**CSB 343H1F – ANIMAL ENERGETICS**

24L

**Lecturer:**

Prof. L. Buck

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TBA

**Course Administrator:**

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**Prerequisite:** (BIO 270H1, BIO271H1)/(PSL 300H1, 301H1)

**Recommended preparation:** BCH 210H1/242Y1

Energy plays a fundamental role in all aspects of animal life. The basic principles of thermodynamics and cellular energy metabolism will be introduced and then the course will emphasize how these cellular processes affect whole animal physiology and behavioural performance.

Lectures are broadly divided into three main topics, all of which are interrelated:

1. Obtaining energy: the cellular basis of energy transduction. Whole animal metabolic rate: basal, standard and field metabolic rates. Scaling factors. Energy balance.
2. Using energy: mechanical and chemical work. Molecular motors and their role in intracellular transport. Muscle structure and function. Comparison of major muscle types and their adaptations for endurance, power and speed of contraction and relaxation. Energy and the neural control of muscle activity.Biomechanics of locomotion in swimming, running and flying animals.
3. Heat: production and exchange. Thermoregulation. Life in the cold; hibernation in mammals and birds.

**Text:**

**Hill, RW, Wyse, GA, Anderson, M. 2016. Animal physiology. 4th Edition. Sunderland (MA): Oxford University Press (formerly Sinauer Associates). 800 p.**

ISBN: 978-1-60535-471-2 casebound Listed Price: \*$168.95

\*US dollars

Additional readings will be made available as web notes if needed. Further information and materials are available to registered students on Portal.

**Evaluation:** 1. Best two of three in-class 1 hour term tests consisting of short answer questions (25% of total marks each)

1. Final examination (2h; worth 50% of total course mark) consisting of an essay (approx. 1.5 h) plus multiple choice questions.