

AGRI10045 Foundations of Agricultural Sciences 1

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| Credit Points: | 12.5 |
| Level: | 1 (Undergraduate) |
| Dates & Locations: | 2016, Parkville This subject commences in the following study period/s: July, Parkville - Taught on campus. This subject is taught over the first six weeks of semester with an exam in the end of semester examination period. |
| Time Commitment: | Contact Hours: 56 hours (which includes five hours of lectures per week, one hour of seminars per week, and a two hour workshop; a one day field trip will be held at the Dookie campus). Total Time Commitment: 170 hours |
| Prerequisites: | None |
| Corequisites: | None |
| Recommended Background Knowledge: | None |
| Non Allowed Subjects: | None |
| Core Participation Requirements: | For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry. It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and the Disability Liaison Unit: http://www.services.unimelb.edu.au/disability/ This subject includes a compulsory field trip to the University's Dookie campus. Students will be required to contribute to the cost of overnight stay at the Dookie campus, indicative cost \$50 per night. Further information about intensives at Dookie can be found at: http://students.fvas.unimelb.edu.au/fvas-programs/intensive-subjects-at-dookie#Dookie-intensives |
| Coordinator: | Dr Sabine Tausz-Posch |
| Contact: | sposch@unimelb.edu.au (mailto:sposch@unimelb.edu.au) |
| Subject Overview: | <p>This subject, which is the first of two, aims to provide Bachelor of Agriculture students with an understanding of the underpinning enabling physical sciences, as they relate to agricultural systems. Concepts in physics, chemistry, mathematics and data management will be introduced in the context of the science of earth and soil, water and climate, and plant and animal biology. In particular, this subject introduces students to concepts in physics, and chemistry, , as they apply to agricultural science.</p> <p>In addition, students will acquire and apply mathematical techniques that will enable them to model and interpret data sets.</p> <p>This subject will begin with introduction to the sun and to solar radiation as the source of energy on earth. Topics will include the spectrum of solar radiation, how light carries energy, energy transformation and measurement of solar radiation. The nature of energy in chemical bonds will then be discussed, with introduction to different types of bonding, valency, and the periodic table. The energy cycle in living systems will then be introduced, and some important chemical reactions in cells will be discussed. Heating and cooling and heat transfer mechanisms, as they apply to earth systems and living systems operating in agricultural environments will then be discussed. . Topics discussed will include the latent heat of water, evaporation and condensation, states of matter, evapotranspiration and the water cycle. The subject will conclude with consideration of how the earth's crust captures the suns energy, measurement of temperature and introduction to principles of climate trends and climate change. ,</p> |

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| | Mathematics topics in this subject will include: data visualisation; data analyses, including population statistics, correlation, and regression analyses; determination of key data parameters such as rate of change, maxima, minima, and cumulative assessment using applied calculus; and application of periodic analyses to data such as Fourier analyses. |
| Learning Outcomes: | <p>This subject should enable students to understand the importance of physical and chemical principles as the foundations of agricultural sciences, and should develop their capacity to:</p> <ul style="list-style-type: none"> # Apply an understanding of key concepts in physics and chemistry to describe fundamental biological processes such as electron transfer, photosynthesis, respiration, circulation and transpiration; # Integrate the use of numerical data, graphical analysis, basic statistics, and mapping, to represent and interpret phenomena in the natural world, in particular as they operate in agricultural environments; # Apply principles in physics and chemistry using logical reasoning, together with appropriate mathematical reasoning, to a variety of familiar and novel situations, both biological and physical, and to problems in agricultural contexts. |
| Assessment: | A two-hour written examination due at the end of semester examination period worth 60% Four x 250 word online intra-semester assessments based on workshop activities due in weeks one to four of the teaching period worth 20% A 1000 word equivalent intra-semester test due in week five of teaching period worth 20% |
| Prescribed Texts: | None |
| Breadth Options: | This subject is not available as a breadth subject. |
| Fees Information: | Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees |
| Generic Skills: | <p>A student who completes this subject should be able to:</p> <ul style="list-style-type: none"> # Demonstrate explain their understanding of fundamental principles in chemistry, physics and data management and their application in agricultural contexts lucidly, both in writing and orally # acquire and interpret scientific data # participate as an effective member of a group in tutorial discussions, and study groups # think independently and analytically, and direct his or her own learning # manage time effectively in order to be prepared for regular tutorial classes, tests and the examination |
| Related Course(s): | Bachelor of Agriculture |