DEPARTMENT OF PHYSICS & ASTRONOMY

Teaching and Learning:

Opportunities for Postgraduate Students and Postdoctoral Staff

Academic Session 2019-20

Contents

1   SUMMARY AND APPLICATION PROCEDURES

Postgraduate students and postdoctoral staff make an invaluable contribution to the Department's teaching and learning, and are much appreciated by our undergraduate students. Contributing to the teaching and training of future scientists is a deeply rewarding experience: the questions posed by our undergraduates can cause you to think more deeply about all sorts of areas of science, particularly those that you thought you understood!

Applications are invited from postgraduate students and postdoctoral staff who wish to be considered for a range of Teaching and Learning opportunities within the Department of Physics & Astronomy at UCL. Typical activities are demonstrating in the undergraduate laboratories or computing sessions, and helping with projects or problem-solving tutorial classes. Training and guidance will be given by the course or activity organiser, and we encourage all our teachers to participate in the UCL Arena One scheme, which can lead to the qualification "Associate Fellow of the Higher Education Academy".

1.1   Postgraduate Students

Postgraduate students are welcome to apply for our teaching and learning roles. Please note also the RCUK Training Grant Guidelines, section 29 state that: "*Students may undertake teaching or demonstrating work when this is compatible with their training and provided their supervisors approve. The total time spent (including preparation and marking) should not interfere with the progress of the PhD. The amount of time is at the RO and supervisor's discretion but it is recommended that this is no more than six hours in any week. It must not be compulsory and must be paid for at the RO's usual rate and supported by appropriate training. Costs for demonstrating or teaching may not be taken from the TG*".

There is also some useful general guidance on the UCL HR website. Please note that students must not be employed if they are registered as a student on the programme or modules (UCL Academic Manual). If you have other questions please consult with our Departmental PhD Administrator, Ms Nadia Waller, email: n.waller@ucl.ac.uk in E1

1.2   Postdoctoral Staff

We usually ask that postdoctoral staff in the Department undertake some teaching and/or demonstrating work, including associated training, preparatory, marking and examination duties.

This will typically be a commitment of around 60 hours per academic year, depending on your funding mechanism. This requirement is well below the upper limit of 6 hours per week, set by the research councils, and should therefore be workable within most PDRA's own timetable. **It should be noted that this level of activity does not attract additional payment.**

However, should you volunteer for additional hours, or be invited to give a course or

part of a course of lectures or part, you will be paid at the Department's standard rates. These payments will be requested as separate payments to your salary but will still be paid via BACS into your designated bank account as per your usual salary.

Please note that if you hold a Tier 2 visa there may well be restrictions on taking additional paid work: please see here.

Contractual enquiries for postdoctoral staff should be directed to our Senior HR Administrator, Ms Khadija Bouzgan (k.bouzgan@ucl.ac.uk).

1.3   Application Procedures

If you wish to apply to be considered for one of our Teaching and Learning roles, please complete the online form available at: https://forms.office.com/Pages/ResponsePage.aspx?id=_oivH5ipW0yTySEKEdmlwq o0kmF6fctFpeBzFuiosyRUMDNKTFFHSUMzNjRFS1NMTVhRSVlSUDVGMC4u

Applications are welcome at any time throughout the year, but all applications received by September 6th 2019 will be treated equally. **Please note you cannot be considered for any paid employment within the Department until you have applied, been accepted and completed all the necessary paperwork to allow you to do so.**

Please see Section 5 for our GDPR Local Privacy Notice regarding your application.

Further information:

a. **Right to Work** - Note that a Right to Work check will need to be carried out before you are able to commence work. You will not be able to carry out any work until we have seen and verified this. Please see here for further details.

b. **Contracts -** Successful applicants will usually be issued with an 'As and When' contract. Please see here for details on this.

c. **Students on Tier 4 visas –** You are able to apply for these roles but need to be aware of the working rights attached to their visa. Please see here for further information.

   Students on Tier 4 visas who are studying in the UK are able to undertake paid/unpaid work, but are limited to the number of hours (20 hours maximum typically) that they can work in a rolling 7-day period (Monday to Sunday).

   While responsibility to ensure visa compliance lies primarily with the student worker, UCL as an employer also have a responsibility when allocating work to student workers on Tier 4 visas and in monitoring how much work is being undertaken.

   It is vital that both our Tier 4 student workers and UCL can demonstrate compliance with the visa regulations set by UKVI. The consequences for anyone found to be breaching the working hour restrictions are severe (fines for the Department up to £20,000 and possible revocation of visa for the student

worker).

To mitigate the risk of any student being allocated or working more than their allowed hours, UCL has developed timesheets to increase the ability of UCL to monitor compliance. Tier 4 students will therefore need to:

- Complete a weekly time sheet, detailing hours worked.
- This must be signed off by the coordinator who allocated the work to you to show that they confirm the hours worked
- This will then need to be submitted to our PhD Administrator, Ms Nadia Waller, email: n.waller@ucl.ac.uk in E1. She will then arrange payment for you via the BACS system directly into your bank account.
- Please contact Nadia if you have any queries on this process.

d. **Payment -** Payment will be received as appropriate on an as and when basis for work carried out during the academic year. As with all UCL payroll payments, you will be paid retrospectively i.e. you will receive payment the month after submission of a payroll request to pay you.

Note that the spine point and salary for demonstrating is usually Grade 5, point 19. The current rate of pay for this is £14.25 per hour but this will rise in August 2019. Please see here for further details.

e. **How to ensure that you are paid -** Please note that you cannot commence work with the department until we have established your Right to Work and a contract has been set up for you**.**

If you have worked before the date your contract has commenced, you will not be paid for the work.

Your annual contract will usually commence on 01 October, however if you bring your paperwork in after this date, It will commence from the date that your passport is signed by the department.

In order for a contract to be set up with Physics and Astronomy (UCL) for the current academic year (October 2019 – September 2020), please take the following documents to Nadia Waller in Room E1:

- Passport: We need to see your original passport, to verify your right to work in the UK. We cannot accept copies. If you do not have a passport, other forms of ID are acceptable. Details of these can be found here. Nadia will copy your ID and return it to you.
- Bank account details: You will need to complete a Bank Account Details form which can be found here. Note that you will need to do this even if you have submitted your Bank Account details on Portico as payroll uses an entirely different system to Portico where stipend payments are made.
- Starter Checklist (Tax exemption form): If you wish to claim exemption from tax (because you will be earning less than the threshold of *circa* £4,500pa), you should complete the starter checklist: which can be found at

http://www.hmrc.gov.uk/forms/starterchecklist.pdf. It is important that you complete it fully and provide your National Insurance Number (NINO). If you do not have a NINO, details on how to obtain one are available here

2 PERSON SPECIFICATION

The post holders will possess a range of general laboratory and computer skills, and will have demonstrated excellent computational and analysis abilities. The post-holders will have the ability to communicate effectively orally and in writing. The post-holders will also have the specific physics and mathematics skills required for each course.

Detailed job descriptions and contacts for further information are given in section 5, and can be augmented by reference to our programme and course descriptions available at: http://www.ucl.ac.uk/physics-astronomy

Post holders will actively follow and promote UCL policies including Equal Opportunities, and maintain an awareness and observation of Fire and Health and Safety regulations.

Criteria	Essential or Desirable
Experience and knowledge	
A Masters or Doctoral level Degree as appropriate in a relevant scientific discipline (for example Physics, Astrophysics, Natural Sciences).	E
Subject-specific knowledge and experience as described in Section 4.	E
Skills and abilities	
Ability to communicate clearly both orally and in writing, with students, academics and administrative staff at all levels	E
Excellent organisational, time management and networking skills	E
Ability to deliver programmes of teaching at undergraduate level	E
Ability to work harmoniously with colleagues and students of all cultures and backgrounds	E
Ability to listen, negotiate, and deal with different personalities	E
Interest in broader issues in Astronomy and Physics, and life-long learning	D

3 TRAINING AND DEVELOPMENT

Before undertaking any Teaching & Learning work within the Department, post-holders must have completed the mandatory UCL Diversity training package and Safety induction. You are also required to complete a UCL Arena Gateway training session.

We also recommend that you participate in the UCL Arena One scheme, which is a development pathway for postgraduate students and postdoctoral staff who teach (usually called PGTAs) at UCL, leading (optionally) to the submission of an application to become an Associate Fellow of the Higher Education Academy.

No prior teaching experience is necessary, but you will need to attend the **Physics & Astronomy Teaching and Learning day on Thursday September 19th 2019.**

Additional mandatory module and task specific training will be provided to post-holders by the module or scheme coordinator.

Please note that before you can assess students' work, you have to be added as an Assistant Internal Examiner to the Departmental Board of Examiners.

We will do this once you have completed the above training.

4 JOB DESCRIPTIONS & CONTACTS

4.1 Coursework Feedback and Assessment

You will be required to mark and provide written feedback for problem sheets, in-course assessments (ICAs) and other written assignments. These coursework assignments form part of the assessment for all of our lecture courses. Typically, you will be asked to mark 20 - 40 sheets, and we aim to turn around work within 2 weeks from submission. Model solutions will be provided, and advice can be given on what courses are suitable for your expertise. You will be expected to provide constructive written and/or oral feedback to students. **Contact**: Dr Stan Zochowski.

4.2 Python-based Computing Skills (PHAS0007, PHAS0029, PHAS0020, PHAS0030)

You will need to have competent basic programming skills in Python (3.x) as well as familiarity with the Jupyter Notebook environment. During the sessions you will be helping and advising students with coding exercises and applying their physics knowledge to programming tasks. You will also be providing both verbal and written feedback to the students and assessing student work using a provided marks scheme. You will need to proactively engage students in discussion about their work, while being able to prioritise your time so that all the students receive the assistance they need.

PHAS0007 "Practical Physics & Computing 1": You will be teaching for one 3.5 hour session a week during the Autumn term, on either Monday, Thursday, or Friday mornings (09.30 – 13.00) [subject to timetable confirmation] for a total of 10 sessions. You may also be required to mark and provide detailed feedback on

students' formal assignments, to be submitted in November and January. **Contact**: [Dr Louise Dash](#).

PHAS0029 "Practical Physics and Computing 2" & PHAS0020 "Practical Astrophysics and Computing": You will be teaching for two 3.5 hour sessions a week during the first half of the Spring term, on either Monday **and** Tuesday, or Thursday **and** Friday afternoons (2.00-5.30pm) [subject to timetable confirmation] for a total of 10 sessions. You may also be required to mark and provide detailed feedback on students' formal assignments, to be submitted in March. **Contact**: [Dr Louise Dash](#) (0029), [Prof Giorgio Savini](#) (0020).

PHAS0030 "Further Practical Mathematics and Computing": You will be teaching for one 3.5 hour session a week during the Spring term, for a total of 10 sessions. In addition to demonstrators in each session, we also need assessors and supervisors, who will be responsible for monitoring (from week 3 onwards) the progress of up to three students who are working on their programming mini- project, and for the first marking of their project reports and logbooks. Progress meetings should be initiated by the student, and you can expect to meet with a student typically up to 5-6 times during term. Exemplars of previous project submissions and marking schemes will be provided by the course coordinator. The position is a commitment to attend all 10 sessions and any briefings. **Contact**: [Prof David Bowler](#).

4.3   Mathematica-based Computing Skills (PHAS0012)

You will need to have programming skills in Mathematica (version 11). During the sessions you will be helping and advising students who will be completing exercises from problem sheets. You will need to proactively engage students in discussion about their work, while being able to prioritise your time so that all the students receive the assistance they need.

PHAS0012 "Computing for Mathematical Physics": You will be teaching for one 3.5 hour session a week during the Spring term, on Tuesday afternoons from 2.00 - 5.30pm, subject to timetable confirmation, for a total of 10 sessions. You may also be required to mark and provide detailed feedback on students' formal assignments which are submitted weekly for 8 weeks. Marking is in addition to demonstrating and therefore attracts extra payment. Session 10 is a formal examination and you will be required to invigilate. The position is a commitment to attend all 10 sessions and any briefings. If you will be unable to attend any sessions, you are expected to organise a suitable replacement with the necessary skills in using Mathematica. **Contact**: [Dr Jasvir Bhamrah](#).

4.4   Java-based Computing Skills (PHAS0056)

PHAS0056: "Scientific Computing using Object Oriented Languages": We need demonstrators for a third-year course on object-oriented programming in Java, with an emphasis on techniques appropriate for scientific computing. You will teach for one or two three-hour sessions during term 1, assisting students with their programming queries and providing guidance in proper programming technique and practice. Those demonstrators with significant Java experience will also be required

to mark students' coursework in class and provide detailed feedback on the various elements that are being marked: a pre-defined rubric is used for marking each module to help achieve uniformity of grading between students. Students attend two three-hour sessions each week, each normally beginning with a short lecture by one of the course coordinators, followed by students working through the associated piece of coursework. In total, the coursework makes up 25% of the final mark: the remainder is made of a mid-term exam (25%), held after Reading Week, and a final exam (50%) held at the beginning of term 2. You will need to be confident with an object-oriented programming language: while experience of Java is highly desirable, it is possible to learn the Java syntax if you have enough prior experience with a related object-oriented programming language such as C++. **Contact**: [Prof Ryan Nichol](#).

4.5   Laboratory Skills: Year One (PHAS0007, PHAS0008)

Prospective postgraduate demonstrators will need to have a desire to teach, and will be willing to help new undergraduates to excel. This will require a good background knowledge of general and practical physics, including mechanics for PHAS0007 and thermodynamics (and some electronics) for PHAS0008. New demonstrators will be give opportunities to gain experience of the experimental systems prior to teaching on the course. However, the focus of the course is to show students how to think differently about practical physics and teach them how to conduct themselves in a laboratory.

The postgraduate demonstrators will need to interact, proactively, with the students. They will undertake assessments of students via 'microvivas'. Consequently, they will need to be good communicators. .

PHAS0007 "Practical Physics and Computing 1": In this term 1 course students will conduct an initial (unassessed) experiment that is guided by a demonstrator. This is undertaken so that students can become familiar with the process of conducting experiments. Students will conduct two 'main' experiments that will challenge how they see experimental physics at university level, when compared to what they have done before at 'A' Level (or equivalent). They will also conduct 'Skill of Hand' tasks that will introduce them to skills they will need in later courses. This work will be assessed by ongoing oral assessments and Moodle Quizzes. In particular, a 'Data Retrieval Test' Moodle Quiz will form the bulk of this experimental mark. **Contact**: [Dr Paul Bartlett](#)

PHAS0008 "Practical Skills 1P": In this term 2 course, students work typically in pairs following scripts for the experiments. The experiments are of the same standard as those in the prerequisite course, PHAS0007. Great emphasis is placed on the formation of good habits in the keeping of a laboratory notebook for which the students are given detailed advice. **Contact**: [Dr Paul Bartlett](#)

4.6   Laboratory Skills: Year Two (PHAS0028, PHAS0029)

PHAS0028 "Practical Physics 2A": This course is taken by second year Physics

and Medical Physics undergraduates. Laboratory classes take place on Monday, Wednesday, Thursday and Friday mornings for 10 weeks in Term 1. In this course, the undergraduates undertake several investigations across a range of experimental topics. A team of demonstrators aid the running of the classes, typically consisting of two staff members, a PDRA demonstrator and a postgraduate demonstrator. Postgraduate and PDRA demonstrators will teach for a total of 10 sessions, typically for one 3.5 hour session per week. The demonstrator's role consists of helping undergraduates to solve problems whilst they carry out experiments in Teaching Lab 2, and encouraging students' best practice such as keeping a contemporaneous account of their observations and correct analysis of experimental data. Demonstrators are also expected to provide feedback on students' laboratory notebooks. An enthusiastic approach to practical physics and problem solving is essential. Demonstrators will be expected to engage with undergraduates in discussion about their work, and so good oral communication skills are vital. Demonstrators will not need prior knowledge of the specific experiments, as laboratory scripts and demonstrator's notes and training can be provided. **Contact**: Dr Daven Armoogum.

PHAS0029 "Practical Physics and Computing 2": This course will run on Mondays, Tuesdays, Thursdays and Fridays in the second half of second term from Monday 19th February - Friday 23rd March. Demonstrators will help with a total of five sessions (one afternoon of 3.5 hours per week over five weeks) to be paid at the standard demonstrator rate. This is a practical project - full details of the digital thermometer electronics project will be provided in advance to demonstrators. The work will consist of going around the class helping students if they have problems, and also checking their lab books (check list provided). Demonstrators will also give mini-vivas to the students to check they have understood the project (sample questions and answers provided). **Contact**: Dr Louise Dash or Prof Neal Skipper.

4.7   Laboratory Skills: Year Three (PHAS0051)

PHAS0051 "Experimental Physics": The course is timetabled to run all day Monday and Thursday through term one and sessions are allocated from 9:30-13:00 or 14:00-17:30. Demonstrators will be expected to assist students in performing their main extended experiment as well as marking and providing feedback on submitted work. They will also provide feedback to the students about their general performance in the lab and monitor attendance. The persons must have had some experience of working in a laboratory environment and have high quality inter-personal skills. **Contact**: Dr Nick Nicolaou

4.8   UCLO (Observatory) and Certificate of Higher Education in Astronomy

There are a number of course modules and activities at the UCL Observatory (UCLO) which are taught during the week in afternoon and evening hours (both terms). These courses span from basic notions of observational astronomy to data analysis and data reduction in the context of planets, asteroids, stars and galaxies. These courses are delivered by senior teaching fellows Steve Fossey and Stephen

Boyle, as well as Prof Ian Howarth and Dr Francisco Diego, who also rely on capable graduate students to demonstrate alongside. Course demonstration is an excellent opportunity to improve teaching skills as well as improve one's CV. The only priority criteria in course-demonstrator pairing is prior experience at UCLO for 3rd year modules. Training is offered for the operation of the Fry and C14s in September and early October. **Contact**: Prof Giorgio Savini.

The Department also offers a part-time Certificate of Higher Education in Astronomy. This course is made up of lectures (PHAS0034, PHAS0032), practical classes (PHAS0031) and review essays (PHAS0033): please see Course Structure. There are opportunities to teach on all of these modules. **Contacts**: Prof Giorgio Savini, Prof Neal Skipper.

4.9   Communication Skills (PHAS0017, PHAS0035)

PHAS0017 "Developing Effective Communication 1" and PHAS0035 "Developing Effective Communication 2": The modules aim to develop students' skills in getting their messages across, and in understanding the messages of others. These skills are crucial not only for being an effective physicist, but also in functioning effectively in many career – or non-career – situations. We need enthusiastic postgraduate students who are themselves excellent communicators, and who are able to advise and assess written and oral skills in a range of contexts. For written work assessment, demonstrators need to turn around within 2 weeks from hand-in. Full training is provided. **Contacts**: Dr Cham Ghag (0017) & Dr Jay Farihi (0035).

4.10 Problem Solving Tutorials (PSTs)

All 1st-year and 2nd-year lecture modules will have associated Problem- Solving Tutorials (PSTs), to help students develop their problem solving ability and understanding. PSTs last one or two hours, and are not assessed, but attendance is expected as they do form an integral part of each module. During these sessions, students can ask for help on pre-seen problems while one or two instructors are on hand to give assistance. We are looking for postgraduate students to assist as tutors for these classes. The problems sheets will be provided in advance along with worked solutions, and a member of academic staff will be present also during the tutorial. **Contacts**: Dr Stan Zochowski & Prof Neal Skipper.

4.11 Invigilation

All 1st-year and 2nd-year lecture modules will have associated in-course assessments (ICAs). Students complete these assessments under examination conditions, either in a large lecture theatre, or in a smaller rooms where we can accommodate students who have specific requirements. Invigilators should be trustworthy, and exhibit common sense, accuracy and attention to detail and strive to ensure the best possible examination experience for our students. They must be punctual and reliable. Duties include laying out stationery, observation, checking attendance, and collecting scripts. **Contact**: Ms Selina Lovell, Prof Neal Skipper.

4.12 Other Work

From time to time other work may be available. These opportunities will be advertised in the Departmental Newsletter which is emailed to all staff and PhD students each Friday. Where we need a quick turnaround for a task/role, all staff and PhD students will be emailed directly. Further information on these types of role will come from [Ms Selina Lovell](#), [Prof Neal Skipper](#).

5 GDPR LOCAL PRIVACY NOTICE

LOCAL PRIVACY NOTICE

5.1 Introduction

UCL and the department of Physics and Astronomy ("we" "us", or "our") respects your privacy and is committed to protecting your personal data.

Please read this Privacy Notice carefully – it describes why and how we collect and use personal data and provides information about your rights. It applies to personal data provided to us, both by individuals themselves or by third parties and supplements the following wider [UCL privacy notice](s):

- [General privacy notice](when you visit UCL's websites:
- [Student privacy notice]
- [Staff privacy notice]
- [Research participants for health and care purposes privacy notice]

We keep this Privacy Notice under regular review. It was last updated on 17 August 2018.

5.2 About us

The department of Physics and Astronomy is part of the Mathematical and Physical Sciences Faculty at University College London (**UCL**). UCL, a company incorporated by Royal Charter (number RC 000631), is the entity that determines how and why your personal data is processed. This means that UCL is the 'controller' of your personal data for the purposes of data protection law.

5.3 Personal data that we collect about you

Personal data, or personal information, means any information about an individual from which that person can be identified. It does not include data where the identity has been removed (anonymous data).

We may collect, use, store and transfer different kinds of personal data about you. This may include:

- Your name and contact details;
- 'Special category' data about you (this may include details about your race or ethnicity, religious or philosophical beliefs, sexual orientation, political opinions, trade union membership, information about your health etc.);
- The names and other details about third parties who are involved in the issues we are helping you with.

5.4 How we use your personal data

We will only use your personal data when the law allows us to. Most commonly, we will use your personal data in the following circumstances:

– To register you as a client and to manage our relationship with you.
– To help you with your enquiry. Depending on the circumstances, this may include special category personal data. Here, the processing of your information is carried out on the basis of your explicit consent; or
– To process a job application submitted by you to us.

Where the processing is based on your consent, you have the right to withdraw your consent at any time by contacting us using the details set out below. Please note that this will not affect the lawfulness of processing based on consent before its withdrawal.

We may also use anonymised data, meaning data from which you <u>cannot</u> be identified, for the purposes of:

– Service evaluation;
– Education and research; or
– Fundraising and promotional purposes.

Anonymised data may also be used in published reports or journals and at conferences.

5.5 Who we share your personal data with

Your personal data will be collected and processed primarily by our staff and UCL (Access to your personal information is limited to staff who have a legitimate need to see it for the purpose of carrying out their job at UCL.). We may have to share your personal data with the parties set out below for the purposes outlined in section 4:

– Job applications – all staff on the shortlisting and interview panel;
– Referees – only so far as agreed by you in your application.

We require all third parties to respect the security of your personal data and to treat it in accordance with the law. We do not allow our third party service providers to use your personal data for their own purposes – we only permit them to process your personal data for specified purposes and in accordance with our instructions.

5.6 International transfers

We do not transfer your personal data outside the European Economic Area (**EEA**).<u>Information security</u>

We have put in place appropriate security measures to prevent your personal data from being accidentally lost, used or accessed in an unauthorised way, altered or disclosed. We have established procedures to deal with any suspected personal data breach and will notify you and any applicable regulator of a breach where we are legally required to do so.

5.7   Data retention

We will only retain your personal data for as long as necessary to fulfil the purposes we collected it for, including for the purposes of satisfying any legal, accounting, or reporting requirements. We will keep your personal data according to the Records Retention Schedule.

5.8   Your rights

Under certain circumstances, you may have the following rights under data protection legislation in relation to your personal data:

− Right to request access to your personal data;
− Right to request correction of your personal data;
− Right to request erasure of your personal data;
− Right to object to processing of your personal data;
− Right to request restriction of the processing your personal data;
− Right to request the transfer of your personal data; and
− Right to withdraw consent.

If you wish to exercise any of these rights, please contact the Data Protection Officer.

5.9   Contacting us

You can contact UCL by telephoning +44 (0)20 7679 2000 or by writing to: University College London, Gower Street, London WC1E 6BT.

Please note that UCL has appointed a Data Protection Officer. If you have any questions about this Privacy Notice, including any requests to exercise your legal rights, please contact our Data Protection Officer using the details set out below: Data Protection & Freedom of Information Officer data-protection@ucl.ac.uk

5.10   Complaints

If you wish to complain about our use of personal data, please send an email with the details of your complaint to the Data Protection Officer so that we can look into the issue and respond to you.

You also have the right to lodge a complaint with the Information Commissioner's Office (**ICO**) (the UK data protection regulator). For further information on your rights and how to complain to the ICO, please refer to the ICO website.