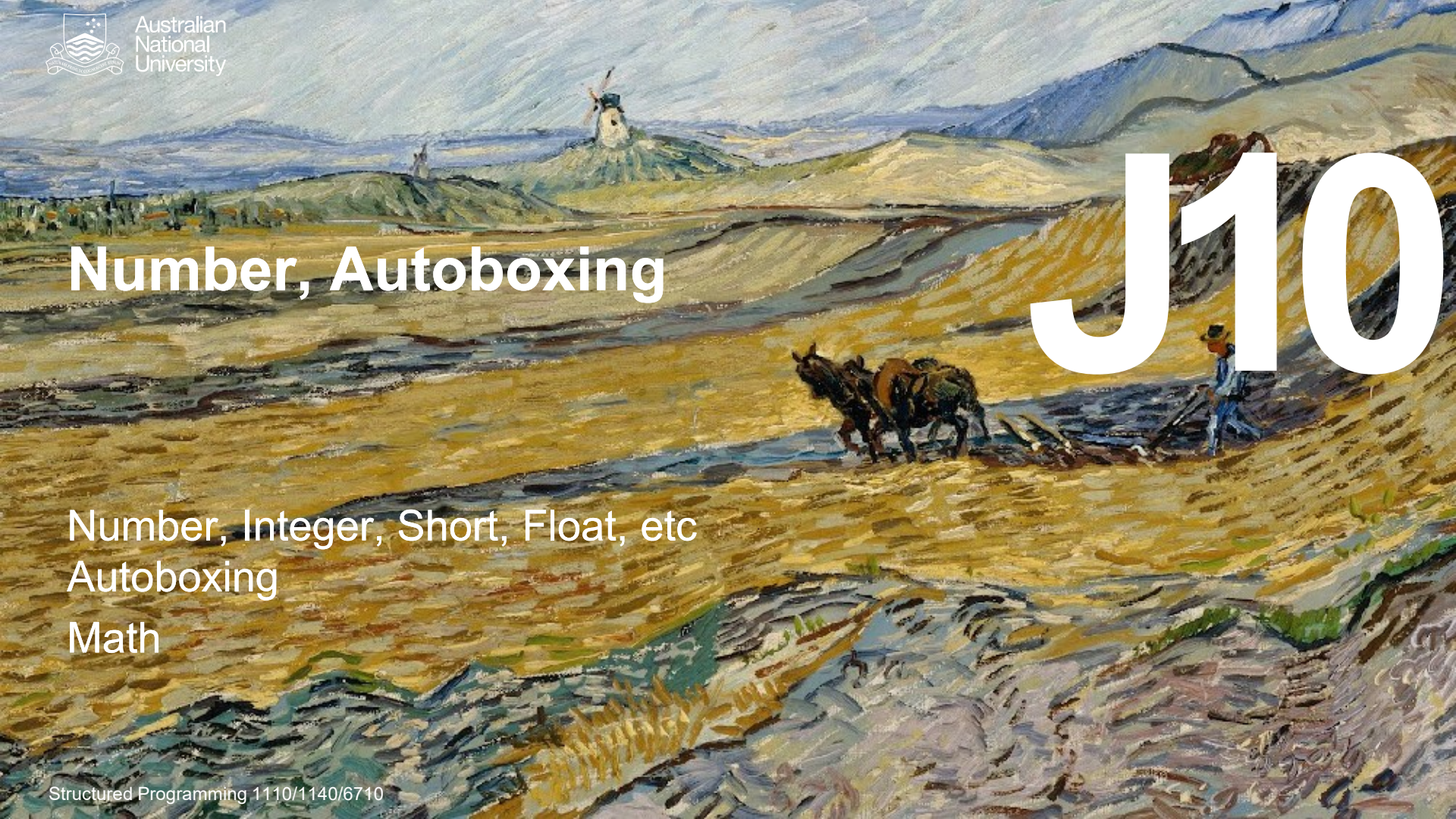
Australian
National
University
J10
Number, Autoboxing
Number, Integer, Short, Float, etc
Autoboxing
Math
Structured Programming 1110/1140/6710

The `Number` Classes

Normally you will represent numbers with the **primitive** types `int`, `short`, `float`, etc. Java includes 'boxed' object analogues to each of these: `Integer`, `Short`, `Float`, etc.

- Number classes have methods (primitives don't)
  - `toString()`, `parseInt()`, etc.
- Number classes have constants
  - `Integer.MIN_VALUE`, `Short.MAX_VALUE`, etc
- Number classes have a space overhead
  - They are instantiated as true objects

Autoboxing

Classes such as `Integer` and `Character` are '*boxed*' versions of the primitive types **`int`** and **`char`** (i.e. object versions of the primitives). Java offers automatic support for boxing and unboxing.

- Boxing: `Integer i = 5;`
- Unboxing: `int j = i;`

The `Math` class

The `Math` class contains methods and constants useful for basic mathematics:

- Constants: `Math.PI` and `Math.E`
- Trigonometry: `sin()`, `cos()`, etc.
- Rounding: `abs()`, `ceil()`, `floor()`, etc.
- Comparison functions: `max()`, `min()`
- Exponentials and logs: `exp()`, `log()`, `pow()`, etc.
- Random number generation: `random()`