B.S., Major in Sustainable Energy Science: 56-64 credits (up to 18 credits satisfy specific Magis Core Requirements)

Introductory Energy Courses

(One of the following:)

ERG 157	Energy in Society	2 credits
PHY 157	Energy in Modern Society	3 credits

Introductory Applied Science / Design Courses

(Minimum of 4 credits from the following:)

ERG 131	Installation and Maintenance of Photovoltaic Systems	3 credits
ERG 132	Solar Thermal and Passive Solar Systems	3 credits
ERG 213	Three-Dimensional Design	2 credits
PHY 195	Selected Topics in Physics	1-2 credits

Mathematics Foundation Courses

(One of the following options:)

Option 1:

MTH 349	Modeling of the Physical World II - Advanced Calculus III	3 credits

Option 2:

MTH 347	Calculus III	3 credits

Plus one of the following:

CHM 532	Mathematical Concepts in Chemistry	3 credits
MTH 545	Differential Equations	3 credits
PHY 551	Mathematical Methods for Physicists	3 credits

Physics Foundation Courses

(3 credits from the following:)

PHY 214	General Physics II	3 credits
PHY 222	Modeling in the Physical World II - Advanced General Physics II	3 credits

Statistics Courses

(Minimum of 3 credits from the following:)

ANT/SOC 314	Statistical Analysis for the Social Sciences	4 credits
ERG 301	Modeling Electrical Load and Yield	3 credits
MTH 562	Mathematical Statistics II	3 credits
HAP/PLS 520	Statistics for Public Administration & Policy Analysis	3 credits

Communication and Organizational Skills Courses

(The following course:)

ERG/PHY 591	Seminar in Engineering	1 credit

(And a minimum of 3 credits from the following:)

COM 320	Leadership: Theories, Styles, and Skills	3 credits
ENG 154	Writing about Energy	3 credits
ENG 315	Technical Writing	3 credits
ENT 312	Innovation and Creativity	3 credits
SOC 316	Qualitative Methods in the Social Sciences	3 credits

Energy Transfer Courses

(Minimum of 3 credits from the following:)

ATS 510	Introduction to Physical Meteorology	3 credits
CHM 455	Chemical Thermodynamics	3 credits
ERG 241	Energy Transfer	3 credits
PHY 541	Thermodynamics	3 credits

Economic, Political, and Legal Considerations Courses

(Minimum of 3 credits from the following:)

BUS 201	Legal Environment of Business	3 credits
ERG 351	Energy Policy	3 credits
ENT 314	Business Planning for Social Entrepreneurs	3 credits
EVS 353	Environmental Economics	3 credits
EVS/PLS 333	Environmental Politics and Policy	3 credits

Sustainability Courses

(Minimum of 6 credits from the following:)

ANT 112	Introduction to Anthropology – Energy, Culture, and Sustainability	3 credits
ANT/EVS/ SOC 355	Environment and Society	3 credits
ANT 424	Sustainability and Rural America	3 credits
PHL 255	Ethics, Energy, and the Environment	3 credits
THL 336	Divine Providence, Catholic Social Teaching, and the Problem of Climate Change	3 credits

Applied Science Experience Courses

(Minimum of 3 credits from the following:)

ERG 361	Internship	3 credits
ERG 521	Introduction to Photovoltaic Materials	3 credits
PHY 561	Nuclear Physics	3 credits

Analytical Science Experience Courses

(Minimum of 4 credits from the following:)

CHM 466	Instrumental Analysis Laboratory	2 credits
CHM 515	Green Chemistry	2 credits
ERG 251	History and Technology of the Western World – Material Science	2 credits
ERG 497	Directed Independent Research	1-3 credits
ERG 520	Introduction to Solar Energy	3 credits
PHY 563	Nuclear Instruments and Methods	2 credits
PHY 581	Advanced Physics Laboratory I	1 credit
PHY 582	Advanced Physics Laboratory II	1 credit

Advanced Project Courses

(Both of the following:)

ERG 581	Energy Innovation Project I	3 credits
ERG 582	Energy Innovation Project II	3 credits

Electives:

(Minimum of 12 additional credits from the following:)

ATS 315 Computer Applications in Meteorology
ATS 460/EVS 460 Terrestrial Remote Sensing
ATS 510 Introduction to Physical Meteorology
ATS 516 Computer Methods in Atmospheric Sciences
ATS 531 Operational Prediction Models
ATS 548/EVS 548 Introduction to Solar-Terrestrial Environment
ATS 564 Statistical Applications in the Atmospheric Sciences
ATS 570 Quantitative Methods in the Atmospheric Sciences
ATS 597/ERG 597 Computer Models for Short Term Weather Forecasting
BIO/EVS 390 Environmental Sciences
CHM 371 Biochemistry of Metabolism
CHM 381 Fundamentals of Biochemistry
CHM 382 Biochemistry Laboratory
CHM 456 Instrumental Analysis
CHM 466 Instrumental Analysis Laboratory
CHM 446 Statistical Mechanics
CHM 447 Physical Chemistry of Macromolecules
CHM 544 Quantum Chemistry
CHM 549 Computational Chemistry
CSC 221 Introduction to Programming
CSC 222 Object-Oriented Programming
CSC 321 Data Structures
CSC 414 Introduction to Computer Organization
CSC 421 Algorithm Design and Analysis
ERG 493 Directed Independent Readings
ERG 495 Directed Independent Study
ERG 551 Grants and Funding for Sustainable Technology
ERG 595 Special Topics in Energy Studies
EVS 374 Management of Environmental Risk
HRS 303 Sources and Methods: Fuzzy Math Logic
HRS 311 Sources and Methods: Graph Theory
HRS 334 Sources and Methods: Green Chemistry and Sustainability

HRS 342 Sources and Methods: Modeling Global Issues
MTH 529 Linear Algebra
MTH 545 Differential Equations
MTH 546 Partial Differential Equations
MTH 561/STA 561 Mathematical Statistics I
MTH 562/STA 562 Mathematical Statistics II
MTH 593 Complex Analysis
PHY 301 Modern Physics
PHY 303 Electronics Laboratory
PHY 331 Physical Optics
PHY 471 Classical Mechanics
PHY 481 Electricity and Magnetism
PHY 521 Electronics for Scientists
PHY 522 Electric Circuits
PHY 531 Quantum Mechanics
PHY 541 Thermodynamics and Statistical Mechanics
PHY 553 Computational Physics
PHY 571 Solid State Physics
PHY 581 Advanced Laboratory I
PHY 582 Advanced Laboratory II
STA 569 ANOVA and Experimental Design

Courses used to meet specific degree requirements cannot also be counted as an elective. Up to 12 transfer credits of pre-approved engineering courses can be counted as electives.