

## Earth and Space Exploration concentration in Exploration Systems Design course information

Course prefix	Course Name	Hrs	When	Prerequisites
SES100	Introduction to Exploration	3	F	Pre / co-req MAT170 or higher or MPT score of 50% or higher
SES121	Earth, Solar System and Universe I	3	F	Pre / co-req MAT170 or higher or MPT score of 50% or higher
SES123	Earth, Solar System and Universe I-Lab	1	F	Pre / co-req MAT170 or higher or MPT score of 50% or higher AND SES121 (C or better if completed)
SES122	Earth, Solar System and Universe II	3	S	Pre-req: SES121 (C or better)
SES124	Earth, Solar System and Universe II-Lab	1	S	Pre/co-req SES122 (C or better if completed)
EEE202*	Circuits I	4	F, S	Pre/Co-requisites: MAT 274 (or MAT 275), and PHY 131 (with C or better if completed)
MAE212*	Engineering Mechanics	4	F, S	PHY 121; Pre/Co-requisite: MAT 274 or 275
SES330	Electronics Instrumentation	4	F	PHY 131; PHY132; SES 394 Topic: Concepts of Electrical & Mechanical Engineering Design (with C or better) OR MAE212 and EEE202 (C or better)
SES350*	Engineering Systems and Experimental Problem Solving	3	F	MAT 267, 272 or 275; PHY131/132 (or 151); C or better
SES405	Exploration Systems Engineering	3	S	SES 330; SES 394 topic: Concepts of Electrical & Mechanical Engineering Design (C or better) or SES350 (C or better)
SES410	Senior Exploration Project I	3	F	ENG 101, ENG 105 or ENG 107; Senior standing
SES411	Senior Exploration Project II	3	S	SES410
CHM114	General Chemistry for Engineers	4	F,S	CHM 101 with C or better OR Mathematics Placement Test score of 50% or higher OR Pre/Co-requisites: MAT 170 (or MAT 171, 210, 251, 265 or 270) with C or better if completed
MAT265/270	Calculus I	3	F,S,SS	MAT 170 with C or better OR Mathematics Placement Test with a score of 60% or higher and the Advanced Mathematics Placement test with a score of 38 or higher. Credit allowed for MAT 265 or MAT 270
MAT266/271	Calculus II	3	F,S,SS	MAT 265 or 270 with C or better; Credit is allowed for only MAT 266 or 271
MAT267/272	Calculus III	3	F,S,SS	MAT 266 or 271 with C or better; Credit is allowed for only MAT 267 or 272
MAT275	Modern Differential Equations	3	F,S,SS	MAT 266 or MAT 271 with a C or better; Credit is allowed for only MAT 274 or 275
PHY121	University Physics I: Mechanics	3	F,S,SS	Pre-req MAT265 or MAT270 with a C or better; Pre or Co-req: MAT 266 or MAT 271 (with C or better if completed)
PHY122	University Physics Laboratory I	1	F,S,SS	Pre- or Co-requisite: PHY 121 (with C or better if completed)
PHY131	University Physics II: Elec.& Mag.	3	F,S,SS	MAT 266 or MAT 271 AND PHY 121 (all C or better); Co-req: MAT 267 or MAT 272 (C or better if completed)
PHY132	University Physics Laboratory II	1	S,SS	Pre or Co-req: PHY131 (C or better if completed)

**SES/AST/GLG approved electives: choose from suggested classes below or obtain advisor approval for other options.**

SES394**	Numerical Methods	3		See catalog
SES490**	Robotics for ESE	3		See catalog
SES/AST 490**	Observ. Inst. and Data Analysis	3		See catalog
AST321	Intro Planetary and Stellar Astrophysics	3	F	MAT266 or MAT271 with C or better AND PHY122/122 or PHY150 with C or better
AST322	Intro Galactic and Extragalactic Astro.	3	S	MAT266 or MAT271 with C or better AND PHY122/122 or PHY150 with C or better
SES311	Essentials of Astrobiology	3	S	MAT 265 or MAT 270 with C or better; PHY 121 or CHM 113 or BIO 188 with C or better
GLG321	Mineralogy	3	S	CHM113 or CHM114 or CHM117/111 AND MAT170 or MAT210 or MAT265 or MAT270; all with C or better
GLG424	Petrology	3	F	GLG321 w/ C or better
GLG404	Fundamentals of Planetary Geology	3	F	GLG101 or GLG102 or SES121 or SES122, with a C or better
GLG490	Hydrology	3	F	CEE 341, MAE 340, or GLG 321 and MAT 272 (C or better)

**\*Students in catalog years 2012 and prior:** SES210, SES310 and 6 additional credits of SES electives were required in place of MAE212, EEE202 and SES350; however, SES210 and SES310 are no longer available. Students in these previous catalog years who have not already taken SES210 and SES310 are now required to take MAE212, EEE202, SES350 and only 3 credits of SES electives. Students who took SES210 but not SES310, cannot take SES350 and should substitute SES310 with the addition of another SES elective course (for a total of 12 credits of SES electives). Students who took SES310 but not SES210 can take SES350 in place of SES210 and will still take 6 credits of SES electives as noted on their major map. Students who already took SES210 and SES310 cannot take SES350 and need 9 credits of SES electives, as noted on their major map. All students are encouraged to take MAE212 and EEE202. They are important engineering courses for students interested in systems design.

\*\*Courses not offered on a regularly scheduled basis at this time.

Codes for offering: F=fall, S=spring, SS=summer session

Special note: This handout is intended as a helpful tool for scheduling planning. However, students and advisors should consult the course catalog for official course information as pre-requisites and course offerings are constantly evolving.