

# Maricopa Community Colleges to UA College of Engineering – Two Year Plan for Aerospace Engineering

Courses in **RED** – offered only at UA

Transfer: Maricopa	UA Course Requirements	Units
<b>1ST SEMESTER</b>		
MAT 220 or MAT 221	MATH 122A/B or MATH 125 Calculus I with Applications	3 to 5
CHM 151 & 151LL	CHEM 151 General Chemistry I	4
ENG 101	ENGL 101 or 107 or 109H First-Year Composition	3
ECE 102 & 103	ENGR 102A/B Introduction to Engineering or ENGR 102	3
AGEC-S	General Education	3
<b>2ND SEMESTER</b>		
MAT 230 or MAT 231	MATH 129 Calculus II	3
ECE 105	AME 105 Introduction to MATLAB I	1
PHY 121 (or 115 & 116)	PHYS 141 Introductory Mechanics	4
ENG 102	ENGL 102 First-Year Composition	3
EEE 220	ECE 175 Computer Programming for Engineering Applications	3
AGEC-S	General Education	3
<b>3RD SEMESTER</b>		
ECE 211	CE 214 Statics	3
MAT 240 or MAT 241	MATH 223 Vector Calculus	4
PHY 131	PHYS 241 Introductory Electricity and Magnetism	4
AGEC-S	General Education	3
	AME 211 Computer Aided Drafting and Manufacturing	3
	AME 205 Introduction to MATLAB II	1
<b>4TH SEMESTER</b>		
ECE 212	AME 250 Dynamics	3
MAT 262	MATH 254 Intro to Ordinary Differential Equations	3
AGEC-S	General Education	3
	AME 220 Intro to Aerospace Engineering	3
	AME 230 Thermodynamics	3

# Maricopa Community Colleges to UA College of Engineering – Two Year Plan for Architectural Engineering

Courses in **RED** – offered only at UA

Transfer: Maricopa	UA Course Requirements	Units
<b>1ST SEMESTER</b>		
MAT 220 or MAT 221	MATH 122A/B or MATH 125 Calculus I with Applications	3 to 5
CHM 151 & 151LL	CHEM 151 General Chemistry I	4
ENG 101	ENGL 101 or 107 or 109H First-Year Composition	3
ECE 102 & 103	ENGR 102A/B Introduction to Engineering or ENGR 102	3
AGEC-S	General Education	3
<b>2ND SEMESTER</b>		
MAT 230 or MAT 231	MATH 129 Calculus II	3
ENG 102	ENGL 102 or 108 First-Year Composition	3
PHY 121 (or 115 & 116)	PHYS 141 Introductory Mechanics	4
AGEC-S	General Education	3
AGEC-S	General Education	3
<b>3RD SEMESTER</b>		
ECE 211	CE 214 Statics	3
MAT 240 or MAT 241	MATH 223 Vector Calculus	4
PHY 131	PHYS 241 Introductory Electricity and Magnetism	4
	ARCE 295 Intro to Architectural Engineering	1
	ARC 220 History of Applied Building Technology	3
	AME 230 Thermodynamics	3
<b>4TH SEMESTER</b>		
ECE 215	CE 215 Mechanics of Materials	3
MAT 262	MATH 254 Intro to Ordinary Differential Equations	3
AGEC-S	General Education	3
	ARCE 210 Build Information Modeling	3
	ARCE 223 Building Technology III, EAS I	3

Via [enr.arizona.edu](http://enr.arizona.edu), Catalog 2020-2021. Courses are subject to change.



# Maricopa Community Colleges to UA College of Engineering – Two Year Plan for Biomedical Engineering

Courses in **RED** – offered only at UA

Transfer: Maricopa	UA Course Requirements	Units
<b>1ST SEMESTER</b>		
MAT 220 or MAT 221	MATH 122A/B or MATH 125 Calculus I with Applications	3 to 5
CHM 151 & 151LL	CHEM 151 General Chemistry I	4
ENG 101	ENGL 101 First-Year Composition	3
ECE 102 & 103	ENGR 102 or ENGR 102A/B Introduction to Engineering	3
AGEC-S	General Education	3
<b>2ND SEMESTER</b>		
MAT 230 or MAT 231	MATH 129 Calculus II	3
CHM 152 & 152LL	CHEM 152 General Chemistry II	4
PHY 121 (or 115 & 116)	PHYS 141 Introductory Mechanics or PHYS 161H	4
ENG 102	ENGL 102 First-Year Composition	3
AGEC-S	General Education	3
	BME 295C Challenges in Biomedical Engineering	1
<b>3RD SEMESTER</b>		
MAT 240 or MAT 241	MATH 223 Vector Calculus	4
BIO 181	MCB 181R&L Introductory Biology I and Laboratory	4
EEE 220	ECE 175 Intro Computer Programming	3
*ECE 211	*CE 214 Statistics or BME 214 Introduction Biomechanics	3
	BME 284 Biosystems Thermal Engineering OR AME 230 Thermodynamics	3
<b>4TH SEMESTER</b>		
MAT 262	MATH 254 Intro to Ordinary Differential Equations	3
BIO 201	PSIO 201 Human Anatomy and Physiology I	4
PHY 131	PHYS 241 Introductory Electricity and Magnetism	4
AGEC-S	General Education	3
	BME 210 Intermediate BME Design	3

# Maricopa Community Colleges to UA College of Engineering – Two Year Plan for Biosystems Engineering

Courses in **RED** – offered only at UA

Transfer: Maricopa	UA Course Requirements	Units
<b>1ST SEMESTER</b>		
MAT 220 or MAT 221	MATH 122A/B or MATH 125 Calculus I with Applications	3 to 5
CHM 151 & 151LL	CHEM 151 General Chemistry I	4
ENG 101	ENGL 101 First-Year Composition	3
ECE 102 & 103	ENGR 102 or ENGR 102A/B Introduction to Engineering	3
AGEC-S	General Education	3
<b>2ND SEMESTER</b>		
MAT 230 or MAT 231	MATH 129 Calculus II	3
CHM 152 & 152LL	CHEM 152 General Chemistry II	4
PHY 121 (or 115/116)	PHYS 141 Introductory Mechanics or PHYS 161H	4
ENG 102	ENGL 102 First-Year Composition	3
AGEC-S	General Education	3
<b>3RD SEMESTER</b>		
ECE 211	CE 214 Statics	3
MAT 240 or MAT 241	MATH 223 Vector Calculus	4
BIO 181	MCB 181R/L Introductory Biology I OR PLS Plant Bio	4
	BE 284 Biosystems Thermal Engineering	3
	BE 201 Introduction to Biosystems Engineering	2
<b>4TH SEMESTER</b>		
MAT 262	MATH 254 Intro to Ordinary Differential Equations	3
PHY 131	PHYS 241 Introductory Electricity and Magnetism	4
BIO 182 or BIO 205 or BIO 201	ECOL 182 L&R Introductory Biology II or MIC 205 A & L General Microbiology or PSIO 201 Human Anatomy and Physiology I	4
AGEC-S	General Education	3
	BE 205 Engineering Analytic Computer Skills	3

# Maricopa Community Colleges to UA College of Engineering Two Year Plan for Chemical Engineering

Courses in **RED** – offered only at UA

Transfer: Maricopa	UA Course Requirements	Units
<b>1st Semester</b>		
MAT 220 or MAT 221	MATH 122A/B or MATH 125 Calculus I with Applications	3 to 5
CHM 151 & 151LL	CHEM 151 General Chemistry I or CHEM 161/163	4
ENGL 101	ENGL 101 or 107 or 109H First-Year Composition	3
ECE 102 & 103	ENGR 102A/B Introduction to Engineering or ENGR 102	3
AGEC-S	General Education	3
<b>2nd Semester</b>		
MAT 230 or MAT 231	MATH 129 Calculus II	3
ECE 105	AME 105 Introduction to MATLAB I	1
PHY 121 (or 115 & 116)	PHYS 141 Introductory Mechanics	4
ENG 102	ENGL 102 First-Year Composition	3
CHM 152 & 152LL	CHEM 152 General Chemistry II or CHEM 162/164 or MSE 110	4
<b>3rd Semester</b>		
MAT 240 or MAT 241	MATH 223 Vector Calculus	4
CHM 235	CHEM 241A Lectures in Organic Chemistry	3
CHM 235LL	CHEM 243A Organic Chemistry Laboratory	1
AGEC-S	General Education	3
	AME 205 Introduction to MATLAB II - (Seven Week II)	1
	CHEE 201 Elements of Chemical Engineering I	3
	CHEE 201L Elements of Chemical Engineering I- Computational Lab	1
<b>4th Semester</b>		
MAT 262	MATH 254 Intro to Ordinary Differential Equations	3
PHY 131	PHYS 241 Introductory Electricity and Magnetism	4
CHM 236	CHEM 241B Lectures in Organic Chemistry OR CHEM 242B or CHEM 246B	3
	CHEE 202 Elements of Chemical Engineering II	4
	CHEE 203 Chemical Engineering Heat Transfer and Fluid Flow	3

# Maricopa Community Colleges to UA College of Engineering

## Two Year Plan for Civil Engineering

Courses in **RED** – offered only at UA

Transfer: Maricopa	UA Course Requirements	Units
<b>1ST SEMESTER</b>		
MAT 220 or MAT 221	MATH 122A/B, or MATH 125 Calculus I with Applications	3 to 5
CHM 151 & 151LL	CHEM 151 General Chemistry I	4
ENG 101	ENGL 101 First-Year Composition	3
ECE 102 & 103	ENGR 102 or ENGR 102A/B Introduction to Engineering	3
AGEC-S	General Education	3
<b>2ND SEMESTER</b>		
MAT 230 or MAT 231	MATH 129 Calculus II	3
BIO 181 or GLG 101 & 103	MCB 181R&L Introductory Biology I and Laboratory or GEOS 251 Physical Geology	4
PHY 121 or PHY 115 & 116	PHYS 141 Introductory Mechanics	4
ENG 102	ENGL 102 First-Year Composition	3
AGEC-S	General Education	3
<b>3RD SEMESTER</b>		
ECE 211	CE 214 Statics	1
MAT 240 or MAT 241	MATH 223 Vector Calculus	3
PHY 131 or CHM 152 & 152LL	PHYS 241 Introductory Electricity and Magnetism or CHEM 152 General Chemistry II	4
AGEC-S	General Education	3
	CE 210 Engineering Graphics	3
<b>4TH SEMESTER</b>		
ECE 215	CE 215 Mechanics of Solids	3
MAT 262	MATH 254 Intro to Ordinary Differential Equations	3
AGEC-S	General Education	3
CON 241	CE 251 Elementary Surveying	3
	CE 260 Computer Programming	1
	CE 218 Mechanics of Fluids	3

# Maricopa Community Colleges to UA College of Engineering – Two Year Plan for Electrical & Computer Engineering

Courses in **RED** – offered only at UA

Transfer: Maricopa	UA Course Requirements	Units
<b>1ST SEMESTER</b>		
MAT 220 or MAT 221	MATH 122A/B OR MATH 125 Calculus I with Applications	3 to 5
CHM 151 & 151LL	CHEM 151 General Chemistry I or CHEM 161/163	4
ENG 101	ENGL 101 First-Year Composition	3
ECE 102 & 103	ENGR 102 or ENGR 102A/B Introduction to Engineering	3
AGEC-S	General Education	3
<b>2ND SEMESTER</b>		
MAT 230 or MAT 231	MATH 129 Calculus II	3
EEE 220	ECE 175 Computer Programming for Engineering Applications	3
PHY 121	PHYS 141 Introductory Mechanics	4
ENG 102	ENGL 102 First-Year Composition	3
AGEC-S	General Education	3
<b>3RD SEMESTER</b>		
EEE 120	ECE 274A Digital Logic	4
MAT 240 or MAT 241	MATH 223 Vector Calculus	4
PHY 131	PHYS 241 Introductory Electricity and Magnetism	4
AGEC-S	General Education	3
	ECE 275 Computer Programming for Engineering Applications II	3
<b>4TH SEMESTER</b>		
EEE 202	ECE 220 Basic Circuits	5
PHY 115 & 116 OR PHY 241	PHYS 143 Optics & Thermodynamics or PHYS 142 or PHYS 162H	2
MAT 227	MATH 243 Discrete Mathematics in Computer Science	3
MAT 262	MATH 254 Intro to Ordinary Differential Equations	3
AGEC-S	General Education	3



# Maricopa Community Colleges to UA College of Engineering

## Two Year Plan for Engineering Management

Courses in **RED** – offered only at UA

Transfer: Maricopa	UA Course Requirements	Units
<b>1ST SEMESTER</b>		
MAT 220 or MAT 221	MATH 122A/B OR MATH 125 Calculus I with Applications	3 to 5
CHM 151 & 151LL	CHEM 151 General Chemistry I	4
ENG 101	ENGL 101 First-Year Composition	3
ECE 102 & 103	ENGR 102 or ENGR 102A/B Introduction to Engineering	3
AGEC-S	General Education	3
<b>2ND SEMESTER</b>		
MAT 230 or MAT 231	MATH 129 Calculus II	3
CHM 152 & 152LL OR BIO 181	CHEM 152 General Chemistry II OR CHEM 162/164 OR MSE 110 Solid State Chemistry OR MCB 181R/L Intro Bio I	4
EEE 220	ECE 175 Computer Programming for Engineering Applications or CSC 127A Introduction to Computer Science	3/4
ENG 102	ENGL 102 First-Year Composition	3
AGEC-S	General Education	3
<b>3RD SEMESTER</b>		
MAT 240 or MAT 241	MATH 223 Vector Calculus	4
PHY 121	PHYS 141 Introductory Mechanics or PHYS 161H	4
AGEC-S	General Education	3
AGEC-S	General Education	3
	SIE 265 Engineering Management I	3
<b>4TH SEMESTER</b>		
ECE 211	CE 214 Statics	3
PHY 131	PHYS 241 Introductory Electricity and Magnetism	4
AGEC-S	General Education	3
	CHEE 201 Elements of Chemical Engineering I or AME 230 Thermodynamics or BE 284 Biosystems Thermal Engineering	3
	SIE 295S Systems & Industrial Engineering Sophomore Colloquium	1
	SIE 270 Mathematical Foundations of Systems and Industrial	3

# Maricopa Community Colleges to UA College of Engineering – Two Year Plan for Environmental Engineering

Courses in **RED** – offered only at UA

Transfer: Maricopa	UA Course Requirements	Units
<b>1st Semester</b>		
MAT 220 or MAT 221	MATH 122A/B or MATH 125 Calculus I with Applications	3 to 5
CHM 151 & 151LL	CHEM 151 General Chemistry I	4
ENG 101	ENGL 101 First-Year Composition	3
ECE 102 & 103	ENGR 102 or ENGR 102A/B Introduction to Engineering	3
AGEC-S	General Education	3
AGEC-S	General Education	3
<b>2nd Semester</b>		
MAT 230 or MAT 231	MATH 129 Calculus II	3
CHM 152 & 152LL	CHEM 152 General Chemistry II	4
ECE 105	AME 105 Introduction to MATLAB I	1
ENG 102	ENGL 102 First-Year Composition	3
PHY 121	PHYS 141 Introductory Mechanics	4
<b>3rd Semester</b>		
MAT 240 or MAT 241	MATH 223 Vector Calculus	4
CHM 235	CHEM 241A Lectures in Organic Chemistry	3
CHM 235LL	CHEM 243A Organic Chemistry Laboratory	1
AGEC-S	General Education	3
	AME 205 Introduction to MATLAB II	1
	CHEE 201 Elements of Chemical Engineering I (Fall only)	3
	CHEE 201L Elements of Chemical Engineering (Lab)	1
<b>4th Semester</b>		
MAT 262	MATH 254 Intro to Ordinary Differential Equations	3
PHY 131	PHYS 241 Introductory Electricity and Magnetism	4
AGEC-S	General Education	3
	CHEE 202 Elements of Chemical Engineering II (Spring only)	4
	CHEE 270 Intro to Environmental Engineering	3
	ENGR 211C Engineering Science Module - Statics	1

# Maricopa Community Colleges to UA College of Engineering – Two Year Plan for Industrial Engineering

Courses in **RED** – offered only at UA

Transfer: Maricopa	UA Course Requirements	Units
<b>1ST SEMESTER</b>		
MAT 220 or MAT 221	MATH 122A/B, MATH 125 Calculus I with Applications	3 to 5
CHM 151 & 151LL	CHEM 151 General Chemistry I	4
ENG 101	ENGL 101 First-Year Composition	3
ECE 102 & 103	ENGR 102 or ENGR 102A/B Introduction to Engineering	3
AGEC-S	General Education	3
<b>2ND SEMESTER</b>		
MAT 230 or MAT 231	MATH 129 Calculus II	3
CHM 152 & 152LL or BIO 181	CHEM 152 General Chemistry II or MCB 181R/L Intro Biology I and Lab	4
EEE 220 or CIS 150AB	ECE 175 Computer Programming for Engineering Applications or CSC 110 Intro to Computer Programming I	3/4
ENG 102	ENGL102 First-Year Composition	3
PHY 121	PHYS 141 Introductory Mechanics	4
<b>3RD SEMESTER</b>		
MAT 240 or MAT 241	MATH 223 Vector Calculus	4
PHY 131	PHYS 241 Introductory Electricity and Magnetism	4
AGEC-S	General Education	3
	SIE 250 Introduction to Systems Engineering	3
	SIE 277 Object-Oriented Modeling and Design	3
<b>4TH SEMESTER</b>		
AGEC-S	General Education	3
AGEC-S	General Education	3
EEE 202 or ECE 211	ECE 207 Elements of Electrical Engineering or ECE 220 Basic Circuits or AME 230 Thermodynamics or CE 214 Statistics or CHEE 201 Elements of Chemical Engineering I (Fall Only) or BE 284 Biosystems Thermal Engineering	3
	SIE 265 Engineering Management I	3
	SIE 270 Mathematical Foundations of SIE	3
	SIE 295S Systems & Industrial Engineering Sophomore Colloquium	1

# Maricopa Community Colleges to UA College of Engineering – Two Year Plan for Material Science & Engineering

Courses in **RED** – offered only at UA

Transfer: Maricopa	UA Course Requirements	Units
<b>1ST SEMESTER</b>		
MAT 220 or MAT 221	MATH 122A/B or MATH 125 Calculus I with Applications,	3 to 5
CHM 151 & 151LL	CHEM 151 General Chemistry I	4
ENG 101	ENGL 101 First-Year Composition	3
ECE 102 & 103	ENGR 102 or ENGR 102A/B Introduction to Engineering	3
AGEC-S	General Education	3
<b>2ND SEMESTER</b>		
MAT 230 or MAT 231	MATH 129 Calculus II	3
PHY 121	PHYS 141 Introductory Mechanics	4
ENG 102	ENGL 102 First-Year Composition	3
AGEC-S	General Education	3
	MSE 110 Solid State Chemistry	4
<b>3RD SEMESTER</b>		
MAT 240 or MAT 241	MATH 223 Vector Calculus	4
PHY 131	PHYS 241 Introductory Electricity and Magnetism	4
AGEC-S	General Education	3
	MSE 222 Introduction to Materials Science	3
	MSE 280 Intro to Computer Methods in MSE	2
<b>4TH SEMESTER</b>		
MAT 262	MATH 254 Intro to Ordinary Differential Equations	3
AGEC-S	General Education	3
	MSE 223R Introduction to Materials Science & Engineering II	3
	MSE 223L Materials Processing Laboratory	2
	MSE 345 Thermodynamics	3

# Maricopa Community Colleges to UA College of Engineering – Two Year Plan for Mechanical Engineering

Courses in **RED** – offered only at UA

Transfer: Maricopa	UA Course Requirements	Units
<b>1ST SEMESTER</b>		
MAT 220 or MAT 221	MATH 122A/B or MATH 125 Calculus I with Applications	3 to 5
CHM 151 & 151LL	CHEM 151 General Chemistry I	4
ENG 101	ENGL 101 First-Year Composition	3
ECE 102 & 103	ENGR 102 or ENGR 102A/B Introduction to Engineering	3
AGEC-S	General Education	3
<b>2ND SEMESTER</b>		
MAT 230 or MAT 231	MATH 129 Calculus II	3
ECE 105	AME 105 Introduction to MATLAB I	1
EEE 220	ECE 175 Computer Programming for Engineering Applications	3
PHY 121	PHYS 141 Introductory Mechanics	4
ENG 102	ENGL102 First-Year Composition	3
AGEC-S	General Education	3
<b>3RD SEMESTER</b>		
ECE 211	CE 214 Statics	3
MAT 240 or MAT 241	MATH 223 Vector Calculus	4
PHY 131	PHYS 241 Introductory Electricity and Magnetism	4
AGEC-S	General Education	3
	AME 211 Computer-Aided Drafting and Manufacturing	3
<b>4TH SEMESTER</b>		
ECE 212	AME 250 Dynamics	3
MAT 262	MATH 254 Intro to Ordinary Differential Equations	3
AGEC-S	General Education	3
	ECE 207 Elements of Electrical Engineering	3
	AME 205 Introduction to MAT LAB II	1
	AME 230 Thermodynamics	3

# Maricopa Community Colleges to UA College of Engineering – Two Year Plan for Mining Engineering

Courses in **RED** – offered only at UA

Transfer: Maricopa	UA Course Requirements	Units
<b>1ST SEMESTER</b>		
MAT 220 or MAT 221	MATH 122A/B or MATH 125 Calculus I with Applications	3 to 5
CHM 151 & 151LL	CHEM 151 General Chemistry I	4
ENG 101	ENGL 101 First-Year Composition	3
ECE 102 & 103	ENGR 102 or ENGR 102A/B Introduction to Engineering	3
AGEC-S	General Education	3
<b>2ND SEMESTER</b>		
MAT 230 or MAT 231	MATH 129 Calculus II	3
CHM 152 & 152LL or	CHEM 152 General Chemistry II OR MSE 110 Solid State Chemistry	4
ENG 102	ENGL102 First-Year Composition	3
PHY 121	PHYS 141 Introductory Mechanics	4
AGEC-S	General Education	3
<b>3RD SEMESTER</b>		
ECE 211	CE 214 Statics	3
GLG 101 & 103	GEOS 251 Physical Geology	4
MAT 240 or MAT 241	MATH 223 Vector Calculus	4
AGEC-S	General Education	3
	MNE 205 Intro to Mining Engineering	3
	MNE 296A Mineral Resource Engineering Topics	1
	MNE 297A Underground Mine Safety	1
<b>4TH SEMESTER</b>		
ECE 215	CE 215 Mechanics of Solids	3
MAT 262	MATH 254 Intro to Ordinary Differential Equations	3
AGEC-S	General Education	3
	MNE 210 Mineralogy and Petrology for Engineers	2
	MNE 204 Introduction to Electric Circuits and Mine Power Systems	1

# Maricopa Community Colleges to UA College of Engineering – Two Year Plan for Optical Sciences & Engineering

Courses in **RED** – offered only at UA

## OPTICS TRACK:

Transfer: Maricopa	UA Course Requirements	Units
<b>1ST SEMESTER</b>		
MAT 220 or MAT 221	MATH 122A/B or MATH 125 Calculus I with Applications	3 to 5
CHM 151 & 151LL	CHEM 151 General Chemistry I	4
ENG 101	ENGL 101 First-Year Composition	3
ECE 102 & 103	ENGR 102 or ENGR 102A/B Introduction to Engineering	3
AGEC-S	General Education	3
<b>2ND SEMESTER</b>		
MAT 230 or MAT 231	MATH 129 Calculus II	3
PHY 121	PHYS 141 Introductory Mechanics or PHY 161H	4
ENG 102	ENGL 102 First-Year Composition	3
AGEC-S	General Education	3
	MSE 110 Solid State Chemistry	4
<b>3RD SEMESTER</b>		
MAT 240 or MAT 241	MATH 223 Vector Calculus	4
PHY 131	PHYS 241 Introductory Electricity and Magnetism	4
	Technical Elective – See advisor for course approval	3
AGEC-S	General Education	3
	OPTI 201R Geometrical and Instrumental Optics I (Fall only)	3
	OPTI 201L Geometrical and Instrumental Optics Lab I (Fall only)	1
<b>4TH SEMESTER</b>		
MAT 262	MATH 254 Intro to Ordinary Differential Equations	3
EEE 202	ECE 207 Elements of Electrical Engineering or ECE 220 Basic Circuits	3/5
AGEC-S	General Education	3
	OPTI 202R Geometrical and Instrumental Optics II (Spring only)	3
	OPTI 202L Geometrical and Instrumental Optics Lab II (Spring only)	1
	OPTI 280 Computer Programming (Spring only)	1
	OPTI 210 Physics Optics I (Spring Only)	3

## Opto-Materials Track:

Transfer: Maricopa	UA Course Requirements	Units
<b>1ST SEMESTER</b>		
MAT 220 or MAT 221	MATH 122A/B or MATH 125 Calculus I with Applications	3 to 5
CHM 151 & 151LL	CHEM 151 General Chemistry I	4
ENG 101	ENGL 101 First-Year Composition	3
ECE 102 & 103	ENGR 102 or ENGR 102A/B Introduction to Engineering	3
AGEC-S	General Education	3
<b>2ND SEMESTER</b>		
MAT 230 or MAT 231	MATH 129 Calculus II	3
PHY 121	PHYS 141 Introductory Mechanics or PHY 161H	4
ENG 102	ENGL 102 First-Year Composition	3
AGEC-S	General Education	3
	MSE 110 Solid State Chemistry	4
<b>3RD SEMESTER</b>		
MAT 240 or MAT 241	MATH 223 Vector Calculus	4
PHY 131	PHYS 241 Introductory Electricity and Magnetism	4
AGEC-S	General Education	3
	OPTI 201R Geometrical and Instrumental Optics I (Fall only)	3
	OPTI 201L Geometrical and Instrumental Optics Lab I (Fall only)	1
<b>4TH SEMESTER</b>		
MAT 262	MATH 254 Intro to Ordinary Differential Equations	3
AGEC-S	General Education	3
EEE 202	ECE 207 Elements of Electrical Engineering or ECE 220 Basic Circuits	3/5
	OPTI 202R Geometrical and Instrumental Optics II (Spring only)	3
	OPTI 202L Geometrical and Instrumental Optics Lab II (Spring only)	1
	OPTI 280 Computer Programming (Spring only)	1
	OPTI 210 Physics Optics I (Spring Only)	3



## Opto-Electronics Track:

Transfer: Maricopa	UA Course Requirements	Units
<b>1ST SEMESTER</b>		
MAT 220 or MAT 221	MATH 122A/B or MATH 125 Calculus I with Applications	3 to 5
CHM 151 & 151LL	CHEM 151 General Chemistry I	4
ENG 101	ENGL 101 First-Year Composition	3
ECE 102 & 103	ENGR 102 or ENGR 102A/B Introduction to Engineering	3
AGEC-S	General Education	3
<b>2ND SEMESTER</b>		
MAT 230 or MAT 231	MATH 129 Calculus II	3
PHY 121	PHYS 141 Introductory Mechanics or PHY 161H	4
ENG 102	ENGL 102 First-Year Composition	3
AGEC-S	General Education	3
	MSE 110 Solid State Chemistry	4
<b>3RD SEMESTER</b>		
MAT 240 or MAT 241	MATH 223 Vector Calculus	4
PHY 131	PHYS 241 Introductory Electricity and Magnetism	4
EEE 220 or CSC 220	ECE 175 Computer Programming for Engineering Application	3
	OPTI 201R Geometrical and Instrumental Optics I (Fall only)	3
	OPTI 201L Geometrical and Instrumental Optics Lab I (Fall only)	1
<b>4TH SEMESTER</b>		
MAT 262	MATH 254 Intro to Ordinary Differential Equations	3
EEE 202	ECE 220 Basic Circuits	5
AGEC-S	General Education	3
	OPTI 202R Geometrical and Instrumental Optics II (Spring only)	3
	OPTI 202L Geometrical and Instrumental Optics Lab II (Spring only)	1
	OPTI 280 Computer Programming (Spring only)	1
	OPTI 210 Physics Optics I (Spring Only)	3

## Opto-Mechanics Track:

Transfer: Maricopa	UA Course Requirements	Units
<b>1ST SEMESTER</b>		
MAT 220 or MAT 221	MATH 122A/B or MATH 125 Calculus I with Applications	3 to 5
CHM 151 & 151LL	CHEM 151 General Chemistry I	4
ENG 101	ENGL 101 First-Year Composition	3
ECE 102 & 103	ENGR 102 or ENGR 102A/B Introduction to Engineering	3
AGEC-S	General Education	3
<b>2ND SEMESTER</b>		
MAT 230 or MAT 231	MATH 129 Calculus II	3
PHY 121	PHYS 141 Introductory Mechanics or PHY 161H	4
ENG 102	ENGL 102 First-Year Composition	3
AGEC-S	General Education	3
	MSE 110 Solid State Chemistry	4
<b>3RD SEMESTER</b>		
MAT 240 or MAT 241	MATH 223 Vector Calculus	4
PHY 131	PHYS 241 Introductory Electricity and Magnetism	4
ECE 211	CE 214 Statics	3
AGEC-S	General Education	3
	OPTI 201R Geometrical and Instrumental Optics I (Fall only)	3
	OPTI 201L Geometrical and Instrumental Optics Lab I (Fall only)	1
<b>4TH SEMESTER</b>		
MAT 262	MATH 254 Intro to Ordinary Differential Equations	3
ECE 212	AME 250 Dynamics	3
AGEC-S	General Education	3
	OPTI 202R Geometrical and Instrumental Optics II (Spring only)	3
	OPTI 202L Geometrical and Instrumental Optics Lab II (Spring only)	1
	OPTI 280 Computer Programming (Spring only)	1
	OPTI 210 Physics Optics I (Spring Only)	3

## Biomedical Optics Track

Transfer: Maricopa	UA Course Requirements	Units
<b>1ST SEMESTER</b>		
MAT 220 or MAT 221	MATH 122A/B or MATH 125 Calculus I with Applications	3 to 5
CHM 151 & 151LL	CHEM 151 General Chemistry I	4
ENG 101	ENGL 101 First-Year Composition	3
ECE 102 & 103	ENGR 102 or ENGR 102A/B Introduction to Engineering	3
AGEC-S	General Education	3
<b>2ND SEMESTER</b>		
MAT 230 or MAT 231	MATH 129 Calculus II	3
PHY 121	PHYS 141 Introductory Mechanics or PHY 161H	4
ENG 102	ENGL 102 First-Year Composition	3
AGEC-S	General Education	3
	MSE 110 Solid State Chemistry	4
<b>3RD SEMESTER</b>		
MAT 240 or MAT 241	MATH 223 Vector Calculus	4
PHY 131	PHYS 241 Introductory Electricity and Magnetism	4
AGEC-S	General Education	3
AGEC-S	General Education	3
	OPTI 201R Geometrical and Instrumental Optics I (Fall only)	3
	OPTI 201L Geometrical and Instrumental Optics Lab I (Fall only)	1
<b>4TH SEMESTER</b>		
MAT 262	MATH 254 Intro to Ordinary Differential Equations	3
BIO 201	PSIO 201 Human Anatomy and Physiology I	3
AGEC-S	General Education	3
	OPTI 202R Geometrical and Instrumental Optics II (Spring only)	3
	OPTI 202L Geometrical and Instrumental Optics Lab II (Spring only)	1
	OPTI 280 Computer Programming (Spring only)	1
	OPTI 210 Physics Optics I (Spring Only)	3

# Maricopa Community Colleges to UA College of Engineering – Two Year Plan for Systems Engineering

Courses in **RED** – offered only at UA

Transfer: Maricopa	UA Course Requirements	Units
<b>1ST SEMESTER</b>		
MAT 220 or MAT 221	MATH 122A/B or MATH 125 Calculus I with Applications	3 to 5
CHM 151 & 151LL	CHEM 151 General Chemistry I	4
ENG 101	ENGL 101 First-Year Composition	3
ECE 102 & 103	ENGR 102 or ENGR 102A/B Introduction to Engineering	3
AGEC-S	General Education	3
<b>2ND SEMESTER</b>		
MAT 230 or MAT 231	MATH 129 Calculus II	3
CHM 152 & 152LL or BIO 181	CHEM 152 General Chemistry II or MSE 110 Solid State Chemistry MCB 181R/L Intro Biology and Lab	4
CSC 220 or CIS 150AB	ECE 175 Computer Programming for Engineering Applications or CSC 110 Introduction to Programming I	3/4
ENG 102	ENGL102 First-Year Composition	3
PHY 121	PHYS 141 Introductory Mechanics	4
<b>3RD SEMESTER</b>		
MAT 240 or MAT 241	MATH 223 Vector Calculus	4
PHY 131	PHYS 241 Introductory Electricity and Magnetism	4
AGEC-S	General Education	3
	SIE 250 Introduction to Systems Engineering	3
	SIE 277 Object-Oriented Modeling and Design	3
<b>4TH SEMESTER</b>		
MAT 262	MATH 254 Intro to Ordinary Differential Equations	3
AGEC-S	General Education	3
	Engineering Minor Course	3
	SIE 265 Engineering Management I	3
	SIE 270 Mathematical Foundations of SIE	3
	SIE 295S Systems & Industrial Engineering Sophomore Colloquium	1