# SIE PhD Course Requirement Worksheet

(Include in Plan of Study)

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| Name |  |  **EGT:**  |
| Date |  |
| Prior Degree |  |
| Student ID |  |

|  |  |  |
| --- | --- | --- |
| **Required Units** | **Units** | **Grades** |
| ***Required Core (select 1 from each core area)***Probability & Statistics (3 units)* SIE 520 – Stochastic Modeling I **OR**
* SIE 530 – Engineering Statistics

Optimization (3 units)* SIE 540 – Survey of Optimization Methods **OR**
* SIE 545 – Fundamentals of Optimization

Systems Engineering (3 units)* SIE 554A – The Systems Engineering Process **OR**
* SIE 550 – Theory of Linear Systems
 | 9 units |  |
| ***Elective Courses – 27 units of SIE-related coursework**** 12 units must be taken from SIE
* 15 units may be taken from SIE or an SIE-related domain with Faculty Advisor & Director of Grad Studies approval
 | 27 units |  |
| ***Minor Courses – 12 units**** All minor coursework can come from single disciple or split between two (6 units from each discipline\*)

*\*If the academic department of the respective discipline allows split minors* | 12 units |  |
| ***Colloquium**** SIE 695A Graduate Seminar: Minimum 2 units required
 | 2 units |  |
| ***Dissertation Research**** SIE 920 Dissertation: Minimum 18 units required
 | 18 units |  |
| ***General Notes:***  |

 **TOTAL = 68 minimum**  **TOTAL** (overall, not current) **=**

**Approved SIE Graduate Electives (**[**SIE website**](https://sie.engineering.arizona.edu/grad-programs/courses)**)**

* SIE 506: Quality Engineering (3.00 credits)
* SIE 508: Reliability Engineering (3.00 credits)
* SIE 511: Human-Machine Interaction (3.00 credits)
* SIE 512: Human Factors Engineering Research Methods (3.00 credits)
* SIE 513: Ergonomics for Inclusive Design (3.00 credits)
* SIE 514: Law for Engineers and Scientists (3.00 credits)
* SIE 515: Technical Sales and Marketing (3.00 credits)
* SIE 520: Stochastic Modeling I (3.00 credits)
* SIE 522: Engineering Decision Making under Uncertainty (3.00 credits)
* SIE 525: Queuing Theory (3.00 credits)
* SIE 530: Engineering Statistics (3.00 credits)
* SIE 531: Simulation Modeling and Analysis (3.00 credits)
* SIE 532: Sports Analytics (3.00 credits)
* SIE 533: Fundamentals of Data Science for Engineers (3.00 credits)
* SIE 536: Experiment Design and Regression (3.00 credits)
* SIE 540: Survey of Optimization Methods (3.00 credits)
* SIE 544: Linear Programming (3.00 credits)
* SIE 545: Fundamentals of Optimization (3.00 credits)
* SIE 546: Algorithms, Graphs, and Networks (3.00 credits)
* SIE 552: Space Systems Engineering (3.00 credits)
* SIE 554A: Systems Engineering Process (3.00 credits)
* SIE 555: Sensor Systems Engineering (3.00 credits)
* SIE 557: Project Management (3.00 credits)
* SIE 556: Fundamental of Guidance for Aerospace Systems (3.00 credits)
* SIE 558: Model-Based Systems Engineering (3.00 credits)
* SIE 561: Traffic Modeling and Simulation (3.00 credits)
* SIE 562: Production Systems Analysis (3.00 credits)
* SIE 563: Integrated Logistics and Distribution Systems (3.00 credits)
* SIE 564: Cost Estimation (3.00 credits)
* SIE 565: Supply Chain Management (3.00 credits)
* SIE 566: Life Cycle Analysis for Sustainable Design (3.00 credits)
* SIE 567: Financial Modeling for Innovation (3.00 credits)
* SIE 570: Intelligent Control Systems & Applications (3.00 credits)
* SIE 571: Systems Cyber Security (3.00 credits)
* SIE 572: Information Security and Research (INSuRE) (3.00 credits)
* SIE 573: Engineering of Trustworthy Systems (3.00 credits)
* SIE 577: Introduction to Biomedical Informatics (3.00 credits)
* SIE 578: Artificial Intelligence for Health and Medicine (3.00 credits)
* SIE 583: Computer Integrated Manufacturing Systems (CIM) (3.00 credits)
* SIE 596: Special Topics in SIE (3.00 credits)
* SIE 606: Advanced Quality Engineering (3.00 credits)
* SIE 608: Advanced Reliability Engineering (3.00 credits)
* SIE 631: Distributed Multi-Paradigm Simulation Systems (3.00 credits)
* SIE 640: Large-Scale Optimization (3.00 credits)
* SIE 644: Integer and Combinatorial Optimization (3.00 credits)
* SIE 645: Nonlinear Optimization (3.00 credits)
* SIE 649: Stochastic Optimization (3.00 credits)
* SIE 654: Advanced Concepts in Systems Engineering (3.00 credits)
* SIE 678: Transportation Systems (3.00 credits)