

Assessment of Candidates to Study Physical Natural Sciences at St John's College Cambridge

December 2017

All candidates have a tutorial (general) interview and two subject interviews, there is also a written test. The tutorial interview will cover subjects such as candidate's motivation for choosing Natural Sciences and St John's. The interviewers will be the Tutor for Natural Sciences (Physical) Miss Tomaselli, who is an historian and Mr Devine-Stoneman, who is a PhD student in the Materials Science department. Both subject interviews last approximately 20-25 minutes each and the time limit for the written test is one hour. The rest of this note describes the types of questions you will be asked and our reasons for asking them.

The Natural Sciences course is very flexible and its great strength is that it allows students to change their minds about which subjects they are most interested in once they have had a chance to experience studying them at degree level. For this reason, we find it appropriate to test candidates across the breadth of their scientific knowledge, irrespective of their current interests. Knowledge from all the science subjects studied by the candidate in their final two years at school (particularly those taken to A level/Advanced Higher/IB Higher Level) is used as the foundation of the interviews. Using this knowledge as a basis, the interviewers present the candidate with unfamiliar objects or phenomena to describe or explain. Our use of questions involving estimation or unfamiliar objects is motivated by the fact that problem solving is one of the key skills in the Natural Sciences course. Mathematics is an essential tool for all physical science subjects and we place great emphasis on candidate's ability to formulate mathematical descriptions of physical systems. This skill will be assessed in the interviews and will form the basis of the written test.

We understand this is a difficult process for all candidates, which is why we emphasize at the start of the interviews that we don't expect a candidate to produce a complete answer on their own, and that it's perfectly normal for the interviewers to make frequent suggestions. We also want to assure candidates that although it is our intention to ask difficult questions, we do not intend them to be 'trick' questions, and that candidates are encouraged to seek clarification from their interviewers if there is any aspect of a question they don't understand.

In addition, we think that candidates will find it useful to consult the Isaac Physics website (<https://isaacphysics.org/>) which provides an opportunity to practise some maths, physics and chemistry skills. You may find the "Core Maths for All Scientists" (https://isaacphysics.org/fast_track_14) section particularly useful as this focuses on the material from modules C1, C2 and M1. Please note that, during the interview process, you may be asked questions on a wider range of science than is presented on the IsaacPhysics website, and not just on the topics covered by this resource.

This year the subject interviewers come from Physics (Prof Atatüre, Dr Lamacraft), Chemistry (Prof Knowles, Prof Reisner, Dr Wood), Earth Science (Dr Tipper), Materials Science (Prof Best) and Chemical Engineering (Dr Torrente); candidates will be informed of the names of their interviewers in the invitation letter. **We would like to reassure candidates that there is no need to know anything about the interviewers or their research interests.**

This describes the Physical Natural Sciences selection process at St John's. Other colleges and other subjects will conduct their interviews in slightly different ways.