

## COMPUTATION & BIOLOGY

Computational Biology

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## COMPUTATIONAL BIOLOGY

### BIOLOGY 4FF3

lectures: M BSB 145 @ 0830  
practicals: W BSB 145 @ 0830  
laboratories: F LSB 215 @ 1030

### Jon Stone

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## COURSE PHILOSOPHY



in-class point system (koans)  
problem-set yellow card system

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## **COURSE DESCRIPTION 1**

**Genes & Mendel's Laws**  
modeling  
logarithms  
information & probability theories  
Bayes' Theorem

**Cell Ultrastructure & Organisation**  
trigonometry  
stereology

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## **COURSE DESCRIPTION 2**

**Individual Growth & Scaling Principles**  
power functions  
linear transformation  
linear regression

**Population Growth**  
logistic equation (continuous)

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## **COURSE DESCRIPTION 3**

**Chaos Theory**  
logistic equation (discrete)  
phase space  
differential equations

**Fractals**  
iteration  
Complex Numbers

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## COURSE DESCRIPTION 4

Game Theory  
dynamic modeling

Population Genetics  
Hardy-Weinberg rules

Evolutionary Biology  
set theory, likelihoods, Bayesian  
inference

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## COURSE DESCRIPTION 5

Bioinformatics  
algorithms, recursion

TBD

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## COURSE EVALUATION

problem sets*	10 @ 05% = 50%	Fridays
review	01 @ 10% = 10%	03 05
report	01 @ 15% = 15%	02 13, 03 26
examination	01 @ 25% = 25%	TBA

\* yellow card system in effect

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## COMPUTATIONAL BIOLOGY

is the discipline wherein computers are used predominantly to study living systems

is multilevel and interdisciplinary

comprises many subdisciplines

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## METHOD

Analysis  
data

Modeling  
numerical  
mathematical



Simulation  
object-oriented  
graphical

configuration?

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