

Physics & Law, Technology and Culture (Optical Science & Engineering Option) - B.S.

(135 credits minimum)

First Year

1st Semester		Credits
ENGL 101	English Composition: Introduction to Academic Writing	3
PHYS 111	Physics I	3
PHYS 111A	Physics I Lab	1
MATH 111	Calculus I	4
CS 113 or CS 115	Introduction to Computer Science or Introduction to Computer Science in C++	3
CHEM 121 or CHEM 125	Fundamentals of Chemical Principles I or General Chemistry I	3
FYS SEM	First-Year Student Seminar	0
Term Credits		17

2nd Semester

PHYS 114	Introduction to Data Reduction with Applications	3
PHYS 121	Physics II	3
PHYS 121A	Physics II Lab	1
MATH 112	Calculus II	4
CHEM 122 or CHEM 126	Fundamentals of Chemical Principles II or General Chemistry II	3
CHEM 125A	General Chemistry Lab I	1
Term Credits		15

Second Year**1st Semester**

MATH 213	Calculus III B	4
MATH 225	Survey of Probability and Statistics ¹	1
PHYS 234	Physics III	3
PHYS 231A	Physics III Lab	1
ENGL 102	English Composition: Introduction to Writing for Research	3
History and Humanities GER 200 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-200-level/)		3
Term Credits		15

2nd Semester

MATH 222	Differential Equations	4
MATH 328	Mathematical Methods for Scientists and Engineers	3
PHYS 335 or R750 315	Introductory Thermodynamics or Intro Thermodynamics	3
Legal Foundations Elective ²		3
LTC Core Elective		3
Term Credits		16

Third Year**1st Semester**

OPSE 301	Introduction to Optical Science and Engineering	3
OPSE 310	Virtual Instrumentation	3
PHYS 430	Classical Mechanics I	3
PHYS 432	Electromagnetism I	3
Legal Foundations Elective ²		3
Term Credits		15

2nd Semester

OPSE 402	High Power Laser and Photonics Applications	3
PHYS 433	Electromagnetism II	3
PHYS 446	Solid State Physics	3
PHYS 418	Fundamentals of Optical Imaging	3
Elective (Physics/OPSE) ³		3

Term Credits	15
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Fourth Year**1st Semester**

PHYS 442 or R750 404	Introduction to Quantum Mechanics or Quantum Mechanics	3
Elective (Physics/OPSE/EE) ⁴		3
Technical Elective ⁵		3
LTC Core Elective		3
Legal Foundations Elective		3

Term Credits	15
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2nd Semester

PHYS 450	Advanced Physics Lab	3
Elective (Physics/EE) ⁶		3
Technical Elective ⁵		3
LTC Core Elective		3
HSS Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/hss-capstone/) ⁷		3

Term Credits	15
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Fifth Year**1st Semester**

HIST 310	Co-op in Law, Technology, Culture and History I	3
Social Science GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/social-science-ger/)		3
LTC Core Elective		3
Technical Elective ⁵		3

Term Credits	12
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Total Credits	135
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¹ Math 333 is an acceptable alternative to Math 225

² The first two Legal Foundations Electives must satisfy the History and Humanities 300 Level GER (<https://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/>).

³ Physics/OPSE Electives: Consult the Physics Department for information about qualifying courses.

⁴ Physics/OPSE/EE Electives: Consult the Physics Department for information about qualifying courses.

⁵ Technical Electives: Consult the Physics Department for information about qualifying courses.

⁶ Physics/EE Electives: Consult the Physics Department for information about qualifying courses.

⁷ The HSS Senior Seminar (<https://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/hss-capstone/>) must be a law-related course as determined by the LTC Program advisor.

Code	Title	Credits
LEGAL FOUNDATIONS ELECTIVES		
Select three of the following:		
HIST 361	The Founding of the American Nation	3
HIST 362	Sex, Gender, and the Law in American History	3
HIST 364	American Law in the World	3
HIST 369	Law and Society in History	3
MGMT 290	Business Law I	3

STS 300	Legal Reasoning, Writing, and Technology	3
R790 304	Intro Law And Legal Res	3

Code	Title	Credits
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LTC CORE ELECTIVES

Select four of the following:

EVSC 335	Environmental Law	3
HIST 320	Law and Evidence	3
HIST 338	Environmental Justice and Climate Change in America	3
HIST 370	Legal issues in the History of Media	3
HIST 375	Legal Issues in Environmental History	3
HIST 378	Medicine and Health Law in Modern America	3
HIST 384	Invention and Regulation	3
IE 447	Legal Aspects of Engineering	3
IT 331	Privacy and Information Technology	3
IT 332	Digital Crime	3
IT 400	Information Technology and the Law	3
R790 382	Environm Pol & Policy	3