

# Role of the Post-Graduate student

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**Astronomy Postgraduate Course Director**

## **Aims:**

- overview of the astronomy post-graduate course
- basic guidance on what you should expect in your PhD
- what is expected of you

# PG course: structure, lectures, and course work

- **Lectures:**
  - typically 1 hour each, 2 per day
  - 9am-11am in OCW017 on most days of the week
  - check google calendar
  
- **Aim:** basic research and specific skills needed for PhD and give wider background - become an independent researcher

# More about lecture courses & assessment

- **Research skills: general computing, statistics, programming, high-performance computing, instrumentation, data reduction, scientific paper writing, evaluating scientific papers**
- **Science lecture courses cover broad range of astrophysics from stars to cosmology**
  - Coursework is set for every lecture series
  - should typically take ~3 hours of your time
  - Aim is to give you grounding in key principals in astrophysics

**Feedback sessions for coursework: ~2 weeks after course**

# Computing

- Basic computing & local system
- Programming workshop: **Python**
- **Introduction to COSMA**
- Workshops: choose **Data Reduction** or **High Performance Computing**
- Numerical methods: python & compiled language: lectures and exercises
- More data intensive courses in Term 2

# Course Assessment: critique, talk, progression report and viva

- **Essay/critique**
  - ~2500 word critique of opposing studies - designed to develop your science evaluation skills and also your scientific writing skills
    - Will have lecture on scientific writing skills before the essay is set
  - ~12 min presentation of the critique with 3 min of questions
- **Friday lunchtime talk** (~20 mins) on your research towards the end of the first year
- **Progression report and viva (towards end of year)**
  - ~5000 word report on your research to date - background material, techniques, and results
  - ~30-45 min oral defence of your report with 2 examiners
- **Progression into second year is dependent on**
  - (1) passing the post-graduate course and completing the course work
  - (2) successfully completing your progression report and viva

# Weekly events

## Expected to attend:

- Wednesday seminars (/CfAI seminars)
  - 3 pm seminar
  - Coffee post seminar
  - Student journal club: Weds 11am: discuss speaker's research
  - Opportunity to go to lunch (dinner) with speaker
- Friday lunchtime talks (internal speakers)
- 1<sup>st</sup> year astro-ph journal club – Mondays 2<sup>nd</sup> & 3<sup>rd</sup> terms
- Theorists: alternate Mondays – Galform lunch/Theory lunch

## Other events:

- LSS, AGN, arXiv journal clubs
- Wednesdays 11 – student journal club

# Other training opportunities

- All students complete a Training Needs Analysis with supervisor
- Identify training needs beyond those met by PG course
- Centre for Academic, Researcher and Organisation Development (CAROD)
- HPC/Fortran – Hamilton/CIS
- <https://www.dur.ac.uk/cis/training/courses>

# PG research: some of the key skills

- **Problem solving**, which you will develop. Do not feel intimidated about asking others (students/PDRAs/staff) for help!
  - Achieve a balance between being independent and seeking advice when necessary
  - Achieve a good relationship with your supervisor: different supervisor/student combinations will have different approaches - work out what works for you both!
- **Presenting your scientific results**
  - Improve your presentation skills: give presentations to the group then progress to larger national meetings and then international conferences
  - Improve your writing skills by writing research papers and proposals
  - Discuss your results with others (students/PDRAs/staff) - explaining your work helps you better understand what you have done and why!
- **Understanding how your work fits into the bigger picture.** Follow the background scientific literature and recognise the strengths and weaknesses of your research (and the research of others)
  - Follow new research in your area by following, e.g., arXiv.org pre-print archive regularly (e.g., each day or week) and NASA ADS



## Dividing your time between research and PG course

- Post-graduate course runs for two terms
- 25-50% of your time will be spent attending lectures and completing course work
  - Manage your time so you can make progress on your research
- Third term: complete your research report and pass your viva (by end of June) - often this is the first draft of your research paper

**Your supervisors know that you attend the PG course and undertake the course work.**

# Building your research portfolio

- **Your success in research so often depends on your research portfolio**
  - Your scientific papers
  - Your reputation for giving good presentations
  - Your visibility within your research community
  - Talking to researchers from outside Durham (e.g. seminar speakers/visitors)
- **Directing your PhD research**
  - At first your supervisor will guide your research
  - Towards the end of PhD you should start to take control and design your own research experiments/projects

# Outreach

