Listed below are all the compulsory subjects of the curriculum of the Licenciatura en Ciencias Físicas of the University of Buenos Aires, together with the classroom hours, the bibliography of each course and the corresponding grades obtained by Samantha Shendla Kucher, using a ranking system from 0 to 10.

Bachelor level

Grade	Subject
6	**Mathemathics 1** Topology in $\mathbb{R}^n$ and differential calculus in several variables **Classroom hours** : 10 hours per week, 160 hours total **Bibliography :** JT.M. Apostol. *Calculus.* I :. Number V. 1 in Calculus. Reverté, 1990. M. Spivak. *Calculus.* Calculus. Cambridge University Press, 2006.
10	**Physics 1** Classical mechanics **Classroom hours** : 10 hours per week, 160 hours total **Bibliography :** M. Alonso and E.J. Finn. *Fundamental University Physics : Mechanics.* Number V. 1. Addison-Wesley, 1967. C. Kittel and W.D. Knight. *Mecánica.* Berkeley physics course. Editorial Reverté, 1996.
8	**Mathemathics 2** Linear algebra **Classroom hours** : 6 hours per week, 96 hours total **Bibliography :** S. Lang. *Introduction to Linear Algebra.* Undergraduate Texts in Mathematics. Springer New York, 2012. L.E. Spence, A.J. Insel, and S.H. Friedberg. *Elementary Linear Algebra : A Matrix Approach.* Always learning. Pearson Education Limited, 2013.
9	**Laboratory 1** Experiences related to classical mechanics **Classroom hours** : 6 hours per week, 96 hours total **Bibliography :** D.C. Baird. *Experimentation : An Introduction to Measurement Theory and Experiment Design. Introduction to Measurement Theory and Experimental Design.* Prentice-Hall, 1995.
6	**Mathemathics 3** Integrals and differential equations **Classroom hours** : 10 hours per week, 160 hours total **Bibliography :** J. Marsden and A. Tromba. *Vector Calculus.* Macmillan Learning, 2012. R. Courant. *Differential and Integral Calculus, Volume 1.* Wiley Classics Library. Wiley, 1988.
9	**Physics 2** Waves and optics **Classroom hours** : 10 hours per week, 160 hours total **Bibliography :** F.S. Crawford. *Berkeley physics course : Ondas. 3.* Berkeley Physics Course. Editorial Reverté, 1971. E. Hecht, A. Zajac, and K. Guardino. *Optics.* Addison-Wesley world student series. Addison-Wesley, 1998.
8	**Physics 3** Introduction to Electrodynamics **Classroom hours** : 10 hours per week, 160 hours total **Bibliography :** D.J. Griffiths. *Introduction to Electrodynamics.* Cambridge University Press, 2017. E.M. Purcell and D.J. Morin. *Electricity and Magnetism.* Electricity and Magnetism. Cambridge University Press, 2013.
9	**Laboratory 2**

Experiences related to mechanical and electromagnetic waves

Classroom hours : 6 hours per week, 96 hours total

10 **Physics 4**

Thermodynamics and introduction to quantum mechanics

Classroom hours : 10 hours per week, 160 hours total

Bibliography :

M.W. Zemansky and R. Dittman. *Heat and Thermodynamics.* International student edition. McGraw-Hill, 1981.

R.M. Eisberg. *Fundamentals of modern physics.* Wiley, 1967.

10 **Laboratory 3**

Experiences related to electromagnetism

Classroom hours : 6 hours per week, 96 hours total

Bibliography :

Philip R Bevington, D Keith Robinson, and Gerry Bunce. *Data Reduction and Error Analysis for the Physical Sciences, 2nd ed.* American Journal of Physics, 61(8) :766–767, 1993.

9 **Numerical calculus**

Numerical calculation methods

Classroom hours : 10 hours per week, 160 hours total

Bibliography :

S. Nakamura. *Numerical Analysis and Graphic Visualization with MATLAB.* Prentice Hall PTR, 2002.

G.H. Golub and J.M. Ortega. *Scientific Computing and Differential Equations : An Introduction to Numerical Methods.* Elsevier Science, 1992.

Ranking system from 0 to 10.

Licenciatura degree - Equivalent to a Master's degree

Grade	Subject
10	**Mathemathics 4** Complex analysis **Classroom hours** : 10 hours per week, 160 hours total **Bibliography :** J.E. Marsden, M.J. Hoffman and T. Marsden. *Basic Complex Analysis.* W. H. Freeman, 1999. A. Pinkus and S. Zafrany. *Fourier Series and Integral Transforms. Fourier Series and Integral Transforms.* Cambridge University Press, 1997.
10	**Classical mechanics** Lagrangian and Hamiltonian mechanics **Classroom hours** : 10 hours per week, 160 hours total **Bibliography :** H. Goldstein. *Classical Mechanics.* Pearson Education, 2002. L.D. Landau and E.M. Lifshitz. *Mechanics : Volume 1.* Number V. 1. Elsevier Science, 1982.
10	**Laboratory 4** Experiences oriented to intorudce different measurement techniques **Classroom hours** : 6 hours per week, 96 hours total
10	**Theoretical physics 1** Classical Electrodynamics **Classroom hours** : 10 hours per week, 160 hours total **Bibliography :** J.D. Jackson. *Classical Electrodynamics, 3rd Ed.* Wiley India Pvt. Limited, 2007. L.D. Landau, E.M. Lifshitz, and L.P. Pitaevskii. *Electrodynamics of Continuous Media.* Course of theoretical physics. Butterworth-Heinemann, 1984.
9	**Theoretical physics 2** Quantum mechanics **Classroom hours** : 10 hours per week, 160 hours total **Bibliography :** C. Cohen-Tannoudji, B. Diu, and F. Laloe. *Quantum mechanics.* Quantum Mechanics. Wiley, 1977. J.J. Sakurai and J. Napolitano. *Modern Quantum Mechanics.* Cambridge University Press, 2017.
10	**Laboratory 5** Experiences related to atomic, nuclear and solid state physics **Classroom hours** : 6 hours per week, 96 hours total
10	**Theoretical physics 3** Statistical mechanics **Classroom hours** : 10 hours per week, 160 hours total **Bibliography :** R.K. Pathria and P.D. Beale. *Statistical Mechanics.* Elsevier Science, 1996. K. Huang. *Statistical Mechanics, 2nd Edition.* Wiley, 1987.
10	**Structure of matter 1** Fluid dynamics **Classroom hours** : 6 hours per week, 96 hours total **Bibliography :** D.J. Tritton. *Physical Fluid Dynamics.* Oxford Science Publ. Clarendon Press, 1988. D.J. Acheson and F.D.J. Acheson. *Elementary Fluid Dynamics.* Comparative Pathobiology - Studies in the Postmodern Theory of Education. Clarendon Press, 1990.
10	**Laboratory 6** Experimental project in a research laboratory **Classroom hours** : 10 hours per week, 160 hours total
10	**Laboratory 7** Experimental project in a research laboratory **Classroom hours** : 10 hours per week, 160 hours total

9 **Structure of matter 2**

Solid state physics

Classroom hours : 6 hours per week, 96 hours total

Bibliography :

N.W. Ashcroft and N.D. Mermin. *Solid-state Physics.* Number V. 30 in Holt-Saunders International Editions : Science : Physics. Saunders College, 1976.

C. Kittel. *Introduction to Solid State Physics.* Wiley, 2004.

9 **Structure of matter 3**

Quantum chemistry

Classroom hours : 6 hours per week, 96 hours total

Bibliography :

A. Szabo and N.S. Ostlund. *Modern Quantum Chemistry : Introduction to Advanced Electronic Structure Theory.* Dover Books on Chemistry. Dover Publications, 2012.

P.W. Atkins. *Molecular Quantum Mechanics : An Introduction to Quantum Chemistry.* Clarendon Press, 1977.

9 **Structure of matter 4**

Particle physics

Classroom hours : 6 hours per week, 96 hours total

Bibliography :

F Halzen and A D Martin. *Quarks and leptons : An introductory course in modern particle physics.* Wiley India Pvt. Limited, 1984.

D. Griffiths. *Introduction to Elementary Particles.* Physics textbook. Wiley, 2008.

10 **Tesis de Licenciatura**

Equivalent to a Master Thesis

Classroom hours : 20 hours per week, 960 hours total

Ranking system from 0 to 10.

Elective courses chosen

Grade	Subject
10	**Non linear dynamics** **Classroom hours** : 10 hours per week, 160 hours total **Bibliography :** S.H. Strogatz. *Nonlinear Dynamics and Chaos : With Applications to Physics, Biology, Chemistry and Engineering.* Studies in nonlinearity. Westview, 2000. S. Wiggins. *Introduction to Applied Nonlinear Dynamical Systems and Chaos. Texts in Applied Mathematics.* Springer New York, 2006.
10	**Statistical methods for experimental physics** **Classroom hours** : 10 hours per week, 160 hours total **Bibliography :** A.G. Frodesen, O. Skjeggestad, and H. Tfte. *Probability and Statistics in Particle Physics.* Number V. 2 in Probability and Statistics in Particle Physics. Universitetsforl., 1979. G. Bohm and G. Zech. *Introduction to statistics and data analysis for physicists.* DESY, 2010.
10	**Instrumentation and control** : Computerized equipment control **Classroom hours** : 6 hours per week, 96 hours total **Bibliography :** J.H. Moore, C.C. Davis, M.A. Coplan, S.C. Greer, and S. Greer. *Building Scientific Apparatus.* Building Scientific Apparatus. Cambridge University Press, 2009. A. J. Diefenderfer and B. E. Holton. *Principles of Electronic Instrumentation.* Saunders College Pub., 3rd edition edition, 1994.

Ranking system from 0 to 10.