

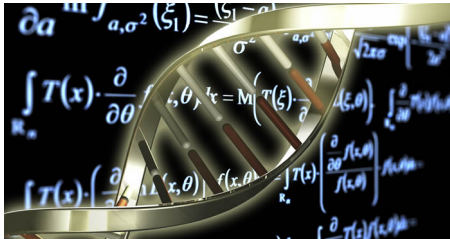
Matematika Dasar

Pertemuan I

Nikenasih Binatari

FMIPA UNY

September 7, 2016



The importance of Math to Bio

The screenshot shows a web browser with several tabs open: 'mathematics and biology', 'Systems Biology | The Un...', 'The Importance of Mathie...', and 'We Use Math = Biologist'. The address bar shows the URL: www.omicsonline.org/the-importance-of-mathematics-to-biology-2157-7625.1000e112.pdf. The page title is 'The Importance of Mathematics to Biology' and the page number is '1 / 1'. The journal logo for 'Ecosystem & Ecography' is visible, along with the issue information: 'Dionisio, J Ecosyst Ecolg 2012, 2:4' and the DOI: <http://dx.doi.org/10.4172/2157-7625.1000e112>. The article is labeled as an 'Editorial' and 'Open Access'. The author is 'Francisco Dionisio*' from 'Instituto Gulbenkian de Ciéncia, Apartado 14, P-2781-901 Oeiras, Portugal'. The article text begins with a quote: '(...) I have deeply regretted that I did not proceed far enough at least to understand something of the great leading principles of mathematics, for men thus endowed seem to have an extra sense' from 'The life and letters of Charles Darwin, 1887., including an autobiographical chapter. London: John Murray.' The text then discusses the importance of mathematical biology, mentioning Paul Dirac's prediction of the neutron in 1928, Carl Anderson's discovery of the positron in 1932, and the Higgs boson in 1964. It concludes that it took almost 50 years for thousands of physicists and/or computer simulation models to be as useful as playing tennis without a net or boundary lines. A quote from George E. P. Box is also included: 'none are fit, all models are false, but some models are useful'.

Figure: Supporting article

Gregor Mendel

Bapak Genetika Modern

- Apa yang ditemukan? unit dasar, gen



Figure: Gregor Mendel

Gregor Mendel

Bapak Genetika Modern

- Apa yang ditemukan? unit dasar, gen
- Bagaimana menemukan? eksperimen.



Figure: Gregor Mendel

Pakis Haji (Fern)

Identifikasi keunikan daun pakis haji (fern) berikut :



Pada akhir semester perkuliahan ini diharapkan :

- 1 Mahasiswa dapat (memahami konsep-konsep dasar matematika yang umum ditemukan dalam bidang Biologi),

Pada akhir semester perkuliahan ini diharapkan :

- 1 Mahasiswa dapat (memahami konsep-konsep dasar matematika yang umum ditemukan dalam bidang Biologi),
- 2 menggunakan konsep-konsep dasar matematika untuk menganalisis dan memecahkan masalah-masalah yang terkait di bidang Biologi.

Pertemuan Ke	Materi Pokok
1	Silabus Perkuliahan dan Pendahuluan
2	Bilangan indeks, logaritma dan himpunan
3	ruang multi dimensi

Pertemuan Ke	Materi Pokok
4	Fungsi dan Kurva
5	Diferensiasi
6-7	Aplikasi diferensial dalam biologi
8	integrasi
9	Persamaan diferensial dan contohnya

Pertemuan Ke	Materi Pokok
10	deret matematika dan fungsi eksponensial
11	fungsi-fungsi di biologi
12,13	kalkulus pada biologi
14	aljabar matrik, vektor dan aplikasinya
15,16	Kombinatorik dan aplikasinya

Buku-buku penunjang perkuliahan ini adalah

- 1 Subanar. Nasir, Moch. Matematika Dasar Untuk Biologiwan. Gajah Mada University Press. 1993.
- 2 Varberg, Dale & Purcell E. J. (2001), Kalkulus Jilid 1 (edisi tujuh), Interaksa, Batam.

 <http://www.abdn.ac.uk/systemsbiology/>

 https://id.wikipedia.org/wiki/Gregor_Mendel