PhB ADVANCED STUDIES COURSE (ASC) SUMMARY FORM

Family Name:	Hindes	**Given Name:**	Adrian	**Uni ID:**	u6082566

Semester:	Semester 1	**Year:**	2017	**Course Code:**	SCNC2104 - ASC 4

ASC Title: Machine learning for optics and controls

This title will appear on your transcript.

Name of Instructor: Robert Ward

You are encouraged to work with different labs/groups and to explore new areas. To encourage this, it is expected that you undertake each ASC project with a different supervisor.

Name of Co-marker: Bram Slagmolen

Co-marker details to be supplied by instructor. Compulsory for all ASC projects, except in Biology and Chemistry where marking is undertaken by a panel.

Brief Project Summary:

Modern gravitational wave detectors such as Advanced LIGO, which recently detected gravitational waves, are the most sensitive measurement devices ever constructed. They are based around multiple nested optical cavities, with each mirror in the system suspended to limit the impact of local seismic motion. This leaves the mirrors free to move, but for the detectors to function, the mirrors positions and orientations must be precisely sensed and delicately controlled. This yields a rich controls problem with many relevant degrees-of-freedom.

We want to apply the methods of machine learning and artificial intelligence to this

This description should be similar to a Course Handbook entry. Please contact the PhB Sub Dean if you have any queries completing this section – attach an extra page if necessary.

ASC Goals or Student Outcomes:

(Including skill development)

Acquire skills in Python, optical interferometer simulation, optics.

Summary of Assessment:

Please give details of assessment for your ASC project:

Required Activities*	Weighting (%)	Due Date	Additional details (if necessary)
Oral Presentation	20 *(20% maximum)*	14/6/17	
Final Report	60	18/6/17	
Optional Activities	**Weighting (%)**	**Due Date**	
Assignments			
Lab work/Log book	20 *(20% maximum)*	18/6/17	

Assessment Notes:

- An ASC project is equivalent to one 6-unit course (approximately 150 hours of work)
- An oral presentation an final report are both mandatory assessment items for an ASC
- Oral presentation and laboratory components must be weighted at no more than 20% of the final mark
- A minimum 60% of assessment must be written task/s such as a report/s or assignment/s.

Important Dates:

- The ASC Progress Report is due in Week 7
- Final Reports and all remaining assessment items due no later than week 14/15 (see PhB Wattle site for dates).

Approval:

	Name	Signature	Date
PhB Student	Adrian Hindes		1/3/2017
ASC Instructor	Robert Ward		1/3/2017

Once your Instructor has signed above, please upload this form to the PhB Science Wattle site. Once submitted, your ASC project will be reviewed by the relevant School Discipline Coordinator and the PhB Sub Dean.