same for both subject areas.

Writing is an important part of integrating reading and science. Reading and writing are at opposite ends of the communication skills continuum; reading involves decoding words, whereas writing involves encoding words. As writing is developed, opportunities need to be provided on a regular and consistent basis to read, silently and aloud, what has been written and to write about what has been read. In this way, both ends of the communication skills continuum are focused on and developed in tandem with science content.

The table includes sample-writing activities that correspond to the reading and science skills, so that you can see the interconnection between these two.

READING

Reading is an absolutely essential skill as a scientist and often it is not easy, innate, or the same as reading poetry; it is a new skill that you need to learn.

Science writing is information dense, and there is a new idea in every sentence and every paragraph. This can make for slow reading since it is generally quite important that you understand each idea before moving on to the next idea. Science writing, like science classes, tends to be linear and cumulative. If you don’t understand paragraph one, it is unlikely that the paragraphs that follow will become understandable.

Furthermore, reading science is not just reading words, it’s reading a picture, equations, tables of data, and graphs.

PICTURES
- Science textbooks have lots of beautiful pictures in them; some of these are important and should be studied and some of these are just nice looking pictures to break up the text.

EQUATIONS
- When reading equations you must make sure that you understand all the variables and the physical interpretation of the mathematical equation. Simple algebraic equations are just simple, but look carefully at exponential and logarithmic equations (and, later, calculus equations) to make sure you see the relationships being expressed.

TABLES
- Data tables should be closely examined. Do trends in data support general relationships or math equations or are exceptions seen? What is the purpose of the data table in the book?

GRAPHs
- These are extremely important. Study the x- and y-axes carefully and make sure you know what is being plotted. Is the plot linear or not? How does this relate to some equation? Why is the plot included at all? Proving something? Are there data that don’t fall on the general curve or trend?

Everyone has had the experience of reading something and not understanding it. If you are interested in learning, you will re-read and concentrate and make notes as you read; sometimes you may even have to ask for help to your instructor or another peer in understanding something. Finally, reading like all skills, improves with practice!
**STEM STUDY SKILLS**

**KNOW YOUR TEXTBOOK**  
Many science textbooks are very well laid out with a list of chapter objectives, or very clear subheadings within chapters. Start by reviewing the chapter so you know exactly what it is you're trying to learn. If you've been assigned a textbook that isn't as clearly presented as you would like, spend a little time studying it to identify how the authors layout information. As you familiarize yourself, you will find it easier to find and understand the information you need.

**LEARN THE BASICS**  
Don't be tempted to skip those first few chapters or lectures because they seem to be recapping on basic principles you are already familiar with. There is a good reason for this. College level study requires you to know the basics really thoroughly in order to build on that knowledge with much more complex concepts. Take the opportunity to review and expand on what you already know.

**KNOW THE TERMS**  
Science is full of terms that have very specific definitions. Often words mean something different in science than they do in everyday conversation. A good example is the word “theory” which means almost the exact opposite in scientific study than it does in casual conversation. Note new terms as you hear them, along with their definitions, either in list form or on index cards. Develop silly rhymes, mnemonic devices, or even draw funny sketches and illustrations that help you remember the definitions of terms, or other information you need to know. It doesn’t matter if you can only remember the planets of our solar system by reciting the sentence “My very elegant mother just served us nine pickles” (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto). It only matters that you remember them.

**LOOK FOR RELEVANT EXAMPLES**  
Some scientific concepts can seem complicated but, almost by definition, you will be able to find examples of how they work in practice in everyday life. You don’t have to think of a complex scientific experiment to understand the concepts of heat transfer by conduction and convection. Think of how it applies to a saucepan of boiling water if that is how you will understand.

**ASK FOR CLARIFICATION**  
Science professors are used to having to clarify terms and find examples all students will relate to. If anything is unclear, speak up. Your fellow students will thank you.

**ATTEND ALL LECTURES**  
This is your chance to discuss what you have read and most scientific concepts that are hard to understand on paper will become blindingly obvious when discussed and applied to everyday situations.

**ATTEND ALL LAB SESSIONS AND FIELD TRIPS**  
This is your chance to “do” what you have learned. Again, difficult concepts will suddenly click into place when you observe an experiment or natural situation that supports what you have read.

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<table>
<thead>
<tr>
<th>SCIENCE AND COMMUNICATION SKILLS</th>
<th>Reading</th>
<th>Writing</th>
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<tbody>
<tr>
<td>Science</td>
<td></td>
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<tr>
<td>Classifying</td>
<td>Identifying main idea/details</td>
<td>Outline science information</td>
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<tr>
<td>Experimenting</td>
<td>Sequencing</td>
<td>Write up a procedure to use</td>
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<tr>
<td>Drawing conclusions</td>
<td>Drawing conclusions</td>
<td>Study experiment results and write up what you think happened based on the facts</td>
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<tr>
<td>Writing up experiment results</td>
<td>Expository writing</td>
<td>After conducting an experiment, write up the results</td>
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<tr>
<td>Observing/inferring</td>
<td>Distinguishing cause and effect</td>
<td>List causes and effects in a given experiment</td>
</tr>
<tr>
<td>Determining cause and effect</td>
<td>Determining cause and effect</td>
<td>List causes and effects in a given experiment</td>
</tr>
<tr>
<td>Comparing and contrasting</td>
<td>Comparing and contrasting</td>
<td>Prepare a chart that gives similarities and differences between two similar organisms</td>
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</table>
**READ AROUND YOUR SUBJECT** Textbooks can be dry but scientific findings are constantly being reviewed in newspapers, popular magazines, scientific journals, publications such as “National Geographic” and on the internet. Looking at something from a different angle or point of view can be really helpful.

**CONSIDER A STUDY GROUP** Study groups can be helpful in all subjects but science in particular lends itself to debate, discussion and good old-fashioned argument. As you delve deeper into your topics with a study group understanding will improve and you will be motivated to research further (if only to “prove” your side of the argument).

**PREPARE WELL FOR TESTS AND EXAMS** Multiple choice/matching/short answer questions are common in many science courses, especially for minor tests and mid-terms. Final exams may combine essay question with short answers. Don’t assume that this type of test is “easier” than essay questions. Remember that in science you may be required, for example, to match a term to a definition and given a choice of three or four equally familiar definitions. Unless you really know the material it’s easy to have a situation where you are familiar with all the definitions but, under pressure, find it difficult to remember exactly which one fits the term. Avoid this by really concentrating on the terms and definitions, and using whatever devices you need to remember them.

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### STEM STUDY TECHNIQUES

<table>
<thead>
<tr>
<th>SKILL</th>
<th>TECHNIQUES</th>
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| **Note Taking** | - Re-write your notes from class (not just re-copy - summarize points in your own words)  
- Leave space in notes to add comments from the text  
- Swap notes  
- Take notes on discussion, not just copying the board  
- Review examples of good notes  
- Record only important information  
- Create Note Cards with Main Ideas  
- Take Notes From Class Discussions  
- Tape Record with Permission  
- Focus on Concepts vs. Details |
| **Study Skills** | - Define a process: e.g., note-taking: re-copy while consulting text; consult instructor  
- A picture’s worth 1000 words, make a mental image of concept  
- Get help if needed  
- Log your actual study time  
- Bring questions to class  
- Do homework problems  
- Choose effective environment for study  
- Prepare in advance for class; read ahead,  
- Review notes at night  
- Write journal questions about concept topics  
- Complete homework  
- Avoid cramming the night before  
- Read, Read, Read  
- Summarize Text in Own Words  
- Compare Text to Notes  
- Study in Groups (Each ask questions from their notes, while others’ notes are closed)  
- Chaining Effect (Reread notes from beginning to end of unit before and after class)  
- Go to Class  
- Sit in the front of the class  
- Make use of other resources and sources of information (tutoring, textbook, websites, etc) |
## Time Management Skills
- Prepare weekly work schedule and check off as things are completed
- Schedule “pal” studying
- Learn to multi-task
- Set short and long term goals and link them
- Go to bed before midnight
- Maintain a time chart
- In college 1 credit = 2 - 4 hours of study out of class
- Avoid distractions (TV, web surfing, bars, telephone, etc.)
- Don’t procrastinate
- Students write down assignments/due dates
- Prioritize (You may have to limit involvement in extracurricular activities)
- Don’t cram. Study 1 hour/night for 5 nights instead of 5 hours on Sunday
- Use “Dead Time” between classes to look at notes, etc.

## Learning vs. Studying
- Learn the concept (don’t memorize, but try to understand)
- Work on listening skills

## Responsibility
- When you are absent, it is your responsibility to find out what you missed
- Go through exam with teacher if you are unhappy with the result: what did I do wrong (didn’t learn, studied poorly, etc.)

## Communicating Subject Matter
- Write short explanation of how a problem is solved
- Write questions concerning subject matter
- Be a good listener while others are talking
- Share ideas
- Make informed decisions
- Communicate effectively

## Test Taking and Preparation
- Organize all test materials
- Review all material
- Re-write notes
- Read assignments

## Reading Subject Matter
- Read section ahead
- Highlight key points
- Outline a section

## Math Discipline
- DON’T use the answer guide
- Make up your own problems (in addition to the examples given); make up problems for each other
- Use correct notation in homework

### WHAT IS A STEM MENTOR?

The best mentors are advisors, coaches, counselors and supporters all at the same time. They are experienced faculty and/or scientists who guide you throughout your undergraduate years as they experienced similar academic challenges. A good mentor will help you define your academic goals, and then support you in your quest to achieve them. He or she will share knowledge, provide encouragement, and hopefully inspire you. In addition to promoting your academic success, your mentor should help you to develop your career goals and construct a scientific network, whenever possible. Above all, your mentor should be someone you trust to always keep your best interest in mind.

### HOW TO CHOOSE AND CONTACT A PROSPECTIVE MENTOR?

There are many circumstances where people become mentor-mentee by chance; and this is more common when dealing with other aspects of life. Education does not usually happen by chance, and having a good mentor, or bad mentor, can influence our educational pathway—and success—in many ways. This is why it is important to choose carefully an academic mentor; ideally someone in your field, and someone that can share, or at least understand, similar points of view about … many things, not only your education. Once you have identified a potential mentor, usually from an available list in your institutions with faculty available to be mentors, e-mail him/her and introduce yourself explaining why would you like him/her to become your mentor. Make sure that your e-mail is specific for each faculty member that you contact, in case you contact more than one, and to explain why you would like this opportunity and your expectations from the opportunity. You may want to attach an updated résumé.

Note that the perfect mentor for one student is often an inappropriate match for another. Furthermore, it is unlikely that any single mentor will meet all of your needs, so you will need to figure out which considerations are the most important for you. This requires self-reflection. For instance, think about whether you feel strongly about having a woman as a mentor, a faculty member if your field of study as a mentor, a person of similar ethnicity as a mentor, a Ph.D. holding mentor, etc. Also consider how often you would like to meet with your mentor, and can your chosen mentor provide you with that opportunity? There are no right or wrong answers to these questions, as long as you are honest with yourself. Again, the perfect mentor for you most likely is not the perfect mentor for your friend.
ACADEMIC MENTOR

It is the responsibility of your mentor to work with you on your academic development. It is reasonable to expect that the mentor will:

- Help you to define your academic goals at the beginning and evaluate them at regular intervals throughout your training.
- Meet with you regularly, one-on-one, to discuss your progress towards these goals.
- Listen to you and to your ideas.
- Provide constructive and timely feedback on your academic work, personal statement for graduate school, résumé, CV, etc.
- Support your growth through encouraging training opportunities and professional development.
- Introduce you to scientific colleagues, so you can begin to develop networks of your own. These include both, students and professionals.

RESEARCH MENTOR

There are three major factors to consider when selecting a research mentor:

1. The research program
2. The personality and mentoring style of the Principle Investigator (PI)
3. The research environment

These factors vary in importance depending on your own personality and your level of training. For instance, undergraduates and summer students can be flexible in their choice of research projects because they often prefer mentors who will provide substantial guidance. While it is appropriate for the research program to be a primary consideration in selecting a research group, you must select a research group where you expect to feel comfortable and where the PI meets your individual needs and expectations. If you have the option to choose a research mentor, finding the right research mentor is critical to a successful and enjoyable research experience.

GETTING THE MOST OUT OF YOUR MENTORING RELATIONSHIP

Even the best mentor-mentee relationships require effort. In order to get the most out of your mentor, make sure that you are holding up your end of the bargain. Always behave professionally and courteously. Take the initiative to schedule meetings. At each meeting, arrive on time and prepared for discussion, with relevant questions in hand. Finally, recognize that sometimes even the best mentors will meet only a subset of your needs. As you advance in your undergraduate education, you may want to seek out additional mentors to fill the gaps. Alternate mentors may include other faculty or staff in your school, additional scientists in your field (specially professional organizations), or people in your network who have careers that interest you or that have dealt with life experiences similar to yours.

MENTOR EVALUATION SUMMARY

The following is a comprehensive list of questions that may be useful in evaluating whether a particular mentor is a good fit for your needs. You can ask some of these questions directly of the prospective mentor or from students whom you know he/she has mentored in the past. This list is to help you with your selection process and should not be used as a survey for your mentor, as he/she will be annoyed with you asking these type of questions.

SCIENTIFIC ISSUES

- What are the mentor’s intellectual interests and passions?
- Does the mentor regularly attend scientific meetings together with students and fellows? Does he or she get invited to speak at meetings?
- What kind of research does the mentor do, if any?
TEST TAKING STRATEGIES

DEFINE THE PROBLEM  ➤ Read the question completely and carefully is the crucial first step. Before looking at the answers, understand what the “problem” is (by restating the question in your own words). One technique is to cover the answers and then read the question.

GENERATE SOLUTIONS  ➤ In multiple choice exams, the instructor generates the solutions. Therefore, read each answer carefully and make sure you understand all the choices.

EVALUATE SOLUTIONS  ➤ Usually one or two choices can be eliminated immediately. After the initial elimination, you may need to go back to the question to ensure you clearly recall the “problem”. Then carefully review each of the remaining answers. If you know the material, this step should be fairly straightforward: simply evaluate the “solutions” carefully and systematically.

MAKE THE DECISION  ➤ The best “solution” to the “problem” will become clear during the evaluation step. Don’t be tempted to throw out the systematic problem-solving approach will take too much time. However, try it, and you may realize how much time you have wasted in the past.

MULTIPLE-CHOICE TESTING

If after going through the steps of the previous section, you find that you still do not know the answer, it is okay to guess. You may know more than you think you know—perhaps something in the test (e.g., previous questions) may help you figure out the answer. Ask yourself, what in the test can help you with the test? Leaving a question blank gives you an absolute zero chance of getting the question correct.

It is okay to change answers, but only if you have a good logical reason to change it. hesitate in changing your answer if you only have an emotional reason. Let the exam help you out. You can learn a bit about the material even as you are taking the exam. Sometimes, several questions will be about the same topic. Looking over the answers for the questions will usually show you which single answer is in common with the questions.

When studying, try to anticipate what questions will be asked (e.g., modified quiz questions). Focus on the details of the material. Some instructors will give you a review sheet to help you out with this. Use that review sheet—the instructor has a very good idea of what will be on the exam.

PERSONALITY

➤ Is the mentor outgoing and sociable, or quiet and reserved?
➤ Does the mentor’s personality seem compatible with your own?
➤ How does the mentor respond to stress?
➤ Does the mentor value diversity?
➤ Does it seem that gender, racial, cultural, or other biases impact his or her relationships?
➤ Does the mentor enjoy socializing with his mentees?
➤ Is the mentor easily approachable?
➤ Is this mentor a good role model for you?
➤ Would you feel comfortable taking criticism from this person?

WORK HABITS

➤ Is the mentor organized, methodical, and disciplined, or does he/she prefer a more flexible approach?
➤ Is the mentor good at developing and adhering to long-term plans?
➤ Does the mentor work regular hours?
➤ How much time does he/she spend with students?
➤ Is the mentor good at multi-tasking or does he/she prefer to complete one task before beginning another?
➤ Is the mentor available for meetings and conversations, or is it difficult to find a convenient time for communication?

MANAGEMENT/MENTORING STYLE

➤ Does the mentor hold regularly scheduled meetings with mentees or does he/she prefer unscheduled informal discussions?
➤ Does the mentor provide a good balance of positive input and constructive criticism?
➤ Does the mentor have additional administrative responsibilities and how do these responsibilities impact his/her availability and responsiveness to the needs of mentees?
➤ How much guidance does the mentor provide about topics such as paper writing, public speaking, project design, peer review, etc?
➤ Does the mentor include mentees in these activities in a way that promotes learning?
➤ How many students or mentees has the mentor worked with in the past?
➤ Does the mentor treat mentees professionally? Do mentees feel like valued members of the academic community?

*Excerpts from this document have been adapted from a National Institute of Health publication.
TIME MANAGEMENT

As college students, we spend a lot of time being active. There are many ways to perfect your time management skills, but these are some of the common ones.

OBSTACLES TO EFFECTIVE TIME MANAGEMENT

UNCLEAR OBJECTIVES
- It’s hard to hit a target with your eyes closed, and it’s just as hard to accomplish something when you aren’t exactly clear about what you want to achieve.

DISORGANIZATION
- It’s easy to see when your desk is too messy, but sometimes you must step back and ask yourself if you are taking an organized approach in completing all of your tasks.

INABILITY TO SAY “NO”
- We all want to be as helpful as we can when others need us, but this can mean taking time away from other priorities to do something we may not have planned.

RELIEVING TEST ANXIETY

1. Turn off the negative self-talk.
2. Avoid those who say the test is hard or will be hard, or who intensify your feelings of failure.
3. Get some exercise in the few days before the exam. Decrease your intake of caffeine and get enough sleep. Fatigue only intensifies anxiety.

Students who believe that their anxiety will help them do better are confusing anxiety with effort. Getting worried will not help you. You waste mental energy on being worried and thinking of all of the negative possibilities, that you will not have the energy nor the time to think clearly about the problem(s) at hand.

Despite negative past experiences, divorce yourself from the past and move forward.

If you are returning to school after an extended time out of the classroom, you have changed since you took those classes long ago. You are not the same person you were in high school or several years ago.

If you blank out in the middle of an exam, try deep breathing or a relaxation exercise. You will not waste time by calming yourself down! In fact, you will be more productive and cover more material.

Prepare for the anxiety, and manage it. You need to stay in a rational place.
HOW A COLLEGE STUDENT BECOMES ORGANIZED

Every Student needs a planner to be organized, but how do you want to go about it?

A Planner  Some students benefit from planners that are Daily, Weekly, or Monthly. To be successful you must be willing to write something new every single day and plot out a strategy.

To Do List  Some students require writing things down. Some benefit from checking things off a list.

Master Calendars  Some students benefit from a wall-calendar that lists every assignment and appointment (always place it near a computer).

Software  Some students are always on the computer and benefit from receiving alerts. This works for students using an iTouch/iPhone/iPad. App: StudentLife (one of many free apps)

IDEAS TO THINK ABOUT... THE POSSIBILITIES ARE ENDLESS

The most important thing you can do is start and end each work session with five minutes of putting everything in its place. You’ll feel better about your space and your clutter will start to disappear. Example: I am working on assignment A, so there should only be notes/books from that class in my work area. Every other assignment that I am working on stays in the backpack until I finish one assignment or decide to move on to another project.

The most common way to organize folders is by course. Each class would have its own folder, any papers regarding that class would be put in that folder.

Make sure that you have dividers in your folder for each assignment and that you label each folder with the name of one of your classes.

Organize your homework and notes into separate piles for each class. Put the homework pile near the side of the folder closest to you and put the notes behind them. This way, there is no need to rifle through the entire stack of papers. You can pick which side of the folder to look in based on whether you are looking for homework or notes.

Goal setting is a must. “I will work on Class A and only A.” Students should work on an assignment for an hour and then stop, take a 15 minute break, and then return to the paper or a new assignment. Note: There is nothing wrong with changing assignments and returning to

TIPS FOR STUDENTS*

Structure Your Out of Class Time  Write down a specific assignment into a specific time slot, as if it was a class you were planning to attend. Be there on time.

Diagnose Your Procrastination  Is it really the WHOLE paper you’re having trouble starting, or just deciding on a topic? Is it the whole problem set, or just one that has a section you can’t understand? Rome wasn’t built in a day; college takes 4-5 years; difficult tasks are meant to be subdivided.

Build Rewards into Your Schedule  Four hours of solid studying followed by a half-hour phone call to your best friend is more productive than four mediocre hours of study interspersed with phone calls.

Take Time for Yourself  Exercise, have fun, have relationships, eat, and sleep.

Look Ahead in Your Month  Try and anticipate what is going to happen so you can better schedule your time.

Study  at a regular time and in a regular place.

Eat Well-Balanced Meals  and get regular exercise.

Double  your time estimates!

*Center for Teaching and Learning, Sweet Hall, Stanford University

*Center for Teaching and Learning, Cornell University
How well do you plan?

**Directions**  
For each question, circle the number that best describes you.

**Scoring**  
Add the numbers next to your answers.

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<th>How often do you plan in an effort to keep life from running out of control?</th>
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<th>How often do you plan time for what matters most to you?</th>
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<th>How often is your daily plan destroyed by urgent interruptions?</th>
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**Things to avoid**

**Avoid Obsessive Organizing**  
Some of us organize to avoid working. If you tidy your desk and file your papers in order to procrastinate, stop it! One sign of an over-organized personality is when your idea of fun is spending extravagant amounts at office supply stores.

**Stay Away From Stickies**  
Post-it notes are only useful if you are putting them in front of your workspace with intentions of throwing them away after a while. Ask yourself this, how many times have you found a scribbled number or date on a post-it note and did not know who or what it meant?

组织一项作业时，当你觉得你准备好了时。有时学生会花太多时间在一项作业上，而忽视了看到一个更大的图景......把所有的作业都做完！

将文件夹添加到整学年，特别是你打算的专业。不要懒惰，停止你的组织方法。这只会导致你丢失更多的旧作业和笔记。

组织技能需要耐心和愿意花时间把纸张放回适当的位置。

**Avoid Obsessive Organizing**  
有些人组织以避免工作。如果你清理你的桌子并按顺序存放文件以拖延时间，停止它！过度组织化的一个标志就是你把工作当作乐趣，花大量的钱在办公用品店。

**Stay Away From Stickies**  
Post-it notes 只有用在你打算在一段时间后丢弃它们的面前。问问自己，你有多少次发现了一个在 Post-it 便签上的手写数字或日期，你不知道它是谁或什么的？
FINANCIAL AID TO DO LIST AND TIPS

SUBMIT A FREE APPLICATION FOR FEDERAL STUDENT AID (FAFSA). Apply even if you don’t think you are eligible, as there are many factors aside from income used to determine eligibility. Do not wait until applying to transfer to apply. You can list up to 10 colleges or universities including East Los Angeles College # 001222. Apply between January 1 and March 2nd to meet the priority deadline. You can still apply after the deadline, but you may miss out on some grants or work-study.

www.fafsa.ed.gov

SUBMIT A GPA VERIFICATION FORM (G-4). You must submit this form along with the FAFSA by March 2nd to apply for Cal Grant. If you already have a Cal Grant and are ready to transfer, be sure to submit a School Change Form (G-10) to the California Student Aid Commission.

www.calgrants.org

SEARCH FOR SCHOLARSHIPS USING COMMON WEBSITES as well as looking at potential transfer institutions you have been accepted to in order see if they have additional scholarships available.

www.elac.edu/admission/finaid/elacScholarships.htm

www.fastweb.com

www.icanaffordcollege.com

ConSIDER ApplyinG To EOPs which may provide supplemental resources and support. The EOP application for the California State University (CSU) once you apply for transfer (which is separate from your participation here at ELAC) are available at

www.csumentor.com

VISIT THE FINANCIAL AID OFFICE WEBSITE for the college or university of your choice. Each school has their own forms, deadlines and policies.

FIVE STEPS TO SUCCESSFUL TIME MANAGEMENT

1. Set specific academic and personal goals.
2. Create a term calendar, recording major events.
3. Create a weekly schedule of your classes, labs, drill, meetings, etc.
4. Decide on specific times to work on each course.
5. Make a to-do list for each day the night before or during breakfast.

©Academic Skills Center, Dartmouth College 2001

Quiz written for USA WEEKEND by time management expert Hyrum Smith, chairman of the Franklin Covey Co.

INTERPRETATION

6-10 › TERRIBLE PLANNER
You should consider using new tools and processes to help you plan effectively. A great first step would be to take a time management course.

11-15 › BELOW AVERAGE PLANNER
You may already have a planning system, but using it more effectively will help to reduce the stress and lack of control you feel in your life.

16-20 › AVERAGE PLANNER
Your planning system is working, but you can do better. You may need help focusing on priorities, dealing with urgent interruptions or writing your daily plan.

21-25 › ABOVE-AVERAGE PLANNER
Your planning system is working well. Keep up the good work, with periodic reviews to be sure you’re planning around what matters most in your life.

26-30 › EXCELLENT PLANNER—OR CANDIDATE FOR BURNOUT?
You have mastered planning and should experience the serenity that comes from taking charge of your life. But make sure you’re in control of your planning rather than letting it control you.
The importance of financial planning is a key component you must understand as you begin your college life, and soon after your career. As you can imagine, it is a process that may evolve continuously as you progress through college; and the most important matter is to be well informed and aware of your present and future financial obligations and opportunities. For example, student loans, car loan, getting married, starting a family, etc. Essentially, it is important to have a financial plan and understanding of your financial situation in order to achieve whatever may be your financial goal within a given time.

To begin your financial plans, assess the financial situation you are at now. Then ask yourself where you want to be within a specific timeline, which is setting your financial goals. Once you have your goals, develop a plan that can get you there. Obviously, developing the plan is only half the story. You need to action upon the plan. Remember, once you start implementing your plan, you will need to constantly evaluate and review your plan to ensure that you are on track.

**Financial Tips for College Students**

- **Organize Your Files.** Creating a paper and/or electronic filing system will make paying your bills on time and meeting deadlines easier. Record keeping also helps avoid potential disputes and/or disagreements regarding whether the terms you agreed to with banks, stores, or friends have been upheld including timing of payment and amounts. You’ll also want to keep records for tax purposes.

- **Make a Budget and Stick to It.** A budget is just a self-imposed guideline for how much money you can (or should) spend and what you can spend it on. You will be amazed at how much farther your money goes when you create a personalized budget. Life is unpredictable, so don’t forget to allocate money for unexpected expenses.

- **Buy Used Books/ Electronic Downloadable Books.** Especially in the STEM fields, the cost of textbooks is high. Though you may find used books in the campus bookstore, it is likely even cheaper to look to online options, where no overhead fee is imposed. **Remember, it is not always the best idea to sell books back; especially books in core math or science courses (depending on your major). Think rationally about whether that same content will likely serve as a valuable resource/reference in the future.**

- **Leave Your Car at Home.** Cars cost more than just gas money. Don’t forget about insurance, parking (parking tickets), maintenance and repair expenses along the way. Walk, use public transportation, and/or ride a bike if that is at all possible in your commute – get students’ public transportation passes. You may also want to arrange a carpool with friends if public transportation isn’t available.
- **GET THE BEST DEAL ON A CHECKING ACCOUNT.** Shop around before opening a checking account. Smaller banks may offer a better deal. Compare fees. Ask if there’s a fee for dealing with a teller, including deposits or withdrawals. Ask if there’s a fee to use a debit card. Ask about ATM fees. Ask if overdraft protection is part of the student package. If not, ask about linking such coverage to a bank-issued credit card.

- **WATCH THE ATM FEES.** These can add up quickly if you are not paying attention to them. Look for a bank with free ATMs, and consider opening a student account at a nearby/more convenient bank where ATM fees can be avoided altogether.

- **USE CREDIT CARDS SPARINGLY.** Use credit cards wisely because this is a chance to establish a solid credit history. Watch the interest rates. Don’t be suckered by low “introductory” rates. Expect the interest rate, or annual percentage rate (APR), to climb above 20 percent in three to six months. Remember: Credit is a loan, which means the balance must be repaid. Get a card with a low limit. Shop around for the best deal and read the fine print before signing up. If you move, inform the bank of your new address. Guard your credit card number and close unused accounts.

- **MAKE A MEAL PLAN.** It is much cheaper to purchase weekly groceries (i.e., loaves of bread, lunch meats/cheeses, fruits, nuts etc) than to eat out regularly. Certainly there are opportunity costs (in terms of time) which during mid terms and finals you may not be willing to spare. However, if you prepare in advance, it can save over the course of each semester. Also remember that an unlimited meal plan may be tempting (once you transfer to a college where that is an option), but you might be satisfied with a less expensive plan. Also, if you’ve paid for a meal plan, be sure to use it! You’re just paying twice if you eat out somewhere else.

- **SAVE ON SNACKS.** Avoid buying snacks at vending machines or convenience stores—they just hike up the prices on the same snacks you love. Instead, stock up at your local grocery store. Especially those long days where you have multiple classes, and stay on campus to study, keeping them with you during the day will avoid expensive and less healthy on-the-go options.

- **AVOID UNNECESSARY EXPENSES.** Parking fines, for example—don’t be lazy. Read the signs and follow the rules. This goes for little things like returning library books or videos. Pay your bills on time or you’ll get stuck with a late fee.

- **USE STUDENT DISCOUNTS TO YOUR ADVANTAGE.** It’s common for movie theaters, concert halls, restaurants, insurance and travel companies to offer discounts with a student ID. Just ask! Taking time for yourself is important in balancing your education and academic load—you might as well do it cheaper, when there are such options available.

- **START SAVING.** A few dollars here and there can make a big difference later in life. Saving and investing your money puts your money to work for you. If you have a job, pay yourself first. Have your bank automatically deposit a set amount from your paycheck into a savings account.

- **KEEP LIFE IN BALANCE.** Money management is important, but it’s only a means to get you where you want to be in life. Strong values, good friends, and a solid education should all be part of your plan for success.

Adapted from: StudentAid.Ed.Gov
UNDERSTANDING TRANSFER

ASSIST (Articulation System Stimulating Interinstitutional Student Transfer)

TAG (Transfer Admission Guarantee)

QUESTIONS TO ASK A UNIVERSITY REPRESENTATIVE

SEMESTER VS. QUARTER SYSTEMS

WRITING A PERSONAL STATEMENT

PERSONAL STATEMENT BRAINSTORM

HOW TO CALCULATE YOUR GPA

APPLYING FOR RESEARCH AND INTERNSHIPS

READING AND UNDERSTANDING A SCIENTIFIC PAPER

PREPARING A RESEARCH POSTER

RESEARCH CONFERENCES AND MEETINGS
UNDERSTANDING TRANSFER

IN TERMS OF TRANSFER OPTIONS, THERE ARE A FEW MAIN AVENUES

CALIFORNIA STATE UNIVERSITY (CSU)
23 campuses
COST » Approximately $5,970/Year
Offer BA/BS degrees and graduate programs, mostly at the Master’s Level, but with more practical teaching focus

UNIVERSITY OF CALIFORNIA (UC)
10 campuses (8 for transfer)
COST » Approximately $13,200/Year
Offer BA/BS degrees and graduate programs, both at the Master and Ph.D. level, but with more research/theory focus. It also offers degrees at the professional level (M.B.A., M.D., J.D., etc).

PRIVATE / INDEPENDENT INSTITUTIONS
70+ campuses in California alone
and 1600+ Nationwide
COST » $15,000-$50,000+/Year » with many scholarship opportunities available

COMMON PRIVATE INSTITUTIONS IN CALIFORNIA
- California Institute of Technology
- Claremont Colleges: Pomona, Harvey Mudd, Pitzer, Claremont McKenna, and Scripps
- Loyola Marymount University
- Mount St. Mary’s College
- Occidental College
- Pepperdine University
- Stanford University
- University of La Verne
- University of San Francisco
- University of San Diego
- University of Southern California
- Whittier College

*Some private institutions such as Harvard University, Stanford University, Columbia University and Cornell University require students to complete only two years or a specific number of units, and no more, at a community college before transferring. Therefore, if you are interested in transferring to any of these universities you must apply at the beginning of your second year at ELAC. Let your counselor know immediately if your goal is to transfer to a private institution in order to research transfer conditions.

“A word as to the education of the heart. We don’t believe that this can be imparted through books; it can only be imparted through the loving touch of the teacher.”

CESAR CHAVEZ

CEMENT & RESEARCH

UNDERSTANDING TRANSFER

understanding

understanding

transfer

transfer
**Graduate Degrees (Masters)**

- **M.A.** Master of Arts
- **M.A.T.** Master of Arts in Teaching
- **M.S.** Master of Science
- **M.E.** Master of Engineering
- **M.B.A.** Master of Business Administration
- **M.L.S.** Master of Library Sciences
- **M.P.A.** Master of Public Administration
- **M.P.H.** Master of Public Health
- **M.P.P.** Master of Public Policy
- **M.S.W.** Master of Social Work

**Graduate and Professional Degrees (Doctorate)**

- **D.D.S.** Doctor of Dental Surgery
- **D.M.D.** Doctor of Dental Medicine
- **D.O.** Doctor of Optometry
- **Ed.D.** Doctor of Education
- **J.D.** Juris Doctor
- **M.D.** Doctor of Medicine
- **Ph.D.** Doctor of Philosophy
- **Psy.D.** Doctor of Psychology
- **Th.D.** Doctor of Theology

**Common Academic Degree Abbreviations (Nomenclature)**

**Undergraduate Degrees**

- **A.A.** Associate in Arts
- **A.N.** Associate of Nursing
- **A.S.** Associate in Sciences
- **B.A.** Bachelor of Arts
- **B.S.** Bachelor of Science
- **B.S.N.** Bachelor of Science, Nursing

**Degree Pyramid**

- **PhD, MD, JD, DDS, etc.**
- **MS, MA, ME, MSW, MBA, MPA, etc.**
- **BS, BA, BSN, etc., Upper Division Coursework**
- **Lower Division Coursework**

- **Doctorate**
- **Master’s Degree**
- **Bachelor’s Degree (110+ units)**
  - (Includes lower division)
  - Junior Level (30-60 units)
- **Associate’s Degree (65+ units)**
  - Freshman Level (1-30 units)
TAG (TRANSFER ADMISSION GUARANTEE)

Transfer Admission Guarantee gives ELAC students who meet basic transfer requirements a written guarantee of admission to selected colleges and universities. Students who complete the agreed upon sequence of classes in general education and a selected major with a stated minimum GPA can apply to the four-year institution within a prescribed time-frame and be "Guaranteed Admission."

UNIVERSITY OF CALIFORNIA

FALL TRANSFERS | TAG FILING PERIOD IS THE MONTH OF SEPTEMBER (1-30)

You can sign a TAG agreement with only one of the following UC campuses:

Davis • Irvine • Merced • Riverside • Santa Barbara • Santa Cruz

Each campus has very specific requirements which you must meet, typically by the end of the Spring semester before transfer.

COMMON UC TAG REQUIREMENTS:

- Have completed 30 transferable units to sign a contract
- Complete 60 transferable units and the 7-course pattern (one transferable math course, two English courses, 4 courses from at least two of the following areas: Arts & Humanities, Social & Behavioral Sciences, Physical & Biological Sciences) by end of Spring prior to Fall transfer for all UC campuses. (AP units can be used)
- Have a gpa between 3.0 - 3.5 depending on major and TAG school of choice
- Complete one transferable math course and two English courses one year prior to transferring (condition applies for majority of TAG schools).
- Complete UC TAG application online at https://uctag.universityofcalifornia.edu

NOTE: You must still submit a UC application, separate from the TAG application.

ASSIST (ARTICULATION SYSTEM STIMULATING INTERINSTITUTIONAL STUDENT TRANSFER)

ARTICULATION

Articulation agreements are formal agreements between two campuses. They define how courses taken at one college or university can be used to satisfy a subject matter requirement at another college or university, usually looking from California community college to California public 4-year universities. To see articulation agreements, start by choosing a college or university.

Using ASSIST—there are many ways to use this helpful website as a resource tool for better understanding your options for transfer to the UC and CSU systems.

1. You can use ASSIST to find community college courses that are transferable to a UC or CSU campus and how those courses might be used to satisfy specific subject matter requirements for admissions, General Education, or lower division major preparation with California public universities.

HOW TO USE ASSIST

- Log on: www.assist.org
- Using the pull-down menu, select East Los Angeles College
- Select the university of your choice
- Select the major or departments
- East Los Angeles College courses will be on the right and the transfer university courses for the major which you have chosen will be on the left.

2. You can use ASSIST to explore the majors available at University of California and California State University campuses.

- Click on Explore Majors

3. You can use ASSIST to figure out whether courses from the community college are transferable to the UC and/or CSU systems.

- Select the community college of interest (East Los Angeles College)
- Select either CSU transferable courses or UC Transferable courses
- Select a department for the courses in question

Adapted from Cerritos College Transfer Center
WHITTIER COLLEGE

1. Submit a completed application for admission as well as all supporting documents and the application fee (fee waiver available in Transfer Center) to Whittier College on or before the transfer application deadline (April 15 for fall and December 1 for spring).

2. Must have completed the Freshman Writing Seminar requirement and the Quantitative Reasoning requirement with a C grade or better in each class (See the general articulation agreement for courses that will fulfill these requirements).

3. Must have completed at least 30 transferable units with a C or better.

4. Must have earned a minimum cumulative GPA of 3.0 in courses eligible for transfer. For example, if a student earned a D or below in a transferable course, that course would not be accepted for transfer credit, but would be factored into the cumulative transfer GPA.

5. Students who are admitted with a cumulative GPA of 3.0 or above will receive a merit-based scholarship ranging from $10,500 to $13,500 per year to be used toward tuition at Whittier College. Students who submit a FAFSA and are eligible for need-based aid may also receive Whittier College grants, as well as other state and federal funding.

6. Student must bring signed ELAC/Whittier College TAG form to the ELAC Transfer Center & schedule an appointment to meet with the Whittier College Representative.

QUESTIONS TO ASK A UNIVERSITY REPRESENTATIVE

WHAT IS THE CAMPUS COMMUNITY LIKE?
- Is your college located in an urban, suburban, or rural setting?
- What kinds of social, cultural & recreational activities are available on the campus and in the community?
- How far away from my home is your campus?
- How much time does it take to get there from my home by car, by public transportation?
- Will I need a car to get around? Does public transportation (bus) provide easy access to the campus and community?
- How many students are enrolled? In my major? From my community/school?
- Are you on the semester or quarter system? When do classes begin?

TELL ME ABOUT YOUR STEM PROGRAMS
- Do you offer my major?
- What programs do you offer that will support my major?
- Is my degree program accredited—by whom and at what level (undergraduate/graduate)?
- Do you have an honors program for students who enter with high grades?
- Can I enroll part-time, take courses in the late afternoons, evenings, weekends or during the summer?
- Are there research/internship opportunities available on campus, in the community?
- Are advanced degrees (master’s, doctorate) offered?

WILL I BE ELIGIBLE FOR ADMISSION?
- What are your admission requirements for transfer students?
- Will I need to write a personal statement?
- How do you determine my grade if I repeat a course?
- Will a course in which I received a “D” grade count?
- What is the admissions priority of transfer students from community colleges, from 4-year colleges?
- If I go to a community college first, will my credits transfer? How and when will I know?
SEMESTER VS. QUARTER SYSTEMS

A semester system (which ELAC operates under) is 15 weeks long, whereas a quarter system institution is only 10 weeks. Should you transfer to a quarter system college, you will be expected to stay on target at a much faster pace, and be held responsible for the same curriculum content as if you were at a semester system institution. It is important that you are aware of the difference, and keep that in mind when selecting which transfer options might be most appropriate for you. Should you decide on quarter system schools, you need to begin now, preparing yourself for the changes, getting ready emotionally, academically, and most important, developing your own personal time management skills, so that once you merge into a much faster paced schedule, you are not completely shocked by the changes.

<table>
<thead>
<tr>
<th>SEMESTER SYSTEM</th>
<th>QUARTER SYSTEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>(15 weeks instruction, 1 week final exams)</td>
<td>(10 weeks instruction, 1 week final exams)</td>
</tr>
<tr>
<td><strong>Fall Semester</strong></td>
<td><strong>Spring Semester</strong></td>
</tr>
<tr>
<td>Late August</td>
<td>Early January</td>
</tr>
<tr>
<td>Mid December</td>
<td>Mid May</td>
</tr>
</tbody>
</table>

IS FINANCIAL AID AVAILABLE?

- What kinds of financial assistance are available?
- When and how do I apply for financial aid? Do I apply for campus scholarships separately?
- How do you determine if I qualify for assistance?
- Will financial aid cover my entire need?
- Are there special kinds of assistance for students from certain underrepresented groups?
- Is it easy to get a part-time job on campus, in the community?

WHAT ELSE DO I NEED TO KNOW?

- Can I take courses at your college for college credit before I transfer?
- What are the requirements for enrolling? When and how do I sign up?
- How do I make arrangements to talk with someone further at your college to discuss enrollment opportunities?
- How do I make arrangements to take a tour of your campus?
- Do you have an open house program for prospective students? When and who do I contact for more information?
- Do you offer housing for transfer students? Is it guaranteed?

Adapted from Cerritos College Transfer Center
WRITING A PERSONAL STATEMENT

THIS IS A DOCUMENT THAT CAN BE INDIVIDUALLY TAILORED TO

- secure scholarships
- gain internship/ research experience
- most important, accompany your transfer application
- Become more than just another name - become an individual, share your personality, your goals, your experiences, and explain opportunities/ obstacles that have affected your academic record
- Provide information that gives readers a context for your accomplishments, or even bumps in the road along the way
- Contribute your voice, to tell your story
- The readers are looking for insight into you as a person
- They are also looking at your writing style, language usage, organization, and content - therefore be sure to have multiple readers review before submitting

MECHANICS AND WRITING STYLE

- Be original--be yourself; Tell a story--your story
- Remember to put things in the words & language with which you are comfortable
- A simple style is best
- Use clear, vivid prose
- Don’t summarize in your Introduction
- The body of each paragraph must relate to the first sentence of the paragraph
- Use transitions
- Your Conclusion is critical
- Revise, Revise, Revise!
- Make corrections in sentence construction, grammar punctuation, and spelling
- Put your draft aside for 24-hours and read it again

INVESTIGATE AND EXPLORE YOUR AUDIENCE

- Find out as much as you can about the scholarship, internship/ research site or universities you are applying to and their admissions process
- What should your audience know about you that makes you stand out above the rest?
- This information can usually be found in the application instructions and also on the website for that particular site of interest--be sure to address ALL parts of any specific question, or set of questions being asked

EXPLORE YOURSELF

- The more you know about yourself the easier it will be to write your essay
- A strong essay demonstrates self-awareness, a key indicator of intelligence and critical thinking
- Get Personal--A successful essay is the one where the readers learn about you
- Details, Details, Details--Use details to personalize your essay and to make it more interesting to read.
- Be Honest--Write about what really happened and who you really are; never be ashamed of your story--own it!
- Don’t stop with just the facts--the why and how is also important

BREAK DOWN THE QUESTION(S)

- Be sure to answer ALL parts of the question(s)
- Brainstorm, starting with key ideas and expand from there
PERSONAL STATEMENT BRAINSTORM

Below are the actual UC personal statement questions from the fall 2012 application. Whether or not you plan to apply to the UC system, these specific questions provide critical value in terms of where to begin with the personal statement process:

PROMPT 1 › 4 PARTS
1. What is your intended major?
2. How did your interest in this subject develop?
3. What experience have you had in the field?
   - Volunteer work
   - Internships
   - Employment
   - Student Organizations/Activities
4. What have you gained from your involvement?

PROMPT 2 › 3 PARTS
1. Choose and describe one of the following:
   - A talent
   - An accomplishment
   - A contribution
   - An experience
2. What about this one thing makes you proud?
3. How does this one thing relate to the person you are?

ADDITIONAL BRAINSTORMING QUESTIONS
(not included in the UC personal statement)

- Where did you grow up?
- What has your educational path been like? i.e. what high school/where? Other colleges attended? Resources? (or lack thereof)
- What obstacles/challenges have you faced? (academic, personal)
- What successes have you had (awards, research, conferences attended, etc)
- When did you realize you wanted to pursue higher education?
- What are your future goals? (academic, career)
- What makes you stand out from others? (academically, personally)
It is important that you understand how to calculate your GPA properly. If you calculate your GPA wrong and misreport it, you might jeopardize your admission/acceptance.

**PLEASE KEEP THE FOLLOWING ITEMS IN MIND**

- Your “UC” transfer GPA is potentially different from your “CSU” transfer GPA
- Some courses are only CSU transferable, in which case, are not included in the calculation of your UC GPA
- A “UC” transferable course can be recognized where there is an “SU” in the last column of your transcript; these courses are transferable to both UC and CSU institutions
- A “CSU” transferable course, on the other hand, can be recognized where there is a “CS” in the last column of your transcript; these courses are then ONLY transferable to CSU institutions, and should be excluded in the calculation of your “UC” GPA
- Both the “UC” and “CSU” systems honor the exclusion of an initial substandard grade (“D” or “F”) when you repeated the course, or had it removed via academic renewal (as long as you submitted the proper paperwork to annotate it in your transcript accordingly)
- For all other schools (USC for example), it will vary by institution, however, typically, they calculate with the inclusion of ALL courses, even those which you may have repeated because you had an initial substandard grade (“D” or “F”)
- Not all courses in your transcript are UC/CSU transferable, and subsequently, do not count in your GPA, nor do the units accrued count towards your total minimum 60 units required. As an example, Math 125 and 120 will not be included in your UC or CSU transferable GPA

The link below (directly from ELAC’s Transfer Center website), allows you to enter the courses individually, and will tabulate your units and total GPA.

www.elac.edu/studentservices/transfercenter/GPACalculator.htm

---

**HOW TO CALCULATE YOUR GPA**

Your GPA or grade point average is the average of your end of term grades. You can figure your GPA for one semester or for your cumulative, overall GPA.

Grades are assigned a numerical value: A=4, B=3, C=2, D=1, F=0

*Note: Units attempted that result in CR/NC, W, IP, or INC grades are not used to calculate the GPA.*

### EXAMPLE COURSE

<table>
<thead>
<tr>
<th>COURSE</th>
<th>UNITS ATTEMPTED</th>
<th>GRADE (NUMERICAL VALUE)</th>
<th>GRADE POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGLISH 101</td>
<td>3</td>
<td>A (4)</td>
<td>12</td>
</tr>
<tr>
<td>MATH 227</td>
<td>4</td>
<td>B (3)</td>
<td>12</td>
</tr>
<tr>
<td>SOC 1</td>
<td>3</td>
<td>B (3)</td>
<td>9</td>
</tr>
<tr>
<td>EARTH 1</td>
<td>3</td>
<td>C (2)</td>
<td>6</td>
</tr>
<tr>
<td>POL SCI 1</td>
<td>3</td>
<td>W (0)</td>
<td>0</td>
</tr>
</tbody>
</table>

**TOTALS** 13* 39 39

*Note: “W” do not count as “Units Attempted”*

Multiply the “Units Attempted” by the “Numerical Value” of the grade to get “Grade Points”.

**EXAMPLE**

<table>
<thead>
<tr>
<th>UNITS ATTEMPTED</th>
<th>GRADE (NUMERICAL VALUE)</th>
<th>GRADE POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
<td>12</td>
</tr>
</tbody>
</table>

Total the units attempted column and total the grade point column.

The GPA is determined by dividing the total grade points by the number of attempted units.

<table>
<thead>
<tr>
<th>GRADE POINTS</th>
<th>UNITS (ATTEMPTED)</th>
<th>GRADE POINT AVERAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>39</td>
<td>13</td>
<td>3.0</td>
</tr>
</tbody>
</table>

**“NORMAL” COURSES GRADE SCALE**

<table>
<thead>
<tr>
<th>GRADE</th>
<th>PERCENTAGE</th>
<th>GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90-100</td>
<td>3.50-4.00</td>
</tr>
<tr>
<td>B</td>
<td>80-89</td>
<td>2.50-3.49</td>
</tr>
<tr>
<td>C</td>
<td>70-79</td>
<td>1.50-2.49</td>
</tr>
<tr>
<td>D</td>
<td>60-69</td>
<td>1.00-1.49</td>
</tr>
<tr>
<td>F</td>
<td>0-59</td>
<td>0.00-0.99</td>
</tr>
</tbody>
</table>
APPLYING FOR RESEARCH AND INTERNSHIPS

Taking advantage of research and internship opportunities is a great way to explore a particular field, and perhaps see if that is something which might be of interest to you in the future.

It is also a great way to engage in the field, and better understand the foundational work.

Furthermore, participating in research or internships will provide you with a unique advantage over other students when applying for transfer, for a scholarship, graduate and professional schools, and even future jobs/careers.

If interested, you should keep the following things in mind to increase competitively for securing research and internship opportunities:

**MAINTAIN HIGH ACADEMIC STANDARDS**

- This displays your academic potential and commitment to academic excellence—qualities which are highly sought after in laboratory settings
  - 3.2 overall GPA and above
  - Complete (at minimum) Chemistry 101 and Math 261 with at least a “B”

**STAY IN TOUCH WITH STEM PROFESSORS**

- In some circumstances, research/internship sites may require letters of recommendation. For that reason, it is imperative that you keep in touch with STEM professors as you take various STEM courses, especially when you excel in them. This way, they may speak on your behalf and provide strong letters of recommendation which may leverage your chances for entry.
- It is especially important that these professors can speak about your laboratory skills, reliability, and ethics in the lab.

QUARTER UNITS TO SEMESTER UNITS CONVERSION TABLE

<table>
<thead>
<tr>
<th>QUARTER UNITS</th>
<th>SEMESTER UNITS</th>
<th>QUARTER UNITS</th>
<th>SEMESTER UNITS</th>
<th>QUARTER UNITS</th>
<th>SEMESTER UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>0.33</td>
<td>1.0</td>
<td>0.66</td>
<td>1.5</td>
<td>1.0</td>
</tr>
<tr>
<td>1.5</td>
<td>1.0</td>
<td>2.0</td>
<td>2.0</td>
<td>2.5</td>
<td>2.66</td>
</tr>
<tr>
<td>2.0</td>
<td>2.0</td>
<td>3.0</td>
<td>4.0</td>
<td>4.0</td>
<td>4.66</td>
</tr>
<tr>
<td>4.0</td>
<td>3.33</td>
<td>5.0</td>
<td>5.0</td>
<td>5.5</td>
<td>6.66</td>
</tr>
<tr>
<td>6.0</td>
<td>4.0</td>
<td>6.0</td>
<td>6.0</td>
<td>7.0</td>
<td>7.33</td>
</tr>
<tr>
<td>7.0</td>
<td>4.66</td>
<td>8.0</td>
<td>5.0</td>
<td>8.0</td>
<td>8.66</td>
</tr>
<tr>
<td>8.0</td>
<td>5.33</td>
<td>9.0</td>
<td>6.0</td>
<td>9.0</td>
<td>9.33</td>
</tr>
<tr>
<td>10.0</td>
<td>6.66</td>
<td>10.5</td>
<td>7.0</td>
<td>10.5</td>
<td>11.0</td>
</tr>
<tr>
<td>12.0</td>
<td>8.0</td>
<td>13.0</td>
<td>8.66</td>
<td>13.5</td>
<td>14.0</td>
</tr>
<tr>
<td>14.0</td>
<td>9.33</td>
<td>15.0</td>
<td>10.0</td>
<td>15.0</td>
<td>16.0</td>
</tr>
<tr>
<td>16.0</td>
<td>10.66</td>
<td>17.0</td>
<td>11.0</td>
<td>17.0</td>
<td>18.0</td>
</tr>
<tr>
<td>18.0</td>
<td>12.66</td>
<td>19.0</td>
<td>13.0</td>
<td>19.0</td>
<td>20.0</td>
</tr>
</tbody>
</table>

QUARTER UNITS TO SEMESTER UNITS CONVERSION TABLE
Reading and Understanding A Scientific Paper

Reading a scientific paper can be overwhelming at the beginning, but with practice and technique it can be a pleasant, and moreover, an informational activity. Scientific papers will provide essential information in order for you to understand a problem, or extend your knowledge of a specific topic. Scientific articles, published in academic journals, are considered objective literature, as what is written is the product of actual experimentation and data collection; furthermore, these articles are "peer-reviewed," which implies that a group of experts in the topic has reviewed and evaluated the information provided in the article and considered that the methods, results, and discussion/conclusion are in agreement with the current knowledge of the studied topic in the field on which the research was performed.

The Main Parts of a Scientific Paper Are

Abstract ➔ Here a summary of the study is presented.

Introduction ➔ Presents a scope of the problem, background information and references, aim of the present study.

Materials and Methods ➔ The experimental design, procedures, controls.

Results ➔ This section focus on findings by presenting experimental data, figures, tables, calculations and other relevant information that is the result of a measurement; let the measurement be direct or indirect.

Discussion & Conclusion ➔ The author aims to explain the significance of results, compare the results with other studies, and discuss direct or indirect implications on the subject and the contribution to the field as a whole.

References ➔ A comprehensive list of cited scientific papers, studies, thesis, etc.

Research Potential Research Sites/ Laboratory Settings and Faculty

- Take an active role in searching for opportunities that match your interests. Thoroughly research institutions of your interest; reading specific faculty profile, programs of interest and identifying unique opportunities to work with special projects and/or instrumentation.
- Look at the websites of various campuses; read through biographies of potential faculty who work within your field(s) of interest—see what work they conduct in their laboratories and how that fits in with your goals or even just things you are curious about.
- Visit campuses when possible, and "knock on doors".
- Apply to at least three different opportunities, both in- and out-of-state.
- When applying, make very clear that you would like to continue to a graduate program such as a master (M.A./M.S.) or doctoral program (Ph.D.); usually, candidates pursuing a medical degree (M.D.) or law degree (J.D.) will not get highest priority.
- Letter of recommendations must be from a STEM faculty that can speak about you not only from the lecture point of view but also about your skills, training and ethics in the lab component of the course.
- Send an e-mail to researchers you have identified and share your interest while also showing that you have done some research about their work.

Seek MESA Program Support

- Make an appointment with the program director, counselor and/or advisor to discuss potential options/how you might move forward/get more information.
- January/February is an optimal time to research and apply for potential opportunities.
PREPARING A RESEARCH POSTER

- Begin with writing an abstract. In a brief two to three paragraphs, summarize what you are attempting to research. This will set the stage for the rest of the poster. Write a hypothesis or thesis statement based on the type of scientific endeavor you are attempting to communicate. Include records of any data or results from your experimentation and research.
- Create a preliminary design, incorporating discussion of your topic, abstract, thesis or hypothesis; experiment or research methods; results and conclusions. Also include room in the preliminary layout for images, charts, tables and data results. You can enhance the look and professional appearance of your poster by adding relevant images, making it more attractive to your intended audience.
- Work with an image-enhancing software program to design the poster on your computer. Use the various functions such as table or graph inserts and graphics to further communicate your results. The layout of your poster also needs to include any references that you used in obtaining your results.
- Edit all elements of your poster. Look for any spelling or grammar mistakes and check all charts and graphs to make sure that they are properly labeled. Most word processing programs, such as Microsoft Office Word, have a built in spelling and grammar checker to help with this process.
- Print out your poster and have it professionally laminated to keep it intact. You can also buy poster board and create the different elements on a word processor individually, print them and attach them with an adhesive to the poster board. Laminating the final project is still a good idea to add a professional touch.

A TYPICAL POSTER CONTAINS THE FOLLOWING ELEMENTS

**TITLE BANNER**  This usually contains the title and the names of the authors. If the research was done at another institution, it should be identified along with the affiliation of the co-authors. Your title should be brief, informative, and interesting. A title may state the problem or the conclusion or ask a question.

**PURPOSE OR OBJECTIVE OF STUDY**  This should clearly state the hypothesis or question. If necessary, a small amount of background information may be included.

**METHODS OR PROCEDURES**  (may be combined with Results) Describe the approach taken to test the hypothesis. If necessary, use diagrams to illustrate the major steps of an experiment or procedure.

**RESULTS**  These are usually presented in graphs or tables. Each figure should be accompanied by a legend and/or a brief explanatory text.

**CONCLUSIONS**  Limit yourself to 2 - 3 conclusions.

KEEP THE FOLLOWING GUIDELINES IN MIND

- In both text and the illustrations, determine what is the essence of your communication. If the text of your poster is too long, others will have difficulties reading it. Because you will be present to answer questions, you can expand on interesting points during the poster session.
- Posters are 28" by 44". They should be readable from a distance of 3 feet. The letters in the title should be at least 1 inch high. Text letters should be at least 3/8 inch high.
- Many people find it difficult to read text when it is presented on a poster in paragraph form. If possible, use short, simple statements and separate them well.

*Adapted from University of California, San Francisco School of Medicine*
RESEARCH CONFERENCES
AND MEETINGS

Please, refer to the earlier section that summarizes professional STEM organizations in order to identify organizations that serve your program of study. Most of these organizations provide a venue for undergraduate students to actively participate in their regional and national meetings. Students can take advantage of unique mentoring opportunities, presenting their research findings - either orally or in a poster format - practice networking skills, meet with other undergraduate students with similar interests, and start investigating different graduate school or work opportunities; along with many other great opportunities.

These opportunities are exceptional because they provide undergraduate students with the unique setting of a large community with similar interest, immersing students in what will be their career in the near future.

REGIONAL VERSUS NATIONAL MEETINGS ➔ The main difference is the number of participants attending the meeting. In southern California we are very lucky that we are surrounded by many great universities; therefore, attending regional meeting is often better as you will get to meet with great faculty and researchers from around the community.

WHO SHOULD ATTEND? ➔ Usually conferences and meeting offer different opportunities for all academic levels; therefore, you can choose to attend at any time during your academic career. However, due to cost and accessibility is important you choose experiences on which you are truly interested to explore, and committed to exploit.

WHAT TO EXPECT? ➔ Expect the unexpected, from meeting Nobel Prize winners to Presidents and Chancellors of prestigious universities. Always expect to learn something new, and attend with an open-mind to the exchange of scientific ideas.

WHAT TO DO? ➔ Network with colleagues, present your research work, attend talks, seminars and workshops, enjoy and growth!

REGISTRATION ➔ If you do your research on-time about the different possible conferences you may attend, you will find that many organizations offer scholarships to high-achieving students to participate for free or for a lower cost. Some meetings offer the opportunity of volunteering for free registration. In addition, you can also take advantage of programs on your campus, or scientific research sites, which will support your participation on these activities. For example, MESA and STEM programs at ELAC facilitate this process for those students motivated and interested in presenting their research findings.

NETWORKING

SMILE ➔ The universal gesture of polite greeting is the smile. It is your icebreaker for any social situation and begins your conversation in a positive, comfortable way.

RELAX ➔ Take a deep breath; let it out…

KEEP IT SIMPLE ➔ Craft a clear, succinct sentence with your name and the goal(s) of your participation in the conference and/or your research interests and career goal(s).

SAVE THE CONTACT ➔ Collect business cards or bring a notebook to document your new contacts. (NOTE: After your new contact walks away, write a note on the back of his or her card to help you recall something about the person and/or the topic(s) on which you want to follow up).

HELP THEM REMEMBER YOU ➔ Create and carry your own business cards to distribute to your new contacts.

INQUIRE AND LISTEN ➔ Introducing yourself is only half of meeting someone. Ask questions and actively listen to your new contact.

PRACTICE, PRACTICE, PRACTICE ➔ Although meeting new people can be intimidating, practice will build confidence and ease in your ability to effectively introduce yourself to new people and work to include them in your network.

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RESUMÉ AND CURRICULUM VITAE (CV)
WRITING A RESUMÉ
SAMPLE RESUMÉ
WRITING A CURRICULUM VITAE (CV)
SAMPLE CURRICULUM VITAE (CV)
WRITING A COVER LETTER
SAMPLE COVER LETTER
E-MAIL ETIQUETTE
ASKING FOR A LETTER OF RECOMMENDATION

professional
SKILLS
RESUMÉ AND CURRICULUM VITAE (CV)

The primary differences between a resumé and CV are the length, what is included and what each is used for.

A resumé is a one or two page summary of your skills, experience and education. While a resumé is brief and concise - no more than a page or two, a curriculum vitae is a longer (at least a two-page) and more detailed synopsis.

A curriculum vitae includes a summary of your educational and academic backgrounds as well as teaching and research experience, publications, presentations, awards, honors, affiliations, and other details. In Europe, the Middle East, Africa, or Asia, employers may expect to receive a curriculum vitae; in the United States, however, a curriculum vitae is used primarily when applying for academic, education, scientific or research positions.

The primary differences between a resumé and CV are the length, what is included and what each is used for.

1. DIFFERENT LENGTH
   - Your resumé should be shorter than your CV. As a general rule, a CV is expected to have a length of 2 or more pages, whereas a resumé should be less than 2 pages, and realistically, should be restricted to a single full page.

2. SIMILAR SECTIONS
   - Both a CV and a resumé should include your full name, address, contact information, education, work experience and skills. Don’t add irrelevant sections to your resumé and don’t leave out essential sections from your CV.

3. DIFFERENT SECTIONS
   - In addition to a resumé, a CV should include awards, teaching experience, hobbies, references, grants and fellowships, diplomas, computer skills, work-related skills, courses completed and any other relevant information. Whatever it is you might be applying for (jobs, scholarships, internships, research, etc.) hundreds of applicants are likely to apply. So, if you add irrelevant information in a lengthy CV format, it may be discarded. To prevent this from ever happening, write a hassle free CV that’s easy to understand. Use simple everyday English. Try to be clear rather than persuasive. You might also find that a resumé is more appropriate, especially in the event you do not have as much experience just yet.

4. UNDERLINING PRINCIPLES
   - In both cases, make sure you write events in a chronological order. It’s easier for people to understand. Your skills, experience and education are the most important aspects. Design your CV or resumé around them.

WRITING A RESUMÉ

A Resumé is an executive summary of your qualifications and can be used to gain internship and research opportunities and in many cases get a scholarship. A Resumé distills to one page all of your education, training, work, and life experience in relation to your potential value to an employer or an opportunity.

ORGANIZING YOUR RESUMÉ

IDENTIFICATION
- Your name, address and telephone number head the Resumé. It is centered at the top of the page or placed to one side. Do not use headings such as “name,” “telephone.” “Resumé.” This information is self-evident and the headings are unnecessary.

CAREER OBJECTIVE
- If you state an objective, it should be brief, concise and address the position, scholarship, or internship that is being offered; do not add future plans. This category should be used only when your objective is clear or definite. You may state your objective in the cover letter (if you are asked to provide one) rather than in your Resumé. If so, your Resumé can be more general and versatile.

EDUCATION
- Your educational history should be placed near or at the top of the page if it is your most important qualification. Under this heading include the names of schools, dates attended, degrees and dates received, and major and minor fields of study. Internships or practicum experiences can also be included here. Limit the number of schools listed to three unless you obtain certain certificates and/or degrees. More than that number might suggest that you were school hopping, and an employer may infer that you will go job hopping as well. You may also list relevant course work to give the employer a clearer sense of your job-related skills (only of relevant courses pertain to intended job or internship).

WORK EXPERIENCE
- This area can be titled “Work Experience,” “Employment,” “Employment History” or “Professional Experience.” You may include names of employers (company or organization, not your boss’ name), dates, job titles and functions or experiences and accomplishments. Include part-time jobs held during your college years. In describing your work experience use positive words which will show your strengths. Leave out negative or neutral words. Descriptive job titles provide employers with information about what you did.

PROFESSIONAL ACTIVITIES AND OTHER INTERESTS
- This category can include such unrelated data as club and professional memberships, awards, honors, hobbies, internships, volunteer experience and community service.

SKILLS AND ACCOMPLISHMENTS
- These categories will be relevant to “combination” and “functional” Resumés. You may describe your skills and accomplishments under such headings as “art experience,” “supervisory experience,” “management experience,” or “counseling skills.” Emphasize skills, especially those that are transferable.

“...That is what learning is. You suddenly understand something you’ve understood all your life, but in a new way.”

DORIS LESSING
WRITING A CURRICULUM VITAE (CV)

Also called a CV or vitae, this is an overview of your life’s accomplishments, most specifically those that are relevant to the academic realm. The curriculum vitae is used for academic endeavors, such as obtaining research positions, or presenting research at conferences, however, it becomes most important as you publish work, or conduct research. The curriculum vitae is a living document, which will reflect the developments in a scholar/teacher’s career, and should be updated as necessary (that is, as you continue to publish work, or conduct research).

HOW IS A CV DIFFERENT FROM A RESUMÉ?

The most noticeable difference is length. Entry level resumes are usually limited to a page. CVs, however, often run to three or more pages. However, length is not the determinant of a successful CV. Try to present all the relevant information that you possibly can, but in as concise a manner as possible.

A more subtle but equally important distinction is that whereas the goal of a resume is to construct a professional identity, the goal of a CV is quite specifically to construct a scholarly identity. Thus, your CV will need to reflect abilities as a researcher, and publishing scholar within your discipline.

Also, work description sections of resumes and CVs is that bullets are very commonly used in resumes and tend to appear somewhat less frequently in CVs. Whether or not you use bullets to separate lines in your CV should depend on how the bullets will affect the appearance of your CV. If you have a number of descriptive statements about your work that all run to about a line in length, bullets can be a good way of separating them. If, however, you have a lot of very short phrases, breaking them up into bulleted lists can leave a lot of white space that could be used more efficiently. Remember that the principles guiding any decision you make should be conciseness and ease of readability.

SAMPLE RESUMÉ

MESA STUDENT
1301 Avenida Cesar Chavez, Monterey Park • (323) 265-8650 • Student@elac.edu

CAREER OBJECTIVE
To obtain an entry level position within a STEM field to (tailor it to the job description)

EDUCATION
Associates Degree in Mathematics, East Los Angeles Community College
• GPA: 3.7, Honors Student • Expected May 2013
– Related Courses: Calculus III, Digital Circuit Analysis, Mechanics of Solids, Electricity and Magnetism, General Biology, Quantitative Analysis I (tailor to job description)

FELLOWSHIPS AND AWARDS
2012 • Inorganic Chemistry Award, departmental award for the outstanding student of inorganic chemistry
2011, 2012 • Cassidy Putnam Prize, departmental award for international intercollegiate mathematics competition

WORK EXPERIENCE
Supplemental Instruction Leader • Learning Assistance Center, CSULB, CA • Spring 2012
– SI course meets 3 hours per week, 15 students are enrolled
– Facilitate in-class discussion, give and review quizzes and assignments
– Grade, lesson plan, and prepare students for exams

Academic Tutor • Tutor R Us Academy, Long Beach, CA • September 2009-September 2011
– Tutored high school Mathematics, English, Physical and Life Sciences
– Prepared at-risk students for CA High School Exit Exam

Intern-Tutor • ELAC Math Tutoring Center, East Los Angeles, CA • Spring 2008
– Tutored lower division mathematics courses including Calculus, Probability, and Statistics
– Independent high school tutor, 2004-2006

Memberships
– Math Club, East Los Angeles College • Spring 2012-Present
– California Mathematics Council • Spring 2012-Present
– American Mathematical Society • Summer 2011-Present
– Association of Mathematics Teacher Educators • Spring 2008-Spring 2009

CONFERENCES ATTENDED
Society of Hispanic Professional Engineers (SHPE) Conference. (2012). Austin, Texas
SAMPLE CURRICULUM VITAE (CV)

(Due to the varying differences among STEM discipline CVs, this is only a basic template for reference)

YOUR NAME

YOUR ADDRESS
1301 Avenida Cesar Chavez
Monterey Park, CA 91754
(323) 265-8650
mesastudent@mesa.edu

PERSONAL PROFILE

• Write your personal profile here. Keep it brief and to a maximum of 200 words.

CAREER HISTORY

JOB TITLE
Employers Name:
Employment Dates:
Work duties:
• Give details of your work duties, try to keep them as relevant as possible to the job you are applying for.

KEY COMPETENCIES AND SKILLS

PROFESSIONAL SKILLS
• Here list those professional abilities you feel are most relevant to the vacancy you are applying for.

PERSONAL SKILLS
• Here list those professional abilities you feel are most relevant to the vacancy you are applying for.

ACADEMIC QUALIFICATIONS

SCHOOL / COLLEGE / UNIVERSITY NAME
Dates attended
Qualifications gained and grades
• Publication Information
• Research conducted/ Research project title

REFERENCES

Name: Name:
Address: Address:
Telephone: Telephone:
E-mail: E-mail:
Job title: Job title:

WHAT SHOULD I INCLUDE?

Your CV should include your name and contact information, an overview of your education, your academic and related employment (especially teaching, editorial, or administrative experience), your research projects (including conference papers and publications), and your departmental and community service. You should also include a reference list. What comes first depends both on your background and on the job for which you are applying. Typically, the first item on a CV for a job candidate start with the candidate’s education listed in reverse chronological order. Frequently the title and even a brief description of the dissertation will be included in this portion. After that, you will want to determine both what the jobs that you are interested in require and where your strengths lie. When determining what comes after your educational credentials, remember that the earlier in your document a particular block of information comes, the more emphasis you will be placing on that block of information. Thus, the most important information should come first. If you are applying for research projects and conference presentations, publications are especially important.

IS THERE A STANDARD CURRICULUM VITAE FORMAT?

No! There are different emphases in each discipline. A good CV emphasizes points that are considered to be most important in your discipline and conforms to standard conventions within it. Find as many examples as possible of CVs by people in your discipline. However, they should never be used as models to be followed in every detail. Instead, they should be used as sources of strategies for how to present your own information most effectively.
WRITING A COVER LETTER

An effective cover letter is just as important as an effective Resumé. The cover letter accompanies the Resumé and it is the piece of paper that the prospective employer sees first.

The individual receiving the Resumé needs to know why it has been sent. The cover letter provides this information and calls the employer’s attention to your special interest in the position or highlights aspects of your background and experience that are particularly relevant to an employer’s needs. The cover letter is an opportunity to:

- Direct the Resumé to a specific person.
- Provide additional information about yourself as it might relate to the specific position for which you are applying.
- Describe briefly what you know about the job and employer.
- Indicate what follow-up action will be taken on your part.

Although the Resumé may be printed, the cover letter should always be individually typed on paper similar to that of the Resumé. It should be no more than one page and written in a business letter format. Never use personal stationery. Following the general rules below will help in developing an effective cover letter:

- Make your letters warm and personal; avoid stereotyped phrases.
- Use plain, good quality stationery.
- Typing is always preferable to handwriting.
- Thank employer/committee for their time and consideration.

EXAMPLE FIRST PARAGRAPH

“I wish to be considered for the student fellowship position at East Los Angeles College. I have an extensive professional background working with programs such as JAVA, which has prepared me for a position in the Center for Computer Science.”

EXAMPLE OF SECOND PARAGRAPH

“My coursework in computer science has strengthened my ability to think critically, analyze information thoroughly, and to “think outside the box”.

FINAL PARAGRAPH

“Thank you for your time and consideration. Should you need more information, I will be happy to provide it.”

SAMPLE COVER LETTER

Your Street Address  
City, State Zip Code  
Telephone Number  
E-mail Address (should be professional)

Month, Day, Year

Mr./Ms./Dr. First Name Last Name  
Title  
Name of Organization  
Street or P. O. Box Address  
City, State Zip Code

Dear Mr./Ms./Dr. Last Name:

OPENING PARAGRAPH: State why you are writing, how you learned of the organization or position, and basic information about yourself.

2ND PARAGRAPH: Tell why you are interested in the employer or type of work the employer does (Simply stating that you are interested does not tell why, and can sound like a form letter). Demonstrate that you know enough about the employer or position to relate your background to the employer or position. Mention specific qualifications which make you a good fit for the employer’s needs. (Focus on what you can do for the employer, not what the employer can do for you.) This is an opportunity to explain in more detail relevant items in your Resumé. Refer to the fact that your Resumé is enclosed. Mention other enclosures if such are required to apply for a position.

3RD PARAGRAPH: Indicate that you would like the opportunity to interview for a position or to talk with the employer to learn more about their opportunities or hiring plans. State that you would be glad to provide the employer with any additional information needed. Thank the employer for her/his consideration.

Sincerely,

(Your handwritten signature [on hard copy])

Your name typed  
(In case of e-mail, your full contact info appears below your printed name [instead of at the top, as for hard copy], and of course there is no handwritten signature)
ASKING FOR A LETTER OF RECOMMENDATION

- **Decide who would be the most appropriate recommender(s)**
  
  As an example, for a research position, you should ask a professor from a STEM course, who can speak about your maturity, academic potential, and perhaps most important, experience in the lab setting. Make sure to choose the appropriate professor by asking yourself:
  
  - Does this professor know my name?
  - Have I ever spoken to this professor outside of class?
  - Did I earn a letter grade of “B” or higher in the course?
  - Have I taken more than one course with this professor?

  Choose someone who can write a letter that includes specifics about your personal characteristics or accomplishments rather than simply generalities already apparent elsewhere in your application.

  If given specific instructions on who should submit, be sure to follow those guidelines:
  
  - You should ask, at minimum, 2 weeks prior to the date for which you need the letter, though 4-6 weeks notice is more appropriate. A single follow up e-mail is appropriate as the date approaches which should only be about 1 week prior to your deadline.
  - Some professors don’t respond well via e-mail. Visiting the professor in office hours, scheduling an appointment, or making a phone call shows that you are willing to put forth the extra effort.
  - Remember that they are not obligated to write recommendations. When they do, they are putting their own reputation on the line.

- **Provide all necessary details**
  
  What do they need to submit, where will they submit to, and by when?

- **Provide as much background information as possible**
  
  So that they can write the best possible letter.

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E-MAIL ETIQUETTE

When sending professional e-mails, it is important that you become more aware of how you come across in your e-mail communication:

- Use only a professional e-mail address (ex: firstname.lastname@gmail.com); create a new account if necessary.
- Make sure to include a subject that is appropriate for the information included in the e-mail; do not leave the subject heading blank.
- Use proper salutation, such as “Dear Dr., Mr., Ms., Mrs.” (research ahead of time to make sure you address the recipient appropriately) if you are not sure, find out before making assumptions.
- Be concise and to the point, avoiding long and/or unnecessary sentences.
- Answer all questions, and pre-empt further questions.
- Use proper spelling, grammar & punctuation—don’t just rely on a spell check, but actually read through yourself to check for errors.
- Do not attach unnecessary files; similarly, if you say you are going to attach something, double check that you have done so.
- Do not write in CAPITALS.
- Pay attention to who an initial e-mail was sent to, and do not “Reply to All” unless it is necessary; however, be sure to “Reply to All” when it is appropriate to do so.
- Avoid abbreviations and emoticons—remember, you are not talking to your friends.
- Include a closing such as “Thank you”, “Respectfully”, etc.
- Do not assume your reader knows who the e-mail is coming from—in your closing salutation, state your first and last name, and if appropriate, other means to get in touch with you (i.e. a phone number or alternative e-mail address).
- Always read through the e-mail before you send it!!
EXAMPLES OF INFORMATION TO INCLUDE (AS AN ATTACHMENT)

- Resume and Curriculum Vitae (CV)
- Personal statement
- Key bullet points—name, major, which course(s) you took with them, when, grade, etc.
- Transcripts
- Background information form (visit ELAC transfer center website for the “Student Background Information Form” and “Recommendation Letter Request Form.”)

ADDRESS THE LETTER PROPERLY

- If you were on a first name basis (meaning they specifically asked you to call them by their first name and you did so constantly), address it by their first name. Otherwise use their appropriate title.
- NOTE “RECOMMENDATION FOR [YOUR NAME]” as the subject line.

GIVE THEM THE DETAILS

- Where does the letter need to go? When do you need it? You’re already asking them to put themselves out and write the letter for you. Don’t ask them to address it and put postage on it for you, too. You want to be the LEAST amount of trouble, so the professor is not annoyed by having to do work you could have done for them (and should have).

THANK THEM, WHETHER OR NOT THEY WRITE THE LETTER

- “Thank you in advance for your time, and consideration. I also wanted to extend an additional thank you for the time I spent under your instruction. I really enjoyed your course, and I can’t express how much I’ve taken away from Math XX.” If they were truly that special teacher, you can be more effusive in your praise. “I know I’ll take the things I’ve learned in that course, and apply them in my life’s work. Your mentoring really had a positive impact in my life, and I can never thank you enough.”

THANK THEM AGAIN

- After you get your letter of recommendation, send a thank you note or follow up e-mail. Where possible a hand-written thank you note via U.S. mail is much more powerful. You may need another letter at another time, or if you’re in a similar field, they may be able to assist you at some other time. If the letter does the trick and gets you the position, scholarship, etc., share the good news!

DO NOT ASK TO READ A COPY OF THE LETTER

- It is not appropriate to do this, since the idea is that the professor sends an honest evaluation. If you think they may not have the greatest things to say, perhaps that is not the best person to ask and you should consider asking someone else. However, you should always ask the recommender if they would write a good and strong letter in your support. It is your right to read the letter; however, this right is often waived as the recommender may choose not to write a letter.
What can I do with a degree in...?

- Biology
- Chemistry
- Computer Science
- Engineering
- Geology
- Mathematics
- Physics

Alternative professions with a STEM degree

What employers look for
WHAT CAN I DO WITH A DEGREE IN **BIOLOGY**?

**GENERAL INFORMATION**
- A Bachelor’s degree will qualify one for work as a laboratory assistant, technician, technologist, or research assistant in education, industry, government, museums, parks, and gardens.
- Master’s degrees allow for more opportunities in research and administration. Some community colleges will hire Master’s level teachers.
- Doctoral degrees are necessary for advanced research and administrative positions, university teaching, and independent research.
- The biological sciences are good preparation for a career in healthcare such as medicine, dentistry, and veterinary science, but professional degrees and licenses are also necessary to practice in these fields.
- Learn laboratory procedures and become familiar with equipment.
- Develop strong analytical, computer, mathematics, and communications skills.
- Read scientific journals related to your area of interest.
- Become familiar with the specific entrance exam for graduate or professional schools in your area of interest.
- Secure strong relationships and personal recommendations from professors and/or employers.
- Consider completing a post-doctoral experience after graduate school.
- Learn federal, state, and local government job application process. The federal government is the largest employer of biologists.
- Gain experience with grant writing and fundraising techniques. Often research must be funded in this manner.

**ORGANISIMAL BIOLOGY**
- Botany and plant sciences
- Ecology and wildlife
- Marine and aquatic
- Systematic (Taxonomy)
- Zoology
- Entomology
- Genetics
- Microbiology: bacteria, algae, fungi, molds, yeasts, viruses, protozoa

**STRATEGIES**
- Seek related experience through coursework, part-time jobs, internships or volunteering. Conduct research or assist in research including the collection of information and samples of water, soil, plants, animals, etc. Join student chapters of professional organizations related to your area of interest. Obtain a Ph.D. for teaching and advanced research and management positions.

**RESEARCH AND DEVELOPMENT**
- Basic
- Applied
- Quality Control
- Administration
- Grant Writing
- Patent Law
- Business
- Education

**STRATEGIES**
- Learn to set up, operate, and maintain laboratory instruments and equipment, and monitor experiments. Select courses with laboratory components.
- Take a course in grant writing. A bachelor’s degree in biology qualifies one for laboratory technician or research assistant positions. Earn master’s degree for better positions, advancement opportunities, more responsibility and higher pay.
- Obtain Ph.D. to direct research projects and lead research teams. Maintain a high grade point average and secure strong faculty recommendations to gain admittance into graduate school.
STRATEGIES
- Plan on attending medical school or other related graduate program
- Maintain an outstanding grade point average, particularly in the sciences
- Seek experiences in hospital or healthcare settings through volunteering, shadowing, or internships
- Develop a backup plan in case medical/graduate school admission is denied
- Consider alternative but related careers such as physician assistants
- Research all of the various fields within medicine to determine career goals.

BIOMEDICAL SCIENCES
- Biophysics
- Biochemistry
- Cellular and Molecular Biology
- Cytology
- Genetics
- Immunology
- Pathology
- Pharmacology
- Physiology
- Virology

STRATEGIES
- Learn to set up, operate, and maintain laboratory instruments and equipment, and monitor experiments
- Seek internships, part-time employment and volunteer opportunities in the biomedical field
- Take courses in areas of specialization and/or consider an advanced degree
- Obtain a Ph.D. for teaching and advanced research and management positions.

HEALTHCARE
- Medicine
- Dentistry
- Optometry
- Podiatry
- Pharmacy
- Veterinary medicine
- Allied Health: occupational therapy, physical therapy
- Medical technology
- Nuclear medicine

STRATEGIES
- Develop multiple areas of specialization through coursework, minors, double-majors in molecular biology, mathematics, statistics, computer science, or machine learning
- Develop strong programming and database management skills; fluency in several programming languages is helpful
- Learn biological software systems
- Complete an internship in an area of interest
- Seek master’s degrees for increased advancement opportunities.

EDUCATION
- Teaching: elementary, secondary, post-secondary
- Non-classroom Education

STRATEGIES
- Gain experience working with students through tutoring, part-time employment, interning, or volunteering
- Master’s degrees may be sufficient for teaching at community or two-year institutions
- Ph.D. is needed for teaching opportunities at colleges and universities.

BIOINFORMATICS
- Algorithm and statistics development
- Data analysis and interpretation
- Information management: organization and retrieval

STRATEGIES
- Develop areas of specialization through coursework, minors, double-majors in molecular biology, mathematics, statistics, computer science, or machine learning
- Develop strong programming and database management skills; fluency in several programming languages is helpful
- Learn biological software systems
- Complete an internship in an area of interest
- Seek master’s degrees for increased advancement opportunities.
WHAT CAN I DO WITH A DEGREE IN CHEMISTRY?

GENERAL INFORMATION
- Undergraduate degree sufficient for entry-level positions such as lab coordinator, research assistant, product testing or analysis, technical sales, or service representative.
- Master’s degree sufficient for most applied research positions, industrial work, and some community college teaching.
- Find research opportunities with professors and other experts in the field to gain experience.
- Ph.D. degree required for university teaching and advanced positions in management and research and development. Postdoctoral experience is preferred for research positions in industry, universities, and government.
- Obtain practical experience using various laboratory equipment and high-tech scientific equipment and data.
- Complete an undergraduate research project.
- Consider electives in computer science, engineering, business, public speaking, and writing.

ANALYTICAL CHEMIST
- Research
- Development
- Analysis and Testing
- Consulting
- Environmental
- Forensics
- Patent Law
- Business
- Education

BIOCHEMICAL
- Research
- Development
- Analysis and Testing
- Consulting
- Quality Control
- Medical
- Environmental
- Industrial Health & Safety
- Hospital Administration

STRATEGIES
- Familiarize yourself with federal, state, and local government job application processes.
- Gain experience in a laboratory setting.
- Develop proficiency with high-tech scientific equipment.
- Take electives in your area of interest.

ORGANIC CHEMIST
- Research
- Development
- Analysis and Testing
- Consulting
- Environmental
- Forensics
- Patent Law
- Business
- Education

STRATEGIES
- Gain additional laboratory and research experience through internships and summer jobs.
- Get involved with undergraduate research with professors.

GENERAL INFORMATION
- Undergraduate degree sufficient for entry-level positions such as lab coordinator, research assistant, product testing or analysis, technical sales, or service representative.
- Master’s degree sufficient for most applied research positions, industrial work, and some community college teaching.
- Find research opportunities with professors and other experts in the field to gain experience.
- Ph.D. degree required for university teaching and advanced positions in management and research and development. Postdoctoral experience is preferred for research positions in industry, universities, and government.
- Obtain practical experience using various laboratory equipment and high-tech scientific equipment and data.
- Complete an undergraduate research project.
- Consider electives in computer science, engineering, business, public speaking, and writing.

ANALYTICAL CHEMIST
- Research
- Development
- Analysis and Testing
- Consulting
- Environmental
- Forensics
- Patent Law
- Business
- Education

BIOCHEMICAL
- Research
- Development
- Analysis and Testing
- Consulting
- Quality Control
- Medical
- Environmental
- Industrial Health & Safety
- Hospital Administration

STRATEGIES
- Familiarize yourself with federal, state, and local government job application processes.
- Gain experience in a laboratory setting.
- Develop proficiency with high-tech scientific equipment.
- Take electives in your area of interest.

ORGANIC CHEMIST
- Research
- Development
- Analysis and Testing
- Consulting
- Environmental
- Forensics
- Patent Law
- Business
- Education

STRATEGIES
- Gain additional laboratory and research experience through internships and summer jobs.
- Get involved with undergraduate research with professors.
STrATEGiES
• Take related courses in social sciences and economics
• Develop strong mathematical background.

EDUCATION- CHEMISTRY PROFESSOR
• Teaching
• Research
• Administration

STrATEGiES
• Obtain certification/licensing for teaching in public schools
• Acquire a master’s degree for community college teaching and a Ph.D. for colleges and universities
• Take courses in public speaking.

BUSINESS CHEMIST
• Technical Sales/Marketing
• Pharmaceutical Sales
• Management
• Consulting
• Industrial Quality Control
• Research & Development

STrATEGiES
• Obtain a minor in business. Develop strong verbal and written communication, interpersonal, and organizational skills
• Hold leadership positions in campus organizations
• Join related student organizations, e.g., American Marketing Association, Financial Management Association, Public Relations Student Society of America, etc.

GEOCHEMISTRY
• Environmental Remediation
• Research & Development
• Analysis & Testing

STrATEGiES
• Take geology & environmental science electives.

INORGANIC CHEMIST
• Research
• Analysis and Testing
• Quality Control
• Consulting

STrATEGiES
• Choose appropriate coursework to specialize in an area
• Develop additional laboratory skills and experience.

POLYMER CHEMIST
• Analysis & Testing
• Research & Development

STrATEGiES
• Gain research experience through internships, part-time employment, and summer jobs.

PHYSICAL CHEMIST
• Research
• Development
• Analysis and Testing
• Quality Control
• Consulting

STrATEGiES
• Gain research experience through internships, part-time employment, and summer jobs.
WHAT CAN I DO WITH A DEGREE IN COMPUTER SCIENCE?

GENERAL INFORMATION
Complete informational interviews with current computer science professionals to help establish career goals.

- Having related experience is critical to most employers that hire computer science majors. Obtain an internship, co-op, or part-time job in a relevant area to increase employability.
- Obtain vendor specific certifications or networking certifications to gain a competitive edge.
- Develop strong interpersonal, communication, and other “soft skills.” Learn to work well on a team.
- Programming and consulting may go hand-in-hand. Many occupations in these areas have responsibilities that overlap.

PROGRAMMING
- Systems
- Scientific Applications
- Business Applications: Intelligence, Warehousing, Information Delivery, Maintenance
- Project Management

STRATEGIES
- Gain relevant experience through internships or co-ops.
- Develop an attention to detail and a flair for creativity.
- Learn to work well with a team and to meet deadlines.
- Supplement computer degree with courses in business, science, or engineering.
- Stay current on programming languages.
- Earn a master’s degree for upper level positions.
- Seek the Certified Computing Professional designation by completing a series of exams and experiential requirements.

SYSTEMS DEVELOPMENT
- Analysis
- Design
- Support
- Quality Assurance
- Specialty Systems: Database, Client-Server, Expert

STRATEGIES
- Develop strong interpersonal skills
- Learn to communicate effectively with technical and non-technical colleagues
- Gain programming experience. Many analysts begin their careers as programmers
- Become an effective problem solver
- Take business courses
- Earn an M.B.A. degree for advanced positions
- Plan to continually educate self on new computer languages and technology.

NETWORK TECHNOLOGY
- Installation and Maintenance
- Administration

STRATEGIES
- Work in university computer labs
- Develop good communication skills and an interest in helping others
- Gain knowledge in a variety of computer areas including minor programming, software, and hardware
- Stay abreast of the latest technology and software
- Earn certifications in networking and computer security.

INTERNET
- Programming
- Software Design
- Systems Analysis
- Hardware Production
- Web Page Design
STRATEGIES
- Gain experience as a webmaster through part-time jobs, internships, or volunteering to design web pages for student organizations
- Learn web-related programming languages
- Take graphic design courses to develop creativity
- Learn to communicate and work well with others in a team by participating in group projects or student organizations
- Earn a master’s degree in computer science for advanced opportunities in programming, analysis, or hardware/software design.

CONSULTING
- System Installation
- System Implementation
- Training

STRATEGIES
- Obtain a strong technical knowledge of computers, a background in business management, and experience as a systems analyst
- Learn various programming languages and operating systems
- Develop exceptional analytical and interpersonal skills.

EDUCATION
- Teaching
- Instructional Technology

CONSULTING
- System Installation
- System Implementation
- Training

STRATEGIES
- Certification required for public school teaching
- Earn a doctoral degree in computer science for post-secondary teaching
- Earn a graduate degree in information technology or a related field for instructional technology
- Develop a research specialty for university teaching. Gain experience working with other students through tutoring or positions in computer labs.

NON-TECHNICAL
- Customer/Product Support
- Technical Writing
- Sales and Marketing
- Business
- Education
- Patent Law

EDUCATION
- Teaching
- Instructional Technology

CONSULTING
- System Installation
- System Implementation
- Training

STRATEGIES
- Certification required for public school teaching
- Earn a doctoral degree in computer science for post-secondary teaching
- Earn a graduate degree in information technology or a related field for instructional technology
- Develop a research specialty for university teaching. Gain experience working with other students through tutoring or positions in computer labs.

NON-TECHNICAL
- Customer/Product Support
- Technical Writing
- Sales and Marketing
- Business
- Education
- Patent Law

STRATEGIES
- Develop excellent communication skills and an interest in helping customers solve problems
- Work in university computer labs
- Supplement curriculum with technical writing courses to develop skills
- Seek related work experiences.
WHAT CAN I DO WITH A DEGREE IN ENGINEERING?

GENERAL INFORMATION

- Bachelor’s degree provides wide range of career opportunities in industry, business, and government.
- Graduate degrees offer more opportunities for career advancement.
- Engineers need to think in scientific and mathematical terms, have ability to study data, sort out important facts, solve problems, and be logical thinkers. Creativity is useful.
- All states and the District of Columbia require registration of engineers whose work may affect the life, health, or safety of the public.
- Join related professional organizations.
- Because of rapid changes in most engineering fields, both continued education and keeping abreast of new developments are very important.
- Most states require an EIT (Engineer-In-Training) test before taking a state examination to become a Professional Engineer (PE).

AEROSPACE ENGINEERING

- Aerodynamics
- Propulsion
- Control Surfaces
- Atmospheric pressure
- Temperature

STRATEGIES

- Deals with the design, construction, and study of the science behind the forces and physical properties of aircraft, rockets, flying craft, and spacecraft.
- Learning and having a strong foundation in physics will be important.

BIOSYSTEMS ENGINEERING

- Natural Resources: Soil and Water Conservation
- International Consulting
- Environmental Control
- Agricultural Structures
- Power and Machinery
- Electronic Systems
- Food Engineering
- Genetic Engineering
- Engineering Technology

STRATEGIES

- A broad, basic engineering discipline with a close relationship to the environment, food production, and agricultural productivity.
- Participate in internship or co-op programs. Acquire strong computer skills.
- Learn a foreign language for work in foreign service. Develop strong math/problem solving skills.

BIOMEDICAL ENGINEERING

- Bioengineering: Design, Development, Manufacturing
- Medical Engineering: Instrumentation, Materials, Diagnostic/Therapeutic Devices, Artificial Organs, Medical Equipment
- Rehabilitation Engineering
- Bio-environmental Engineering

STRATEGIES

- Obtain a Position as a Biomedical Engineer
- Discipline combines engineering and human anatomy to develop and maintain medical and healthcare systems and equipment. Develop strong team work skills. Many positions require a graduate or professional degree. Serves as a good background for medical school.
ELECTRICAL/COMPUTER ENGINEERING

- Power Electronics
- Power Systems
- Communications
- Electronics
- Control Systems
- Digital Signal Processing
- Microelectronics
- Image Processing & Robotics
- Computer Engineering
- Plasma Engineering
- Computer Vision

STRATEGIES
- A field in touch with a wide and growing range of applications such as high speed and wireless communication, exploration of outer space, and a revolution in medical diagnosis and treatment.
- Develop effective verbal and written communication skills.
- Gain experience in team work. Acquire capacity for details. Develop interpersonal skills. Obtain research experience.

CHEMICAL ENGINEERING

- Administration
- Environmental and Waste Management: Development, Design

STRATEGIES
- Combines science of chemistry with discipline of engineering to solve problems and develop efficiency.
- Develop exceptional interpersonal skills. Acquire technical work experience during college years.

CIVIL ENGINEERING

- Structural
- Urban and Community Planning
- Construction
- Environmental
- Water Resources
- Transportation and Pipeline
- Geotechnical
- Photogrammetry, Surveying and Mapping
- Materials

STRATEGIES
- Broad discipline of “doers” providing service to the community through development and improvement.
- Works extensively with other professionals involved with the community. Provides opportunity to work outdoors.
- Learn to work well within a team. Develop strong communication and interpersonal skills.
- Get experience in organizing and directing workers and materials.
- Ability to visualize objects in three dimensions is helpful.

INDUSTRIAL ENGINEERING

- Operations Research
- Applied Behavioral Science Systems
- Manufacturing Management
- Information Engineering
- Computer Systems Design and Development

STRATEGIES
- Discipline links management and operations by improving productivity through a “big picture” approach; serves human needs and works with people.
- Take courses in psychology, sociology and anthropology to learn more about people and how they behave. Earn an MBA for advancement in management or administration.
WHAT CAN I DO WITH A DEGREE IN GEOLOGY?

GENERAL INFORMATION

- Within the many facets of geology, there is often overlap of job functions. However, many geologists find advantage in becoming more specialized.
- Gaining experience is very important and there are many opportunities for students to obtain volunteer, part-time, summer, internship, and/or co-op experiences in different geological fields.
- A bachelor’s degree may be sufficient for entry-level industry positions.
- A master’s degree is often preferred for state survey work and advancement in industry and government.
- Employment prospects are best for those with master’s degrees, familiarity with advanced technologies such as computer modeling, and willingness to relocate.
- Plan on completing a state exam to become a registered geologist.
- Obtain experience in mapping and surveying. Develop skills with measuring equipment as well as laboratory equipment and processes.
- Obtain a business background to help in managing projects and assessing economic costs and benefits.
- Have a love of the outdoors, an interest in nature, and a desire to travel.
- Join groups directed toward improvement of natural resources, environment, and pollution control.
- Develop exceptional computer skills.
- Join the student branch of the professional organization(s) related to interest area(s).
- Learn a foreign language since work may often be done in other countries.
- Develop physical stamina to work and do research in remote areas under various conditions.
- Excellent verbal and written communication skills are essential. The ability to market your skills and write proposals is necessary to maintain steady work. The ability to obtain grants may be necessary to continue a project.

MECHANICAL ENGINEERING

- Mechanical Power Generation: Internal Combustion Engines, Jet Engines, Steam Power Plants, Rockets, Energy Utilization and Conservation
- Machine Sciences: Mechanical Design, Manufacturing and Production, Robotics, Operation and Maintenance

STRATEGIES

- Takes broad outlook on solving complex problems
- Involves design, development and production
- Keeps pace with technology. Acts as an interface between society and technology
GEOLOGIC MAPPING

Strategies
- Geologists interested in geologic mapping collect, process, analyze, translate, and disseminate earth-science information through geologic maps.
- Obtain excellent computer and technical skills because much mapping is now digitized. Gain experience in surveying through internships or academic opportunities.

ASTROGEOLOGY & SPACE SCIENCES

Strategies
- Geologists involved in astrogeology may participate in processing and analyzing data from various missions to planetary bodies in our solar system, assisting in finding potential landing sites for exploration vehicles, mapping our neighboring planets and their moons, and conducting research to better understand the origins, evolutions, and geologic processes operating on these bodies.
- Work in this area often requires many years of experience and developed research. A PhD is often required. Develop extraordinary analytical writing skills for grant writing and research.

HAZARDS (EARTHQUAKES, VOLCANOES, LANDSLIDES, FLOODS)

Strategies
- Geologists involved in this area focus on the detection of hazards and the effects of hazards on the landscape.
- Obtain experience in technical mapping such as digital terrain modeling.
- Consider an additional major in physics or take additional geophysics courses.
- Gain some knowledge in engineering.
- Develop presentation and writing skills.

LANDSCAPE- ENVIRONMENTAL GEOLOGY

Strategies
- Geologists in this category may focus on studying, protecting, and reclaiming the environment.
- Obtain a great deal of lab experience. Consider obtaining a double major in physics because of the geophysical nature of this concentration area.
- Develop excellent written and public speaking skills. Gain a thorough understanding of federal and state government guidelines for the management of solid, liquid, and gaseous waste. Consider a law degree for work with land-use laws and legal matters.

MINERALS

Strategies
- Geologists who are focused in the mineralogy or mining geology area are interested in locating the accumulations of minerals or metals within the earth’s crust.
- Become familiar with environmental regulations and government permit issues.
- Mining geologists rely heavily on the computerized Geologic Block Model to learn about a mineral deposit, so computer literacy is essential.

Strategies
- Mining Geology
- Mineralogy
- Geochemistry
- Economic Geology
- Paleontology
- Stratigraphy
- Sedimentology
- Crystallography

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Strategies
- Sedimentology
- Hydrology
- Geomagnetism
- Earth Surface Dynamics
- Coastal & Marine Geology

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WHAT CAN I DO WITH A DEGREE IN **MATHEMATICS**?

**GENERAL INFORMATION**

- Math majors develop transferable skills including critical thinking, problem diagnosis and solving, computer skills, and quantitative skills.
- A bachelor’s degree is often sufficient for entry-level positions, but an advanced degree may open the door to more upper-level opportunities. Pair a strong background in mathematics with another technical discipline such as computer science or engineering.
- Gain experience through volunteering, internships, and part-time or summer jobs.
- Develop competencies in a specific area of interest.
- Supplement curriculum with courses in business, economics, computers, or statistics for increased job opportunities.
- Maintain a high grade point average. Demonstrate attention to detail and commitment to accuracy.
- Build relationships with faculty for career information, contacts, and letters of recommendation.
- Join related student professional associations and seek leadership positions.
- Conduct informational interviews with professionals in areas of interest to enhance knowledge and make contacts.
- Stay informed of new developments and current trends in the field.

**EDUCATION**

- Teaching
- Research
- Administration

**DESCRIPTION/STRATEGIES**

- Obtain certification/licensing for public school teaching.
- Obtain Ph.D. for higher education teaching and/or advanced research and administrative positions. Develop grant writing skills. Become familiar with Geographic Information Systems (GIS).
INDUSTRY
- Research
- Development
- Design
- Data Processing
- Testing
- Operations
- Quality Control
- Statistical Processing Control
- Environmental Analysis
- Consulting

MARKET RESEARCH
- Data Collection
- Information Analysis

STRATEGIES
- Develop good oral and written communication skills
- Acquire a business minor.
- Volunteer to assist a professor with research
- Become a student member of the American Marketing Association
- Assist with canvassing/phone interviewing for charities or political campaigns
- Complete a market research internship.

BANKING
- Branch Management
- Credit Lending
- Operations
- Systems
- Trusts

STRATEGIES
- Complete an internship in a financial institution
- Develop good interpersonal skills
- Obtain a business minor
- Develop excellent computer skills
- Demonstrate attention to detail
- Become the financial officer or treasurer of a campus organization.

EDUCATION

STRATEGIES
- Obtain appropriate state licensure and/or certification for public school teaching positions
- Volunteer to teach, supervise, or tutor with organizations such as Big Brother/Sister, YMCA, or churches
- Develop excellent written and oral communication skills
- Acquire a master’s degree or Ph.D. for teaching positions at the college or university level.

GOVERNMENT
- Research
- Administration

STRATEGIES
- Become familiar with government hiring procedures. Make contacts through involvement in campus, local, or state politics. Obtain internship with local, state, or federal government. Join related professional organizations. Maintain a high grade point average.

STRATEGIES
- Note that greatest demand is for applied mathematicians with skills in computer science, electronics design and theory, statistics and probability
- Develop computer and research skills
- Learn to use relevant software packages
- Earn a master’s degree in math, business, or related field for advanced positions or for consulting jobs
- Maintain excellent G.P.A. for graduate/professional school admission
- Gain relevant experience through internships, volunteering, summer, or part-time jobs
- Develop good oral and written communication skills
- Learn to work well in teams.
WHAT CAN I DO WITH A DEGREE IN PHYSICS?

GENERAL INFORMATION
- A bachelor's degree will qualify for positions as research assistants, high level technicians, or computer specialists, as well as nontechnical work in publishing or sales.
- An undergraduate degree also provides a solid background for pursuing advanced degrees in other employment areas such as law, business, accounting, or medicine.
- Be aware that expertise and experience in a specialty area are usually required for employment opportunities directly related to physics.
- A graduate degree and post-graduate experience will allow for more responsibility and advancement in the field of physics.
- An earned doctorate is required for college or university teaching, advanced research, and administrative positions.
- A bachelor's degree and state teacher certification are required for K-12 teaching opportunities.
- Visit government laboratories or research centers. Talk with a physicist about his/her profession and career path.
- Join relevant professional associations. Attend their meetings and read their publications.
- Gain experience with tools, electronics, and machinery.
- Become familiar with government job application process for positions in federal, state, or local government.

ASTRONOMY
- Teaching
- Research
- Writing

STRATEGIES
- Acquire excellent verbal and written communication skills
- Get involved in a research project
- Develop a specialty area of expertise and experience.

ACOUSTICAL PHYSICS
- Basic and Applied Research
- Development
- Teaching
- Consulting
- Administration
- Testing

STRATEGIES
- Supplement program with courses in psychology, physiology, communications, political science, and sociology
- Obtain a graduate degree in physics for opportunities in industry
- Maintain an interest in music, the arts and humanities.

ASTROPHYSICS
- Teaching
- Consulting
- Administration
- Research
- Design
- Astronautics

STRATEGIES
- Obtain experience through part-time or voluntary position in a planetarium, observatory or science museum. Complete an internship with a research organization or related industry. Participate in research with scholars in the field.
- Contact the American Astronomical Society for more information.
BIOPHYSICS

- Basic and Applied Research
- Development
- Teaching
- Consulting
- Administration

STRATEGIES
- Acquire information about state licensure required for various types of technicians working in medical settings. Gain experience as a laboratory assistant or hospital orderly. Volunteer at a hospital or clinic.

FLUID AND PLASMA PHYSICS

- Basic and Applied Research
- Development
- Teaching
- Consulting
- Administration

STRATEGIES
- Obtain a graduate degree (master’s or doctorate) for opportunities in industry or research.

GEOPHYSICS

- Basic and Applied Research
- Development
- Teaching
- Consulting
- Administration
- Exploration

STRATEGIES
- Specialize in geophysics or minor in geology
- Develop good background in mathematics, chemistry, engineering, and physics
- Maintain good physical condition.

HEALTH PHYSICS

- Basic and Applied Research
- Development
- Teaching
- Consulting
- Administration
- Monitoring/Inspection

STRATEGIES
- Earn a Ph.D. and certification by the American Board of Health Physics (ABHP) for top university teaching, research and administrative positions
- Complete a master’s degree and certification by the ABHP for professional health physicists’ positions
- Specialize in health physics and obtain technician certification from the National Registry of Radiation Protection

MEDICAL PHYSICS

- Basic and Applied Research
- Development
- Teaching
- Consulting
- Administration

STRATEGIES
- Gain experience working in a hospital
- Develop a research specialty in a medical or health related area.
ALTERNATIVE PROFESSIONS
WITH A STEM DEGREE

STEM degrees are diverse, yet the problem solving and critical thinking skills gained in these areas are highly applicable to various other career options, and furthermore, make you more desirable and marketable candidates for various other career opportunities.

 Regardless of STEM degree obtained, you may still always consider alternatives in:

- Art Conservation
- Business
- Department of Defense (Military or Civilian)
- Education
- Government Agencies (State and Federal, NASA, NSF, NIH, NIST, Dept. State, Dept. Commerce, etc.)
- Homeland Security (TSA, FBI, CIA, etc.)
- Law
- And a number of other options

You can do so, by considering the pursuit of additional education and degrees that go beyond a 4-year bachelors degree, such as:

- Business Programs (M.B.A.)
- Education (M.A.T., Ph.D., Ed.D.)
- Law School (J.D.)
- Library Science (M.L.S.)
- Medical School (M.D.)
- Public Administration (M.P.A.)
- Public Health (M.P.H.)
- And many more

Never limit yourself, to the numerous possibilities that are right at your fingertips!

NUCLEAR PHYSICS

- Basic and Applied Research
- Development
- Teaching
- Consulting
- Administration
- Law
- Quality Control
- Operations and Maintenance

STRATEGIES

- A master’s degree is preferred for positions in industry
- Develop excellent laboratory skills
- Acquire a strong mathematics and chemistry background.
**WHAT EMPLOYERS LOOK FOR**

<table>
<thead>
<tr>
<th>SKILL/QUALITY</th>
<th>WEIGHTED AVERAGE RATING*</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABILITY TO VERBALLY COMMUNICATE WITH PERSONS</td>
<td>4.63</td>
</tr>
<tr>
<td>INSIDE AND OUTSIDE THE ORGANIZATION</td>
<td></td>
</tr>
<tr>
<td>ABILITY TO WORK IN A TEAM STRUCTURE</td>
<td>4.60</td>
</tr>
<tr>
<td>ABILITY TO MAKE DECISIONS AND SOLVE PROBLEMS</td>
<td>4.51</td>
</tr>
<tr>
<td>ABILITY TO PLAN, ORGANIZE, AND PRIORITIZE WORK</td>
<td>4.46</td>
</tr>
<tr>
<td>ABILITY TO OBTAIN AND PROCESS INFORMATION</td>
<td>4.43</td>
</tr>
<tr>
<td>ABILITY TO ANALYZE QUANTITATIVE DATA</td>
<td>4.30</td>
</tr>
<tr>
<td>TECHNICAL KNOWLEDGE RELATED TO THE JOB</td>
<td>3.99</td>
</tr>
<tr>
<td>PROFICIENCY WITH COMPUTER SOFTWARE PROGRAMS</td>
<td>3.95</td>
</tr>
<tr>
<td>ABILITY TO CREATE AND/OR EDIT WRITTEN REPORTS</td>
<td>3.56</td>
</tr>
<tr>
<td>ABILITY TO SELL OR INFLUENCE OTHERS</td>
<td>3.55</td>
</tr>
</tbody>
</table>

**5-point scale, where 1=Not at all important; 2=Not very important; 3=Somewhat important; 4=Very important; and 5=Extremely important**

**Source:** Job Outlook 2013, National Association of Colleges and Employers (Published on October 24, 2012)
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NOTE: For more up to date information on STEM Programs and its different components, please visit http://stem.elac.edu or call (323) 780-6730.
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