

Prerequisites for the course in Quantum Mechanics (M1, first semester).

My first-year master course in Quantum Mechanics is an introductory course intended to both chemists and physicists. The lecture material will be written (in English) on the blackboard or written on slides (see my webpage: <https://quantique.u-strasbg.fr/doku.php?id=fr:pageperso:ef:enseignement>). Note that my written-in-French online material will be translated if classes cannot take place.

I expect the students to have basic knowledge in classical mechanics for a particle (velocity vector, acceleration, force, Newton's law, kinetic and potential energy). To be on the safe side, I will cover this topic during the first lecture. Most importantly, I expect the students to be familiar with various mathematical tools that are listed below. I strongly recommend all the students to check the list and read about the items that they may not be familiar with. I can of course answer questions about what the students read (on their own) after the classes, if necessary.

Mathematical prerequisites:

- * vectors in real space, dot and vector products, cartesian basis, time derivative of a (time-dependent) vector.

- * complex numbers, real part, imaginary part, square modulus, Euler's formula for complex numbers.

- * Partial derivatives of a multiple variable function, partial derivative differential equations.

- * Basics in linear algebra: finite-dimension vector space, linearly independent vectors, vector basis, linear operators on a vector space, matrix representation of a linear operator (in a given basis), sum and product of matrices, transpose of a matrix, determinant of a matrix, inversion of a matrix, eigenvalues and eigenvectors of a matrix.

Emmanuel Fromager, Strasbourg, July 13th, 2020.