Overview
Musical instruments function according to the laws of physics contained in the wave equation. Wind instruments, the human voice and the acoustics of concert halls can be explained largely by considering waves in the air, but understanding drums, percussion, string instruments and even the ear itself involves studying the coupling of waves in various media. The concepts of pitch, loudness and tone are all readily explained in quantitative terms as are the techniques that musicians and instrument makers use to control them. The analysis of musical instruments naturally culminates in a look at how musical sound may be synthesized.

Aims & Objectives
To provide a detailed overview of the physics involved in the production, analysing and synthesizing of musical sounds.

Learning Outcomes
Students will have acquired an understanding of the physical principles involved in the listening, analysing and synthesizing of musical sounds. They will be able to appreciate the physics of acoustic resonators and excitation mechanisms and how these are utilized in various musical instruments.

Synopsis

Pre-requisites
PH2011, PH2012, [MT2001 or (MT2501 and MT2503)], Admission to an Honours programme in the School of Physics and Astronomy and prior or concurrent attendance at PH3081 or PH3082

Anti-requisites
None

Assessment
2 Hour Examination = 100%

Accreditation Matters
This module may not contain material that is part of the IOP “Core of Physics”, but does contribute to the wider and deeper learning expected in an accredited degree programme. The skills developed in this module, and others, contribute towards the requirements of the IOP “Graduate Skill Base”.

Recommended Books
Please view University online record:
http://resourcelists.st-andrews.ac.uk/modules/ph4036.html

General Information
Please also read the general information in the School's honours handbook.