MINISTÉRIO DA EDUCAÇÃO
Fundação Universidade Federal do ABC
Reitoria
Av. dos Estados, 5001 · Bairro Santa Terezinha · Santo André - SP
CEP 09210-580 · concursos@ufabc.edu.br

OFFICIAL NOTICE Nº 081/2018

Opening of public service examination for the position of Adjunct Professor rank A – level I, of the career of higher Education; Area: Physics; Subareas: Computational Material Science.

The Rector of Fundação Universidade Federal do ABC (UFABC), exercising the power conferred upon him, following the terms of the correspondent legal basis, the application opening Notice, with the objective of selecting candidates by the means of a public service examination for the position of Professor of higher Education with the following conditions and characteristics:

1. CONDITIONS AND CHARACTERISTICS:

1.1. Class: Rank A - Level 1 / Work regime: Full-time (40h per week) and Exclusive Dedication / Legal Basis: Laws nº 7.596/1987, 8.112/1990, 9.394/1996, 12.772/2012, 12.863/2013, 12.990/2014 and 13.325/2016, and the Decrees nº 3.298/1999, 6.944/2009 and 7.485/2011 and changes, Interministerial Ordinance nº 399/2016 Ordinance nº 450/2002 / MPOG / Openings: 1 (vacancy).

1.2. Application Period: 14/06/18 from to 14/08/18;

1.2.1. Period for requesting a fee waiver, referring to item 7 of Official Public Notice of General Conditions nº 96/2013: 14/06/18 from to 14/07/18.

1.3. Application Fee: 239,00;

1.4. Remuneration:

Basic Remuneration	4.455,22
Compensation by Degree (Doctor's)	5.130,45
Starting Remuneration (Doctor)	9.585,67

1.5. Area: Physics / Sub-area: Computational Material Science.

2. PROGRAM CONTENT:

2.1. Lecture exam

Experimental motivations of Quantum Mechanics. Quantization. Uncertainty relations. Time-dependent and time-independent Schrodinger equation. Reflection, Transmission and tunneling.

Schrodinger equation in spherical coordinates. Hydrogen atom. Angular momentum and spin. Schrodinger equation for 2-body and many body systems. Atoms and periodic table. Fundamental and excited states: spectra of atoms, diatomic and polyatomic molecules. Molecular interactions. Crystal lattices. Electronic bands.

2.2. Written exam:
The Drude theory and Sommerfeld theory of metals. Crystal lattices: structures, classification and determination. Reciprocal lattices. Electronic band structure. Fermi surface. Semiconductors. Magnetism. Molecular Orbital theory. Hartree-Fock method. Density Functional Theory. Classical and ab initio molecular dynamics. Empiricial models for materials.

3. DA BIBLIOGRAFIA RECOMENDADA:

3.1. Lecture exam
3.1.1. D. Halliday, R. Resnick, J.Walker, Fundamentals of Physics.
3.1.2. R. A. Serway, J. W. Jewett Jr., Principles of Physics.
3.1.3. H. Moysés Nussenzveig, Curso de Física Básica, Editora Edgard Blücher Ltda.
3.1.4. R. B. Leighton, M. Sands, R. P. Feynman, The Feynman Lectures on Physics, Addison-Wesley.
3.1.5. P. A. Tipler, R. A. Llewellyn, Modern Physic.
3.1.6. P. Atkins, Physical-Chemistry.

3.2. Written test
3.2.1. Charles Kittel, Introduction to Solid State Physics, Wiley.
3.2.2. Neil W. Ashcroft and N. David Mermin, Solid State Physics, Cengage Learning.
3.2.3. Daan Frenkel e Berend Smit, Understanding Molecular Simulation: From Algorithms to Applications, Academic Press, 2 ed., 2001.
3.2.4. Donald A McQuarrie, Simon; John D. Simon, Physical chemistry: a molecular approach. University Science Books, 1997.
3.2.5. Frederick Reif, Fundamentals of Statistical and Thermal Physics, Waveland Press Inc, 2008.
3.2.6. M. P. Allen, D. J. Tildesley, Computer simulation of liquids, Clarendon Press, 1987.
3.2.7. Richard M. Martin, Electronic Structure: Basic Theory and Practical Methods, Cambridge University Press, 2008.

4. GENERAL CONDITIONS:
4.1. It is a constituent part of the current, the UFABC Official Public Notice of General Conditions nº 96/2013, available on: http://www.ufabc.edu.br/concursos/docentes/inscricoes-abertas
4.2. The validity duration of the examination will be of 01 (one) year counting from the date of publication of the "Edital de Homologação do Resultado Final do Concurso" (Official note of the final result of the examination), being allowed to be extended by an equal amount.
4.3. The exams must take place within 6 (six) months, after the publication of the "Edital de Homologação das Inscrições" (Official note of the confirmation of the applications).

4.4. The candidate, at the time of application to the public service examination, declares to be completely aware and to fully accept the rules and conditions established in this Notice, in the Official Public Notice of General Conditions and in the corresponding relevant law regulations.
4.5. And, in order to make it public to the interested parties, DISPATCH the current Notice.

Santo André, June 7th 2018.

Dácio Roberto Matheus
Reitor