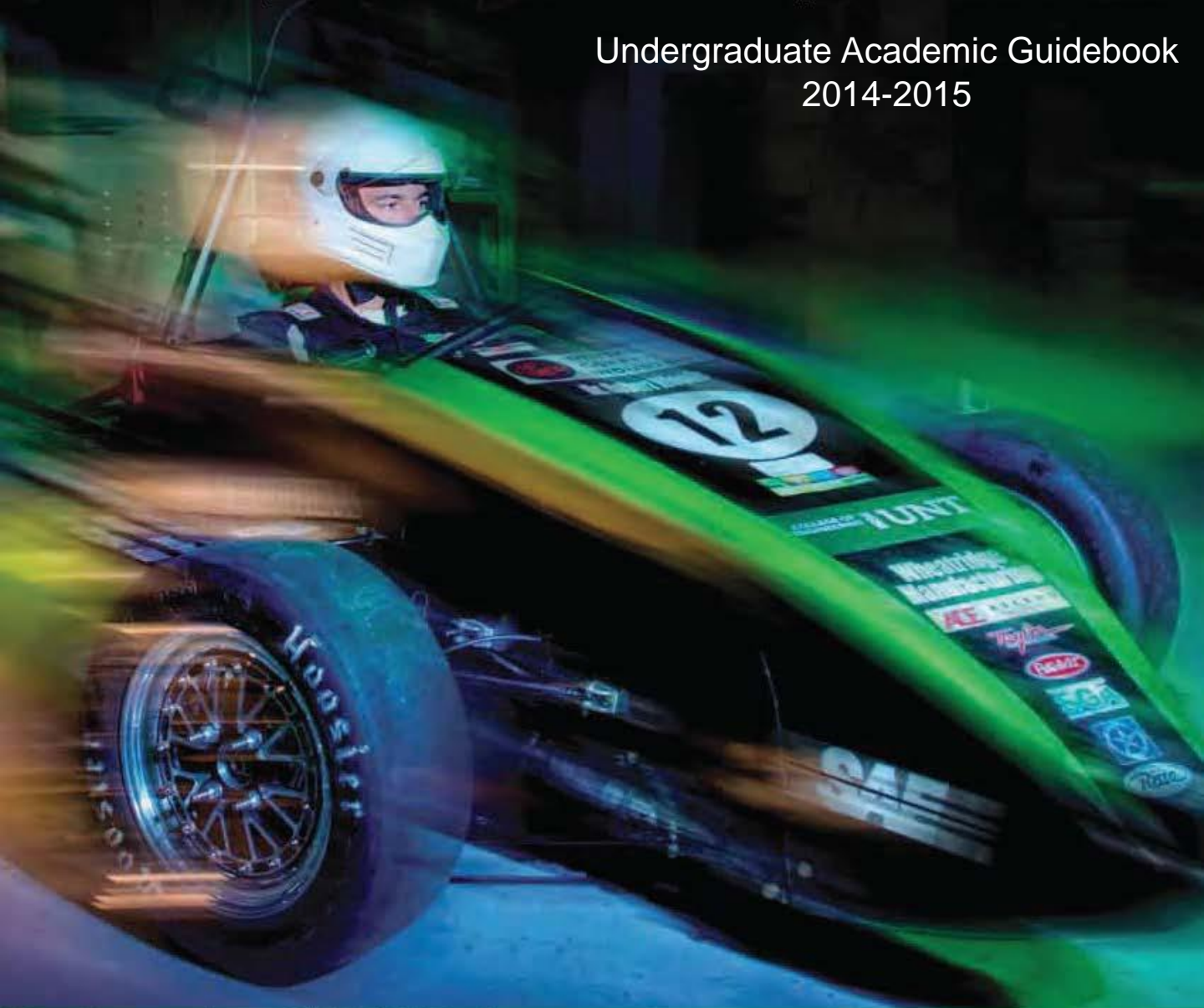


# College of Engineering

Undergraduate Academic Guidebook  
2014-2015



A green light to greatness.

COLLEGE OF  
ENGINEERING **UNIVERSITY OF NORTH TEXAS**

Updated April 21, 2014



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## North Texas Discovery Park

North Texas Discovery Park (NTDP) is a 2<sup>nd</sup> campus located 4 miles north of the main campus. It is the location of all College of Engineering offices, classes, & labs. NTDP also offers a cafeteria, library, computer access labs, specialty engineering labs, an engineering student organization office, an advising office, & a career services office.

Information on free bus transportation routes/times & available student parking passes/locations can be found at [www.unt.edu/transit](http://www.unt.edu/transit).

## College of Engineering Advising Office

The Advising Office exists to aid all students interested in engineering realize & achieve their academic goals. The office is typically open, Monday through Friday, 8:30 A.M. to 5:00 P.M. You should meet with an advisor or counselor in the office at least once each semester.

Advisors: Corina Gomez, Chris Heiden, Lauren Hill, Kimberly Srader, Nancy Van Hoy

Contact information: North Texas Discovery Park C-104  
(940) 565-4201

[engineering.unt.edu/advising](http://engineering.unt.edu/advising)  
"UNT College of Engineering Advising Office" on Facebook  
"@UNTCENGAdvising" on Twitter  
"UNTCENGAdvising" on Instagram

*Advising by appointment only. No walk-ins. Please allow at least 3 weeks for an available appointment opening.*

## Admissions Requirements

In addition to UNT admissions requirements, you must also meet requirements for admission into your desired degree program (major) within the College of Engineering.

### *Freshman Applicants:*

Must have a Math SAT score of 540 (or higher) or a Math ACT score of 22 (or higher).

### *Transfer Applicants:*

Must be eligible to enroll in Math 1710 (Calculus I) by completion of MATH 1650 (Pre-Calculus) or MATH 1610 (Graphs, Functions & Applications) with a grade of "C" or better or equivalent; or in a math course at a higher level than MATH 1710.

If you meet the above requirements, admission will be granted into your desired degree program (major) within the College of Engineering. A degree audit must be created for you in order to progress toward graduation. The degree audit is an official document that lists all the courses & requirements you need to complete your degree. It also shows the application of completed courses, credits, & requirements toward graduation. Your degree audit will be created & emailed to your UNT email account after orientation. Please contact the Advising Office (contact information above) for any questions or concerns regarding your degree audit.

If you do **not** meet the above requirements, you must seek entry into a degree program (major) within another college. You may be eligible to be admitted into an engineering degree program (major) after you complete Math 1650 or MATH 1610 with a grade of "C" or better & if you are also in Academic Good Standing (UNT cumulative 2.0 GPA or higher). You will need to contact the College of Engineering Advising Office (contact information above) to seek admissions after you have met the admissions criteria.

## Degree Requirements

The structure of engineering bachelor's degrees consists of 3 categories of requirements:

- *University Core Curriculum*: set of general education requirements common to all degrees at UNT.
- *Engineering Foundations*: set of requirements unique to engineering degrees.
- *Major*: set of requirements common to a primary area of study.

You may choose to pursue a *Minor* or a *Certificate* in addition to your degree requirements. A *Minor* or a *Certificate* is an optional set of requirements for a secondary area of study. It is similar to a "mini-major".

## Courses

All UNT courses are documented using a four letter subject abbreviation & four digit number.

<i>Abbreviations:</i>	ENGL for English	<i>Numbers:</i>	Freshman	1000
	HIST for History		Sophomore	2000
	MATH for Mathematics		Junior	3000
			Senior	4000

### Different types of courses at UNT:

- *Prerequisite* or "Prereq": course that must be completed to move onto another course in a sequence.
- *Corequisite* or "Coreq": course that must be taken in the same semester as another course.
- *Recitation* or "Rec": extra, required meeting time to cover homework, answer questions, etc..
- *Laboratory* or "Lab": required time that's an application of the information that you learn in class.
- *Advanced course*: junior or senior level course.
- *Internet course* or "INET": course in which the majority of instruction, assignments, & work is online.
- *Blended course*: course in which a portion of the instruction, assignments, & work is online.

## Credit Hours

Number of units assigned to each class. Tells you approximately how many hours per week you'll be in class & approximately how many hours per week you'll need to study for that course.

### How many hours do I earn for each class?

Depends on the course. Usually 3 – 4 hours but courses can range from 1 to 5 hours.

### How many credits is full-time?

12 hours (approximately 4 courses). UNT bills the same tuition for 12 – 15 hours. Fees vary based on credits & course type.

### How many hours can I take each semester?

19 hours in the fall/spring semesters & 18 hours in the summer. You can receive overload approval to take more hours if you have met the following criteria:

- At least a 3.0 GPA on a minimum 15 hour UNT residence load for the semester just completed.
- At least a 3.0 GPA on a minimum 12 hour UNT residence load for the summer terms just completed.
- At least a 3.0 GPA on all work completed at UNT & a minimum 24 hours of credit in residence.

### Do I have to be a full-time student?

No, UNT doesn't require you to be a full-time student but if you are an international student, an athlete, receiving financial aid, scholarships, or insurance coverage from your parents, then yes.

## Classification

Your classification is based on the number of earned credit hours after semester/term grade/credit posting; not the number of semesters or years you have been attending university.

Classification dictates your registration appointment each semester & may impact your eligibility for scholarships, financial aid, etc.

<i>Freshman:</i>	0 - 29 hours	<i>Junior:</i>	60 - 89 hours
<i>Sophomore:</i>	30 - 59 hours	<i>Senior:</i>	90+ hours

## Grade Point Average (GPA)

Grades have a point value & courses are worth a certain amount of credit hours. GPA is calculated by dividing the number of grade points earned by the number of attempted hours. Attempted credit hours are used in calculating GPA. Credit hours earned by AP, CLEP, or IB & courses dropped "W" don't count as attempted hours & don't average into your GPA.

*Careful! Grades of "F" & "WF" are still attempted hours and count heavily against your GPA!*

### How do grades convert to grade points?

- A = 4 points x # of credit hours course is worth
- B = 3 points x # of credit hours course is worth
- C = 2 points x # of credit hours course is worth
- D = 1 points x # of credit hours course is worth
- F = 0 points x # of credit hours course is worth

### How to Calculate Your GPA:

- Determine grade points for each course using the conversion above
- Total your number of grade points
- Total your number of attempted hours
- Divide total grade points by total attempted hours
- Number that results = your GPA

### Different types of GPAs:

- *Semester (or Term) GPA:* the GPA you earned for the semester just enrolled.
- *UNT GPA:* the cumulative GPA you earn in all UNT courses. A minimum 2.0 GPA is required.
- *Overall GPA:* GPA you earn in all courses (UNT & transfer). A minimum 2.0 GPA is required.
- *Engineering Foundations GPA:* GPA you earn in foundations courses. A minimum 2.5 GPA is required.
- *Major GPA:* the GPA you earn in courses in your major. See the requirement checklist page for your major.

You can access a GPA calculator at <http://advising.unt.edu/about-your-gpa/calculate-your-gpa>. You should meet with an advisor with any questions or concerns regarding GPA calculations.

## Grade Point Average (GPA): Honors

### Semester Honors:

Semester honors is determined from your fall or spring semester GPA & is documented on your UNT transcript. You must complete at least 12 hours to be recognized for honors. Summer GPA is not recognized for honors. Candidates for a 2<sup>nd</sup> bachelor's degree are not eligible for semester honors.

*President's List: 4.000*

*Dean's List: 3.500 – 3.999*

### Graduation with Honors:

Graduation with honors is determined by your overall (UNT & transfer) GPA & is documented on your UNT transcript. Candidates for a 2<sup>nd</sup> bachelor's degree are not eligible for graduation honors.

*Cum laude: 3.500 – 3.699*

*Magna cum laude: 3.700 – 3.899*

*Summa cum laude: 3.900 – 4.000*

## Grade Point Average (GPA): Academic Status

### Academic Good Standing:

Standing if you earn at least a cumulative 2.0 UNT GPA.

### Academic Alert:

Standing if you are a freshmen & your UNT GPA falls below 1.8 during the 1<sup>st</sup> semester or falls below 2.0 during the 2<sup>nd</sup> semester. You can only be placed on alert once. You must raise your UNT GPA to 2.0 or higher during the alert semester or you will be placed on probation.

### Academic Probation:

Standing if you are not eligible for alert & your UNT GPA falls below 1.8 during the 1<sup>st</sup> semester or falls below 2.0 during any following semester. You must raise your UNT GPA to 2.0 to return to good standing or earn a semester GPA of at least 2.25 to remain on probation.

### Academic Suspension:

Standing if you fail to raise your UNT GPA to a 2.0 or earn a 2.25 semester GPA while on probation. A 1<sup>st</sup> suspension is for 1 long semester, a 2<sup>nd</sup> suspension is for 2 long semesters, & a 3<sup>rd</sup> suspension is for 4 long semesters. You **may** be allowed to return to UNT after completing your suspension period.

## Incompletes

An "I" or "Incomplete" grade is a pending grade on your record which does not affect your GPA. An "I" may be granted by the professor if you meet all the following conditions:

- The final drop & withdraw deadlines for the semester/term have passed.
- You experience an emergency situation that prohibits you from completing remaining work.
- You have been earning a passing grade to the point of the emergency situation.
- You can complete & submit outstanding work within one year after the grade of "I" is granted.

*Professors are not required to grant an "I" even if you meet the conditions. Each professor may use his or her discretion when deciding whether or not to grant an "I". Incompletes must be completed within 12 months or an automatic grade of "F" will be posted on your transcript.*

### Pass/No Pass Grading Option

You may elect to take a course under the Pass/No Pass Grading Option. Certain criteria must be met & you must obtain approval from your advisor after you have enrolled in the course. A "grade" of "P" or "NP" will be recorded on your transcript. This "grade" is not calculated into your GPA so your "grade" performance will not have a positive or negative impact on your GPA.

Refer to [catalog.unt.edu](http://catalog.unt.edu) for more information & [unt.edu/registration](http://unt.edu/registration) for deadlines.

### Retaking Courses: Course Duplications

If your transcript(s) contains the same course with an earned grade more than once, the 1<sup>st</sup> course/grade will be treated as a duplication & deleted from your GPA. Any additional courses/grades will be calculated into the GPA. This includes transfer courses/grades.

Course duplication will impact your GPA & your academic status (alert, probation, suspension, or good standing).

Please note there is a 2 attempt limit on engineering & major required courses that require a grade of C or better. Also, note that only the last attempt/grade will be used in certifying eligibility for graduation. Contact your advisor to confirm how your GPA or graduation eligibility will be affected if you take a course more than once.

### Dropping or Withdrawing

*Dropping* refers to removing yourself from one or more course(s) for the semester/term (but you remain in at least one course for the semester/term). You must follow the procedures & deadlines listed at [unt.edu/registration](http://unt.edu/registration). A "W" or "WF" may be recorded on your transcript.

Only 6 drops are allowed during your academic career unless you began college before the fall semester of 2007. Once the 6 drop limit is reached, no additional drops are approved.

*Withdrawing* refers to dropping all courses for the semester/term. You must follow the procedures & deadlines listed at [unt.edu/registration](http://unt.edu/registration). A "W" or "WF" may be recorded on your transcript.

*Remember that a "WF" is calculated as a "F" grade on your GPA.*

*Dropping or withdrawing may affect your financial aid. Check with the Financial Aid Office!*

### Taking Courses at Another Institution: Concurrent Enrollment

You may take courses at another institution to apply at UNT if you meet the following conditions:

- You have been preapproved by your advisor.
- The course(s) you plan to enroll in may be preapproved by an advisor.
- You meet course load approval & residency requirements at UNT.
- You are not graduating the same semester/tem in which you will be concurrently enrolled.

*Enrollment in course(s) at another institution during your last/graduating semester will result in postponement of your graduation. This applies to summer enrollment as well as fall or spring enrollment.*

## Registration

You will be using MyUNT located at **my.unt.edu** to register for classes each semester/term.

MyUNT is your personal database for all your information connected with UNT. You will need your EUID & password to log on. Instructional guides for using MyUNT are available on the login page under the myHelp link. MyUNT contains your:

- UNT transcript (shows your grades)
- Degree audit (degree plan which shows all requirements to earn your degree)
- Current Schedule
- Account Balance
- Financial Aid
- Registration/enrollment dates & holds
- Contact information registered with UNT

The ultimate information resource to UNT is the University Catalog. You can locate it at **catalog.unt.edu**. The catalog contains information on:

- Majors, Minors, Certificates offered
- Course descriptions (including prerequisites and corequisites)
- Options for core categories
- University policies (academic, financial, registration, behavior, etc.)
- Resources & contact information

Information on registration issues, problems, or concerns can be located at the following:  
**unt.edu/registration.**

You must register during open enrollment periods & pay by the deadline listed in MyUNT or **unt.edu/registration**. Failure to pay will result in the cancellation of your entire schedule of classes.

If you are having difficulty adding a course to your schedule, contact the department that teaches the course. Common difficulties include full course sections, prerequisite errors, corequisite errors & restricted section errors. Below are department contacts for some common course subject abbreviations:

- |                     |  |
|---------------------|--|
| • BIOL              | Biological Sciences Department: BIOL 210 or (940) 565-2011   |
| • BMEN              | Biomedical Engineering Department: DP A-160 or (940) 565-3338  |
| • CHEM              | Chemistry Department: CHEM 101 or (940) 565-2713   |
| • CNET              | Engineering Technology Department: DP F-115 or (940) 565-2022  |
| • CSCE              | Computer Science & Engineering Department: DP F-201 or (940) 565-2767  |
| • EENG              | Electrical Engineering Department: DP B-270 or (940) 891-6872  |
| • ELET              | Engineering Technology Department: DP F-115 or (940) 565-2022  |
| • ENGR              | Engineering Technology Department: DP F-115 or (940) 565-2022  |
| • MATH              | Mathematics Department: GAB 435 or (940) 565-2155  |
| • MEEN              | Mechanical & Energy Engineering Department: DP F-101 or (940) 565-2400   |
| • MEET              | Engineering Technology Department: DP F-115 or (940) 565-2022  |
| • MFET              | Engineering Technology Department: DP F-115 or (940) 565-2022  |
| • MGMT              | Management Department: BLB 207 or (940) 565-4234   |
| • MTSE              | Materials Science & Engineering Department: DP E-132 or (940) 565-3260   |
| • PHYS              | Physics Department: PHYS 110 or (940) 565-2626   |
| • Any other courses | UNT Directory: (940) 565-2022 & ask to be transferred to the appropriate department that teaches the course in question. |



## Payment

You must register during open enrollment periods & pay by the deadline listed in MyUNT or [www.unt.edu/registration](http://www.unt.edu/registration). Failure to pay will result in the cancellation of your entire schedule of classes.

You have numerous options available to pay. These include financial aid, scholarships, grants, loans, & student employment. Refer to <http://www.unt.edu/paying-for-college.htm> for information.

If you have been awarded financial aid, please be aware that you must maintain Satisfactory Academic Progress (SAP) & Pace of Progression (POP) in order for your aid to continue. Refer to <http://financialaid.unt.edu/satisfactory-academic-progress-requirements> for information.

## Tuition Increases

### *Repeated Course Tuition Increase:*

If you are a Texas resident & you attempt certain courses more than twice, you are subject to pay an additional tuition rate per semester credit hour for the repeated course. Refer information at [essc.unt.edu/registrar/repeated](http://essc.unt.edu/registrar/repeated).

### *Excessive Hours Regarding Tuition:*

Texas code specifies that resident undergraduates may be subject to a higher tuition rate for attempting excessive hours at any public institution.

If you initially enrolled in the fall 1999 semester (or later), you cannot exceed more than 45 credit hours of the number of hours required for the completion of your degree plan. Any hours beyond 45 are considered excessive & will result in additional tuition charges.

If you initially enrolled in the fall 2006 semester (or later), you cannot exceed more than 30 credit hours of the number of hours required for the completion of your degree plan. Any hours beyond 30 are considered excessive & will result in additional tuition charges.

Refer to information at [essc.unt.edu/registrar/excess](http://essc.unt.edu/registrar/excess) & [essc.unt.edu/saucs](http://essc.unt.edu/saucs).

### *Excessive Hours Regarding Financial Aid:*

If you receive financial aid & maintain Satisfactory Academic Progress (SAP) & Pace of Progression (POP), your aid eligibility continues until you attempt 150% of the minimum credit hours required for your degree plan. For most students, once they attempt approximately 180 credit hours, their aid is discontinued.

## Graduation

You must make an appointment with the Advising Office the semester before you plan to graduate to confirm that you are on track for graduation.

Also, you must obtain & complete a graduation application at the beginning of your final semester. Refer to [essc.unt.edu/registrar/graduation](http://essc.unt.edu/registrar/graduation) for more information & the application deadline.

## Commencement

Commencement is UNT's formal graduation ceremony. UNT offers 3 commencements per year in May, August, & December. In order to attend commencement, you must have applied for & been approved for graduation at the beginning of your final semester. Refer to [unt.edu/commencement](http://unt.edu/commencement) for more information.

# BIOMEDICAL ENGINEERING

Bachelor of Science (B.S.) degree with a major in Biomedical Engineering offered through the  
Department of Biomedical Engineering  
Discovery Park A-160; (940) 565-3338  
Faculty Advisor: Dean Vijay Vaidyanathan

**\*This degree and major is only available to incoming first time in college students\***

## University Core

### COMMUNICATION

- 3 Hours approved course

**Grade of "C" or better is required.**

### AMERICAN HISTORY

- HIST 2610, U.S. History To 1865 (3 Hours)
- HIST 2620, U.S. History From 1865 (3 Hours)

*Honors equivalents, HIST 4700, or advanced US-Topic History course(s) may substitute for the courses above.*

### GOVERNMENT/POLITICAL SCIENCE

- PSCI 1040, Government: Laws & Institutions (3 Hours)
- PSCI 1050, Government: Processes & Policies (3 Hours)

*If you are transferring credit for either PSCI course, check with your advisor about the application of course(s) taken elsewhere.*

### CREATIVE ARTS

- 3 Hours approved course

### LANGUAGE, PHILOSOPHY, & CULTURE

- 3 Hours approved course

### SOCIAL & BEHAVIORAL SCIENCE

- 3 Hours approved course

### DISCOVERY

- Should be fulfilled by BMEN 1300, Discover Biomed.

### CAPSTONE

- Should be fulfilled by BMEN 4222, Senior Design II

## Engineering Foundations

Grades of C or better. Needs 2.5 GPA.

- MATH 1710, Calculus I (4 Hours)
- CHEM 1410, General Chemistry I (3 Hours) & CHEM 1430, General Chemistry I Lab (1 Hour)  
or  
CHEM 1415, Chemistry for Engineers (3 Hours) & CHEM 1435, Chemistry for Engineers Lab (1 Hour)
- PHYS 1710, Mechanics (3 Hours) & PHYS 1730, Mechanics Lab (1 Hour)
- TECM 2700, Technical Writing (3 Hours)

## Major Requirements: Biomedical Engineering

Grades of C or better.

### MATHEMATICS & SCIENCE

- PHYS 2220, Electricity & Magnetism (3 Hours) & PHYS 2240 Electricity & Magnetism Lab (1 Hour)
- MATH 1720, Calculus II (3 Hours)
- MATH 2700, Linear Algebra & Vector Geometry (3 Hours)
- MATH 2730, Multivariable Calculus (3 Hours)
- MATH 3410, Differential Equations I (3 Hours)
- MATH 3680, Applied Statistics (3 Hours)

*Please note that completion of the above UNT Math courses will earn a minor in Mathematics.*

### BIOMEDICAL ENGINEERING

- BMEN 1300, Discover Biomedical Engineering (3 Hours)
- BMEN 2320, Biomedical Instrumentation I (4 Hours)
- BMEN 3310, Anatomy and Physiology for Engineers (3 Hours)
- BMEN 3311, Biomedical Signal Analysis (3 Hours)
- BMEN 3312, Introduction to Biomechanics (3 Hours)
- BMEN 3321, Biomaterials (3 Hours)
- BMEN 4310, Biomedical Modeling (3 Hours)
- BMEN 4212, Senior Design I (1 Hour)
- BMEN 4222, Senior Design II (3 Hours)
- BMEN 4311, Advanced Topic in BMEN (3 Hours)
- BMEN 4321, Advanced Topic in BMEN (3 Hours)

- CSCE 1030, Computer Science I (4 Hours)

- ENGR 2405 or EENG 2610, Circuit Analysis (3 Hours)  
ENGR 2415, Circuit Analysis Lab (1 Hour)
- ENGR 2720 or EENG 2710, Logic Design (3 Hours)  
ENGR 2730, Logic Design Lab (1 Hour)
- ENGR 2301, Statics (3 Hours)
- ENGR 2302, Dynamics (3 Hours)

### BIOMEDICAL ENGINEERING ELECTIVE TRACK

Choose an elective track & complete 4 courses from the approved options below:

- Elective (3 Hours)
- Elective (3 Hours)
- Elective (3 Hours)
- Elective (3 Hours)

#### **Biomedical Instrumentation Elective Track:**

MBEN, EENG, and/or ELET courses. Specific course list is currently undetermined.

#### **Biomechanics Elective Track:**

BMEN, MEEN, and/or MEET courses. Specific course list is currently undetermined.

#### **Bioinformatics Elective Track:**

BMEN and/or CSCE courses. Specific course list is currently undetermined.

*This is an unofficial simplified checklist effective Fall 2014. Degree requirements may change. You may need elective courses to help reach a minimum of 120 Total Hours & 42 Advanced Hours. Check with an advisor.*

# BIOMEDICAL ENGINEERING

## Sample Four-Year Schedule

**\*This degree and major is only available to incoming first time in college students\***

### FRESHMAN YEAR

#### FALL

MATH 1710, Calculus I (see note 1)	4
CHEM 1410 or 1415, Chemistry (see note 2)	3
CHEM 1430 or 1435, Chemistry Lab (see note 2)	1
BMEN 1300, Discover BMEN (MATH 1650)	3
Communication Core course	3
University Core course	<u>3</u>
Total Hours	17

#### SPRING

MATH 1720, Calculus II (MATH 1710)	3
PHYS 1710, Mechanics (MATH 1710)	3
PHYS 1730, Mechanics Lab (MATH 1710)	1
CSCE 1030, Computer Science I (see note 3)	4
TECM 2700, Tech. Writing (Communication Core)	3
University Core course	<u>3</u>
Total Hours	17

### SOPHOMORE YEAR

#### FALL

MATH 2730, Multivariable Calculus (MATH 1720)	3
PHYS 2220, E. & M. (MATH 1720, PHYS 1710, 1730)	3
PHYS 2240, E. & M. Lab (MATH 1720, PHYS 1710, 1730)	1
ENGR 2301, Statics (MATH 1710, PHYS 1710, 1730)	3
ENGR 2405 or EENG 2610, Circuits (see note 4)	3
ENGR 2415, Circuits Lab (see note 4)	<u>1</u>
Total Hours	15

#### SPRING

MATH 2700, Linear Algebra (MATH 1720)	3
BMEN 2320, Biomedical Instrumentation I (see note 5)	4
ENGR 2720 or EENG 2710, Logic Design	3
ENGR 2720, Logic Design Lab	1
ENGR 2302, Dynamics (MATH 1720, ENGR 2301)	<u>3</u>
Total Hours	14

### JUNIOR YEAR

#### FALL

MATH 3410, Differential Equations (MATH 1720)	3
BMEN 3311, Biomedical Signal Analysis (see note 5)	3
BMEN 3310, Anatomy and Physiology (see note 5)	3
BMEN 3312, Introduction to Biomechanics (see note 5)	3
Elective Track course	<u>3</u>
Total Hours	15

#### SPRING

MATH 3680, Statistics and Probability (MATH 1720)	3
BMEN 3321, Biomaterials (see note 5)	3
Elective Track course	3
University Core course	3
University Core course	<u>3</u>
Total Hours	15

### SENIOR YEAR

#### FALL

BMEN 4310, Biomedical Modeling (see note 5)	3
BMEN 4212, Senior Design I (see note 5)	1
BMEN 4311, Advanced Topic in BMEN (see note 5)	3
Elective Track course	3
University Core course	<u>3</u>
Total Hours	13

#### SPRING

BMEN 4321, Advanced Topic in BMEN (see note 5)	3
BMEN 4222, Senior Design II (see note 5)	3
Elective Track course	3
University Core course	3
University Core course	<u>3</u>
Total Hours	15

*Required prerequisite(s) indicated in parentheses.*

Note 1: MATH 1710 requires one of the following as prerequisite: completion of MATH 1650, Pre-Calculus with a grade of "C" or higher; or Freshman Math Group Level 3; or approval authorized by score on the Mathematics Department Math Placement Test; or earned credit for a math course at or above the MATH 1710 level.

Note 2: CHEM 1410 & 1430 requires MATH 1100, College Algebra (or higher) as prerequisite. CHEM 1415 & 1435 requires MATH 1650, Pre-Calculus (or higher) as prerequisite.

Note 3: CSCE 1030 requires completion of or co-enrollment in MATH 1710, Calculus I (or higher) as prerequisite. AP Computer Science A score of 4 or 5 earns credit for CSCE 1030. AP Computer Science AB score of 4 or 5 earns credit for CSCE 1030 & 1040. IB Computer Science earns credit for CSCE 1030 & 1040.

Note 4: ENGR 2405 or EENG 2610 and ENGR 2415 requires completion of MATH 1720 and either completion of or co-enrollment in PHYS 2220 & 2240.

Note 5: Prerequisite(s) for this course have not been established yet. Please check with an advisor.

Must earn at least a grade of "C" in each course above except for University Core courses. Must earn at least a 2.5 GPA in Engineering Foundations courses & at least a 2.75 in advanced CSCE courses.

**This is an unofficial sample schedule. Requirements, prerequisites, etc. may change. Students should meet with an advisor each semester for individual scheduling, program decisions, etc. Engineering admissions requirements must be met & a degree audit must be created in order to progress in the program to a timely graduation.**

# COMPUTER ENGINEERING

Bachelor of Science (B.S.) degree with a major in Computer Engineering offered through the Department of Computer Science & Engineering  
Discovery Park F-201; (940) 565-2767  
www.cse.unf.edu

Faculty Advisors: Dr. Ryan Garlick & Mr. David Keathly

## University Core

### COMMUNICATON

- 3 Hours approved course

**Grade of "C" or better is required.**

### AMERICAN HISTORY

- HIST 2610, U.S. History To 1865 (3 Hours)
- HIST 2620, U.S. History From 1865 (3 Hours)

*Honors equivalents, HIST 4700, or advanced US-Topic History course(s) may substitute for the courses above.*

### GOVERNMENT/POLITICAL SCIENCE

- PSCI 1040, Government: Laws & Institutions (3 Hours)
- PSCI 1050, Government: Processes & Policies (3 Hours)

*If you are transferring credit for either PSCI course, check with your advisor about the application of course(s) taken elsewhere.*

### CREATIVE ARTS

- 3 Hours approved course

### LANGUAGE, PHILOSOPHY, & CULTURE

- 3 Hours approved course

### SOCIAL & BEHAVIORAL SCIENCE

- 3 Hours approved course

### DISCOVERY

- 3 Hours approved course

### CAPSTONE

- Fulfilled by CSCE 4011, Engineering Ethics

## Engineering Foundations

Grades of C or better. Needs 2.5 GPA.

- MATH 1710, Calculus I (4 Hours)
- CHEM 1410, General Chemistry I (3 Hours) & CHEM 1430, General Chemistry I Lab (1 Hour)
- or
- CHEM 1415, Chemistry for Engineers (3 Hours) & CHEM 1435, Chemistry for Engineers Lab (1 Hour)
- PHYS 1710, Mechanics (3 Hours) & PHYS 1730, Mechanics Lab (1 Hour)
- TECM 2700, Technical Writing (3 Hours)

## Major Requirements: Computer Engineering

Grades of C or better. Needs a 2.75 GPA in CSCE courses.

### MATHEMATICS & SCIENCE

- PHYS 2220, Electricity & Magnetism (3 Hours) & PHYS 2240, Electricity & Magnetism Lab (1 Hour)
- MATH 1720, Calculus II (3 Hours)
- MATH 1780, Probability Models (3 Hours)
- MATH 2700, Linear Algebra & Vector Geometry (3 Hours)
- MATH 2730, Multivariable Calculus (3 Hours)
- Advanced Math or Science Elective course (3 Hours). Check with your advisor for approved options.

### ELECTRICAL ENGINEERING

- EENG 2610 or ENGR 2405, Circuit Analysis (3 Hours) & ENGR 2415, Circuit Analysis Lab (1 Hour)
- EENG 2710 or ENGR 2720, Digital Logic Design (3 Hours) & ENGR 2730, Digital Logic Lab (1 Hour)
- EENG 3510, Electronics I (3 Hours)

### COMPUTER SCIENCE and ENGINEERING

- CSCE 1030, Computer Science I (4 Hours)
- CSCE 1040, Computer Science II (3 Hours)
- CSCE 2100, Computing Foundations I (3 Hours)
- CSCE 2110, Computing Foundations II (3 Hours)
- CSCE 2610, Assembly Lang. & Computer Organization (3 Hours)
- CSCE 3010, Signals & Systems (3 Hours)
- CSCE 3020, Communications Systems (3 Hours)
- CSCE 3600, Principles of Systems Programming (3 Hours)
- CSCE 3612, Embedded Systems Design (3 Hours)
- CSCE 3730, Reconfigurable Logic (3 Hours)
- CSCE 4011, Engineering Ethics (3 Hours)
- CSCE 4910, Senior Design I (3 Hours)
- CSCE 4915, Senior Design II (3 Hours)

### SPECIALTY AREA

Choose a specialty area & complete 3 courses from the approved options below:

- Specialty Elective (3 Hours)
- Specialty Elective (3 Hours)
- Specialty Elective (3 Hours)

#### **Real-time & Embedded Systems Specialty Area:**

ELET 3750, CSCE 4440, 4600, 4610, 4620, 4730

#### **VLSI & Electronics Specialty Area:**

ELET 3750, PHYS 4500, CSCE 4610, 4730, 4750

#### **Communications & Networks Specialty Area:**

CSCE 3510, 3530, 4520, 4530, 4550, 4560

#### **Computer Systems Specialty Area:**

CSCE 3030, 4600, 4610, 4620, 4650

*This is an unofficial simplified checklist effective Fall 2014. Degree requirements may change. You may need elective courses to help reach a minimum of 121 Total Hours & 42 Advanced Hours. Check with an advisor.*

# COMPUTER ENGINEERING

## Sample Four-Year Schedule

### FRESHMAN YEAR

#### FALL

MATH 1710, Calculus I (see note 1)	4
CHEM 1410 or 1415, Chemistry (see note 2)	3
CHEM 1430 or 1435, Chemistry Lab (see note 2)	1
CSCE 1030, Computer Science I (see note 3)	4
Communication Core course	<u>3</u>
Total Hours	15

#### SPRING

MATH 1720, Calculus II (MATH 1710)	3
PHYS 1710, Mechanics (MATH 1710)	3
PHYS 1730, Mechanics Lab (MATH 1710)	1
CSCE 1040, Comp. Science II (CSCE 1030, MATH 1710)	3
TECM 2700, Tech. Writing (Communication Core)	3
University Core course	<u>3</u>
Total Hours	16

### SOPHOMORE YEAR

#### FALL

MATH 2730, Multivariable Calculus (MATH 1720)	3
PHYS 2220, E. & M. (MATH 1720, PHYS 1710, 1730)	3
PHYS 2240, E. & M. Lab (MATH 1720, PHYS 1710, 1730)	1
CSCE 2100, Computing Foundations I (CSCE 1040)	3
EENG 2710 or ENGR 2720, Digital Logic	3
ENGR 2730, Digital Logic Lab	1
University Core course	<u>3</u>
Total Hours	17

#### SPRING

MATH 1780, Probability Models (MATH 1710)	3
MATH 2700, Linear Algebra (MATH 1720)	3
CSCE 2110, Computing Foundations II (CSCE 2100)	3
CSCE 2610, Assembly & Org. (CSCE 2100, EENG 2710)	3
EENG 2610 or ENGR 2405, Circuit Analysis (see note 4)	3
ENGR 2415, Circuit Analysis Lab (see note 4)	<u>1</u>
Total Hours	16

### JUNIOR YEAR

#### FALL

EENG 3510, Electronics I (EENG 2610)	3
CSCE 3010, Signals & Systems (EENG 2610, MATH 2730)	3
CSCE 3600, Computer Systems (CSCE 2100)	3
CSCE 3730, Reconfigurable Logic (CSCE 2610)	3
University Core course	<u>3</u>
Total Hours	15

#### SPRING

CSCE 3020, Comm. (CSCE 3010)	3
CSCE 3612, Embed. Sys. Design (EENG 2710, CSCE 2610)	3
CSCE Specialty Area Elective course (see note 5)	3
Advanced Math or Science Elective	3
University Core course	<u>3</u>
Total Hours	15

### SENIOR YEAR

#### FALL

CSCE 4910, Design I (CSCE 3612, EENG 3510)	3
CSCE Specialty Area Elective course (see note 5)	3
CSCE Specialty Area Elective course (see note 5)	3
University Core course	3
University Core course	<u>3</u>
Total Hours	15

#### SPRING

CSCE 4915, Design II (CSCE 4910)	3
CSCE 4011, Engineering Ethics (junior classification)	3
University Core course	3
University Core course	3
Advanced Level General Elective (see note 6)	<u>3</u>
Total Hours	15

*Required prerequisite(s) indicated in parentheses.*

Note 1: MATH 1710 requires one of the following as prerequisite: completion of MATH 1650, Pre-Calculus with a grade of "C" or higher; or Freshman Math Group Level 3; or approval authorized by score on the Mathematics Department Math Placement Test; or earned credit for a math course at or above the MATH 1710 level.

Note 2: CHEM 1410 & 1430 requires MATH 1100, College Algebra (or higher) as prerequisite. CHEM 1415 & 1435 requires MATH 1650, Pre-Calculus (or higher) as prerequisite.

Note 3: CSCE 1030 requires completion of or co-enrollment in MATH 1710, Calculus I (or higher) as prerequisite. AP Computer Science A score of 4 or 5 earns credit for CSCE 1030. AP Computer Science AB score of 4 or 5 earns credit for CSCE 1030 & 1040. IB Computer Science earns credit for CSCE 1030 & 1040.

Note 4: EENG 2610 or ENGR 2405 & ENGR 2415 lab requires completion of MATH 1720 and either completion of or co-enrollment in PHYS 2220 & 2240 as prerequisite.

Note 5: Must complete prerequisite(s) for each CSCE Specialty Area Elective course.

Note 6: Advanced level general elective may be needed to reach 42 total advanced hours. Please check with an advisor.

Must earn at least a grade of "C" in each course above except for University Core courses. Must earn at least a 2.5 GPA in Engineering Foundations courses & at least a 2.75 in advanced CSCE courses.

**This is an unofficial sample schedule. Requirements, prerequisites, etc. may change. Students should meet with an advisor each semester for individual scheduling, program decisions, etc. Engineering admissions requirements must be met & a degree audit must be created in order to progress in the program to a timely graduation.**

# COMPUTER SCIENCE

Bachelor of Science (B.S.) degree with a major in Computer Engineering offered through the  
Department of Computer Science & Engineering  
Discovery Park F-201; (940) 565-2767  
www.cse.unf.edu

Faculty Advisor: Dr. Ryan Garlick & Mr. David Keathly

## University Core

### COMMUNICATION

- ☐ 3 Hours approved course

**Grade of "C" or better is required.**

### AMERICAN HISTORY

- ☐ HIST 2610, U.S. History To 1865 (3 Hours)
- ☐ HIST 2620, U.S. History From 1865 (3 Hours)

*Honors equivalents, HIST 4700, or advanced US-Topic History course(s) may substitute for the courses above.*

### GOVERNMENT/POLITICAL SCIENCE

- ☐ PSCI 1040, Government: Laws & Institutions (3 Hours)
- ☐ PSCI 1050, Government: Processes & Policies (3 Hours)

*If you are transferring credit for either PSCI course, check with your advisor about the application of course(s) taken elsewhere.*

### CREATIVE ARTS

- ☐ 3 Hours approved course

### LANGUAGE, PHILOSOPHY, & CULTURE

- ☐ 3 Hours approved course

### SOCIAL & BEHAVIORAL SCIENCE

- ☐ 3 Hours approved course

### DISCOVERY

- ☐ 3 Hours approved course

### CAPSTONE

- ☐ Fulfilled by CSCE 4010, Social Issues in Computing

## Engineering Foundations

Grades of C or better. Needs a 2.5 GPA.

- ☐ MATH 1710, Calculus I (4 Hours)
- ☐ CHEM 1410, General Chemistry I (3 Hours) & CHEM 1430, General Chemistry I Lab (1 Hour)  
or  
CHEM 1415, Chemistry for Engineers (3 Hours) & CHEM 1435, Chemistry for Engineers Lab (1 Hour)
- ☐ PHYS 1710, Mechanics (3 Hours) & PHYS 1730, Mechanics Lab (1 Hour)
- ☐ TECM 2700, Technical Writing (3 Hours)

## Major Requirements: Computer Science cont'd

Grades of C or better. Needs a 2.75 GPA in CSCE courses.

### TECHNICAL COMMUNICATION

- ☐ 1 course chosen from:
  - TECM 4100, Writing Grants & Proposals (3 Hours)
  - TECM 4180, Advanced Technical Writing (3 Hours)
  - TECM 4190, Technical Editing (3 Hours)
  - TECM 4200, Research Methods (3 Hours)
  - TECM 4250, Writing Procedures & Manuals (3 Hours)
  - TECM 4700, Writing in the Sciences (3 Hours)

### MATHEMATICS & SCIENCES

- ☐ PHYS 2220, Electricity & Magnetism (3 Hours) & PHYS 2240 Electricity & Magnetism Lab (1 Hour)
- ☐ BIOL 1710, Principles of Biology (3 Hours) & BIOL 1730, Principles of Biology Lab (1 Hour)
- ☐ MATH 1720, Calculus II (3 Hours)
- ☐ MATH 1780, Probability Models (3 hours)
- ☐ MATH 2700, Linear Algebra & Vector Geometry (3 Hours)

### ELECTRICAL ENGINEERING

- ☐ EENG 2710 or ENGR 2720, Digital Logic Design (3 Hours)

### COMPUTER SCIENCE and ENGINEERING

- ☐ CSCE 1030, Computer Science I (4 Hours)
- ☐ CSCE 1040, Computer Science II (3 Hours)
- ☐ CSCE 2100, Computing Foundations I (3 Hours)
- ☐ CSCE 2110, Computing Foundations II (3 Hours)
- ☐ CSCE 2610, Assembly Lang. & Computer Organization (3 Hours)
- ☐ CSCE 3110, Data Structures (3 Hours)
- ☐ CSCE 3600, Principles of Systems Programming (3 Hours)
- ☐ CSCE 4010, Social Issues in Computing (3 Hours)
- ☐ CSCE 4110, Algorithms (3 Hours)

3 CSCE Core/Depth Elective Courses (9 Hours) chosen from:

- ☐ CSCE 4115, Formal Lang., Automata & Computability (3 Hours)
- ☐ CSCE 4410, Software Development I (3 Hours)
- ☐ CSCE 4430, Programming Languages (3 Hours)
- ☐ CSCE 4600, Introduction to Operating Systems (3 Hours)
- ☐ CSCE 4610, Computer Architecture (3 Hours)
- ☐ CSCE 4650, Introduction to Compilation Techniques (3 Hours)
- ☐ CSCE 4999, Senior Thesis (3 Hours)

3 CSCE Breadth Elective Courses (9 Hours) chosen from:

- ☐ CSCE 3530, Introduction to Computer Networks (3 Hours)
- ☐ CSCE 4210, Game Programming I (3 Hours)
- ☐ CSCE 4230, Introduction to Computer Graphics (3 Hours)
- ☐ CSCE 4310, Introduction to Artificial Intelligence (3 Hours)
- ☐ CSCE 4350, Intro. to Database Systems Design (3 Hours)
- ☐ CSCE 4444, Software Engineering (3 Hours)
- ☐ CSCE 4901, Computer Science Capstone (3 Hours)

3 CSCE Elective Courses (9 Hours) chosen from any 3\*\*\* &/or 4\*\*\* CSCE courses not already applied to other requirements listed above:

- ☐ CSCE 3\*\*\* or 4\*\*\* (3 Hours)
- ☐ CSCE 3\*\*\* or 4\*\*\* (3 Hours)
- ☐ CSCE 3\*\*\* or 4\*\*\* (3 Hours)

*Maximum of 6 hours may be applied from CSCE 4890, 4920, 4940, or 4950. Consult your faculty advisor.*

# COMPUTER SCIENCE

## Sample Four-Year Schedule

### FRESHMAN YEAR

#### FALL

MATH 1710, Calculus I (see note 1)	4
BIOL 1710, Principles of Biology I (see note 2)	3
BIOL 1730, Principles of Biology I Lab (see note 2)	1
CSCE 1030, Computer Science I (see note 3)	4
Communication Core course	<u>3</u>
Total Hours	15

#### SPRING

MATH 1720, Calculus II (MATH 1710)	3
CHEM 1410 or 1415, Chemistry (see note 4)	3
CHEM 1430 or 1435, Chemistry Lab (see note 4)	1
CSCE 1040, Comp. Science II (CSCE 1030, MATH 1710)	3
TECM 2700, Tech. Writing (Communication Core)	3
University Core course	<u>3</u>
Total Hours	16

### SOPHOMORE YEAR

#### FALL

MATH 2700, Linear Algebra (MATH 1720)	3
PHYS 1710, Mechanics (MATH 1710)	3
PHYS 1730, Mechanics Lab (MATH 1710)	1
CSCE 2100, Computing Foundations I (CSCE 1040)	3
EENG 2710 or ENGR 2720, Digital Logic Design	3
University Core course	<u>3</u>
Total Hours	16

#### SPRING

MATH 1780, Probability Models (MATH 1710)	3
PHYS 2220, E. & M. (MATH 1720, PHYS 1710, 1730)	3
PHYS 2240, E. & M. Lab (MATH 1720, PHYS 1710, 1730)	1
CSCE 2110, Computing Foundations II (CSCE 2100)	3
CSCE 2610, Assembly & Org. (CSCE 2100, EENG 2710)	3
University Core course	<u>3</u>
Total Hours	16

### JUNIOR YEAR

#### FALL

CSCE 3110, Data Structures (CSCE 2110)	3
CSCE 3600, Principles of Systems (CSCE 2100)	3
CSCE Elective course (see note 5)	3
TECM course (TECM 2700)	3
University Core course	<u>3</u>
Total Hours	15

#### SPRING

CSCE 4010, Social Issues (junior classification)	3
CSCE Elective course (see note 5)	3
CSCE Elective course (see note 5)	3
CSCE Elective course (see note 5)	3
University Core course	<u>3</u>
Total Hours	15

### SENIOR YEAR

#### FALL

CSCE 4110, Analysis of Algorithms (CSCE 3110)	3
CSCE Elective course (see note 5)	3
CSCE Elective course (see note 5)	3
University Core course	3
University Core course	<u>3</u>
Total Hours	15

#### SPRING

CSCE Elective course (see note 5)	3
CSCE Elective course (see note 5)	3
CSCE Elective course (see note 5)	3
University Core course	<u>3</u>
Total Hours	12

*Required prerequisite(s) indicated in parentheses.*

Note 1: MATH 1710 requires one of the following as prerequisite: completion of MATH 1650, Pre-Calculus with a grade of "C" or higher; or Freshman Math Group Level 3; or approval authorized by score on the Mathematics Department Math Placement Test; or earned credit for a math course at or above the MATH 1710 level.

Note 2: AP Biology score of 4 or 5 earns credit for BIOL 1710, 1730, 1720 & 1740. CLEP Biology earns credit for BIOL 1710, 1730, 1720 & 1740. IB Biology earns credit for BIOL 1710, 1730, 1720 & 1740.

Note 3: CSCE 1030 requires completion of or co-enrollment in MATH 1710, Calculus I (or higher) as prerequisite. AP Computer Science A score of 4 or 5 earns credit for CSCE 1030. AP Computer Science AB score of 4 or 5 earns credit for CSCE 1030 & 1040. IB Computer Science earns credit for CSCE 1030 & 1040.

Note 4: CHEM 1410 & 1430 requires MATH 1100, College Algebra (or higher) as prerequisite. CHEM 1415 & 1435 requires MATH 1650, Pre-Calculus (or higher) as prerequisite.

Note 5: Must complete prerequisite(s) for each CSCE Elective course.

Must earn at least a grade of "C" in each course above except for University Core courses. Must earn at least a 2.5 GPA in Engineering Foundations courses & at least a 2.75 in advanced CSCE courses.

**This is an unofficial sample schedule. Requirements, prerequisites, etc. may change. Students should meet with an advisor each semester for individual scheduling, program decisions, etc. Engineering admissions requirements must be met & a degree audit must be created in order to progress in the program to a timely graduation.**

# CONSTRUCTION ENGINEERING TECHNOLOGY

Bachelor of Science in Engineering Technology (B.S.E.T) degree with a major in Construction Engineering Technology offered through the Department of Engineering Technology  
Discovery Park F-115; (940) 565-2022  
www.etec.unf.edu  
Faculty Advisor: Dr. Michael Shenoda

## University Core

### COMMUNICATION

- 3 Hours approved course

**Grade of "C" or better required.**

### AMERICAN HISTORY

- HIST 2610, U.S. History to 1865 (3 Hours)
- HIST 2620, U.S. History from 1865 (3 Hours)

*Honors equivalents, HIST 4700, or advanced US-Topic History course(s) may substitute for the courses above.*

### GOVERNMENT/POLITICAL SCIENCE

- PSCI 1040, Government: Laws & Institutions (3 Hours)
- PSCI 1050, Government: Processes & Policies (3 Hours)

*If you are transferring credit for either PSCI course, check with your advisor. Do not make an assumption about the application of course(s) taken elsewhere.*

### CREATIVE ARTS

- 3 Hours approved course

### LANGUAGE, PHILOSOPHY, & CULTURE

- 3 Hours approved course

### SOCIAL & BEHAVIORAL SCIENCE

- Fulfilled by ECON 1100, Microeconomics

### DISCOVERY

- Fulfilled by ENGR 1030, Technological Systems

### CAPSTONE

- Fulfilled by CNET 4790, Senior Design II

## Engineering Foundations

Grades of C or better. Needs a 2.5 GPA.

- MATH 1710, Calculus I (4 Hours)
- CHEM 1410, General Chemistry I (3 Hours) & CHEM 1430, General Chemistry I Lab (1 Hour)

**or**

- CHEM 1415, Chemistry for Engineers (3 Hours) & CHEM 1435, Chemistry for Engineers Lab (1 Hour)
- PHYS 1710, Mechanics (3 Hours) & PHYS 1730, Mechanics Lab (1 Hour)
- TECM 2700, Technical Writing (3 Hours)

## Major Requirements: Construction Engr. Tech.

Grades of C or better.

### MATHEMATICS & SCIENCE

- PHYS 2220, Electricity & Magnetism (3 Hours) & PHYS 2240, Electricity & Magnetism Lab (1 hour)
- MATH 1720, Calculus II (3 Hours)

### CONSTRUCTION ENGINEERING TECHNOLOGY

- CNET 1160, Construction Methods & Materials (3 Hours)
- CNET 2180, Construction Methods & Surveying (4 Hours)
- CNET 2300, Architectural Drawing (2 Hours)
- CNET 3150, Construction Contract Documents (2 Hours)
- CNET 3160, Construction Cost Estimating (3 Hours)
- CNET 3190, Construction Scheduling (3 Hours)
- CNET 3410, Occupational Safety & Liability (3 Hours)
- CNET 3430, Structural Analysis (3 Hours)
- CNET 3440, Steel Structures (3 Hours)
- CNET 3460, Soils & Foundations (3 Hours)
- CNET 3480, Structural Design w/ Concrete, Timber, etc. (3 Hours)
- CNET 4170, Construction Management (3 Hours)
- CNET 4180, Problems in Project Management (3 Hours)
- CNET 4620, Adv. Design in Cold-Formed Steel Structures (3 Hours)
- CNET 4780, Senior Design I (1 Hour)
- CNET 4790, Senior Design II (3 Hours)

- ENGR 1030, Technical Systems (3 Hours)
- ENGR 1060, Communications & Ethics (3 Hours)
- ENGR 2301, Statics (3 Hours)
- ENGR 2332, Mechanics of Materials (4 Hours)

- ACCT 2010, Accounting Principles I (3 Hours)
- BCIS 3610, Basic Information Systems (3 Hours)
- BLAW 3430, Legal & Ethical Environment of Business (3 Hours)
- BLAW 4770, Real Estate Law & Contracts (3 Hours)
- ECON 1100, Microeconomics (3 Hours)
- MGMT 3830, Operations Management (3 Hours)

### TECHNICAL ELECTIVES

- Any level course chosen from appropriate elective options (3 Hours)
- Any level course chosen from appropriate elective options (2 Hours)

*Electives must be chosen from the subjects of business, engineering, mathematics, and science. Check with an advisor for appropriate technical elective course options.*



# CONSTRUCTION ENGINEERING TECHNOLOGY

## Sample Four-Year Schedule

### FRESHMAN YEAR

#### FALL

MATH 1710, Calculus I (see note 1)	4
CHEM 1410 or 1415, Chemistry (see note 2)	3
CHEM 1430 or 1435, Chemistry Lab (see note 2)	1
CNET 1160, Const. Methods & Materials	3
ENGR 1030, Technological Systems	3
Communication Core course	<u>3</u>
Total Hours	17

#### SPRING

MATH 1720, Calculus II (MATH 1710)	3
PHYS 1710, Mechanics (MATH 1710)	3
PHYS 1730, Mechanics Lab (MATH 1710)	1
CNET 2180, Const. Methods & Surveying (CNET 1160)	4
ENGR 1060, Comm. & Ethics (English Composition)	3
TECM 2700, Technical Writing (Communication Core)	<u>3</u>
Total Hours	17

### SOPHOMORE YEAR

#### FALL

PHYS 2220, E. & M. (MATH 1720, PHYS 1710, 1730)	3
PHYS 2240, E. & M. Lab (MATH 1720, PHYS 1710, 1730)	1
CNET 2300, Arch. Drawing (CNET 1160)	2
ENGR 2301, Statics (MATH 1710, PHYS 1710, 1730)	3
ECON 1100, Microeconomics	3
University Core course	<u>3</u>
Total Hours	15

#### SPRING

ACCT 2010, Accounting Principles I (ECON 1100)	3
BCIS 3610, Basic Information Systems	3
ENGR 2332, Mechanics of Materials (ENGR 2301)	4
MGMT 3830, Operations Management	3
University Core course	<u>3</u>
Total	16

### JUNIOR YEAR

#### FALL

CNET 3150, Const. Contract Doc. (CNET 2180)	2
CNET 3160, Const. Cost Estimating (CNET 1160, 2300)	3
CNET 3410, Occupational Safety & Liability	3
CNET 3430, Structural Analysis (ENGR 2332)	3
University Core course	<u>3</u>
Total Hours	14

#### SPRING

CNET 3190, Const. Scheduling (CNET 3160)	3
CNET 3440, Steel Structures (CNET 3430)	3
CNET 3460, Soils & Foundations (CNET 2180, ENGR 2332)	3
BLAW 3430, Legal & Ethical Env. (PSCI 1040, PSCI 1050)	3
University Core course	<u>3</u>
Total Hours	15

### SENIOR YEAR

#### FALL

CNET 3480, Structural Design (CNET 2180, CNET 3430)	3
CNET 4170, Const. Management (CNET 3160)	3
CNET 4780, Senior Design I (see note 3)	1
BLAW 4770, Real Estate Law & Contracts	3
University Core course	3
Technical elective course (see note 4)	<u>2</u>
Total Hours	15

#### SPRING

CNET 4180, Problems in Project Mgmt. (CNET 4170)	3
CNET 4620, Adv. Design (CNET 3440)	3
CNET 4790, Senior Design II (CNET 4780)	3
University Core course	3
Technical elective course (see note 4)	<u>3</u>
Total Hours	15

*Required prerequisite(s) indicated in parentheses.*

Note 1: MATH 1710 requires one of the following as prerequisite: completion of MATH 1650, Pre-Calculus with a grade of "C" or higher; or Freshman Math Group Level 3; or approval authorized by score on the Mathematics Department Math Placement Test; or earned credit for a math course at or above the MATH 1710 level.

Note 2: CHEM 1410 & 1430 requires MATH 1100, College Algebra (or higher) as prerequisite. CHEM 1415 & 1435 requires MATH 1650, Pre-Calculus (or higher) as prerequisite.

Note 3: CNET 4780 requires senior classification & completion of CNET 3190, CNET 3440, and CNET 3460 as prerequisite.

Note 4: Must complete 5 hours of technical elective credit. Completion of MATH 1650, Pre-Calculus as prerequisites for MATH 1710 will count toward technical elective hours. Please meet with an advisor to discuss electives.

Must earn at least a grade of "C" in each course above except for University Core courses.

Must earn at least a 2.5 GPA in Engineering Foundations courses.

**This is an unofficial sample schedule. Requirements, prerequisites, etc. may change. Students should meet with an advisor each semester for individual scheduling, program decisions, etc. Engineering admissions requirements must be met & a degree audit must be created in order to progress in the program to a timely graduation.**

# ELECTRICAL ENGINEERING

Bachelor of Science (B.S.) degree with a major in Electrical Engineering is offered through the  
Department of Electrical Engineering  
Discovery Park B-252; (940) 891-6872  
www.ee.unt.edu  
Faculty Advisor: Dr. Gayatri Mehta

## University Core

### COMMUNICATION

- 3 Hours approved course

**Grade of "C" or better is required.**

### AMERICAN HISTORY

- HIST 2610, U.S. History To 1865 (3 Hours)
- HIST 2620, U.S. History From 1865 (3 Hours)

*Honors equivalents, HIST 4700, or advanced US-Topic History course(s) may substitute for the courses above.*

### GOVERNMENT/POLITICAL SCIENCE

- PSCI 1040, Government: Laws & Institutions (3 Hours)
- PSCI 1050, Government: Processes & Policies (3 Hours)

*If you are transferring credit for either PSCI course, check with your advisor about the application of course(s) taken elsewhere.*

### CREATIVE ARTS

- 3 Hours approved course

### LANGUAGE, PHILOSOPHY, & CULTURE

- 3 Hours approved course

### SOCIAL & BEHAVIORAL SCIENCE

- 3 Hours approved course

### DISCOVERY

- Fulfilled by EENG 1910, Learning to Learn

### CAPSTONE

- Fulfilled by EENG 4990, Senior Design II

## Engineering Foundations

Grades of C or better. Needs 2.5 GPA.

- MATH 1710, Calculus I (4 Hours)
- CHEM 1410, General Chemistry I (3 Hours) & CHEM 1430, General Chemistry I Lab (1 Hour)  
**or**  
CHEM 1415, Chemistry for Engineers (3 Hours) & CHEM 1435, Chemistry for Engineers Lab (1 Hour)
- PHYS 1710, Mechanics (3 Hours) & PHYS 1730, Mechanics Lab (1 Hour)
- TECM 2700, Technical Writing (3 Hours)

## Major Requirements: Electrical Engineering

Grades of C or better

### MATHEMATICS & SCIENCE

- PHYS 2220, Electricity & Magnetism (3 Hours) & PHYS 2240 Electricity & Magnetism Lab (1 Hour)
- MATH 1720, Calculus II (3 Hours)
- MATH 2700, Linear Algebra & Vector Geometry (3 Hours)
- MATH 2730, Multivariable Calculus (3 Hours)
- MATH 3410, Differential Equations I (3 Hours)
- MATH 3680, Applied Statistics (3 Hours)

*Please note that completion of the above UNT Math courses will earn a minor in Mathematics.*

### ELECTRICAL ENGINEERING

- EENG 1910, Learning to Learn (3 Hours)
- EENG 1920, Introduction to Electrical Engineering (3 Hours)
- EENG 2610, Circuit Analysis (3 Hours)
- EENG 2620, Signals & Systems (3 Hours)
- EENG 2710, Digital Logic Design (3 Hours)
- EENG 2910, Digital System Design (3 Hours)
- EENG 2920, Analog Circuit Design (3 Hours)
- EENG 3410, Engineering Electromagnetics (3 Hours)
- EENG 3510, Electronics I (3 Hours)
- EENG 3520, Electronics II (3 Hours)
- EENG 3710, Computer Organization (3 Hours)
- EENG 3810, Communications Systems (3 Hours)
- EENG 3910, DSP System Design (3 Hours)
- EENG 3920, Modern Comm. System Design (3 Hours)
- EENG 4910, Senior Design I (3 Hours)
- EENG 4990, Senior Design II (3 Hours)
  
- CSCE 1020, Program Development (4 Hours)

### 4 ELECTRICAL ENGINEERING ELECTIVES

- EENG 4\*\*\*\* (3 Hours)
- EENG 4\*\*\*\* (3 Hours)
- EENG 4\*\*\*\* (3 Hours)
- EENG 4\*\*\*\* (3 Hours)

*Electives may be chosen any 4\*\*\* level EENG courses. Examples Include 4010, 4310, 4330, 4340, 4350, 4410, 4710, 4760, 4810, 4850, & 4900. EENG 4010 is a topics course & the content of 4010 varies for each section for each semester. EENG 4010 may be repeated for credit if you do not retake the exact same topic the 2<sup>nd</sup> time. EENG 4920 & 4951 cannot be taken as electives.*

### BUSINESS COURSES

- MGMT 3830, Operations Management (3 Hours)
- MGMT 3850, Entrepreneurship (3 Hours)

*A minor in Business Foundations (General Business Track) will fulfill the credit for MGMT 3830 or MGMT 3850.*

# ELECTRICAL ENGINEERING

## Sample Four-Year Schedule

### FRESHMAN YEAR

#### FALL

MATH 1710, Calculus I (see note 1)	4
CHEM 1410 or 1415, Chemistry (see note 2)	3
CHEM 1430 or 1435, Chemistry Lab (see note 2)	1
EENG 1910, Project I (see note 3)	3
Communication Core course	3
CSCE 1020, Program Development	4
Total Hours	18

#### SPRING

MATH 1720, Calculus II (MATH 1710)	3
PHYS 1710, Mechanics (MATH 1710)	3
PHYS 1730, Mechanics Lab (MATH 1710)	1
EENG 1920, Intro. to EE (EENG 1910, MATH 1710)	3
EENG 2710, Digital Logic	3
TECM 2700, Tech. Writing (Communication Core)	3
Total Hours	16

### SOPHOMORE YEAR

#### FALL

MATH 2730, Multivariable Calculus (MATH 1720)	3
PHYS 2220, E. & M. (MATH 1720, PHYS 1710, 1730)	3
PHYS 2240, E. & M. Lab (MATH 1720, PHYS 1710, 1730)	1
EENG 2610, Circ. (MATH 1720, coreq PHYS 2220, 2240)	3
EENG 2910, Digital System (EENG 2710)	3
University Core course	3
Total Hours	16

#### SPRING

MATH 2700, Linear Algebra (MATH 1720)	3
MATH 3410, Differential Equations (MATH 1720)	3
EENG 2620, Signals & Systems (EENG 2610, MATH 2730)	3
EENG 2920, Analog Circ. Des. (EENG 1920, EENG 2610)	3
University Core course	3
Total Hours	15

### JUNIOR YEAR

#### FALL

MATH 3680, Statistics (MATH 1710, coreq MATH 1720)	3
EENG 3410, Electromagnetics (EENG 2610, MATH 3410)	3
EENG 3510, Electronics I (EENG 2610)	3
EENG 3910, DSP System Design (EENG 2620)	3
University Core course	3
University Core course	3
Total Hours	18

#### SPRING

EENG 3520, Electronics II (EENG 3510)	3
EENG 3710, Computer Org. (EENG 2710, CSCE 1020)	3
EENG 3810, Comm. Sys. (EENG 2620, 3510, MATH 3680)	3
EENG 3920, Modern Comm. Sys. (coreq EENG 3520)	3
University Core course	3
Total Hours	15

### SENIOR YEAR

#### FALL

EENG Elective (see note 4)	3
EENG Elective (see note 4)	3
EENG 4910, Senior Design I (EENG 3810, 3910, 3920)	3
MGMT 3830, Operations Management	3
University Core course	3
Total Hours	15

#### SPRING

EENG Elective (see note 4)	3
EENG Elective (see note 4)	3
EENG 4990, Senior Design II (EENG 4910)	3
MGMT 3850, Entrepreneurship	3
University Core course	3
Total Hours	15

*Required prerequisite(s) indicated in parentheses.*

Note 1: MATH 1710 requires one of the following as prerequisite: completion of MATH 1650, Pre-Calculus with a grade of "C" or higher; or Freshman Math Group Level 3; or approval authorized by score on the Mathematics Department Math Placement Test; or earned credit for a math course at or above the MATH 1710 level.

Note 2: CHEM 1410 & 1430 requires MATH 1100, College Algebra (or higher) as prerequisite. CHEM 1415 & 1435 requires MATH 1650, Pre-Calculus (or higher) as prerequisite.

Note 3: EENG 1910 requires a major classification as prerequisite. Pre-Engineering students cannot enroll in this course until MATH 1650, Pre-Calculus is completed with a minimum grade of "C" and earn a minimum UNT GPA of 2.0.

Note 4: Must complete prerequisite(s) for each EENG Elective course.

Must earn at least a grade of "C" in each course above except for University Core courses.

Must earn at least a 2.5 GPA in Engineering Foundations courses.

**This is an unofficial sample schedule. Requirements, prerequisites, etc. may change. Students should meet with an advisor each semester for individual scheduling, program decisions, etc. Engineering admissions requirements must be met & a degree audit must be created in order to progress in the program to a timely graduation.**

# ELECTRICAL ENGINEERING TECHNOLOGY

Bachelor of Science in Engineering Technology (B.S.E.T.) degree with a major in Electrical Engineering Technology  
offered through the Department of Engineering Technology  
Discovery Park F-115; (940) 565-2022  
www.etec.unf.edu  
Faculty Advisor: Dr. Robert Hayes

## University Core

### COMMUNICATION

- 3 Hours approved course
- Grade of "C" or better required.**

### AMERICAN HISTORY

- HIST 2610, U.S. History to 1865 (3 Hours)
- HIST 2620, U.S. History from 1865 (3 Hours)

*Honors equivalents, HIST 4700, or advanced US-Topic History course(s) may substitute for the courses above.*

### GOVERNMENT/POLITICAL SCIENCE

- PSCI 1040, Government: Laws & Institutions (3 Hours)
- PSCI 1050, Government: Processes & Policies (3 Hours)

*If you are transferring credit for either PSCI course, check with your advisor. Do not make an assumption about the application of course(s) taken elsewhere.*

### CREATIVE ARTS

- 3 Hours approved course

### LANGUAGE, PHILOSOPHY, & CULTURE

- 3 Hours approved course

### SOCIAL & BEHAVIORAL SCIENCE

- 3 Hours approved course

### DISCOVERY

- Fulfilled by ENGR 1030, Technological Systems

### CAPSTONE

- Fulfilled by ELET 4790, Senior Design II

## Engineering Foundations

Grades of C or better. Needs 2.5 GPA.

- MATH 1710, Calculus I (4 Hours)
  - CHEM 1410, General Chemistry I (3 Hours) & CHEM 1430, General Chemistry I Lab (1 Hour)
- or**
- CHEM 1415, Chemistry for Engineers (3 Hours) & CHEM 1435, Chemistry for Engineers Lab (1 Hour)
  - PHYS 1710, Mechanics (3 Hours) & PHYS 1730, Mechanics Lab (1 Hour)
  - TECM 2700, Technical Writing (3 Hours)

## Major Requirements: Electrical Engr. Tech.

Grades of C or better

### MATHEMATICS & SCIENCE

- PHYS 2220, Electricity & Magnetism (3 Hours) & PHYS 2240, Electricity & Magnetism Lab (1 Hour)
- MATH 1720, Calculus II (3 Hours)

### ELECTRICAL ENGINEERING TECHNOLOGY

- ENGR 1030, Technological Systems (3 Hours)
- ENGR 1060, Communication and Ethics (3 Hours)
- ENGR 2405, Circuit Analysis (3 Hours) & ENGR 2415, Circuit Analysis Lab (1 Hour)
- ENGR 2720, Logic Design (3 Hours) & ENGR 2730, Logic Design Lab (1 Hour)
- ENGR 2750, Introduction to Microprocessors (4 Hours)

- ELET 1720, Introduction to Electronics (3 Hours)
- ELET 2740, Special Electronic Devices (4 Hours)
- ELET 3700, Advanced Circuit Analysis (4 Hours)
- ELET 3750, Embedded C-Programming (4 Hours)
- ELET 3760, Design of DSP Systems (4 Hours)
- ELET 3980, Digital Control of Industrial Processes (3 Hours)
- ELET 4300, Embedded System Organization (3 Hours)
- ELET 4320, Electronic Communications II (3 Hours)
- ELET 4330, Instrumentation System Design (3 Hours)
- ELET 4340, Digital Logic Design Techniques (3 Hours)
- ELET 4710 (4 Hours), Electronic Communications I (4 Hours)
- ELET 4720 (4 Hours), Control Systems (4 Hours)
- ELET 4780 (4 Hours), Senior Design I (1 Hour)
- ELET 4790, Senior Design II (3 Hours)

### TECHNICAL ELECTIVES

- Advanced level (3\*\*\* or 4\*\*\* level) course chosen from appropriate elective options (3 Hours).  
*ELET 3220 is recommended for all students for this elective.*
- Any level course chosen from appropriate elective options (3 Hours)
- Any level course chosen from appropriate elective options (3 Hours)
- Any level course chosen from appropriate elective options (3 Hours)
- Any level course chosen from appropriate elective options (3 Hours)

*Electives must be chosen from the subjects of business, engineering, mathematics, and science. Check with an advisor for appropriate technical elective course options.*

*This is an unofficial simplified checklist effective Fall 2014. Degree requirements may change. You may need elective courses to help reach a minimum of 124 Total Hours & 42 Advanced Hours. Check with an advisor.*

# ELECTRICAL ENGINEERING TECHNOLOGY

## Sample Four-Year Schedule

### FRESHMAN YEAR

#### FALL

MATH 1710, Calculus I (see note 1)	4
CHEM 1410 or 1415, Chemistry (see note 2)	3
CHEM 1430 or 1435, Chemistry Lab (see note 2)	1
ELET 1720, Intro. to Electronics (see note 3)	3
ENGR 1030, Technological Systems	3
Communication Core course	3
Total Hours	17

#### SPRING

MATH 1720, Calculus II (MATH 1710)	3
PHYS 1710, Mechanics (MATH 1710)	3
PHYS 1730, Mechanics Lab (MATH 1710)	3
ELET 2740, Elect. Devices (ELET 1720, coreq MATH 1710)	4
ENGR 2720, Logic Design	3
ENGR 2730, Logic Design Lab	1
Total Hours	17

### SOPHOMORE YEAR

#### FALL

PHYS 2220, E. & M. (MATH 1720, PHYS 1710, 1730)	3
PHYS 2240, E. & M. Lab (MATH 1720, PHYS 1710, 1730)	1
ENGR 2405, Circuits (MATH 1720, co/pre PHYS 2220)	3
ENGR 2415, Circuits Lab (see above)	1
ENGR 2750, Intro to Microprocessors (ENGR 2720, 2730)	4
University Core course	3
Total Hours	15

#### SPRING

ENGR 1060, Comm. & Ethics (English Composition)	3
ELET 3980, Dig. Control (MATH 1650 or higher)	3
TECM 2700, Technical Writing (Communication Core)	3
University Core course	3
University Core course	3
Total Hours	15

### JUNIOR YEAR

#### FALL

ELET 3700, Adv. Circuit Analysis (ENGR 2405, 2415)	4
ELET 3750, Embedded C-Prog. (ENGR 2750)	4
University Core course	3
University Core course	3
Total Hours	14

#### SPRING

ELET 3220, Intro. to Power Sys. Analysis (ENGR 2405)	3
ELET 3760, Design of DSP Systems (ELET 3700, ELET 3750)	4
ELET 4340, Digital Logic Design Tech. (ELET 3750)	3
Technical Elective (see note 3)	3
University Core course	3
Total Hours	16

### SENIOR YEAR

#### FALL

ELET 4300, Embedded System Org. (ELET 4340)	3
ELET 4710, Electronic Comm I (ELET 3700)	4
ELET 4720, Control Systems (ELET 3700)	4
ELET 4780, Senior Design I (ELET 3760, Senior Standing)	1
Technical Elective (see note 3)	3
Total Hours	15

#### SPRING

ELET 4320, Electronic Comm II (ELET 4710)	3
ELET 4330, Instrumentation Sys. Design (ELET 3760)	3
ELET 4790, Senior Design II (ELET 4780)	3
Technical Elective (see note 3)	3
University Core course	3
Total Hours	15

*Required prerequisite(s) indicated in parentheses.*

Note 1: MATH 1710 requires one of the following as prerequisite: completion of MATH 1650, Pre-Calculus with a grade of "C" or higher; or Freshman Math Group Level 3; or approval authorized by score on the Mathematics Department Math Placement Test; or earned credit for a math course at or above the MATH 1710 level.

Note 2: CHEM 1410 & 1430 requires MATH 1100, College Algebra (or higher) as prerequisite. CHEM 1415 & 1435 requires MATH 1650, Pre-Calculus (or higher) as prerequisite.

Note 3: ELET 1720 requires MATH 1100, College Algebra, or a higher MATH course as prerequisite.

Must earn at least a grade of "C" in each course above except for University Core courses.

Must earn at least a 2.5 GPA in Engineering Foundations courses.

**This is an unofficial sample schedule. Requirements, prerequisites, etc. may change. Students should meet with an advisor each semester for individual scheduling, program decisions, etc. Engineering admissions requirements must be met & a degree audit must be created in order to progress in the program to a timely graduation.**

# INFORMATION TECHNOLOGY

Bachelor of Arts (B.A.) degree with a major in Information Technology is offered through the  
Department of Computer Science & Engineering  
Discovery Park F-201; (940) 565-2767  
www.cse.unf.edu  
Faculty Advisor: Dr. Ryan Garlick & Mr. David Keathly

## University Core

## Major Requirements: Information Tech.

Grades of C or better. Needs 2.75 GPA in advanced CSCE

### COMMUNICATION

- 3 Hours approved course

Grade of "C" or better is required.

### AMERICAN HISTORY

- HIST 2610, U.S. History To 1865 (3 Hours)
- HIST 2620, U.S. History From 1865 (3 Hours)

Honors equivalents, HIST 4700, or advanced US-Topic History course(s) may substitute for the courses above.

### GOVERNMENT/POLITICAL SCIENCE

- PSCI 1040, Government: Laws & Institutions (3 Hours)
- PSCI 1050, Government: Processes & Policies (3 Hours)

If you are transferring credit for either PSCI course, check with your advisor about the application of course(s) taken elsewhere.

### CREATIVE ARTS

- 3 Hours approved course

### LANGUAGE, PHILOSOPHY, & CULTURE

- 3 Hours approved course

### SOCIAL & BEHAVIORAL SCIENCE

- 3 Hours approved course

### DISCOVERY

- 3 Hours approved course

### CAPSTONE

- Fulfilled by CSCE 4010, Social Issues in Computing

## Engineering Foundations

Grades of C or better. Needs 2.5 GPA.

- MATH 1710, Calculus I (4 Hours)
- CHEM 1410, General Chemistry I (3 Hours) & CHEM 1430, General Chemistry I Lab (1 Hour)  
or  
CHEM 1415, Chemistry for Engineers (3 Hours) & CHEM 1435, Chemistry for Engineers Lab (1 Hour)
- PHYS 1710, Mechanics (3 Hours) & PHYS 1730, Mechanics Lab (1 Hour)
- TECM 2700, Technical Writing (3 Hours)

### MATHEMATICS

- MATH 1680, Elementary Probability & Statistics (3 Hours)

### COMPUTER SCIENCE and ENGINEERING

- CSCE 1030, Computer Science I (4 Hours)
- CSCE 1040, Computer Science II (3 Hours)
- CSCE 2100, Computing Foundations I (3 Hours)
- CSCE 2110, Computing Foundations II (3 Hours)
- CSCE 3055, IT Project Management (3 hours)
- CSCE 3220, Human Computer Interfaces (3 Hours)
- CSCE 3420, Internet Programming (3 Hours)
- CSCE 3530, Introduction to Computer Networks (3 Hours)
- CSCE 3600, Principles of Systems Programming (3 Hours)
- CSCE 4010, Social Issues in Computing (3 Hours)
- CSCE 4350, Introduction to Database Systems Design (3 Hours)
- CSCE 4444, Software Engineering (3 Hours)
- CSCE 4550, Introduction to Computer Security (3 Hours)
- CSCE 4905, Information Technology Capstone I (3 Hours)
- CSCE 4925, Information Technology Capstone II (3 Hours)

### CONCENTRATION AREA ELECTIVES

- CSCE 3\*\*\* or 4\*\*\* Level Course (3 Hours)
- CSCE 3\*\*\* or 4\*\*\* Level Course (3 Hours)
- CSCE 3\*\*\* or 4\*\*\* Level Course (3 Hours)

### SUPPORTING AREA

- Course approved by an advisor (3 Hours)
- Course approved by an advisor (3 Hours)
- Course approved by an advisor (3 Hours)
- Course approved by an advisor (3 Hours)
- Course approved by an advisor (3 Hours)
- Course approved by an advisor (3 Hours)
- Course approved by an advisor (3 Hours)

You must choose a supporting area (21 Hours) & complete approved courses. Check with your advisor concerning approved classes. Suggestions include, but are not limited to:

Game Development  
Information Security  
Networking  
Information Systems

Business (Pre-MBA)  
Pre-Law  
Pre-Med

A maximum of 6 hours can be applied to Concentration Area and/or Supporting Area from CSCE 4890, 4920, 4940, or 4950.

Completion of CSCE 2610, 3530, 4550, & 4560 for Concentration Area and/or Supporting Area earns a certificate from the Committee on National Security Systems.

Completion of CSCE 4210, 4215, 4220, & 4250 for Concentration Area and/or Supporting Area earns a certificate in Game Programming.

This is an unofficial simplified checklist effective Fall 2014. Degree requirements may change. You may need elective courses to help reach a minimum of 121 Total Hours & 42 Advanced Hours. Check with an advisor.

# INFORMATION TECHNOLOGY

## Sample Four-Year Schedule

### FRESHMAN YEAR

#### FALL

MATH 1710, Calculus I (see note 1)	4
CHEM 1410 or 1415, Chemistry (see note 2)	3
CHEM 1430 or 1435, Chemistry Lab (see note 2)	1
CSCE 1030, Computer Science I (see note 3)	4
Communication Core course	<u>3</u>
<b>Total Hours</b>	<b>15</b>

#### SPRING

MATH 1680, Intro. Probability & Statistics	3
PHYS 1710, Mechanics (MATH 1710)	3
PHYS 1730, Mechanics Lab (MATH 1710)	1
CSCE 1040, Comp. Science II (CSCE 1030, MATH 1710)	3
TECM 2700, Technical Writing (Communication Core)	3
University Core course	<u>3</u>
<b>Total Hours</b>	<b>16</b>

### SOPHOMORE YEAR

#### FALL

CSCE 2100, Computing Foundations I (CSCE 1040)	3
Supporting Area course (see note 4)	3
University Core course	3
University Core course	3
University Core course	<u>3</u>
<b>Total Hours</b>	<b>15</b>

#### SPRING

CSCE 2110, Computing Foundations II (CSCE 2100)	3
CSCE 3600, Computer Systems (CSCE 2100)	3
Supporting Area course (see note 4)	3
University Core course	3
University Core course	<u>3</u>
<b>Total Hours</b>	<b>15</b>

### JUNIOR YEAR

#### FALL

CSCE 3055, IT Project Management (CSCE 2100)	3
CSCE 3220, Human Computer Interfaces (CSCE 2110)	3
CSCE 3420, Internet Programming (CSCE 2110)	3
CSCE 3530, Computer Networks (CSCE 3600)	3
CSCE 4350, Database Systems (CSCE 2110)	<u>3</u>
<b>Total Hours</b>	<b>15</b>

#### SPRING

CSCE 4010, Engineering Ethics (junior classification)	3
CSCE Concentration Area Elective (see note 5)	3
CSCE Concentration Area Elective (see note 5)	3
Supporting Area course (see note 4)	3
University Core course	<u>3</u>
<b>Total Hours</b>	<b>15</b>

### SENIOR YEAR

#### FALL

CSCE 4444, Software Engineering (CSCE 2110)	3
CSCE 4550, Computer Security (CSCE 3600)	3
CSCE 4905, Capstone I (CSCE 3055)	3
Supporting Area course (see note 4)	3
Supporting Area course (see note 4)	<u>3</u>
<b>Total Hours</b>	<b>15</b>

#### SPRING

CSCE 4925, Capstone II (CSCE 4905)	3
CSCE Concentration Area Elective (see note 5)	3
Supporting Area course (see note 4)	3
Supporting Area course (see note 4)	3
University Core course	<u>3</u>
<b>Total Hours</b>	<b>15</b>

*Required prerequisite(s) indicated in parentheses.*

Note 1: MATH 1710 requires one of the following as prerequisite: completion of MATH 1650, Pre-Calculus with a grade of "C" or higher; or Freshman Math Group Level 3; or approval authorized by score on the Mathematics Department Math Placement Test; or earned credit for a math course at or above the MATH 1710 level.

Note 2: CHEM 1410 & 1430 requires MATH 1100, College Algebra (or higher) as prerequisite. CHEM 1415 & 1435 requires MATH 1650, Pre-Calculus (or higher) as prerequisite.

Note 3: CSCE 1030 requires completion of or co-enrollment in MATH 1710, Calculus I (or higher) as prerequisite. AP Computer Science A score of 4 or 5 earns credit for CSCE 1030. AP Computer Science AB score of 4 or 5 earns credit for CSCE 1030 & 1040. IB Computer Science earns credit for CSCE 1030 & 1040.

Note 4: Must enroll in Supporting Area courses approved by an advisor & complete prerequisite(s) for approved courses.

Note 5: Must enroll in 3\*\*\* or 4\*\*\* level CSCE courses & complete prerequisite(s) for chosen courses.

Must earn at least a grade of "C" in each course above except for University Core courses. Must earn at least a 2.5 GPA in Engineering Foundations courses & at least a 2.75 in advanced CSCE courses.

**This is an unofficial sample schedule. Requirements, prerequisites, etc. may change. Students should meet with an advisor each semester for individual scheduling, program decisions, etc. Engineering admissions requirements must be met & a degree audit must be created in order to progress in the program to a timely graduation.**

# MATERIALS SCIENCE & ENGINEERING

Bachelor of Science (B.S.) degree with a major in Materials Science & Engineering offered through the  
Department of Materials Science & Engineering  
Discovery Park E-132; (940) 565-3260  
www.mtse.unt.edu  
Faculty Advisor: Dr. Peter Collins

## University Core

### COMMUNICATION

- 3 Hours approved course

**Grade of "C" or better is required.**

### AMERICAN HISTORY

- HIST 2610, U.S. History To 1865 (3 Hours)
- HIST 2620, U.S. History From 1865 (3 Hours)

*Honors equivalents, HIST 4700, or advanced US-Topic History course(s) may substitute for the courses above.*

### GOVERNMENT/POLITICAL SCIENCE

- PSCI 1040, Government: Laws & Institutions (3 Hours)
- PSCI 1050, Government: Processes & Policies (3 Hours)

*If you are transferring credit for either PSCI course, check with your advisor about the application of course(s) taken elsewhere.*

### CREATIVE ARTS

- 3 Hours approved course

### LANGUAGE, PHILOSOPHY, & CULTURE

- 3 Hours approved course

### SOCIAL & BEHAVIORAL SCIENCE

- 3 Hours approved course

### DISCOVERY

- 3 Hours approved course , MTSE 1100 recommended

### CAPSTONE

- Fulfilled by MTSE 4100, Senior Research Project II

## Engineering Foundations

Grades of C or better. Needs 2.5 GPA.

- MATH 1710, Calculus I (4 Hours)
- CHEM 1410, General Chemistry I (3 Hours) & CHEM 1430, General Chemistry I Lab (1 Hour)
- PHYS 1710, Mechanics (3 Hours) & PHYS 1730, Mechanics Lab (1 Hour)
- TECM 2700, Technical Writing (3 Hours)

## Major Requirements: Materials Sci. & Engr.

Grades of C or better

### MATHEMATICS & SCIENCE

- CHEM 1420, General Chemistry II (3 Hours)
- PHYS 2220, Electricity & Magnetism (3 Hours) & PHYS 2240, Electricity & Magnetism Lab (1 Hour)
- PHYS 3010, Modern Physics (3 Hours)
- MATH 1720, Calculus II (3 Hours)
- MATH 2700, Linear Algebra & Vector Geometry (3 Hours)
- MATH 3410, Differential Equations (3 Hours)

### MATERIALS SCIENCE & ENGINEERING

- ENGR 2301, Statics (3 Hours)
- ENGR 2332, Mechanics of Materials (4 Hours)
- ENGR 3450, Engineering Materials (3 Hours)
- MTSE 3010, Bonding & Structure (3 Hours)
- MTSE 3020, Microstructure & Characterization (3 Hours)
- MTSE 3030, Thermodynamics & Phase Diagrams (3 Hours)
- MTSE 3040, Transport Phenomena (3 Hours)
- MTSE 3050, Mechanical Properties (3 Hours)
- MTSE 3060, Phase Transformations (3 Hours)
- MTSE 3070, Electrical, Optical, & Magnetic Properties (3 Hours)
- MTSE 3080, Materials Processing (3 Hours)
- MTSE 3090, Laboratory I (1 Hour)
- MTSE 3100, Laboratory II (1 Hour)
- MTSE 4010, Physical Metallurgy Principles (3 Hours)
- MTSE 4030, Ceramic Science & Engineering (3 Hours)
- MTSE 4050, Polymer Science & Engineering (3 Hours)
- MTSE 4060, Materials Selection & Performance (3 Hours)
- MTSE 4090, Senior Research Project I (2 Hours)
- MTSE 4100, Senior Research Project II (3 Hours)

### Advanced Level MTSE Elective courses

- MTSE Elective course (3 Hours)
- MTSE Elective course (3 Hours)

*This is an unofficial simplified checklist effective Fall 2014. Degree requirements may change. You may need elective courses to help reach a minimum of 120 Total Hours & 42 Advanced Hours. Check with an advisor.*



# MATERIALS SCIENCE & ENGINEERING

## Sample Four-Year Schedule

### FRESHMAN YEAR

#### FALL

MATH 1710, Calculus I (see note 1)	4
CHEM 1410, General Chemistry I (see note 2)	3
CHEM 1430, General Chemistry I Lab (see note 2)	1
Communication Core course	3
MTSE 1100, Discover How & Why Materials Matter	3
Total Hours	14

#### SPRING

MATH 1720, Calculus II (MATH 1710)	3
CHEM 1420, General Chemistry II (CHEM 1410, 1430)	3
PHYS 1710, Mechanics (MATH 1710)	3
PHYS 1730, Mechanics Lab (MATH 1710)	1
TECM 2700, Tech. Writing (Communication Core)	3
University Core course	3
Total Hours	16

### SOPHOMORE YEAR

#### FALL

MATH 2700, Linear Algebra (MATH 1720)	3
PHYS 2220, E. & M. (MATH 1720, PHYS 1710, 1730)	3
PHYS 2240, E. & M. Lab (MATH 1720, PHYS 1710, 1730)	1
ENGR 2301, Statics (MATH 1710, PHYS 1710, 1730)	3
University Core course	3
University Core course	3
Total Hours	16

#### SPRING

MATH 3410, Differential Equations (MATH 1720)	3
PHYS 3010, Modern Physics (PHYS 2220, 2240)	3
ENGR 2332, Mechanics of Materials (ENGR 2301)	4
ENGR 3450, Engineering Materials (see note 3)	3
University Core course	3
Total Hours	16

### JUNIOR YEAR

#### FALL

MTSE 3010, Bonding & Structure (ENGR 3450)	3
MTSE 3020, Micro & Characterization (ENGR 3450)	3
MTSE 3030, Thermo & Phase Diagrams (ENGR 3450)	3
MTSE 3040, Transport Phen. (ENGR 3450, MATH 3410)	3
MTSE 3090, Laboratory I (ENGR 3450)	1
University Core course	3
Total Hours	16

#### SPRING

MTSE 3050, Mechanical Properties (ENGR 3450)	3
MTSE 3060, Phase Transform. (MTSE 3010, 3030, 3040)	3
MTSE 3070, Elect., Opt., & Mag. Properties (ENGR 3450)	3
MTSE 3080, Materials Processing (MTSE 3040)	3
MTSE 3100, Laboratory II (MTSE 3090)	1
University Core course	3
Total Hours	16

### SENIOR YEAR

#### FALL

MTSE 4010, Phys. Metallurgy Prin. (MTSE 3010, 3030, 3040)	3
MTSE 4030, Ceramic Sci. & Engr. (MTSE 3010, 3020, 3040)	3
MTSE 4050, Polymer Sci. & Engr. (ENGR 3450)	3
MTSE 4090, Senior Research Project I (see note 4)	2
University Core course	3
Total Hours	14

#### SPRING

MTSE Advanced Level MTSE Elective (see note 5)	3
MTSE Advanced Level MTSE Elective (see note 5)	3
MTSE 4060, Selection & Perform. (MTSE 3030, 3040, 3050)	3
MTSE 4100, Senior Research Project II (MTSE 4090)	3
University Core course	3
Total Hours	15

*Required prerequisite(s) indicated in parentheses.*

Note 1: MATH 1710 requires one of the following as prerequisite: completion of MATH 1650, Pre-Calculus with a grade of "C" or higher; or Freshman Math Group Level 3; or approval authorized by score on the Mathematics Department Math Placement Test; or earned credit for a math course at or above the MATH 1710 level.

Note 2: CHEM 1410 & 1430 requires MATH 1100, College Algebra, or placement into a higher level math course as prerequisite.

Note 3: ENGR 3450 requires completion of MATH 1710, CHEM 1410, 1430, PHYS 1710, 1730 as prerequisite.

Note 4: MTSE 4090 requires completion of MTSE 3010, 3020, 3030, 3040, 3050, 3070, 3080 as prerequisite.

Note 5: Must complete prerequisite(s) for each Advanced Elective MTSE course. See your advisor for approved course options.

Must earn at least a grade of "C" in each course above except for University Core courses.

Must earn at least a 2.5 GPA in Engineering Foundations courses.

**This is an unofficial sample schedule. Requirements, prerequisites, etc. may change. Students should meet with an advisor each semester for individual scheduling, program decisions, etc. Engineering admissions requirements must be met & a degree audit must be created in order to progress in the program to a timely graduation.**

# MECHANICAL & ENERGY ENGINEERING

Bachelor of Science (B.S.) degree with a major in Mechanical & Energy Engineering offered through the  
Department of Mechanical & Energy Engineering  
Discovery Park F-101; (940) 565-2400  
www.mee.unt.edu  
Faculty Advisors: Dr. Xiaohua Li & Dr. Cherish Qualls

## University Core

### COMMUNICATION

- ☐ 3 Hours approved course
- Grade of "C" or better is required.**

### AMERICAN HISTORY

- ☐ HIST 2610, U.S. History To 1865 (3 Hours)
- ☐ HIST 2620, U.S. History From 1865 (3 Hours)

*Honors equivalents, HIST 4700, or advanced US-Topic History course(s) may substitute for the courses above.*

### GOVERNMENT/POLITICAL SCIENCE

- ☐ PSCI 1040, Government: Laws & Institutions (3 Hours)
- ☐ PSCI 1050, Government: Processes & Policies (3 Hours)

*If you are transferring credit for either PSCI course, check with your advisor about the application of course(s) taken elsewhere.*

### CREATIVE ARTS

- ☐ 3 Hours approved course

### LANGUAGE, PHILOSOPHY, & CULTURE

- ☐ 3 Hours approved course

### SOCIAL & BEHAVIORAL SCIENCE

- ☐ 3 Hours approved course

### DISCOVERY

- ☐ Fulfilled by MEEN 1000, Discover Mechanical & Energy

### CAPSTONE

- ☐ Fulfilled by MEEN 4250, Capstone Design

## Engineering Foundations

Grades of C or better. Needs 2.5 GPA.

- ☐ MATH 1710, Calculus I (4 Hours)
- ☐ CHEM 1415, Chemistry for Engineers (3 Hours) & CHEM 1435, Chemistry for Engineers Lab (1 Hour)
- ☐ PHYS 1710, Mechanics (3 Hours) & PHYS 1730, Mechanics Lab (1 Hour)
- ☐ TECM 2700, Technical Writing (3 Hours)

*Please note that CHEM 1410-1430 cannot be approved for MEEN students unless CHEM 1420-1440 is completed in addition to CHEM 1410-1430.*

## Major Requirements: Mechanical & Energy Engr.

Grades of C or better

### MATHEMATICS & SCIENCE

- ☐ PHYS 2220, Electricity & Magnetism (3 Hours) & PHYS 2240, Electricity & Magnetism Lab (1 Hour)
- ☐ MATH 1720, Calculus II (3 Hours)
- ☐ MATH 2700, Linear Algebra & Vector Geometry (3 Hours)
- ☐ MATH 2730, Multivariable Calculus (3 Hours)
- ☐ MATH 3410, Differential Equations (3 Hours)

### MECHANICAL & ENERGY ENGINEERING

- ☐ MEEN 1000, Discover Mechanical & Energy (3 Hours)
- ☐ MEEN 2210, Thermodynamics I (3 Hours)
- ☐ MEEN 3100, Manufacturing Processes (3 Hours)
- ☐ MEEN 3110, Thermodynamics II (3 Hours)
- ☐ MEEN 3120, Fluid Mechanics (3 Hours)
- ☐ MEEN 3130, Machine Elements (3 Hours)
- ☐ MEEN 3210, Heat Transfer (3 Hours)
- ☐ MEEN 3230, System Dynamics & Controls (3 Hours)
- ☐ MEEN 3240, Laboratory I (2 Hours)
- ☐ MEEN 3242, Laboratory II (1 Hour)
- ☐ MEEN 3250, Analytical Methods (3 Hours)
- ☐ MEEN 4150, Design I (3 Hours)
- ☐ MEEN 4250, Capstone Design (3 Hours)

- ☐ ENGR 1304, Engineering Graphics (3 Hours)
- ☐ ENGR 2301, Statics (3 Hours)
- ☐ ENGR 2302, Dynamics (3 Hours)
- ☐ ENGR 2332, Mechanics of Materials (4 Hours)
- ☐ ENGR 2405, Circuit Analysis (3 Hours)
- or**
- ☐ EENG 2610, Circuit Analysis (3 Hours)
- ☐ ENGR 3450, Engineering Materials (3 Hours) & ENGR 3451, Engineering Materials Lab (1 Hour)
- ☐ CSCE 1020, Program Development (4 Hours)

### MECHANICAL & ENERGY ELECTIVES

- ☐ MEEN Energy Elective course (3 hours)
- ☐ MEEN Energy Elective course (3 Hours)

Mechanical & Energy Elective course options:  
MEEN 3125, 4110, 4112, 4300, 4310, 4315, 4320, 4330, 4332, 4335, 4340, 4350, 4410

### TECHNICAL ELECTIVES

- ☐ MEEN Technical Elective course (3 hours)
- ☐ MEEN Technical Elective course (3 Hours)

Technical Elective course options:  
MEEN 4120, 4130, 4140, 4151, 4152, 4160, 4415, 4488, 4510, MFET 4190

*Detailed information about energy & technical elective course options is located at [www.mee.unt.edu](http://www.mee.unt.edu)*

# MECHANICAL & ENERGY ENGINEERING

## Sample Four-Year Schedule

### FRESHMAN YEAR

#### FALL

MATH 1710, Calculus I (see note 1)	4
CHEM 1415, Chemistry for Engineers (see note 2)	3
CHEM 1435, Chemistry for Engineers Lab (see note 2)	1
MEEN 1000, Discover Mech. & Energy (see note 3)	3
Communication Core course	3
University Core course	<u>3</u>
Total Hours	17

#### SPRING

MATH 1720, Calculus II (MATH 1710)	3
PHYS 1710, Mechanics (MATH 1710)	3
PHYS 1730, Mechanics Lab (MATH 1710)	1
ENGR 1304, Engineering Graphics	3
TECM 2700, Tech Writing (Communication Core)	3
University Core course	<u>3</u>
Total Hours	16

### SOPHOMORE YEAR

#### FALL

MATH 2730, Multivariable Calculus (MATH 1720)	3
PHYS 2220, E. & M. (MATH 1720, PHYS 1710, 1730)	3
PHYS 2240, E. & M. Lab (MATH 1720, PHYS 1710, 1730)	1
ENGR 2301, Statics, (MATH 1710, PHYS 1710, 1730)	3
CSCE 1020, Program Development	4
University Core course	<u>3</u>
Total Hours	17

#### SPRING

MATH 3410, Differential Equations (MATH 1720)	3
MEEN 2210, Thermodynamics I (MATH 1720, PHYS 1710)	3
ENGR 2302, Dynamics (ENGR 2301)	3
ENGR 2332, Mechanics of Materials (ENGR 2301)	3
EENG 2610 or ENGR 2405, Circuit Analysis (see note 4)	<u>3</u>
Total Hours	15

### JUNIOR YEAR

#### FALL

MEEN 3110, Thermodynamics II (MEEN 2210)	3
MEEN 3120, Fluids (MATH 2730, MATH 3410)	3
MEEN 3240, Laboratory I (MEEN 2210, MATH 3410)	2
MEEN 3250, Analy. (ENGR 1304, CSCE 1020, MATH 3410)	3
ENGR 3450, Materials (CHEM 1415, 1435, PHYS 1710)	3
ENGR 3451, Materials Lab (CHEM 1415, 1435, PHYS 1710)	<u>1</u>
Total Hours	15

#### SPRING

MATH 2700, Linear Algebra (MATH 1720)	3
MEEN 3130, Machine Elements (MEEN 1000, ENGR 2332)	3
MEEN 3210, Heat Transfer (MEEN 3120)	3
MEEN 3230, Dyna. & Controls (ENGR 2302, MATH 3410)	3
MEEN 3242, Laboratory II (MEEN 3240)	1
University Core course	<u>3</u>
Total Hours	16

### SENIOR YEAR

#### FALL

MEEN 3100, Manufacturing (ENGR 2332, 3450, 3451)	3
MEEN 4150, Design I (see note 5)	3
MEEN Advanced Level Energy Elective (see note 6)	3
MEEN Advanced Level Technical Elective (see note 6)	3
University Core course	<u>3</u>
Total Hours	15

#### SPRING

MEEN 4250, Capstone Design (MEEN 4150)	3
MEEN Advanced Level Energy Elective (see note 6)	3
MEEN Advanced Level Technical Elective (see note 6)	3
University Core course	3
University Core course	<u>3</u>
Total Hours	15

*Required prerequisite(s) indicated in parentheses.*

Note 1: MATH 1710 requires one of the following as prerequisite: completion of MATH 1650, Pre-Calculus with a grade of "C" or higher; or Freshman Math Group Level 3; or approval authorized by score on the Mathematics Department Math Placement Test; or earned credit for a math course at or above the MATH 1710 level.

Note 2: CHEM 1415 & 1435 requires MATH 1650, Pre-Calculus, or placement into a higher level math course as prerequisite.

Note 3: MEEN 1000 requires MATH 1650, Pre-Calculus, or placement into a higher level math course as prerequisite.

Note 4: EENG 2610 or ENGR 2405 require MATH 1720 as prerequisite and PHYS 2220, 2240 as prerequisite or corequisite.

Note 5: MEEN 4150 requires EENG 2610 or ENGR 2405, MEEN 3130, MEEN 3210, & MEEN 3230 as prerequisite.

Note 6: Must complete prerequisite(s) for each Advanced Level Energy & Advanced Level Technical Elective course. Please check with an advisor.

Must earn at least a grade of "C" in each course above except for University Core courses.

Must earn at least a 2.5 GPA in Engineering Foundations courses.

**This is an unofficial sample schedule. Requirements, prerequisites, etc. may change. Students should meet with an advisor each semester for individual scheduling, program decisions, etc. Engineering admissions requirements must be met & a degree audit must be created in order to progress in the program to a timely graduation.**

# MECHANICAL ENGINEERING TECHNOLOGY

Bachelor of Science in Engineering Technology (B.S.E.T.) degree with a major in Mechanical Engineering Technology offered through the Department of Engineering Technology  
Discovery Park F-115; (940) 565-2022  
www.etec.unf.edu  
Faculty Advisor: Dr. Robert Hayes

## University Core

### COMMUNICATION

- ☐ 3 Hours approved course
- Grade of "C" or better required.**

### AMERICAN HISTORY

- ☐ HIST 2610, U.S. History to 1865 (3 Hours)
- ☐ HIST 2620, U.S. History from 1865 (3 Hours)

*Honors equivalents, HIST 4700, or advanced US-Topic History course(s) may substitute for the courses above.*

### GOVERNMENT/POLITICAL SCIENCE

- ☐ PSCI 1040, Government: Laws & Institutions (3 Hours)
- ☐ PSCI 1050, Government: Processes & Policies (3 Hours)

*If you are transferring credit for either PSCI course, check with your advisor. Do not make an assumption about the application of course(s) taken elsewhere.*

### CREATIVE ARTS

- ☐ 3 Hours approved course

### LANGUAGE, PHILOSOPHY, & CULTURE

- ☐ 3 Hours approved course

### SOCIAL & BEHAVIORAL SCIENCE

- ☐ 3 Hours approved course

### DISCOVERY

- ☐ Fulfilled by ENGR 1030, Technological Systems

### CAPSTONE

- ☐ Fulfilled by MEET 4790, Senior Design II

## Engineering Foundations

Grades of C or better. Needs 2.5 GPA.

- ☐ MATH 1710, Calculus I (4 Hours)
  - ☐ CHEM 1410, General Chemistry I (3 Hours) & CHEM 1430, General Chemistry I Lab (1 Hour)
- or**
- ☐ CHEM 1415, Chemistry for Engineers (3 Hours) & CHEM 1435, Chemistry for Engineers Lab (1 Hour)
  - ☐ PHYS 1710, Mechanics (3 Hours) & PHYS 1730, Mechanics Lab (1 Hour)
  - ☐ TECM 2700, Technical Writing (3 Hours)

## Major Requirements: Mechanical Engr. Tech.

Grades of C or better

### MATHEMATICS & SCIENCE

- ☐ PHYS 2220, Electricity & Magnetism (3 Hours) & PHYS 2240, Electricity & Magnetism Lab (1 Hour)
- ☐ MATH 1720, Calculus II (3 Hours)

### MECHANICAL ENGINEERING TECHNOLOGY

- ☐ ENGR 1030, Technological Systems (3 Hours)
- ☐ ENGR 1060, Communication and Ethics (3 Hours)
- ☐ ENGR 1304, Engineering Graphics (3 Hours)
- ☐ ENGR 2301, Statics (3 Hours)
- ☐ ENGR 2302, Dynamics (3 Hours)
- ☐ ENGR 2332, Mechanics of Materials (4 Hours)
- ☐ ENGR 2405, Circuit Analysis (3 Hours) & ENGR 2415, Circuit Analysis Lab (1 Hour)
- ☐ ENGR 3450, Engineering Materials (3 Hours) & ENGR 3451, Engineering Materials Lab (1 Hour)
- ☐ MEET 3650, Design of Mechanical Components (3 Hours)
- ☐ MEET 3940, Fluid Mechanics Applications (3 Hours)
- ☐ MEET 3990, Applied Thermodynamics (3 Hours)
- ☐ MEET 4050, Mechanical Design (3 Hours)
- ☐ MEET 4350, Heat Transfer Applications (3 Hours)
- ☐ MEET 4360, Experimental Thermal Sciences (2 Hours)
- ☐ MEET 4780, Senior Design I (1 Hour)
- ☐ MEET 4790, Senior Design II (3 Hours)
- ☐ MFET 3110, Machining Principles and Processes (4 Hours)
- ☐ MFET 4190, Quality Assurance (3 Hours)
- ☐ MFET 4200, Engineering Cost Analysis (2 Hours)
- ☐ MFET 4210, CAD/CAM System Operations (3 Hours)
- ☐ CSCE 1020, Program Development (4 Hours)
- ☐ ELET 3980, Digital Control of Industrial Processes (3 Hours)
- ☐ LSCM 3960, Logistics and Supply Chain Management (3 Hours)

### TECHNICAL ELECTIVES

- ☐ Advanced level (3\*\*\* or 4\*\*\* level) course chosen from appropriate elective options (3 Hours)
- ☐ Advanced level (3\*\*\* or 4\*\*\* level) course chosen from appropriate elective options (2 Hours)
- ☐ Any level course chosen from appropriate elective options (3 Hours)

*Electives must be chosen from the subjects of business, engineering, mathematics, and science. Check with an advisor for appropriate technical elective course options.*

*This is an unofficial simplified checklist effective Fall 2014. Degree requirements may change. You may need elective courses to help reach a minimum of 124 Total Hours & 42 Advanced Hours. Check with an advisor.*

# MECHANICAL ENGINEERING TECHNOLOGY

## Sample Four-Year Schedule

### FRESHMAN YEAR

#### FALL

MATH 1710, Calculus I (see note 1)	4
CHEM 1410 or 1415, Chemistry (see note 2)	3
CHEM 1430 or 1435, Chemistry Lab (see note 2)	1
ENGR 1030, Technological Systems	3
ENGR 1304, Engineering Graphics	3
Communication Core course	<u>3</u>
Total Hours	17

#### SPRING

MATH 1720, Calculus II (MATH 1710)	3
PHYS 1710, Mechanics (MATH 1710)	3
PHYS 1730, Mechanics Lab (MATH 1710)	1
ENGR 1060, Comm. & Ethics (English Composition)	3
TECM 2700, Tech. Writing (Communication Core)	3
University Core course	<u>3</u>
Total Hours	16

### SOPHOMORE YEAR

#### FALL

PHYS 2220, E. & M. (MATH 1720, PHYS 2220, 2240)	3
PHYS 2240, E. & M. Lab (MATH 1720, PHYS 2220, 2240)	1
ENGR 2301, Statics (MATH 1710, PHYS 1710, 1730)	3
CSCE 1020, Program Development	4
University Core course	3
University Core course	<u>3</u>
Total Hours	17

#### SPRING

ENGR 2302, Dynamics (ENGR 2301)	3
ENGR 2332, Mechanics of Materials (ENGR 2301)	4
ENGR 2405, Circuit (MATH 1720, PHYS 2220, 2240)	3
ENGR 2415, Circuit Lab (MATH 1720, PHYS 2220, 2240)	1
University Core course	3
University Core course	<u>3</u>
Total Hours	17

### JUNIOR YEAR

#### FALL

ENGR 3450, Materials (PHYS 1710, CHEM Req.)	3
ENGR 3451, Materials Lab (PHYS 1710, CHEM Req.)	1
MEET 3940, Fluid Mechanics (ENGR 2302, MATH 1720)	3
MEET 3990, Thermo. (ENGR 2332, CHEM Req.)	3
MFET 3110, Mach. Principles & Processes	<u>4</u>
Total Hours	14

#### SPRING

ELET 3980, Digital Controls (MATH 1650 or higher)	3
MEET 3650, Design of Mech. Components (ENGR 2332)	3
MFET 4190, Quality Assurance (MATH 1720)	3
MFET 4210, CAD/CAM System Operations (see note 3)	3
LSCM 3960, Logistics (junior classification)	<u>3</u>
Total Hours	15

### SENIOR YEAR

#### FALL

MEET 4050, Mechanical Design (MEET 3650)	3
MEET 4350, Heat Transfer Appl (MEET 3940, 3990)	3
MEET 4780, Senior Design I (see note 4)	1
MFET 4200, Engineering Costs Analysis (MATH 1720)	2
Technical Elective	3
University Core course	<u>3</u>
Total Hours	15

#### SPRING

MEET 4790, Senior Design II (MEET 4780)	3
MEET 4360, Exper. Thermal Sci. (MEET 3940, 3990, 4350)	2
Advanced Technical Elective	3
Advanced Technical Elective	2
University Core course	<u>3</u>
Total Hours	13

*Required prerequisite(s) indicated in parentheses.*

Note 1: MATH 1710 requires one of the following as prerequisite: completion of MATH 1650, Pre-Calculus with a grade of "C" or higher; or Freshman Math Group Level 3; or approval authorized by score on the Mathematics Department Math Placement Test; or earned credit for a math course at or above the MATH 1710 level.

Note 2: CHEM 1410 & 1430 requires MATH 1100, College Algebra, or placement into a higher level math course as prerequisite.  
CHEM 1415 & 1435 requires MATH 1650, Pre-Calculus, or placement into a higher level math course as prerequisite.

Note 3: MFET 4210 requires MFET 3110, ENGR 1304, & completion of all MATH, PHYS, & CHEM requirements as prerequisite.

Note 4: MEET 4780 requires completion of or concurrent enrollment in MEET 4050 and MEET 4350.

Must earn at least a grade of "C" in each course above except for University Core courses.

Must earn at least a 2.5 GPA in Engineering Foundations courses.

**This is an unofficial sample schedule. Requirements, prerequisites, etc. may change. Students should meet with an advisor each semester for individual scheduling, program decisions, etc. Engineering admissions requirements must be met & a degree audit must be created in order to progress in the program to a timely graduation.**

# UNT Core Information

## **COMMUNICATION** (3 Hours)

ENGL 1310, College Writing I  
 ENGL 1311, Honors College Writing I  
 ENGL 1315, Writing about Literature I  
 TECM 1312, Intro. to Writing For International Students  
 TECM 1700, Intro. to Professional, Science, & Tech. Writing

*AP English Language & Composition score of 4 or 5 fulfills this category*

## **AMERICAN HISTORY** (6 Hours)

HIST 2610, US to 1865 **or**  
 HIST 2675, Honors US History to 1865  
 HIST 2620, US from 1865 **or**  
 HIST 2685, Honors US History from 1865

*AP U.S. History score of 3, 4 or 5  
 CLEP History of United States I  
 CLEP History of United States II  
 fulfills this category*

## **GOVT./POLITICAL SCIENCE** (6 Hours)

PSCI 1040, American Government **or**  
 PSCI 1041, Honors Am. Government  
 PSCI 1050, American Government **or**  
 PSCI 1051, Honors Am. Government

*AP U.S. Government & Politics score of 3, 4 or 5  
 CLEP American Government  
 fulfills PSCI 1050 or PSCI 1051*

## **CREATIVE ARTS** (3 Hours)

ART 1300, Art Appreciation  
 ART 1301, Honors Art Appreciation  
 ART 2360, Art History Survey II  
 COMM 2060, Performance of Literature  
 DANC 1200, Appreciation of Dance  
 DANC 2800, Survey of Dance  
 MUMH 1600, Music in Human Imagination  
 MUMH 2040, Music Appreciation  
 MUMH 3000, Nineteenth-Century Music  
 MUMH 3010, Twentieth-Century Music  
 THEA 1340, Aesthetics of the Theatre  
 THEA 2340, Theater Appreciation  
 THEA 3030, World Theatre to 1700  
 THEA 3040, World Theatre from 1700

*AP Art History score of 4 or 5  
 IB Dance score of 4 or higher\*  
 fulfills this category*

## **LANGUAGE, PHIL. & CULTURE** (3 Hours)

AGER 2250, Aging in Film & Lit.  
 ANTH 3101 American Culture & Society  
 ANTH 3110, North American Indians  
 ANTH 3120, Indians Southwest  
 ANTH 3140, Latinos in the U.S.  
 ANTH 3200, Latin American  
 ANTH 3210, Meso America  
 ANTH 3220, Mayan Culture  
 ANTH 3300, Peoples of the Pacific  
 ANTH 3400, Peoples of Africa  
 ANTH 3500, Middle Eastern Culture  
 ANTH 3700, South Asian Culture  
 DFST 2313, Courtship & Marriage

## **LANGUAGE, PHIL. & CULTURE Cont'd** (3 Hours)

ENGL 2210, World Literature I  
 ENGL 2211, Honors World Literature I  
 ENGL 2220, World Literature II  
 ENGL 2221, Honors World Literature  
 FREN 3040, Adv. Reading French Culture  
 FREN 4060, Studies in French Literature  
 FREN 4310, French Civilization & Culture  
 GERM 3040, Topics in German Culture  
 GERM 3050, Topics in German Literature  
 GERM 4310, Topics Adv. German Culture  
 HIST 1050, World History to 16<sup>th</sup> Century  
 HIST 1060, World History from 16<sup>th</sup> Century  
 ITAL 3040, Topics in Italian Culture  
 ITAL 3050, Italian Culture Thru Film  
 ITAL 3070, Intro. to Italian Literature  
 JAPN 3020, Advanced Japanese I  
 JAPN 3030, Advanced Japanese II  
 MUET 3030, Music Cultures of the World  
 PHIL 1050, Introduction to Philosophy  
 PHIL 1400, Contemporary Moral Issues  
 PHIL 2050, Introduction to Logic  
 PHIL 2070, Great Religions  
 PHIL 2100, Intro. To Judaism  
 PHIL 2310, Intro. To Ancient Philosophy  
 PHIL 2400, Religion in American Society  
 PHIL 2600, Ethics in Science

*AP English Literature & Composition score of 4 or 5 fulfills this category  
 AP World History score of 3, 4 or 5  
 IB History score of 4 or higher\*  
 fulfills this category*

## **SOCIAL & BEHAVIORAL SCIENCE** (3 Hours)

AGER 4560, Minority Aging  
 AGER 4800, Social Context of Aging  
 ANTH 1010, Intro. to Anthropology  
 ANTH 2300, Culture and Society  
 BEHV 2300, Behavior Principles I  
 CJUS 2100, Crime and Justice in the U.S.  
 COMM 2020, Interpersonal Comm.  
 DFST 1013, Human Development  
 EADP 4050, Special Pop. in Disasters  
 ECON 1100, Microeconomics  
 ECON 1110, Macroeconomics  
 GEOG 1200, Global Societies  
 HLTH 2200, Family Life & Human Sexuality  
 JOUR 1210, Mass Comm. & Society  
 MDSE 2750, Consumers in Global Market  
 MDSE 3370, Fashion Theory & Trend Analysis  
 MKTG 2650, Princ. of Global Marketing  
 PADM 2100, Diversity in Urban Gover.  
 PSYC 1630, General Psychology I  
 PSYC 1650, General Psychology II  
 RHAB 3100, Disability & Society  
 SOCI 1510, Individuals in Society  
 SOCI 2100, Crime & Justice in the U.S.

*AP Macroeconomics score of 3, 4 or 5  
 AP Microeconomics score of 3, 4 or 5  
 AP Psychology score of 4 or 5  
 IB Economics score of 4 or higher\*  
 IB Geography score of 4 or higher\*  
 IB Psychology score of 4 or higher\*  
 CLEP Macroeconomics  
 CLEP Microeconomics  
 CLEP Human Growth & Development  
 CLEP Introductory Psychology  
 CLEP Introductory Sociology  
 fulfills this category*

## **DISCOVERY** (3 Hours)

AGER 2250, Aging in Film & Literature  
 ANTH 1100, World Cultures  
 ANTH 1150, World Cultures Through Film  
 ANTH 2070, Intro. to Race & Ethnic Studies  
 ANTH 2200, Gender Across Cultures  
 BCIS 3615, Visual Display of Business Info.  
 BIOL 1000, Discover Life Science  
 BIOL 1750/1755, Intro. Research Lab I & II  
 BMEN 1300, Discover Biomedical Engr.  
 BUSI 1340, Managing Business Enterprise  
 CHEM 1400, Discover Chemistry  
 COMM 1010, Intro. to Communication  
 COMM 1440, Honors Classical Argument  
 COMM 2040, Public Speaking  
 COMM 2140, Rhetoric & Argument  
 COUN 2620, Diversity & Cultural Awareness  
 DANC 1100, Stress Reduct. Thru Movement  
 DFST 2033, Parenting in Diverse Families  
 DFST 3423, Family, Schools, Communities  
 EENG 1910, Learning to Learn  
 ENGL 2500, Literary Analysis & Interpretation  
 ENGR 1030, Technological Systems  
 FREN 1610, French Influence in North Am.  
 FREN 1620, French Language in Canada  
 GEOG 1500, Geography of DFW Metroplex  
 HMGT 1450, Principles of Nutrition  
 HNRS 1100, The Good Society  
 HNRS 1500, Intro. to Research  
 INST 2100, Intro. to International Studies  
 ITAL 1610, Italian Influences in the U.S.  
 LANG 1610, World Ling. Landscapes  
 LING 2050, Language of Now  
 MATH 2000, Discrete Mathematics  
 MDSE 2750, Consumers in a Global Market  
 MEEN 1000, Discover Mech. & Energy Engr.  
 MGMT 3330, Communicating in Business  
 MKTG 3010, Professional Selling  
 MTSE 1100, Discover Materials  
 PHED 1000, Health Related Fitness  
 PHIL 1800, Philosophy of Self  
 PHIL 2400, Religion in American Society  
 PHIL 2500, Contemp. Environmental Issues  
 PSCI 1010, Politics and Pop Culture  
 PSYC 1500, Mythbusting  
 RHAB 3000, Microcounseling  
 SOCI 2070, Race & Ethnic Relations  
 SOWK 4540, Human Diversity  
 TECM 1500, New Media for College Career  
 WMST 2100, Women & Society

## **CAPSTONE** (3 Hours)

Fulfilled by a required course in your major

*\*Completion of IB program, earned IB Diploma, & minimum score of 4 or completion of IB program without the earned diploma & minimum score of 5, 6 or 7.*

# Engineering Foundations Information

## **CALCULUS I** (4 Hours)

MATH 1710, Calculus I (4 Hours)

### Math Placement for Freshman Students:

If you have not earned credit for math courses via AP, IB, CLEP, or transfer credit, you must begin math courses based on your Math Group Level assigned by the Math Department:

Math Level 0 or Math Level 1 or No Math Level: MATH 1100

Math Level 2: MATH 1600 or 1650

Math Level 3: MATH 1710

### Math Placement Options:

If you feel that you are capable of beginning your math courses at a higher level than your pre-assigned Math Group Level or qualification based on earned math credit, you can seek approval into a higher math course via two options.

One option is taking a free Math Placement test offered by the UNT Mathematics Department. The test is available Mondays through Fridays from 8:30 A.M. to 3:00 P.M. in the General Academic Building (GAB) 443. Another option is taking the online ALEKS placement. This option requires a small fee & completion of a 6 week long tutorial.

Contact the Math Department at (940) 565-2155 or General Academic Building (GAB) 440. for more information

AP Statistics score of 3, 4, 5: MATH 1680 (prereq for MATH 1100)

AP Calculus AB score of 3, 4, 5: MATH 1710

AP Calculus BC score of 3, 4, 5: MATH 1710, 1720

AP Calculus AB Subscore of BC Exam score 3, 4, or 5: MATH 1710

CLEP Mathematics: elective

CLEP College Algebra: MATH 1100

CLEP Trigonometry: MATH 1600

CLEP Pre-calculus: MATH 1650

CLEP Calculus with Elementary Functions: MATH 1710

IB Mathematic Studies: Elective

IB Mathematics: MATH 1710

Transfer Remedial or Intermediate Algebra (prereq for MATH 1100 if TSI complete in Mathematics)

Transfer College Algebra: MATH 1100

Transfer Statistics: MATH 1680 (prerequisite for MATH 1100)

Transfer Trigonometry credit: MATH 1600

Transfer Business Calculus: MATH 1190 (prereq for MATH 1600 or 1650)

Transfer Pre-calculus credit: MATH 1650

Transfer Calculus credit: MATH 1710

## **CHEMISTRY** (4 Hours)

CHEM 1410, General Chemistry I (3 Hours) &

CHEM 1430, General Chemistry Lab (1 Hour)

or

CHEM 1415, Chemistry for Engineers (3 Hours)

CHEM 1435, Chemistry for Engineering Lab (1 Hour)

AP Chemistry score of 4: CHEM 1410-1430

AP Chemistry score of 5: CHEM 1410-1430, 1420-1440

CLEP Chemistry: CHEM 1410, CHEM 1420

IB Chemistry: CHEM 1410-1430, 1420-1440

## **PHYSICS** (4 Hours)

PHYS 1710, Mechanics (3 Hours) &

PHYS 1730, Mechanics Lab (1 Hour)

AP Physics C (Mechanics) score 4 or 5: PHYS 1710-1730

AP Physics C (Electricity & Magnetism score of 4 or 5:

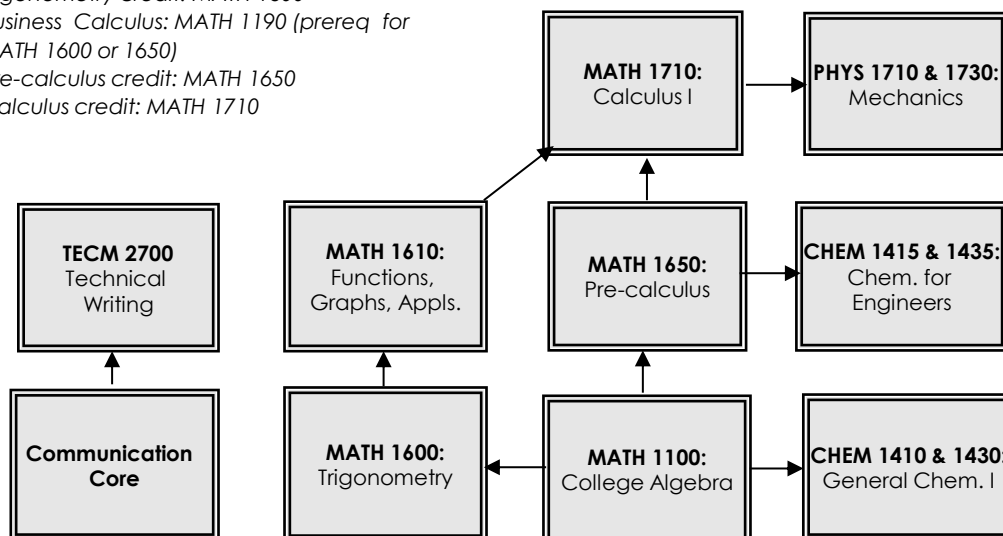
PHYS 2220-2240

## **TECHNICAL COMMUNICATION** (3 Hours)

TECM 2700, Technical Writing (3 Hours)

Grades of "C" or better is required.

Needs 2.5 GPA in MATH 1710, CHEM 1410 & 1430 or 1415 & 1435, PHYS 1710 & 1730, and TECM 2700.



Check your requirement checklist & sample plan for appropriate CHEM course/lab.

If you are TSI incomplete in Mathematics, you must meet with the Learning Center in Sage Hall to assess enrollment in the proper entry mathematics course.

# Minor Information

## **BUSINESS FOUNDATIONS GENERAL TRACK MINOR** (18 Hours)

ACCT 2010, Accounting Principles I (3 Hours)

ACCT 2020, Accounting Principles II (3 Hours)

FINA 3770, Finance (3 Hours)

MKTG 3650, Foundations of Marketing (3 Hours)

MGMT 3780, Organizational Behavior, (3 Hours)

or

MGMT 3820, Management Concepts (3 Hours)

Plus 3 advanced hours (1 course) chosen from any 3\*\*\* or 4\*\*\* level business course. Options available in the UNT catalog located at [catalog.unt.edu](http://catalog.unt.edu).

*Must complete appropriate prerequisites in order to enroll in courses. Please check with an advisor.*

## **BUSINESS FOUNDATIONS MBA PREP TRACK MINOR** (18 Hours)

ACCT 2010, Accounting Principles I (3 Hours)

ACCT 2020, Accounting Principles II (3 Hours)

Plus 12 advanced hours (4 courses) chosen from:

BCIS 3610, Basic Information Systems (3 Hours)

BLAW 3430, Legal & Ethical Environment (3 Hours)

DSCI 3710, Business Statistics (3 Hours)

FINA 3770, Finance (3 Hours)

MGMT 3830, Operations Management (3 Hours)

MKTG 3650, Foundations of Marketing (3 Hours)

*Must complete appropriate prerequisites in order to enroll in courses. Please check with an advisor.*

## **CHEMISTRY MINOR** (20 Hours)

CHEM 1410, General Chemistry I (3 Hours)

CHEM 1430, General Chemistry I Lab (1 Hour)

CHEM 1420, General Chemistry II (3 Hours)

CHEM 1440, General Chemistry II Lab (1 Hour)

CHEM 2370, Organic Chemistry I (3 Hours)

CHEM 3210, Organic Chemistry I Lab (1 Hour)

CHEM 2380, Organic Chemistry II (3 Hours)

CHEM 3220, Organic Chemistry Lab (1 Hour)

Plus 4 hours chosen from a list of options available in the UNT catalog located at [catalog.unt.edu](http://catalog.unt.edu)

*Must complete appropriate prerequisites in order to enroll in courses. Please check with an advisor.*

## **COMPUTER SCIENCE & ENGINEERING MINOR** (19 Hours)

CSC 1030, Computer Science I (4 Hours)

CSC 1040, Computer Science II (3 Hours)

CSC 2100, Computing Foundations I (3 Hours)

CSC 2110, Computing Foundations II (3 Hours)

CSC 3\*\*\* or 4\*\*\*, CSC advanced level course (3 Hours)

CSC 3\*\*\* or 4\*\*\*, CSC advanced level course (3 Hours)

*Must complete appropriate prerequisites in order to enroll in courses. Please check with an advisor.*

## **ELECTRICAL ENGINEERING MINOR** (18 Hours)

EENG 2610, Circuit Analysis (3 Hours)

EENG 2620, Signals & Systems (3 Hours)

EENG 2710, Digital Logic Design (3 Hours)

EENG 2910, Digital System Design (3 Hours)

or

EENG 2920, Analog Circuit Design (3 Hours)

EENG 3510, Electronics I (3 Hours)

EENG 4\*\*\*, EENG advanced level course (3 Hours)

*Must complete appropriate prerequisites in order to enroll in EENG courses. Please check with an advisor.*

## **FOREIGN LANGUAGE MINORS** (18-21 Hours)

Minors are offered in Arabic, Chinese, French, German, Italian, Japanese, Latin, Russian, and Spanish. Some languages require 18 hours (6 courses) and some require 21 hours (7 courses). Specific course requirements are located in the UNT catalog at [catalog.unt.edu](http://catalog.unt.edu).

*Must complete appropriate prerequisites in order to enroll in courses. Please check with an advisor.*

## **GENERAL ENGINEERING TECHNOLOGY MINOR** (18 Hours)

6 courses (12 Hours) including 2 advanced level courses (6 Hours) chosen from the Department of Engineering Technology. Courses from this department are coded as CNET, ELET, ENGR, MEET, or MFET.

*Must complete appropriate prerequisites in order to enroll in courses. Please check with an advisor.*

## **MATERIALS SCIENCE & ENGINEERING MINOR** (18 Hours)

ENGR 3450, Engineering Materials (3 Hours)

6 advanced hours (2 courses chosen from

MTSE 3010, Bonding & Structure (3 hours)

MTSE 3030, Thermodynamics & Phase Diagrams (3 Hours)

MTSE 3050, Mechanical Properties of Materials

MTSE 3070, Electrical, Optic, & Magnetic Properties (3 Hours)

Plus 9 advanced hours (3 courses) chosen from options above or from any MTSE 3\*\*\*, MTSE 4\*\*\* level courses. Options are located in the UNT catalog at [catalog.unt.edu](http://catalog.unt.edu)

*Must complete appropriate prerequisites in order to enroll in courses. Please check with an advisor.*

## **MATHEMATICS MINOR** (19 Hours)

MATH 1710, Calculus I (4 Hours)

MATH 1720, Calculus II (3 Hours)

MATH 2730, Multivariable Calculus (3 Hours)

MATH 1780, Probability Models (3 Hours)

or

MATH 2700, Linear Algebra & Vector Geometry (3 Hours)

MATH 3\*\*\* or MATH 4\*\*\*

MATH 3\*\*\* or MATH 4\*\*\*

*Must complete appropriate prerequisites in order to enroll in courses. Please check with an advisor.*

## **STATISTICS MINOR** (19 Hours)

MATH 1710, Calculus I (4 Hours)

MATH 1720, Calculus II (3 Hours)

MATH 2730, Multivariable Calculus (3 Hours)

MATH 3680, Applied Statistics (3 Hours)

MATH 4610, Probability (3 Hours)

MATH 4650, Statistics (3 Hours)

Plus 3 advanced hours (1 course) chosen from a list of specific options which is located in the UNT catalog at [catalog.unt.edu](http://catalog.unt.edu).

*Must complete appropriate prerequisites in order to enroll in courses. Please check with an advisor.*

*Minors are not required in order to graduate with a degree from the College of Engineering at UNT.*

*UNT offers many more minors than those listed on this page. Information on all available minor options & requirements can be found in the UNT catalog located at [catalog.unt.edu](http://catalog.unt.edu).*



# Certificate Information

## **CRIMINALISTICS CERTIFICATE** (18 Hours)

BIOL 3331, Biomedical Criminalistics (3 Hours)  
CJUS 3330, Intro. to Criminalistics (3 Hours)  
CJUS 3340, Computer Crime (3 Hours)  
CJUS 4360, Criminal Investigation (3 Hours)  
CJUS 4370, Advanced Criminalistics I (3 Hours)  
CJUS 4380, Advanced Criminalistics II (3 Hours)  
CJUS 4390, Crime Science Investigation Theory (3 Hours)

*Must complete appropriate prerequisites in order to enroll in courses. Please check with an advisor.*

## **ENERGY ASSESSMENT OF BUILDINGS CERTIFICATE** (15 Hours)

MEEN 3220, Mechanical & Energy Engineering Projects (3 Hours)  
MEEN 4320, Mechanical Systems of Buildings (3 Hours)  
MEEN 4335, Computational Simulation of Building Energy Systems (3 Hours)  
MEEN 4340, Energy Efficiencies & Green Building Design for Commercial Buildings (3 Hours)  
MEEN 4350, Energy Efficiencies & Green Building Design for Residential Buildings (3 Hours)

*Must complete appropriate prerequisites in order to enroll in courses. Please check with an advisor.*

## **ENTREPRENEURSHIP CERTIFICATE** (12 Hours)

MGMT 3850, Entrepreneurship (3 Hours)  
Plus 9 advanced hours (3 courses) chosen from  
MGMT 3915, Creativity & Opportunity Dev. (3 Hours)  
MGMT 4210, E-Management (3 Hours)  
MGMT 4220, Advanced Entrepreneurship (3 Hours)  
MGMT 4235, Social Entrepreneurship (3 Hours)  
MGMT 4335, Technology & Innovation Mgmt. (3 Hours)

## **FORENSIC SCIENCE CERTIFICATE** (19 Hours)

CJUS 4360, Criminal Investigation (3 Hours)  
BIOL 3331, Biomedical Criminalistics (3 Hours)  
BIOL 4240, Forensic Microscopy (3 Hours)  
BIOL 4590, Forensic Molecular Biology Lab (3 Hours)  
CHEM 4351, Forensic Chemistry (3 Hours)  
CHEM 4631, Instrumental Analysis (3 Hours)  
CHEM 4632, Instrumental Analysis Lab (1 Hour)  
Plus completion of the Forensic Science Aptitude Test offered through the American Board of Criminalistics.

*Must complete appropriate prerequisites in order to enroll in courses. Please check with an advisor.*

## **GAME PROGRAMMING CERTIFICATE** (12 Hours)

CSCS 4210, Game Programming I (3 Hours)  
CSCS 4215, Programming Math & Physics for Games (3 Hours)  
CSCS 4220, Game Programming II (3 Hours)  
CSCS 4250, Topics in Game Development (3 Hours)

*Must complete appropriate prerequisites in order to enroll in CSCS courses. Please check with an advisor.*

## **MATHEMATICS OF SCIENTIFIC COMPUTATION CERTIFICATE** (18 Hours)

CSCS 1020, Program Development (4 Hours)

or

CSCS 1030, Computer Science I (4 Hours)  
MATH 3350, Introduction to Numerical Analysis (3 Hours)  
MATH 3410, Differential Equations (3 Hours)  
Plus 9 advanced hours (3 courses) courses chosen from a specific list of options which is located in the UNT catalog at [catalog.unt.edu](http://catalog.unt.edu).

*Must complete appropriate prerequisites in order to enroll in courses. Please check with an advisor.*

## **SECURITY CERTIFICATE** (18 Hours)

CSCS 1030, Computer Science I (4 Hours)  
CSCS 1040, Computer Science II (3 Hours)  
CSCS 2610, Assembly Language & Computer Organization (3 Hours)  
CSCS 3530, Intro. to Computer Networks (3 Hours)  
CSCS 4550, Intro. to Computer Security (3 hours)  
CSCS 4560, Secure Electronic Commerce (3 Hours)

## **STATISTICS CERTIFICATE** (12 Hours)

MATH 3680, Applied Statistics (3 Hours)  
MATH 4610, Probability (3 Hours)  
MATH 4650, Statistics (3 Hours)  
Plus 3 advanced hours (1 course) chosen from a specific list of options which is located in the UNT catalog at [catalog.unt.edu](http://catalog.unt.edu).

*Must complete appropriate prerequisites in order to enroll in CSCS courses. Please check with an advisor.*

## **TECHNICAL WRITING CERTIFICATE** (12 Hours)

TECM 2700, Technical Writing (3 Hours)  
TECM 4180, Advanced Technical Writing (3 Hours)  
TECM 4190, Technical Editing (3 Hours)  
TECM 4100, Writing Grants & Proposals (3 Hours)  
or  
TECM 4250, Writing Technical Procedures & Manuals (3 Hours)  
or  
TECM 4700, Writing in the Sciences (3 Hours)

*Grades of "B" or better required for each course. TECM 2700 is the prerequisite for TECM 4\*\*\* courses.*

*Certificates are not required in order to graduate with a degree from the College of Engineering at UNT.*

*UNT offers many more certificates than those listed on this page. Information on all available certificate options & requirements can be found in the UNT catalog located at [catalog.unt.edu](http://catalog.unt.edu).*

# Resource Information

Advising	<a href="http://engineering.unt.edu/advising">engineering.unt.edu/advising</a> & (940) 565-4201 & NTDP C-104
Catalog	<a href="http://catalog.unt.edu">catalog.unt.edu</a>
Computer Access Labs	<a href="http://gacl.unt.edu">gacl.unt.edu</a>
Counseling & Health Services Child and Family Resource Clinic Counseling & Human Development Center Counseling & Testing Service Health & Wellness Center Psychology Clinic	<a href="http://coe.unt.edu/child-and-family-resource-clinic">coe.unt.edu/child-and-family-resource-clinic</a> <a href="http://coe.unt.edu/counseling-and-human-development-center">coe.unt.edu/counseling-and-human-development-center</a> <a href="http://unt.edu/cat">unt.edu/cat</a> <a href="http://healthcenter.unt.edu">healthcenter.unt.edu</a> <a href="http://psychology.unt.edu/clinic">psychology.unt.edu/clinic</a>
Deadlines (Registration, Drop, Withdrawal, Payment, etc.)	<a href="http://unt.edu/registration">unt.edu/registration</a> <a href="http://my.unt.edu">my.unt.edu</a>
Dean of Students (Withdrawal Process, Complaints, Student Life Offices, Code of Conduct, etc.)	<a href="http://deanofstudents.unt.edu">deanofstudents.unt.edu</a>
Email Account (EagleConnect)	<a href="http://eagleconnect.unt.edu">eagleconnect.unt.edu</a> or <a href="http://unt.edu/helpdesk">unt.edu/helpdesk</a>
Engineering Student Organizations & Honor Societies	<a href="http://engineering.unt.edu/ceo/home">engineering.unt.edu/ceo/home</a>
Employment, Internships, & Job Skills: Career Center InRoads Internships InternMatch Texas Internships	<a href="http://careercenter.unt.edu">careercenter.unt.edu</a> <a href="http://inroads.org">inroads.org</a> <a href="http://nternmatch.com">nternmatch.com</a> <a href="http://texasinternships.jobs">texasinternships.jobs</a>
Financial Assistance Financial Aid & Scholarships Office Student Accounting Money Management Center	<a href="http://financialaid.unt.edu">financialaid.unt.edu</a> <a href="http://essc.unt.edu/saucs">essc.unt.edu/saucs</a> <a href="http://moneymangement.unt.edu">moneymangement.unt.edu</a>
Libraries	<a href="http://library.unt.edu">library.unt.edu</a>
Office of Disability Accommodations	<a href="http://disability.unt.edu">disability.unt.edu</a>
Registrar (General Information, Drop, Excessive Hours, Graduation, Registration, Transcripts)	<a href="http://essc.unt.edu/registrar">essc.unt.edu/registrar</a>
Registration	<a href="http://my.unt.edu">my.unt.edu</a> <a href="http://unt.edu/registration">unt.edu/registration</a>
Scholarships	<a href="http://engineering.unt.edu/students/scholarships-and-grants">engineering.unt.edu/students/scholarships-and-grants</a> <a href="http://financialaid.unt.edu">financialaid.unt.edu</a> <a href="http://searchforcolleges.org">searchforcolleges.org</a>
Student Activities & Organizations	<a href="http://studentactivities.unt.edu">studentactivities.unt.edu</a>
Student Government Association	<a href="http://sga.unt.edu">sga.unt.edu</a>
Student Legal Services	<a href="http://studentlegal.unt.edu">studentlegal.unt.edu</a>
Texas Success Initiative: START Office	<a href="http://start-office.unt.edu">start-office.unt.edu</a>
Tutoring & Academic Improvement Services: Chemistry Resource Center (CRC) Computer Class Help Lab Coursera (online math, science, etc.) Educator (online math, science, etc.) Khan Academy (online math, science, etc.) Learning Center Math Lab & Private Tutor List Mathway (online calculations) Physics Instructional Center (PIC) Quizlet (online math, science, etc.) That Tutor Guy (online math) Thinkwell (online math, science, etc.) Wolf Ram Alpha (online math, science, etc.) Writing Lab	<a href="http://chemistry.unt.edu">chemistry.unt.edu</a> <a href="http://cse.unt.edu">cse.unt.edu</a> <a href="http://coursera.org">coursera.org</a> <a href="http://educator.com">educator.com</a> <a href="http://khanacademy.org">khanacademy.org</a> <a href="http://learningcenter.unt.edu">learningcenter.unt.edu</a> <a href="http://math.unt.edu/mathlab">math.unt.edu/mathlab</a> <a href="http://mathway.com">mathway.com</a> <a href="http://phys.unt.edu/PIC">phys.unt.edu/PIC</a> <a href="http://quizlet.com">quizlet.com</a> <a href="http://thattutorguy.com">thattutorguy.com</a> <a href="http://thinkwell.com">thinkwell.com</a> <a href="http://wolframalpha.com">wolframalpha.com</a> <a href="http://lfc.unt.edu/labs">lfc.unt.edu/labs</a>
Veteran Assistance Veteran Center Veteran Services	<a href="http://veteranscenter.unt.edu">veteranscenter.unt.edu</a> <a href="http://unt.edu/veterans">unt.edu/veterans</a> & <a href="http://essc.unt.edu/registrar/veterans">essc.unt.edu/registrar/veterans</a>