

## INTEGRATED Ph.D. CURRICULUM

### Department of Chemistry

#### I Semester

Course No.	Course Title	Credit
CHM 301	Symmetry and Group Theory	4
CHM 311	Organic Chemistry I	4
CHM 313	Organic Chemistry Laboratory II	3
CHM 321	Physical Chemistry of Solutions	4
CHM 3**	Departmental Elective I	4
*** **	Open Elective I	3/4
Total		22/23

#### II Semester

Course No.	Course Title	Credit
CHM 302	Chemistry of Transition Metals	4
CHM 304	Inorganic Chemistry Laboratory II	3
CHM 312	Organic Chemistry II	4
CHM 322	Principles of Quantum Chemistry	4
CHM 3**	Departmental Elective II	4
*** **	Open Elective II	3/4
Total		22/23

#### III Semester

Course No.	Course Title	Credit
CHM 401	Non-transition Metal Chemistry	4
CHM 411	Physical Organic Chemistry	4
CHM 421	Statistical Mechanics	4
CHM 423	Physical Chemistry Laboratory II	3
CHM 6**	Departmental Elective III	4
CHM 6**	Departmental Elective IV	4
Total		23

#### IV Semester

Course No.	Course Title	Credit
CHM 422	Molecular Spectroscopy	4
CHM 6**	Departmental Elective V	4
CHM 6**	Departmental Elective VI	4
*** **	Open Elective III	4
*** **	Open Elective IV	4
Total		20

#### V Semester

Course No.	Course Title	Credit
CHM 5**	Project Work	16
Total		16

#### VI Semester

Course No.	Course Title	Credit
CHM 6**	Project Work	16
Total		16

#### VII Semester

Course No.	Course Title	Credit
CHM 800	Project Work	16
Total		16

## Department of Mathematics

### I Semester

Course No.	Course Title	Credit
MTH 301	Group Theory	4
MTH 303	Real Analysis I	4
MTH 305	Elementary Number Theory	4
MTH 311	Advanced Linear Algebra	4
MTH 407	Complex Analysis I	4
Total		20

### II Semester

Course No.	Course Title	Credit
MTH 302	Rings and Modules	4
MTH 304	General Topology	4
MTH 306	Ordinary Differential Equations	4
MTH 404	Measure and Integration	4
MTH ***	Departmental Elective I	4
Total		20

### III Semester

Course No.	Course Title	Credit
MTH 401	Fields and Galois Theory	4
MTH 403	Real Analysis II	4
MTH 405	Partial Differential Equations	4
MTH 507	Introduction to Algebraic Topology	4
Total		16

### IV Semester

Course No.	Course Title	Credit
MTH 503	Functional Analysis	4
MTH 508	Introduction to Differentiable Manifolds	4
MTH 5**	Departmental Elective II	4
MTH 5**/69*	Departmental Elective III/Reading Course	4
Total		16

### V Semester

<b>Course No.</b>	<b>Course Title</b>	<b>Credit</b>
MTH 5**	Departmental Elective IV	4
MTH 5**	Departmental Elective V	4
MTH 5**	Departmental Elective VI	4
MTH 69*	Reading Course	4
Total		16

### VI Semester

<b>Course No.</b>	<b>Course Title</b>	<b>Credit</b>
MTH 6**	Departmental Elective VII	4
MTH 6**	Seminar	4
MTH 69*	Reading Course #	4
MTH 69*	Reading Course #	4
Total		16

### VII Semester

<b>Course No.</b>	<b>Course Title</b>	<b>Credit</b>
MTH 6**	Departmental Elective VIII	4
Total		

### VIII Semester

<b>Course No.</b>	<b>Course Title</b>	<b>Credit</b>
MTH 6**	Departmental Elective IX	4
Total		

## Department of Physics

### I Semester

Course No.	Course Title	Credit
PHY 301	Mathematical Methods I	4
PHY 303	Quantum Mechanics I	4
PHY 305	Classical Mechanics	4
PHY 309	Thermal Physics	4
PHY 337	Integrated Physics Laboratory I	4
Total		20

### II Semester

Course No.	Course Title	Credit
PHY 302	Mathematical Methods II	4
PHY 304	Quantum Mechanics II	4
PHY 306	Statistical Mechanics	4
PHY 312	Numerical Methods and Programming	4
PHY 338	Integrated Physics Laboratory II	4
Total		20

### III Semester

Course No.	Course Title	Credit
PHY 401/605	Electrodynamics	4
PHY 403/607	Condensed Matter Physics	4
PHY 405	Condensed Matter Physics Lab	3
PHY4**	Departmental Elective I	4
*** **	Open Elective I	3/4
Total		18/19

#### IV Semester

Course No.	Course Title	Credit
PHY 402/606	Atomic and Molecular Physics	4
PHY 404/608	Nuclear and Particle Physics	4
PHY 432	Integrated Ph.D. Project	4
PHY 4**	Departmental Elective II	3/4
*** **	Open Elective II	3/4
Total		18/20

#### V Semester

Course No.	Course Title	Credit
PHY 701	Project Work	8
PHY 5**/6**	Departmental Elective I	4
PHY 5**/6**	Departmental Elective II	4
*** **	Open Elective III	3/4
Total		19/20

#### VI Semester

Course No.	Course Title	Credit
PHY 702	Project Work	16
*** **	Open Elective IV	3/4
Total		19/20

#### VII Semester

Course No.	Course Title	Credit
PHY 800	Project Work	16
Total		16