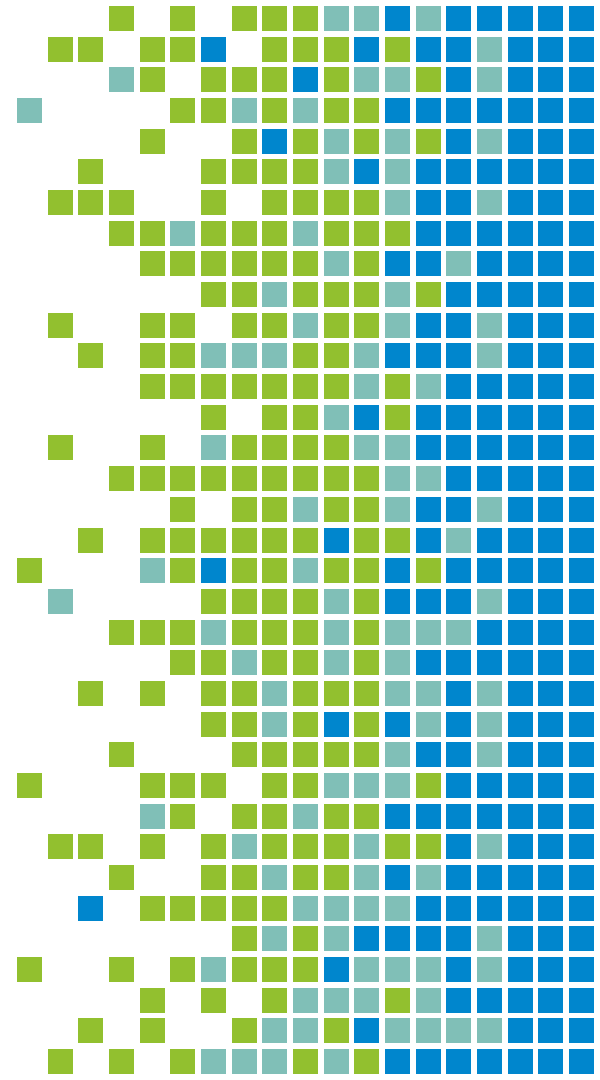


Scientific Programming Concepts: ACM40660/PH502

Dr. Buket Benek Gursoy (ICHEC)
Mr. Jake Williams (UCD)
Mr. Pablo Laturent (ICHEC)



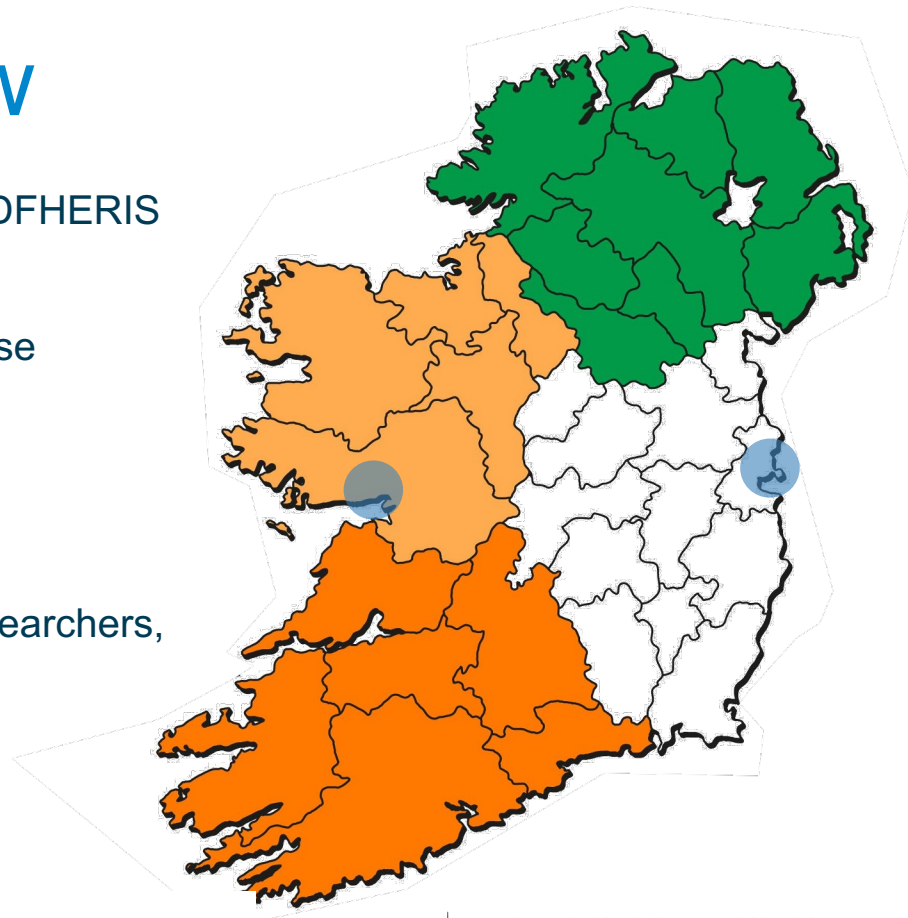
ICHEC overview

National HPC hosted by NUIG and funder by DFHERIS

Provides e-infrastructure, services and expertise

Academia, industry and public sector

Staff: sysadmins, computational scientists, researchers, etc.



OLLSCOIL NA GAILLIMHE
UNIVERSITY OF GALWAY



An Roinn Breisoideachais agus Ardoideachais,
Taighde, Nuálaíochta agus Eolaíochta
Department of Further and Higher Education,
Research, Innovation and Science

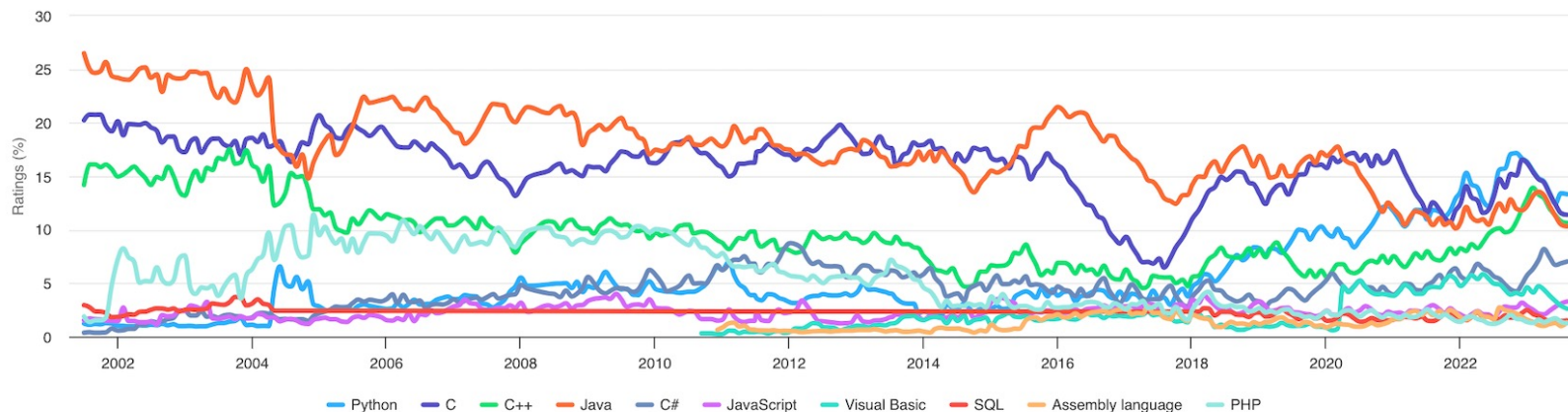
Course Overview

The goal is to introduce the basic programming concepts (C/Fortran) that allow construction of simple programs that are fit for purpose, using best practice. Choose C or Fortran.

Python is popular but slower than C and Fortran in scientific programming.

TIOBE Programming Community Index

Source: www.tiobe.com



C and Fortran are fast and well suited to HPC platforms.

Lectures and Practicals

Lectures:

The lectures are all video recorded. There are between **30-40 minutes of pre-recorded lecture materials** available each week, with accompanying pdfs

UCD students: Brightspace

University of Galway and Other Institutions: Canvas

You can watch these in your own time and there will be several to watch before the Q&A session.

Practicals and Q&A Sessions:

There will be a practical of the week to complete before the next week's Q&A sessions.

Q&A session: **Tuesday 10am-12pm** covering the previous week's practical.

The practicals will be covered in a live coding session, however if there are any other questions, please post them in the forums so we can answer/cover them.

There will be two Virtual Office hours.

Assessment

Git Assignment (20% total grade)

Maintain a git repository based on the practicals which are being covered throughout the course. Please follow the assignment instructions closely

Git Assignment Tuesday October 3rd → Tuesday November 28th

Assignments (50% total grade, 25% each)

There will be 2 assignments spread over the course, which need to be uploaded to Brightspace/Canvas. The normal rules governing plagiarism apply. Remember to comment your code!

Assignment 1: Tuesday 17th October → Tuesday November 7th

Assignment 2: Tuesday 14th November → Tuesday December 5th

Exam (30% total grade)

Tuesday 5th December (2 hours to complete, 30 mins for uploading)

Due to widespread of participating students across multiple universities, all Q&A sessions will be held online. Exam will be held online.

Timetable

Week#	Material Covered	Tuesday Date	Q&A Session	Deadlines
1	Computer Architectures, Intro to C, Fortran	19 th Sep	intro session	
2	Variables and Arithmetic Operators + Intro to Git	26 th Sep	practical 1	
3	Loops and Conditionals	3 rd Oct	practical 2	Git Assignment released
4	Arrays, Functions and Subroutines	10 th Oct	practical 3	
5	Casting and Pointers	17 th Oct	practical 4	Assignment 1 released
6	Structs and Programmer Tools	24 th Oct	practical 5	
7	Pointers and Dynamic Memory Allocation	31 st Oct	practical 6	
8	Introduction to Algorithms	7 th Nov	practical 7	Assignment 1 due
9	Algorithms and Standard Libraries	14 th Nov	practical 8	Assignment 2 released
10	Object Oriented Programming	21 st Nov	practical 9	
N/A		28 th Nov		Git Assignment due
EXAM		5 th Dec		Assignment 2 due

Virtual Office Hours

Number #	Date	Topics
1	6 th Oct Friday 10am-11am	Week 1-3 Content, SSH Problems, Linux Editors, Compiling Issues
2	3 th Nov Friday 10am-11am	Week 4-7 Content, git assignment and Assignment 1 related questions
3	If requested	Rest of the contents and Assignment 2

Logging into sciprog

A successful login will appear as the following

Watch **How to SSH** recording for login information

Your passwords will not appear as you type

Ensure that your new password is longer than 20 characters

Username available in **Username.pdf** on Brightspace/Canvas

NB: Your assignments, exams will be marked on sciprog, so ensure that all submitted material is can be compiled and run on sciprog

```
Chris-MBP-5:~ chris$ ssh sp1@sciprog.ichec.ie
sp1@sciprog.ichec.ie's password:
You are required to change your password immediately (root enforced)
WARNING: Your password has expired.
You must change your password now and login again!
Changing password for user sp1.
Changing password for sp1.
(current) UNIX password:
New password:
BAD PASSWORD: The password is shorter than 20 characters
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
Connection to sciprog.ichec.ie closed.
Chris-MBP-5:~ chris$
Chris-MBP-5:~ chris$
Chris-MBP-5:~ chris$ ssh sp1@sciprog.ichec.ie
sp1@sciprog.ichec.ie's password:
Last login: Fri Sep 25 14:45:23 2020 from glasnost.ichec.ie
[sp1@sciprog ~]$
```




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Recent announcements

- 
- Zoom Details for Tuesday sessions

Dear Class, There will be a live introduction to the module...

Posted on:
11 Sept 2023, 13:48



Welcome to PH502 Scientific Programming


Dear Class, The module will be starting on Monday Septe...


Posted on:
4 Sept 2023, 13:56

Recent activity in 2324-PH502


- 
- 2 announcements


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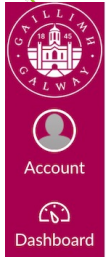
To do

-  [Welcome to PH502 Scientific Programming](#) ×
- 2324-PH502 Scientific Programming Concepts

4 Sep at 13:56
-  [Zoom Details for Tuesday sessions](#) ×
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Canvas view



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✓ + ⋮

Module Description

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RecommendedReferences.pdf

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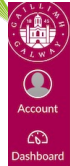
HowtoSSH

⊘ ⋮

▶ Recordings

⊘ + ⋮

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Lecture1_1.mp4	✓	⋮
Lecture1_2.mp4	✓	⋮
Lecture1_3.mp4	✓	⋮
Lecture1_4.mp4	✓	⋮
Lecture1_5.mp4	✓	⋮
Slides		
Lecture1_1_handout.pdf	⏮ ✓	⋮
Lecture1_2_handout.pdf	⏮ ✓	⋮
Lecture1_3_handout.pdf	⏮ ✓	⋮
Lecture1_4_handout.pdf	⏮ ✓	⋮
Lecture1_5_handout.pdf	⏮ ✓	⋮
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printing.c	✓	⋮
printing.f90	✓	⋮
scanning.c	✓	⋮
scanning.f90	✓	⋮




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For any update/queries:

Announcements on Brightspace/Canvas

Discussion Forum on Brightspace/Canvas

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