



Pre-Engineering - Associate of Science Degree

Recommended Degree Plan by Semester

*(A total of 60 college level credit hours needed to complete this degree.)



Semester 1			Semester 2		
Course	Course Name	Credit Hours	Course	Course Name	Credit Hours
ENG 121	English Composition I	3	ENG 122	English Composition II	3
MAT 201	Calculus I (<i>required course</i>)	5	MAT 202	Calculus II (<i>required course</i>)	5
COM 115	Public Speaking	3	Humanity	(<i>See courses on semester sheet and in schedule</i>)	3
PHY 211	Physics: Calculus-based I (<i>required course</i>) (Devel. Math and Devel. Eng)	5	PHY 212	Physics: Calculus-based II (<i>required course</i>)	5
Total Hours		16	Total Hours		16
Semester 3			Semester 4		
CHE 111	General College Chemistry I (<i>required course</i>)	5	CHE 112	General College Chemistry II or or CSC 160 Computer Science I	4-5
Social & Behavioral Science - May be a History (<i>See courses on semester sheet and in class schedule</i>)		3	MAT 265 or 261 or 266	Differential Equations or Differential Equations with Engineering Apps. or Differential Equations with Linear Algebra (<i>required course</i>)	3-4
MAT 203 or 204	Calculus III or Calculus III with Engineering Apps. (<i>required course</i>)	4-5	Electives	<i>Must be in the areas of Advanced Math or Computer Science</i>	9
Total Hours		12-16	Total Hours		16
			Total Degree Hours		60+

*If transferring to the School of Mines, Univ. of CO Boulder, Fort Lewis College, Univ. of CO Colo. Springs, CSU Fort Collins, CSU Pueblo, CO Mesa Univ., or Metro State Univ. contact an Academic Advisor at that institution before your 3rd semester; they may have different requirements to the basic curriculum shown above.

TRANSFER READY*

- Colorado School of Mines
- Colorado State University - Fort Collins
- Colorado State University - Pueblo

*For information on transfer requirements for specific universities, see transfer sheet or visit:
<http://higher.ed.colorado.gov/Academics/Transfers/TransferDegrees.html>

- Fort Lewis College
- Metropolitan State University of Denver
- University of Colorado Boulder
- University of Colorado Colorado Springs



TRANSFER READY

Pre-Engineering



Colorado School of Mines - Pre-Engineering Transfer Courses

Please note that this curriculum neither fulfills the GT Pathways general education curriculum nor the associate degree requirements at the community college.

Required Courses Applicable to Engineering Majors			30-31	Elective Courses			0-30
General Education Knowledge Area	Credit Hours	Community College (CCCS) Course No.	Course Title and gtPathways Category	General Education Knowledge Area	Credit Hours	Community College (CCCS) Course No.	Course Title and gtPathways Category
Art & Humanities, History or Social & Behavioral Science	6		200-level GT-HI1, GT-AH1, GT-AH2, GT-AH3 or GT-SS1, GT-SS2, or GT-SS3 and 100-level courses World Language courses may fulfill humanities and social sciences requirements at Mines. Students should contact a Mines advisor and refer to the Bulletin information at http://lais.mines.edu/LAIS-HSS-Requirements to obtain information regarding course transfer.	Elective courses must be selected in consultation with the engineering advising office at Mines to verify they will transfer and apply to the student's chosen major requirements. Community college students are advised not to break up course sequences. For example, in majors that require both PHY 211 and PHY 212 or MAT 201 and MAT 202 student should complete the sequences at the community college before transferring.			
Natural & Physical Sciences	5 5	PHY 211 CHE 111	Physics: Calculus-based I (GT-SC1) General College Chemistry I with Lab (GT-SC1)	Laboratory Science	5 5 5 4 5	BIO 111 BIO 112 CHE 112 GEY 111 PHY 212	General College Biology I with Lab (GT-SC1)* General College Biology II with Lab (GT-SC1) General College Chemistry II with Lab (GT-SC1)* Physical Geology with Lab* Physics: Calculus-based II (GT-SC1)*
Mathematics	5	MAT 201	Calculus I (GT-MA1)	Computer Science	4 4	CSC 160 CSC 161	Computer Science I (Language) Computer Science II (Language)
Mathematics - Calculus II*	5	MAT 202	Calculus II (GT-MA1)	Computer Aided Drafting (Free Elective only)	3 3 3 3	CAD 101 CAD 102 CAD 201 CAD 202	Computer Aided Drafting I Computer Aided Drafting II CAD/Custom Computer Aided Drafting/3D
Mathematics - Calculus III**	4 5	MAT 203 Or MAT 204 (PREFERRED)	Calculus III (GT-MA1) Calculus III with Engineering Applications (GT-MA1)	Public Speaking	3	COM 115	Public Speaking (Free Elective Only)
Mathematics - Differential Equations	4 4	MAT 261 Or MAT 265	Differential Equations with Engineering Applications (GT-MA1) Differential Equations (GT-MA1)	These courses count as required distributed science courses for some majors. Please consult the Mines Bulletin (http://bulletin.mines.edu/undergraduate/undergraduateinformation/distributedcore/) or an advisor at Mines for additional information.			
<p>Students are strongly encouraged to complete the Calculus II and III sequence at the same institution. Due to the unique nature of the Calculus curriculum at the Colorado School of Mines, transfer credit for Calculus II and III will only be granted if both courses have been successfully completed prior to transfer and provided that the Calculus III course being transferred is equivalent in content to CSM's MATH 213: Calculus for Scientists and Engineers III. Should it be necessary, CSM has created short-form courses to bridge from the highest-level Calculus course being transferred to the CSM curriculum. These courses are designed to have a minimal impact on transfer students while ensuring that they have the same foundation as all CSM undergraduates.</p>							

For more information regarding transfer requirements, visit: <http://higher.ed.colorado.gov/Academics/Transfers/TransferDegrees.html>



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Colorado State University - Pre-Engineering Transfer Courses

Please note that this curriculum neither fulfills the GT Pathways general education curriculum nor the associate degree requirements at the community college.

Required Courses Applicable to All CSU Engineering Majors (30 credits)			
General Education Knowledge Area	Credit Hours	Community College (CCCS) Course No.	Course Title and gtPathways Category
Written Communication ¹	6	ENG 121 and ENG 122 OR ENG 122 and a gt-Pathways-approved CO3 course	English Composition I (GT-CO1) and English Composition II (GT-CO2) OR English Composition II (GT-CO2) and Advanced Writing CO3 course (GT-CO3)
Art & Humanities	3		Any gtPathways Arts & Humanities course from one of the following AH Categories: GT-AH1, GT-AH2 or GT-AH3
Social & Behavioral Science	3	ECO 202	Any gtPathways Social & Behavioral Sciences course from one of the following SS Categories: GT-SS1, GT-SS2 or GT-SS3 Principles of Microeconomics (GT-SS1) – Must be taken for the following majors: Biomedical/Electrical, Computer, Electrical & Environmental Engineering
History	3		Any gtPathways Historical Perspectives courses from the GT-HI1 category
Mathematics ²	5	MAT 201	Calculus I (GT-MA1)
Natural & Physical Sciences	5 5	PHY 211 CHE 111 ³	Physics: Calculus-based I (GT-SC1) General College Chemistry I with Lab (GT-SC1) – Will directly fulfill requirements for all Engineering majors except for Computer Engineering

Additional Required Courses by Major:			
The following courses may also count in certain engineering areas. Please check with appropriate department to verify your academic planning.			
MAJOR AREA:	Credit Hours	Community College (CCCS) Course No.	Course Title and gtPathways Category
Chemical & Biological Engineering	5 5	BIO 111 CHE 112	General College Biology I with Lab (GT-SC1) General College Chemistry II with Lab (GT-SC1)
Civil Engineering	5 5 3 3	CHE 112 PHY 211 CSC 233 or CSC 240 CAD 101	General College Chemistry II with Lab (GT-SC1) Physics: Calculus-based I Object Oriented Programming in C++ or Java Programming Computer-Aided Drafting I
Computer Engineering	<i>If you determine you have met the minimum requirements for admission to Engineering we highly recommend that you APPLY to CSU</i>		
Electrical Engineering	<i>If you determine you have met the minimum requirements for admission to Engineering we highly recommend that you APPLY to CSU</i>		
Environmental Engineering	5 5 3 3	CHE 112 PHY 211 CSC 233 or CSC 240 CAD 101	General College Chemistry II with Lab (GT-SC1) Physics: Calculus-based I Object Oriented Programming in C++ or Java Programming Computer-Aided Drafting I
Mechanical Engineering	<i>If you determine you have met the minimum requirements for admission to Engineering we highly recommend that you APPLY to CSU</i>		
Biomedical Engineering	5 5	BIO 111 CHE 112	General College Biology I with Lab (GT-SC1) General College Chemistry II with Lab (GT-SC1)
And Electrical Engineering	<i>If you determine you have met the minimum requirements for admission to Engineering we highly recommend that you APPLY to CSU</i>		
And Mechanical Engineering	<i>If you determine you have met the minimum requirements for admission to Engineering we highly recommend that you APPLY to CSU</i>		

Special Program Notes: ¹ If you are considering earning the Associates Degree from your Colorado Community College then you will be required to take 6 credits of Writing. Not all CSU Engineering majors will have room to accommodate 3 extra credits of Writing (i.e. Computer Engineering and Electrical Engineering) as they will require a 300 level Advanced Writing course beyond the CO-1/CO-2 or CO-2/CO-3 combination for completion of the associate's degree.

² Some of the Math and Sciences courses from the Colorado community college you are attending are 1-2 credits more than those equivalent courses at CSU (i.e. MATH 201 or BIO 111, etc. . .). Under gtPathways guidelines you will be awarded the full-credit for the courses as taken at the community college. Additionally, those credits may count towards completion of an Associates of Sciences at the community college, however, that extra credit may not count towards overall graduation requirements at CSU. It is important to note that CSU Engineering majors do not have 'free elective' credit options where this extra credit could possibly count.

³ Computer Engineering majors can use CHE 111 for admissions consideration but the credit from the course will not fulfill any degree requirements for the major.

For more information regarding transfer requirements, visit: <http://higher.ed.colorado.gov/Academics/Transfers/TransferDegrees.html>



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Colorado State University - Pueblo - Pre-Engineering Transfer Courses

Please note that this curriculum neither fulfills the GT Pathways general education curriculum nor the associate degree requirements at the community college.

Required Courses Applicable to Engineering Majors (46 credits)			
General Education Knowledge Area	Credit Hours	Community College (CCCS) Course No.	Course Title and gtPathways Category
Art & Humanities, History or Social & Behavioral Science	3		Any GT-HI1, GT-AH1, GT-AH2, GT-AH3 or GT-SS1, GT-SS2, or GT-SS3 (up to 6 credits of Arts & Humanities, 3 credits of History, 6 credits of Social & Behavioral Science)
Written Communication	3 3	ENG 121 ENG 122	English Composition I (GT-C01) English Composition I (GT-C02)
Public Speaking	3	COM 115	Public Speaking
Natural & Physical Sciences	5 5	PHY 211 PHY 212	Physics: Calculus-based I (GT-SC1) Physics: Calculus-based II (GT-SC1)
Mathematics	5 5 3 4 4	MAT 201 MAT 202 MAT 255 MAT 261 or MAT 265	Calculus I (GT-MA1) Calculus II (GT-MA1) Linear Algebra Differential Equations with Engineering Applications (GT-MA1) or Differential Equations (GT-MA1)

*Students are strongly encouraged to complete course sequences (such as, PHY 211 & 212 and MAT 201&202) at the same institution before transferring.

Elective Courses - 8 Credits			
Elective courses must be selected in consultation with the engineering advising office at the 4-year institution to verify they will transfer and apply to the student's chosen major requirements.			
General Education Knowledge Area	Credit Hours	Community College (CCCS) Course No.	Course Title and gtPathways Category
Science	5 5 5 5	BIO 111 BIO 112 CHE 111 CHE 112	General College Biology I with Lab (GT-SC1) General College Biology II with Lab (GT-SC1) General College Chemistry I with Lab (GT-SC1) General College Chemistry II with Lab (GT-SC1)
Computer Science	4 4 3 4 3	CSC 160 CSC 161 CSC 233 CSC 234 CSC 240	Computer Science I (Language) Computer Science II (Language) Object-Oriented Programming (Language) C++ Programming Java Programming
Computer Aided Drafting	3 3 3 3	CAD 101 CAD 102 CAD 201 CAD 202	Computer Aided Drafting I Computer Aided Drafting II CAD/Custom Computer Aided Drafting/3D



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Colorado Mesa University - Pre-Engineering Transfer Courses

Please note that this curriculum neither fulfills the GT Pathways general education curriculum nor the associate degree requirements at the community college.

Required Courses Applicable to Engineering Majors - 35 credits			
General Education Knowledge Area	Credit Hours	Community College (CCCS) Course No.	Course Title and gtPathways Category
Written Communication	3	ENG 121	English Composition I (GT-C01)
Art & Humanities	3		Any GT-AH1, GT-AH2, GT-AH3
Social & Behavioral Science	3		Any GT-SS1, GT-SS2, or GT-SS3
	3	SOC 210	Technology and Society
History	3		Any GT-HI1
Natural & Physical Sciences	5	PHY 211	Physics: Calculus-based I (GT-SC1)
	5	CHE 111	General College Chemistry I with Lab (GT-SC1)
Mathematics	5	MAT 201	Calculus I (GT-MA1)
	5	MAT 202	Calculus II (GT-MA1)

*Students are strongly encouraged to complete course sequences (such as, PHY 211 & 212 and MAT 201, 202 & 203) at the same institution before transferring.

Elective Courses Recommended by Major - 15-19 credits			
Elective courses must be selected in consultation with the engineering advising office at the 4-year institution to verify they will transfer and apply to the student's chosen major requirements.			
Major Area	Credit Hours	Community College (CCCS) Course No.	Course Title and gtPathways Category
Applied Mechanical Engineering	3	ENG 122	English Composition II (GT-C02)
	3	COM 115	Public Speaking
	3		Any GT-AH1
	3	MAC 102	Blueprint Reading
	3	MAC 120	Intro to Milling Machine
Mechanical Engineering (CU Boulder Partnership)	5	PHY 212	Physics: Calculus-based II (GT-SC1)
	4 or 5	MAT 203 or MAT 204	Calculus III (GT-MA1) or
	3	MAT 255	Calculus III with Engineering Applications (GT-MA1) Preferred
	3	MAT 265	Linear Algebra
	3	MAC 120	Differential Equations (GT-MA1)
			Intro to Milling Machine



TRANSFER READY

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FORT LEWIS COLLEGE
DURANGO, COLORADO

Fort Lewis College - Pre-Engineering Transfer Courses

Please note that this curriculum neither fulfills the GT Pathways general education curriculum nor the associate degree requirements at the community college.

Required Courses Applicable to Engineering Majors - 30-31 credits			
General Education Knowledge Area	Credit Hours	Community College (CCCS) Course No.	Course Title and gtPathways Category
Art & Humanities, History <u>or</u> Social & Behavioral Science	3		Any GT-HI1, GT-AH1, GT-AH2, GT-AH3 or GT-SS1, GT-SS2, or GT-SS3
Written Communication	3	ENG 121	English Composition I (GT-C01)
Natural & Physical Sciences	5 5	PHY 211 PHY 212	Physics: Calculus-based I (GT-SC1) Physics: Calculus-based II (GT-SC1)
Mathematics	5 5 <u>4 or</u> 5	MAT 201 MAT 202 MAT 203 <u>or</u> MAT 204	Calculus I (GT-MA1) Calculus II (GT-MA1) Calculus III (GT-MA1) <u>or</u> Calculus III with Engineering Applications (GT-MA1)
* Students are strongly encouraged to complete course sequences (such as, PHY 211 & 212 and MAT 201, 202 & 203) at the same institution before transferring.			

Elective Courses - 0-30 credits			
Elective courses must be selected in consultation with the engineering advising office at the 4-year institution to verify they will transfer and apply to the student's chosen major requirements.			
General Education Knowledge Area	Credit Hours	Community College (CCCS) Course No.	Course Title and gtPathways Category
Advanced Mathematics	3 4 4 4	MAT 255 MAT 261 MAT 265 MAT 266	Linear Algebra Diff. Equations w/ Engineering Applications (GT-MA1) Differential Equations (GT-MA1) Differential Equations with Linear Algebra
Science	5 5 5 5	BIO 111 BIO 112 CHE 111 CHE 112	General College Biology I with Lab (GT-SC1) General College Biology II with Lab (GT-SC1) General College Chemistry I with Lab (GT-SC1) General College Chemistry II with Lab (GT-SC1)
Computer Science	4 4 3 4 3	CSC 160 CSC 161 CSC 233 CSC 234 CSC 240	Computer Science I (Language) Computer Science II (Language) Object-Oriented Programming (Language) C++ Programming Java Programming
Computer Aided Drafting	3 3 3 3	CAD 101 CAD 102 CAD 201 CAD 202	Computer Aided Drafting I Computer Aided Drafting II CAD/Custom Computer Aided Drafting/3D
Public Speaking	3	COM 115	Public Speaking



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Metropolitan State University - Pre-Engineering Transfer Courses

Please note that this curriculum neither fulfills the GT Pathways general education curriculum nor the associate degree requirements at the community college.

Required Courses Applicable to Engineering Majors - 38 credits			
General Education Knowledge Area	Credit Hours	Community College (CCCS) Course No.	Course Title and gtPathways Category
Written Communication	3	ENG 121	English Composition I (GT-C01)
	3	ENG 122	English Composition II (GT-C02)
Oral Communication	3	COM 115	Public Speaking
Art & Humanities	3		Any 200-Level GT-AH1, GT-AH2, GT-AH3
Social & Behavioral Science	3	ECO 201	Macroeconomics (GT-SS1)
History	3		Any 200-Level GT-HI1
Natural & Physical Sciences	5	PHY 211	Physics: Calculus-based I (GT-SC1)
	5	CHE 111	General College Chemistry I with Lab (GT-SC1)
Mathematics	5	MAT 201	Calculus I (GT-MA1)
	5	MAT 202	Calculus II (GT-MA1)

* Students are strongly encouraged to complete course sequences (such as, PHY 211 & 212 and MAT 201, 202 & 203) at the same institution before transferring.

Elective Courses Recommended by Major - 0-14			
Elective courses must be selected in consultation with the engineering advising office at the 4-year institution to verify they will transfer and apply to the student's chosen major requirements.			
Major Area	Credit Hours	Community College (CCCS) Course No.	Course Title and gtPathways Category
Civil Engineering Technology	4 <u>or</u> 5 5	MAT 203 <u>or</u> MAT 204 PHY 212	Calculus III (GT-MA1) <u>or</u> Calculus III with Engineering Applications (GT-MA1) Physics: Calculus-based II (GT-SC1)
Electrical Engineering Technology			
Mechanical Engineering Technology	3 3 5	PHI 112 PHY 212	Ethics (GT-AH3) Any GT-SS1, GT-SS2, GT-SS3 Physics: Calculus-based II (GT-SC1)



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University of Colorado Boulder - Pre-Engineering Transfer Courses

Please note that this curriculum neither fulfills the GT Pathways general education curriculum nor the associate degree requirements at the community college.

Required Courses Applicable to All Engineering Majors (these are not admission requirements)			
General Education Knowledge Area	Credit Hours	Community College (CCCS) Course No.	Course Title and gtPathways Category
Art & Humanities, Social & Behavioral Science, History	9		Choose from the list at this resource page (near the bottom): http://www.colorado.edu/engineering/admissions/transfer/co-community-colleges
Natural & Physical Sciences	5 5	CHE 111 PHY 211	General College Chemistry I with Lab (GT-SC1) Physics: Calculus-based I (GT-SC1)
Mathematics	5 5	MAT 201 MAT 202	Calculus I (GT-MA1) Calculus II (GT-MA1)
For more information regarding course applicability to specific majors, please review the "CU-Boulder Engineering Course Matrix" at: http://www.colorado.edu/engineering/admissions/transfer/co-community-colleges .			

Elective Courses			
Elective courses must be selected in consultation with the engineering advising office at the 4-year institution to verify they will transfer and apply to the student's chosen major requirements.			
Major Area	Credit Hours	Community College (CCCS) Course No.	Course Title and gtPathways Category
Advanced Mathematics	4	MAT 203	Calculus III (GT-MA1)
	5	MAT 204	Calculus III with Engineering Applications (GT-MA1)
	3	MAT 255	Linear Algebra
	4	MAT 261	Differential Equations with Engineering Applications (GT-MA1)
	4	MAT 265	Differential Equations (GT-MA1)
Science	4	MAT 266	Differential Equations with Linear Algebra
	5	BIO 111	General College Biology I with Lab (GT-SC1)
	5	BIO 112	General College Biology II with Lab (GT-SC1)
	5	CHE 112	General College Chemistry II with Lab (GT-SC1)
Computer Science	5	PHY 212	Physics: Calculus-based II (GT-SC1)
	4	CSC 160	Computer Science I (Language)
	4	CSC 161	Computer Science II (Language)
Computer Aided Drafting	3	ECC 130	Engineering Computing
	3	CAD 101	Computer Aided Drafting I
	3	CAD 102	Computer Aided Drafting II
	3	CAD 201	CAD/Custom
	3	CAD 202	Computer Aided Drafting/3D
	6	CAD 256	SolidWorks Basics
	6	CAD 257	SolidWorks Intermediate
	6	CAD 258	SolidWorks Advanced
	3	CAD 259	Advanced SolidWorks
	3	ECC 101	Engineering Graphics I
Art & Humanities, Social & Behavioral Science, History	6		Choose from the list of upper-division courses (shown in bold) in the H/SS PDF on the resource page (near the bottom) at: http://www.colorado.edu/engineering/admissions/transfer/co-community-colleges

For more information regarding transfer requirements, visit: <http://higherred.colorado.gov/Academics/Transfers/TransferDegrees.html>



TRANSFER READY

Pre-Engineering



University of Colorado
Colorado Springs

University of Colorado Colorado Springs - Pre-Engineering Transfer Courses

Please note that this curriculum neither fulfills the GT Pathways general education curriculum nor the associate degree requirements at the community college.

Required Courses Applicable to Engineering Majors - 38 credits			
General Education Knowledge Area	Credit Hours	Community College (CCCS) Course No.	Course Title and gtPathways Category
Written Communication	3	ENG 121	English Composition I (GT-C01)
Art & Humanities	3		Any GT-AH1, GT-AH2, GT-AH3
Social & Behavioral Science	3		Any GT-SS1, GT-SS2, GT-SS3
History	3		Any 200-Level GT-HI1
Natural & Physical Sciences	5	PHY 211	Physics: Calculus-based I (GT-SC1)
	5	PHY 212	Physics: Calculus-based II (GT-SC1)
	5	CHE 111	General College Chemistry I with Lab (GT-SC1)
Mathematics	5	MAT 201	Calculus I (GT-MA1)
	5	MAT 202	Calculus II (GT-MA1)
	4 <u>or</u>	MAT 203 <u>or</u>	Calculus III (GT-MA1) <u>or</u>
	5	MAT 204	Calculus III with Engineering Applications (GT-MA1)
	3	MAT 265	Preferred Differential Equations (GT-MA1)

* Students are strongly encouraged to complete course sequences (such as, PHY 211 & 212 and MAT 201, 202 & 203) at the same institution before transferring.

Elective Courses Recommended by Major - 9-23			
Elective courses must be selected in consultation with the engineering advising office at the 4-year institution to verify they will transfer and apply to the student's chosen major requirements.			
Major Area	Credit Hours	Community College (CCCS) Course No.	Course Title and gtPathways Category
Computer Engineering	3	EKG 105	Logic Design I
	4	CSC 160	Computer Science I
	4	CSC 161	Computer Science II
	3	CSC 230	C Programming
	3		Any GT-SS1, GT-SS2, GT-SS3
	3		Any GT-AH1, GT-AH2, GT-AH3
Electrical Engineering	3	MAT 215	Discrete Mathematics (GT-MA1)
	3	EKG 105	Logic Design I
	3		Any GT-SS1, GT-SS2, GT-SS3
Mechanical Engineering	3		Any GT-AH1, GT-AH2, GT-AH3
	3	BUS 115	Introductions to Business
	3	EKG 102	Introduction to Engineering Methodologies
	3	MAT 255	Linear Algebra