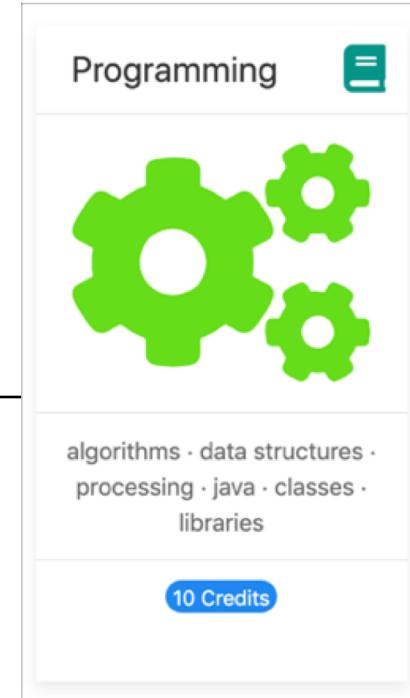


Programming Fundamentals

An Introduction to the module

Produced by: Mr. Colm Dunphy
Dr. Siobhán Drohan



Waterford Institute *of* Technology
INSTITIÚID TEICNEOLAÍOCHTA PHORT LÁIRGE

Department of Computing and Mathematics
<http://www.wit.ie/>

Agenda

- *Lecturers / Tutors*
- *Module Structure & Delivery*
- *Technologies*
- *Module Assessment (Assignments)*
- *Troubleshooting Labs*
- *Ethos*

Introducing your lecturers / tutors

Colm Dunphy

- Profile:https://www.wit.ie/about_wit/contact_us/staff_directory/colm_dunphy
- Email:cdunphy@wit.ie



Patrick Felicia

- Profile:https://www.wit.ie/about_wit/contact_us/staff_directory/patrick_felicia
- Email:pfelicia@wit.ie



Jonathan Brazil

- Profile:https://www.wit.ie/about_wit/contact_us/staff_directory/colm_dunphy
- Email:jbrazil@wit.ie



Module Structure

12 weeks of delivery

2 *Lectures / Talks
(webinar/video)

2 * Labs

Lab Support
on Slack

Mon
12:15 –
2:00

Wed
12:15 –
2:00

Mon
Tues

Wed
Thurs

within 24 hours M-F

* Double Module (10 credits)



Learning Technologies

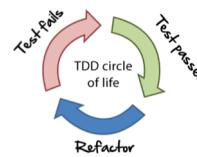




Programming Technologies

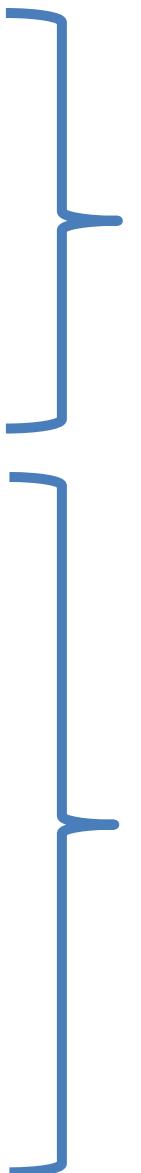


Programming Technologies



JUnit

Semester 1		S	M	T	W
January	Week	6	7	8	9
	1	13	14	15	16
	2	20	21	22	23
	3	27	28	29	30
February	4	3	4	5	6
	5	10	11	12	13
	reading-week	17	18	19	20
	6	24	25	26	27
March	7	3	4	5	6
	8	10	11	12	13
	reading-week	17	18	19	20
	9	24	25	26	27
April	10	31	1	2	3
	11	7	8	9	10
	Easter-break	14	15	16	17
	Easter-break	21	22	23	24
	12	28	29	30	1
May	reading-week	5	6	7	8
	reading-week	12	13	14	15

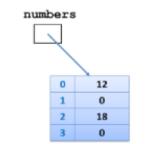


Week	Lecture	
1	Intro to Processing	
2	Animate your Drawings	
3	If statement and Events	
4	Iteration (for and while)	
5	Methods	
6	More on Methods	
7	Strings and Intro to Classes	
8	Classes and Encapsulation	
9	Swing (JOptionPane) and Arrays	
10	Arrays and Classes	
11	Pong Intro	
12	Pong Solutions	
7	IntelliJ, JVM and I/O	
8	Grouping Objects (ArrayLists)	
9	Menu and CRUD	
10	Persistence (XML) and Exceptions	
11	Inheritance and Polymorphism	
12	Collections (Map and Set)	

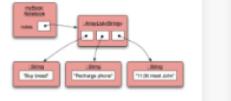
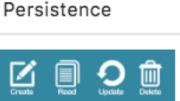
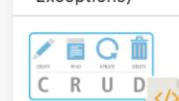
Assignment 1 (P1)

1a: Introduction to Processing	1b: Animating your Drawings	2a: Selection and Events	2b: Iteration (Loops)	3a: Methods (Part 1)	3b: Methods (Part 2)
					
processing · java · drawing shapes · colour · grayscale · RGB · syntax errors · commenting code	animating simple drawings · variables · system variables · primitive data types · operators	animated drawings · conditional statements · relational operators · logical operators · variables · mouse events · key events	iteration · for loops · while loops · variable scope · compound assignment statements · print · println	method signature · return types · parameters · mouse event methods · bespoke methods	more sophisticated methods · return types · parameters · recursion · Strings · API · String methods · JOptionPane

Assignment 2 (P2)

4a: Classes (Part 1)	4b: Classes (Part 2)	5a: Swing and Arrays	5b: Arrays and Classes	6: Game of Pong
				
String methods · Objects · Classes · behaviour · attributes · Spot class	classes · methods · behaviour · overloading · validation · this · encapsulation · access modifiers · accessors · mutators	GUI · Swing · JOptionPane · dialog boxes · primitive arrays · array syntax	primitive arrays · array syntax · arrays and loops · length · classes	Game of Pong · Ball class · Paddle class · Player class · Tournaments · Statistics · Collision detection

Assignment 3 (P3)

7: IntelliJ and Basic I/O	8: Grouping Objects	9: Menu Driven Apps and Persistence	10: Persistence (XML & Exceptions)	11: Inheritance and Polymorphism	12: Collections (Map and Set)
					
IntelliJ · Java Virtual Machine (JVM) · main method · Scanner · OO recap · Array recap	primitive arrays · classes · algorithms for collections · ArrayLists	Switch · Loops · Menus · persistence · CRUD · debugging	Streaming · XML · Exception Handling · Validate User Input · Static · JavaDoc · ShopV5.0 · DVD3.0	Inheritance · <i>is-a</i> relationship · Polymorphism (many shapes!) · Overriding	Collections · Map · Set · Tech Support App

Semester 1

January	Week	
	1	
	2	
	3	
February	4	
	5	
	reading-week	
	6	
March	7	
	8	
	reading-week	
	9	
April	10	
	11	
	Easter-break	
	Easter-break	
	12	
May	reading-week	
	reading-week	

ASSESSMENT

P1 – 15%

P2 - 30%

% reflects difficulty and time required

P3 – 55%

Assignments

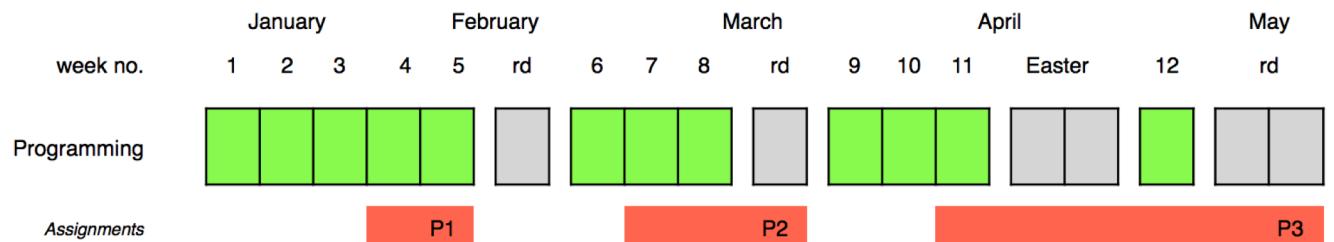
Programming



 Assignment 1

 Assignment 2

 Assignment 3



Online
Interviews / Demos



Assignments

- 100% Continuous Assessment (CA).
- All Individual assignments
 - (no team-based ones).
- Submit via Moodle assignment dropboxes.
- Hard deadlines;
extensions only permitted if mitigating circumstances apply.
- Interviews

Troubleshooting labs ...during the lab sessions

Post the issue in Slack;
think of it as asking a question in a traditional classroom.
Include any screen shots, screen recordings, etc.
you think might help with solving the problem.



We encourage classmates to help each other (peer learning),
if you know the answer to another student's issue,
please do respond.



All our responses will be via Slack
so that all students can see the resolution.
for private issues, use DM in Slack

Troubleshooting labs ...outside of the lab sessions

Search **#Slack** Chatroom

Check Google / **StackOverflow** (or equivalent) for possible solution

Post the issue on **#Slack** programming channel

Ethos

- **Self-directed learning** outside of lectures / labs.
- Inquisitive and motivated.
- Help your **peers** (**use #Slack!**).
- **Engagement** and staying current with the module.
- All work submitted must be **your own work**.
 - all code/approaches given in the module by us can be re-used / re-purposed in your assignments.

Introduction to Processing



What is Processing?



“Processing is a programming language,
development environment,
and online community.”

[Source: https://processing.org/](https://processing.org/)

Examples:

<http://www.openprocessing.org/browse/>

Processing...



...can be used to develop static or interactive online material
and data **visualisations**.

...is often used by visual **artists**.

...produces **visual** and **interactive** representations of programming code.

What is Processing?



- Different programming languages can be used with Processing
e.g. :

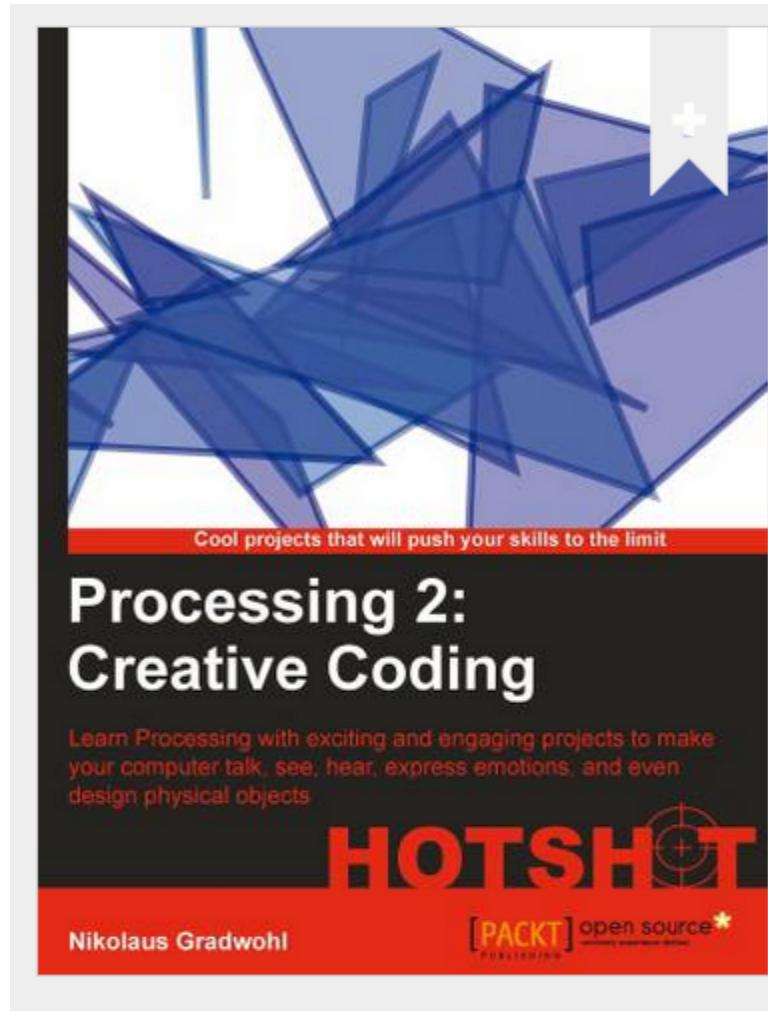
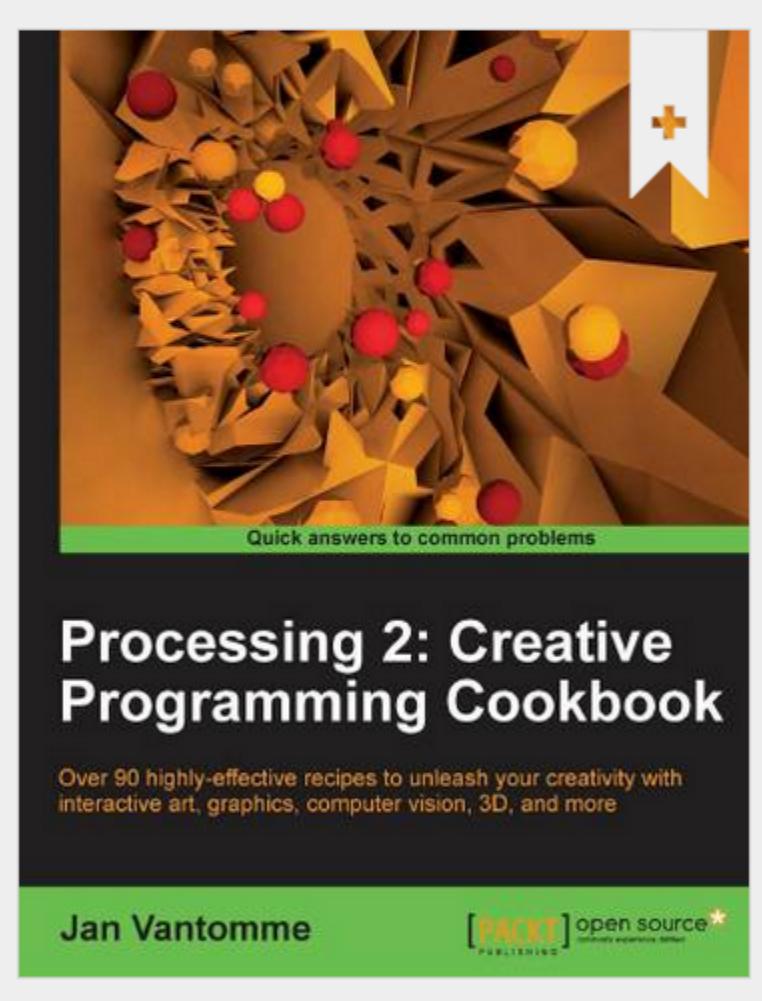


- Java: we will use this language.
- JavaScript
- Python
- CoffeeScript
- Etc.

Why are we using Processing?

*Processing is increasingly used
to teach computer
programming fundamentals
(<https://processing.org/overview/>)*

Some eBooks in WIT library



We will start coding in Processing
in the afternoon session



Questions?

