Alignment of the Course Objectives and Contents with the ELOs

M.Sc. and Ph.D. Programs

No.	Code	Subject	Credits (lecture-lab-self study)	Expected Learning Outcomes (ELO)							
				1	2	3	4	5	6	7	8
(1) Required courses											
1	SCPY 502	Classical Mechanics	3 (3-0-6)	I	I		I	I	I	I	I
2	SCPY 503	Quantum Mechanics	3 (3-0-6)	I	I		I	I	I	I	I
3	SCPY 504	Thermodynamics and Statistical Physics	3 (3-0-6)	R	R		R	R	I	R	I
4	SCPY 507	Classical Electrodynamics	3 (3-0-6)	R	R		R	R	I	R	I
(2) Selective courses											
5	SCPY 505	Mathematical Methods for Physicists	3 (3-0-6)	R	R	I	R	R	I	R	I
6	SCPY 511	Atomic and Molecular Physics	3 (3-0-6)	R	R	I	R	R	I	R	I
7	SCPY 515	Electrical Materials	3 (3-0-6)	R	R	I	R	R	I	R	I
8	SCPY 516	Electronic Devices and Circuits	3 (3-0-6)	R	R	I	R	R	I	R	I
9	SCPY 517	Fluid Mechanics	3 (3-0-6)	R	R	I	R	R	I	R	I
10	SCPY 519	Nuclear Physics	3 (3-0-6)	R	R	I	R	R	I	R	I
11	SCPY 521	Physics of Semiconductor	3 (3-0-6)	R	R	I	R	R	I	R	I
12	SCPY 523	Classical Field Theory	3 (3-0-6)	R	R	I	R	R	I	R	I
13	SCPY 524	Fourier Optics	3 (3-0-6)	R	R	I	R	R	I	R	I
14	SCPY 525	Photonics	3 (3-0-6)	R	R	I	R	R	I	R	I
15	SCPY 526	Quantum Optics	3 (3-0-6)	R	R	I	R	R	I	R	I
16	SCPY 527	Mathematics for Quantum Information	3 (3-0-6)	R	R	I	R	R	I	R	I

I = ELO is introduced & assessed R = ELO is reinforced & assessed P = ELO is practiced & assessed M = Level of Mastery is assessed

No.	Code	Subject	Credits (lecture-lab-self study)	Expected Learning Outcomes (ELO)							
				1	2	3	4	5	6	7	8
17	SCPY 528	Quantum Information	3 (3-0-6)	R	R	I	R	R	I	R	I
18	SCPY 529	Topics in Quantum Information	3 (3-0-6)	R	R	I	R	R	I	R	I
19	SCPY 531	Cosmic Rays	3 (3-0-6)	R	R	I	R	R	I	R	I
20	SCPY 532	Galactic Astronomy	3 (3-0-6)	R	R	I	R	R	I	R	I
21	SCPY 533	Astronomy and Astrophysics	3 (3-0-6)	R	R	I	R	R	I	R	I
22	SCPY 534	Solar Physics	3 (3-0-6)	R	R	I	R	R	I	R	I
23	SCPY 535	General Relativity	3 (3-0-6)	R	R	I	R	R	I	R	I
24	SCPY 543	Surface and Interface Physics	3 (3-0-6)	R	R	I	R	R	I	R	I
25	SCPY 561	Fundamentals of Biophysics	3 (3-0-6)	R	R	I	R	R	I	R	I
26	SCPY 562	Modeling and Simulation in Biophysics	3 (3-0-6)	R	R	I	R	R	I	R	I
27	SCPY 570	Signal and Image Processing	3 (3-0-6)	R	R	I	R	R	I	R	I
28	SCPY 571	Parallel Programming	3 (3-0-6)	R	R	I	R	R	I	R	I
29	SCPY 574	Numerical Methods for Differential Equations	3 (3-0-6)	R	R	I	R	R	I	R	I
30	SCPY 575	Computational Fluid Dynamics	3 (3-0-6)	R	R	I	R	R	I	R	I
31	SCPY 576	Scientific Visualization	3 (3-0-6)	R	R	I	R	R	I	R	I
32	SCPY 581	Geophysical Prospecting: Potential Field Methods	3 (3-0-6)	R	R	I	R	R	I	R	I
33	SCPY 582	Geophysical Prospecting: Electromagnetic	3 (3-0-6)	R	R	I	R	R	I	R	I
34	SCPY 583	Geophysical Prospecting: Seismic Methods	3 (3-0-6)	R	R	I	R	R	I	R	I
35	SCPY 585	Introductory Seismology	3 (3-0-6)	R	R	I	R	R	I	R	I
36	SCPY 586	Applied Modern Seismology	3 (3-0-6)	R	R	I	R	R	I	R	I
37	SCPY 587	Earthquake Source Theory	3 (3-0-6)	R	R	I	R	R	I	R	I
38	SCPY 612	Computational Physics I	3 (3-0-6)	R	R	I	R	R	I	R	I

I = ELO is introduced & assessed R = ELO is reinforced & assessed P = ELO is practiced & assessed M = Level of Mastery is assessed

No.	Code	Subject	Credits (lecture-lab-self study)	Expected Learning Outcomes (ELO)							
				1	2	3	4	5	6	7	8
39	SCPY 620	Non-Perturbative Methods in Quantum Field	3 (3-0-6)	R	R	I	R	R	I	R	I
40	SCPY 621	Supersymmetry in Field Theory and String	3 (3-0-6)	R	R	I	R	R	I	R	I
41	SCPY 626	Physics Education	3 (3-0-6)	R	R	I	R	R	I	R	I
42	SCPY 627	Data Analysis in Physics Education	3 (3-0-6)	R	R	I	R	R	I	R	I
43	SCPY 628	Physics Concepts and Misconception	3 (3-0-6)	R	R	I	R	R	I	R	I
44	SCPY 630	Physics of the Solid Earth	3 (3-0-6)	R	R	I	R	R	I	R	I
45	SCPY 636	Optoelectronics	3 (3-0-6)	R	R	I	R	R	I	R	I
46	SCPY 637	Molecular Simulation	3 (3-0-6)	R	R	I	R	R	I	R	I
47	SCPY 638	Molecular Quantum Mechanics	3 (3-0-6)	R	R	I	R	R	I	R	I
48	SCPY 639	Quantum Field Theory	3 (3-0-6)	R	R	I	R	R	I	R	I
49	SCPY 640	Theory of Many-Particle Systems	3 (3-0-6)	R	R	I	R	R	I	R	I
50	SCPY 642	Diffraction Techniques	3 (3-0-6)	R	R	I	R	R	I	R	I
51	SCPY 643	Thin Film Physics and Technology	3 (3-0-6)	R	R	I	R	R	I	R	I
52	SCPY 645	Laser Theory	3 (3-0-6)	R	R	I	R	R	I	R	I
53	SCPY 646	Fractals and Chaos	3 (3-0-6)	R	R	I	R	R	I	R	I
54	SCPY 647	Nonlinear Waves	3 (3-0-6)	R	R	I	R	R	I	R	I
55	SCPY 648	Computational Nonlinear Phenomena	3 (3-0-6)	R	R	I	R	R	I	R	I
56	SCPY 649	Plasma Physics	3 (3-0-6)	R	R	I	R	R	I	R	I
57	SCPY 650	Plasma Technologies and Applications	3 (3-0-6)	R	R	I	R	R	I	R	I
58	SCPY 651	Semiconductor Devices	3 (3-0-6)	R	R	I	R	R	I	R	I
59	SCPY 652	Superconductivity	3 (3-0-6)	R	R	I	R	R	I	R	I
60	SCPY 655	Complex Systems	3 (3-0-6)	R	R	I	R	R	I	R	I

I = ELO is introduced & assessed R = ELO is reinforced & assessed P = ELO is practiced & assessed M = Level of Mastery is assessed

No.	Code	Subject	Credits (lecture-lab-self study)	Expected Learning Outcomes (ELO)							
				1	2	3	4	5	6	7	8
61	SCPY 668	Contemporary Biophysics	3 (3-0-6)	R	R	I	R	R	I	R	I
62	SCPY 670	Inverse Theory and Applications	3 (3-0-6)	R	R	I	R	R	I	R	I

M.Sc. Program (only)

No.	Code	Subject	Credits (lecture-lab-self study)	Expected Learning Outcomes (ELO)							
				1	2	3	4	5	6	7	8
(1) Required courses											
1	SCPY 596	Seminar in Physics I	1 (1-0-2)	R	R	I	P	P	P	P	P
2	SCPY 597	Seminar in Physics II	1 (1-0-2)	R	R	R	P	P	P	P	P
(2) Thesis											
3	SCPY 698	Thesis	42 (0-37-0)	M	M	M	M	M	M	M	M

Ph.D. Program (only)

No.	Code	Subject	Credits (lecture-lab-self study)	Expected Learning Outcomes (ELO)							
				1	2	3	4	5	6	7	8
(1) Required courses											
1	SCPY 508	Contemporary Physics	3 (3-0-6)	R	R	I	R	R	I	R	I
2	SCPY 598	Seminar in Physics III	1 (1-0-2)	R	R	I	P	P	P	P	P
3	SCPY 599	Seminar in Physics IV	1 (1-0-2)	R	R	R	P	P	P	P	P
4	SCPY 600	Seminar in Physics V	1 (1-0-2)	R	R	R	P	P	P	P	P

I = ELO is introduced & assessed R = ELO is reinforced & assessed P = ELO is practiced & assessed M = Level of Mastery is assessed

No.	Code	Subject	Credits (lecture-lab-self study)	Expected Learning Outcomes (ELO)							
				1	2	3	4	5	6	7	8
(2) Selective courses											
5	SCPY 510	Advanced Mathematical Methods for Physicists	3 (3-0-6)	R	R	R	R	R	I	R	I
6	SCPY 522	Advanced Quantum Mechanics	3 (3-0-6)	R	R	R	R	R	I	R	I
7	SCPY 584	Advanced Seismic Exploration	3 (3-0-6)	R	R	R	R	R	I	R	I
8	SCPY 611	Advanced Atomic Physics	3 (3-0-6)	R	R	R	R	R	I	R	I
9	SCPY 613	Computational Physics II	3 (3-0-6)	R	R	R	R	R	I	R	I
10	SCPY 657	Advanced Condensed Matter Physics	3 (3-0-6)	R	R	R	R	R	I	R	I
11	SCPY 680	Selected Topics in Astrophysics	3 (3-0-6)	R	R	R	R	R	I	R	I
12	SCPY 681	Selected Topics in Astronomy	3 (3-0-6)	R	R	R	R	R	I	R	I
13	SCPY 682	Selected Topics in Physics Education	3 (3-0-6)	R	R	R	R	R	I	R	I
14	SCPY 683	Selected Topics in Thin Film and Surface Physics	3 (3-0-6)	R	R	R	R	R	I	R	I
15	SCPY 684	Selected Topics in Geophysics	3 (3-0-6)	R	R	R	R	R	I	R	I
16	SCPY 685	Selected Topics in Laser Applications	3 (3-0-6)	R	R	R	R	R	I	R	I
17	SCPY 686	Selected topics in Nonlinear Phenomena	3 (3-0-6)	R	R	R	R	R	I	R	I
18	SCPY 687	Selected Topics in Physics	3 (3-0-6)	R	R	R	R	R	I	R	I
19	SCPY 688	Selected Topics in Applied Physics	3 (3-0-6)	R	R	R	R	R	I	R	I
(3) Dissertation											
20	SCPY 699	Dissertation	36 (0-108-0)	M	M	M	M	M	M	M	M
21	SCPY 799	Dissertation	48 (0-144-0)	M	M	M	M	M	M	M	M

I = ELO is introduced & assessed R = ELO is reinforced & assessed P = ELO is practiced & assessed M = Level of Mastery is assessed