

OTHER NATURAL AND PHYSICAL SCI (NATS)

NATS 0001 Academic Skills for Health Science (WSTC Prep) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats0001/>) **Legacy Code:** 700225

This subject is designed to assist students to become successful independent learners. It introduces students to a range of theories and concepts to facilitate the development of practical skills and personal attitudes necessary for success in tertiary study. Emphasis is placed on developing the key competencies such as time management, critical thinking, researching, learning how to learn and referencing.

Level: Undergraduate Level 0 Preparatory subject

Equivalent Subjects: NATS 0002 - Academic Skills for Health Science (WSTC)

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 0002 Academic Skills for Health Science (WSTC) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats0002/>) **Legacy Code:** 900099

This subject is designed to assist students to become successful independent learners. It introduces students to a range of theories and concepts to facilitate the development of practical skills and personal attitudes necessary for success in tertiary study. Emphasis is placed on developing the key competencies such as time management, critical thinking, researching, notetaking and referencing.

Level: Undergraduate Level 0 Preparatory subject

Equivalent Subjects: NATS 0001 - Academic Skills for Health Science (UWSCFS)

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 0003 Academic Skills for Science (WSTC Prep) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats0003/>) **Legacy Code:** 700230

This subject is designed to assist students to become successful independent reflective learners. It introduces students to a range of theories and concepts to facilitate the development of practical skills and personal attitudes necessary for success in tertiary study. Emphasis is placed on developing the key competencies of scientific enquiry - collecting, analysing, organising and communicating information as well as solving problems, particularly when related to using mathematical ideas and techniques.

Level: Undergraduate Level 0 Preparatory subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 0004 Academic Skills for Science (WSTC) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats0004/>) **Legacy Code:** 900101

This subject is designed to assist students to become successful independent reflective learners. It introduces students to a range of theories and concepts to facilitate the development of practical skills and personal attitudes necessary for success in tertiary study. Emphasis is placed on developing the key competencies of scientific enquiry - collecting, analysing, organising and communicating information as well as solving problems, particularly when related to using mathematical ideas and techniques.

Level: Undergraduate Level 0 Preparatory subject

Equivalent Subjects: NATS 0003 - Academic Skills for Science (UWSCFS)

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 0005 Foundations of Science (WSTC) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats0005/>) **Legacy Code:** 900053

This subject aims to provide students with sufficient knowledge of scientific facts and theories to provide the basis for further studies in science, engineering and technology. Emphasis is placed on developing the key competencies of scientific inquiry - collecting, analysing, organising and communicating information as well as solving problems, particularly when related to using mathematical ideas and techniques. Major areas of science - physics, chemistry and biology are represented within the subject and presented in context within an integrated framework.

Level: Undergraduate Level 0 Preparatory subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 0006 Fundamentals of Health Science (WSTC Prep) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats0006/>) **Legacy Code:** 700190

The depth of knowledge and practical skills required by health professionals in the 21st century is very different to that which was required in the past. Medical treatment of illness and disease has become increasingly technical and health professionals are expected to work in partnership in determining patient care. In order to achieve this, today's health professional must have a basic understanding of the fundamental scientific principles behind health and disease. Increasingly, modern health science is concerned with maintaining health as a way of preventing disease and this is achieved through a holistic approach to the human condition. This subject is an introduction to the basic concepts in human body systems, health and disease, that is required in order to commence any tertiary health science course.

Level: Undergraduate Level 0 Preparatory subject

Equivalent Subjects: NATS 0016 - Science for Health Professionals (UWSC) NATS 0018 - Science for Health Science (UWSCFS)

Incompatible Subjects: BIOS 1023 - Introduction to Human Biology (WSTC) BIOS 1022 - Introduction to Human Biology

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 0007 Fundamentals of Science (WSTC Prep) (10 Credit Points)
Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats0007/>) **Legacy Code:** 700231

In its broadest sense, science is an evolving body of skills, theories and knowledge about the nature of the world, based on observation, measurement and experiment. In order to begin participating in tertiary science studies, students require a fundamental toolkit of scientific literacy that includes key concepts, language, and skills. This subject provides an overview of, and grounding in, fundamental scientific concepts including the nature of matter and energy, and the flow of energy and cycling of matter through key processes in the biosphere. Integrating these concepts within a framework of a contemporary issue, climate change, enables students to build skills in applying scientific concepts, methods and problem-solving techniques, as well as furthering an understanding of interrelationships between science and other aspects of society. The subject imparts a basic body of essential scientific knowledge, as well as facilitating skills in collecting and analysing information and writing coherent explanations within a scientific framework.

Level: Undergraduate Level 0 Preparatory subject

Equivalent Subjects: NATS 0008 - Fundamentals of Science (WSTC)

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 0008 Fundamentals of Science (WSTC) (10 Credit Points)
Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats0008/>) **Legacy Code:** 900105

In its broadest sense, science is an evolving body of skills, theories and knowledge about the nature of the world, based on observation, measurement and experiment. In order to begin participating in tertiary science studies, students require a fundamental toolkit of scientific literacy that includes key concepts, language, and skills. This subject provides an overview of, and grounding in, fundamental scientific concepts including the nature of matter and energy, and the flow of energy and cycling of matter through key processes in the biosphere. Integrating these concepts within a framework of a contemporary issue, climate change, enables students to build skills in applying scientific concepts, methods and problem-solving techniques, as well as furthering an understanding of interrelationships between science and other aspects of society. The subject imparts a basic body of essential scientific knowledge, as well as facilitating skills in collecting and analysing information and writing coherent explanations within a scientific framework.

Level: Undergraduate Level 0 Preparatory subject

Equivalent Subjects: NATS 0007 - Fundamentals of Science (UWSCFS)

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 0009 Health Communication (WSTC) (10 Credit Points)
Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats0009/>) **Legacy Code:** 900081

Health Care Professionals work in an environment where a high level of communication with others is of paramount importance. Oral, written and interpersonal communication skills form the cornerstone of good professional practice. This subject is designed to help you develop self-awareness and increase your confidence and skills in communicating with others in preparation for the practicum experiences during your undergraduate studies.

Level: Undergraduate Level 0 Preparatory subject

Equivalent Subjects: LGYB 1382 - Nursing Communication (UWSC)

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 0010 Interpreting Data In Science (WSTC Prep) (10 Credit Points)
Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats0010/>) **Legacy Code:** 700287

Science is a way of knowing about the world. It is a process of discovery whose product, an evolving body of scientific knowledge and technology, is a significant determinant of modern Western societies. Engaging with the content, process, and social functions of science requires foundational scientific literacy, including the ability to access multiple textual forms, to construct meaning, and to critically evaluate new information in a scientific framework. In this subject students will develop skills in scientific literacy through undertaking case studies of contemporary relevance. Emphasis is placed on key competencies in scientific academic writing - collecting, analysing, organising, interpreting and communicating information - as well as solving problems related to mathematical ideas and techniques.

Level: Undergraduate Level 0 Preparatory subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 0011 Science and Health Exchange Unit 1 (10 Credit Points)
Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats0011/>) **Legacy Code:** 900636

Level: Undergraduate Level 0 Preparatory subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 0012 Science and Health Exchange Unit 2 (10 Credit Points)
Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats0012/>) **Legacy Code:** 900637

Level: Undergraduate Level 0 Preparatory subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 0013 Science and Health Exchange Unit 3 (10 Credit Points)
Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats0013/>) **Legacy Code:** 900638

Level: Undergraduate Level 0 Preparatory subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 0014 Science and Health Exchange Unit 4 (10 Credit Points)
Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats0014/>) **Legacy Code:** 900639

Level: Undergraduate Level 0 Preparatory subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 0015 Science and Health Exchange Unit 5 (10 Credit Points)
Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats0015/>) **Legacy Code:** 900640

Level: Undergraduate Level 0 Preparatory subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 0016 Science for Health Professionals (WSTC) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats0016/>) **Legacy Code:** 900090

The depth of knowledge and practical skills required by health professionals in the 21st century is very different to that which was required in the past. Medical treatment of illness and disease has become increasingly technical and health professionals are expected to work in partnership to determine patient care. In order to achieve this, today's health professional must have a basic understanding of the fundamental scientific principles behind health and disease. Increasingly, modern health science is concerned with maintaining health as a way of preventing disease and this is achieved through a holistic approach to the human condition. This subject is an introduction to the basic concepts in human body systems, health and disease, that are required in order to commence any tertiary health science program.

Level: Undergraduate Level 0 Preparatory subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 0018 Science for Health Science (WSTC Prep) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats0018/>) **Legacy Code:** 700059

From 2015, this subject is replaced by 700190 - Fundamentals of Health Science (UWSCFS). The depth of knowledge and practical skills required by health professionals in the 21st century are very different to that which were required in the past. Medical treatment of illness and disease has become increasingly technical and health professionals are expected to work in partnership in determining patient care. In order to achieve this, today's health professional must have a basic understanding of the fundamental scientific principles behind both the diseases and their treatments. Increasingly, modern health science is concerned with maintaining health as a way of preventing disease and this is achieved through a holistic approach to the human state. This course is an introduction to the basic concepts in physics, chemistry and biology that will be required in order to commence any tertiary health science course.

Level: Undergraduate Level 0 Preparatory subject

Equivalent Subjects: NATS 0006 - Fundamentals of Health Science (WSTC Prep) NATS 0017 - Science for Health Science (UWSC) LGYB 1383 - Science for Nursing (UWSC) NATS 0016 - Science for Health Professionals (WSTC)

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 0019 Scientific Method (WSTC) (5 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats0019/>) **Legacy Code:** 900038

The subject Scientific Method is designed to encourage those intending tertiary study in science and computing to use their knowledge of science and technology, together with strategies of design, to solve practical and ideological problems.

Level: Undergraduate Level 0 Preparatory subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 0020 Skills for Health Science (WSTC) (5 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats0020/>) **Legacy Code:** 900112

This subject is designed to give students skills in health science to become successful independent reflective learners in health sciences. It introduces students to a range of theories and concepts to facilitate the development of referencing conventions used in health science as well as practical skills and personal attitudes necessary for success in tertiary study and eLearning. Emphasis is placed on developing the key competencies of inquiry - analysing, organising, researching and communicating information as well as problem solving.

Level: Undergraduate Level 0 Preparatory subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 0021 Skills for Science (WSTC) (5 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats0021/>) **Legacy Code:** 900113

Level: Undergraduate Level 0 Preparatory subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 1002 Concepts in Human Anatomy (WSTC) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats1002/>) **Legacy Code:** 700266

This subject provides a basic understanding of human embryological development, anatomical terminology, and a range of foundation concepts in human anatomy. Students must attend a 'wet' laboratory session where the learning of anatomy will be enhanced through the study of human cadaveric material. Wet laboratory sessions are not available on the Nirimba campus, and therefore students will need to travel to Campbelltown in order to attend these sessions.

Level: Undergraduate Level 1 subject

Equivalent Subjects: NATS 1001 - Concepts in Human Anatomy

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 1003 Digital Forensic Photography (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats1003/>) **Legacy Code:** 300874

Forensic photography serves an important function within forensic science for the purpose of scene and item documentation, as well as the detection and enhancement of forensic evidence. This subject introduces the student to the fundamental principles and practices of forensic photography. Topics include: principles of light science, digital imaging, camera and lighting operations, technical photography composition, and the maintenance of image integrity.

Level: Undergraduate Level 1 subject

Pre-requisite(s): NATS 1008

Equivalent Subjects: NATS 2012 - Digital Forensic Photography 1

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 1004 Drugs on Line (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats1004/>) **Legacy Code:** 400961

This subject deals with selected issues in drug use, misuse and abuse. An introductory section discusses mechanisms of drug action in the body and their likely effects. Some topical areas include; drugs in society (illicit drug taking and drug taking in sports), antidepressants and weight management therapeutic agents, and the exploration of complementary alternative medicines (CAMs) in Australian society.

Level: Undergraduate Level 1 subject

Equivalent Subjects: NATS 1005 - Drugs On Line

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 1008 Forensic Science (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats1008/>) **Legacy Code:** 300806

This subject aims to give students a basic understanding of scientific methodology as it applies to the collection, analysis and interpretation of forensic evidence. Students are introduced to a range of crime scene investigation methods and analysis methods that are used with various types of forensic evidence. The concept of individualisation is introduced and the importance of this concept in forensic science is explained. Case studies are used to explain the concepts discussed in this subject. The role of human factors is discussed, together with the importance of critically evaluating forensic evidence and the means by which it was obtained.

Level: Undergraduate Level 1 subject

Equivalent Subjects: NATS 1006 - Forensic Science NATS 1007 - Forensic Science

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 1009 Human Anatomy and Physiology 1 (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats1009/>) **Legacy Code:** 400868

This is the first of two subjects covering systematic anatomy and physiology at an introductory level. This subject is designed to provide students in medical science and applied health science programs with an overview of body systems and their functions to ensure a suitable basis for their future studies. The subject studies the basic concepts of biochemistry and histology, general anatomy and physiology of the major body systems including the central and peripheral nervous systems, integumentary system, musculoskeletal system (bones, muscles and joints), special senses and endocrine system. Emphasis will be placed on the interconnection and relationship between structure and function at every level of organisation.

Level: Undergraduate Level 1 subject

Equivalent Subjects: BIOS 1033

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 1010 Human Anatomy and Physiology 2 (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats1010/>) **Legacy Code:** 400869

Human Anatomy and Physiology 2 systematically covers anatomy and physiology at an introductory level. This subject is designed to provide students, especially those in clinical health science programs, with an overview of body systems and their functions, to ensure a suitable basis for their future studies. The subject studies the basic structure and function of the major body systems such as cardiovascular, respiratory, digestive, urinary, reproductive and lymphatic. This subject also explores the physiological processes involved in the immune response, cell metabolism, regulation of body fluids and acid-base balance. Emphasis is placed on the interconnection and relationship between structure and function at every level of organisation.

Level: Undergraduate Level 1 subject

Equivalent Subjects: NATS 1030

NATS 1001

Incompatible Subjects: LGYA 5933 - Introduction to Human Anatomy and Histology BIOS 1024 - Introduction to Human Physiology BIOS 1018 - Human Medical Sciences 2 LGYA 7033 - Human Medical Sciences 1 NATS 1013 - Introduction to Anatomy NATS 1015 - Introduction to Anatomy and Histology NATS 1017 - Introduction to Human Physiology BIOS 1025 - Introduction to Physiology NATS 1012 - Introduction to Anatomy

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 1019 Scientific Literacy (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats1019/>) **Legacy Code:** 300811

This subject is designed to provide students with scientific literacy, personal and employability skills and attitudes required to successfully undertake science-related undergraduate studies and to prepare for professional life. Students learn, develop and utilise academic and interpersonal methodologies and approaches within the context of applied scientific principles and take responsibility for their own learning and develop a work ethic. Students are introduced to the contestable and uncertain nature of science and the scientific method that underpins academic integrity and ethical behaviour. Activities encourage development of oral and written communication skills, self-confidence, self-efficacy, creative and critical thinking through problem solving, group process, and peer support and assessment. Academic and employability skills include scientific reading and writing, time management, researching scientific information and library skills, oral presentation, taking tests and exams, effective personal and group based learning strategies, and approaches to online learning.

Level: Undergraduate Level 1 subject

Equivalent Subjects: NATS 1018 - Professional Skills for Science

NATS 1020 - Scientific Literacy (WSTC)

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 1020 Scientific Literacy (WSTC) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats1020/>) **Legacy Code:** 700124

This subject is designed to provide students with scientific literacy, personal and employability skills and attitudes required to successfully undertake science-related undergraduate studies and to prepare for professional life. Students learn, develop and utilise academic and interpersonal methodologies and approaches within the context of applied scientific principles and take responsibility for their own learning and develop a work ethic. Students are introduced to the contestable and uncertain nature of science and the scientific method that underpins academic integrity and ethical behaviour. Activities encourage development of oral and written communication skills, self-confidence, self-efficacy, creative and critical thinking through problem solving, group process and peer support and assessment. Academic and employability skills include scientific reading and writing, time management, researching scientific information and library skills, oral presentation, taking tests and exams, effective personal and group based learning strategies and approaches to online learning.

Level: Undergraduate Level 1 subject

Equivalent Subjects: NATS 1018 - Professional Skills for Science LGYB 0464 - Professional Skills for Science (UWSC) NATS 1019 - Scientific Literacy

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 1021 Concepts in Human Physiology (WSTC) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats1021/>) **Legacy Code:** 700295

This subject introduces the core concepts and terminology necessary to provide a basic understanding of the physiological responses of the human body using relevant examples. These include the processes of homeostasis, cell-cell interactions and the physical and chemical transport processes that are required to carry out integrated functions. Students will explore these key physiological concepts through practical hands-on experiments and in interactive group work in prac and tutorial classes, respectively. The subject provides the foundation to study the physiology of human organ systems.

Level: Undergraduate Level 1 subject

Equivalent Subjects: BIOS 1033 Concepts in Human Physiology

Incompatible Subjects: BIOS 1025 Introduction to Physiology

NATS 1009 Human Anatomy Physiology 1

BIOS 1022 Introduction to Human Biology

BIOS 1026 Introduction to Physiology (WSTC)

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 1022 Functional Anatomy (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats1022/>) **Legacy Code:** 401410

From 2020 this subject replaces 400881 - Functional Anatomy. This subject covers in depth the functional anatomy of the musculoskeletal system. Special attention is given to the relationship between form and function, the terminology used to describe human movement and thorough knowledge of the bony landmarks, joints, muscle attachments, innervation, blood supply along with detailed actions of specific muscles and muscle groups. Emphasis is on a practical functional context with the relevance to clinical applications such as surface and imaging anatomy, and the anatomical basis of common injuries. Learning experience intends to stimulate proactive deep approach in learning anatomy motivated by the outcomes driven from specialist work within the Health professions.

Level: Undergraduate Level 1 subject

Pre-requisite(s): NATS 1009

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 1024 Introduction to Physiology (WSTC) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats1024/>) **Legacy Code:** 700302

This subject introduces the concept of homeostasis and critically examines examples of how the body systems are regulated and homeostatically controlled. The subject uses a body-systems approach to examine the physiology of tissues, organs and systems in order to develop an integrated view of the regulated functioning of the human body.

Level: Undergraduate Level 1 subject

Equivalent Subjects: NATS 1017 - Introduction to Human Physiology
LGYA 6186 - Physiology 1 BIOS 1025 - Introduction to Physiology
BIOS 1026 Introduction to Physiology (WSTC) 700098 Introduction to Physiology (WSTC)

Incompatible Subjects: BIOS 1022 - Introduction to Human Biology

BIOS 1023 - Introduction to Human Biology (WSTC)

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 1025 Management of Aquatic Environments (UG Cert) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats1025/>) **Legacy Code:** 500051

This subject introduces students to the physical, chemical and biological nature of water systems and the linkages to human activity. These linkages include a development of an appreciation of the essential services and broad uses and values of water in modern human society, and the natural environment. Students are challenged to examine the causes and effects of water pollution and environmental degradation. Students are introduced to scientific water sampling, analysis and reporting of water quality and pollution.

Level: Undergraduate Level 1 subject

Equivalent Subjects: BIOS 1028 Management of Aquatic Environments

BIOS 1027 Management of Aquatic Environments BIOS 1034

Management of Aquatic Environments

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 1026 Digital Forensic Photography (WSTC) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats1026/>) **Legacy Code:** 700329

Forensic photography serves an important function within forensic science for the purpose of scene and item documentation, as well as the detection and enhancement of forensic evidence. This subject introduces the student to the fundamental principles and practices of forensic photography. Topics include: principles of light science, digital imaging, camera and lighting operations, technical photography composition, and the maintenance of image integrity.

Level: Undergraduate Level 1 subject

Pre-requisite(s): NATS 1027

Equivalent Subjects: NATS 2012 Digital Forensic Photography 1

NATS 1003 Digital Forensic Photography

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 1027 Forensic Science (WSTC) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats1027/>) **Legacy Code:** 700330

This subject aims to give students a basic understanding of scientific methodology as it applies to the collection, analysis and interpretation of forensic evidence. Students are introduced to a range of crime scene investigation methods and analysis methods that are used with various types of forensic evidence. The concept of individualisation is introduced and the importance of this concept in forensic science is explained. Case studies are used to explain the concepts discussed in this subject. The role of human factors is discussed, together with the importance of critically evaluating forensic evidence and the means by which it was obtained.

Level: Undergraduate Level 1 subject

Equivalent Subjects: NATS 1008

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 1028 Scientific Literacy (BLOCK) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats1028/>)

This Subject is designed to provide students with scientific literacy, personal and employability skills and attitudes required to successfully undertake science-related undergraduate studies and to prepare for professional life. Students learn, develop and utilise academic and interpersonal methodologies and approaches within the context of applied scientific principles and take responsibility for their own learning and develop a work ethic. Students are introduced to the contestable and uncertain nature of science and the scientific method that underpins academic integrity and ethical behaviour. Activities encourage development of oral and written communication skills, self-confidence, self-efficacy, creative and critical thinking through problem solving, group process and peer support and assessment. Academic and employability skills include scientific reading and writing, time management, researching scientific information and library skills, oral presentation, taking tests and exams, effective personal and group based learning strategies and approaches to online learning.

Level: Undergraduate Level 1 subject

Equivalent Subjects: NATS 1018 Prof Skills for Sci

NATS 1019 Scientific Literacy

NATS 1020 Scientific Literacy (UWSC)

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 1029 Human Anatomy and Physiology 1 (WSTC) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats1029/>)

This is the first of two subjects covering systematic anatomy and physiology at an introductory level. This subject is designed to provide students in applied health science programs with an overview of body systems and their functions to ensure a suitable basis for their future studies. The subject studies the basic concepts of biochemistry and histology, general anatomy and physiology of the major body systems including the central and peripheral nervous systems, integumentary system, musculoskeletal system (bones, muscles and joints), special senses and endocrine system. Emphasis will be placed on the interconnection and relationship between structure and function at every level of organisation.

Level: Undergraduate Level 1 subject

Equivalent Subjects: NATS 1009

NATS 1021

BIOS 1033

Incompatible Subjects: BIOS 1024

BIOS 1018

NATS 1015

NATS 1012

NATS 1017

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 1030 Human Anatomy and Physiology 2 (WSTC) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats1030/>)

Human Anatomy and Physiology 2 systematically covers anatomy and physiology at an introductory level. This subject is designed to provide students, especially those in clinical health science programs, with an overview of body systems and their functions, to ensure a suitable basis for their future studies. The subject studies the basic structure and function of the major body systems such as cardiovascular, respiratory, digestive, urinary, reproductive and lymphatic. This subject also explores the physiological processes involved in the immune response, cell metabolism, regulation of body fluids and acid-base balance. Emphasis is placed on the interconnection and relationship between structure and function at every level of organisation.

Level: Undergraduate Level 1 subject

Equivalent Subjects: NATS 1001

NATS 1002

NATS 1010

Incompatible Subjects: BIOS 1024

BIOS 1018

NATS 1013

NATS 1015

NATS 1017

BIOS 1025

NATS 1012

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 1032 Introduction to Applied Science and Technology (WSTC) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats1032/>)

In this subject, you will explore the science behind ground-breaking inventions that have revolutionised contemporary society and made it what it is today. You will delve into historic innovations, such as the Haber Process, which played a pivotal role in urbanisation, as well as contemporary marvels like the lithium-ion battery, fundamental to our technology-driven lifestyle. Additionally, you will answer the "big philosophical questions" associated with these inventions. For example, 'Why did the cheap replacement lithium battery that I brought off the internet for my mobile phone or laptop explode on recharging?' and 'Why are foods and drinks, including my morning coffee, acidic?'

Level: Undergraduate Level 1 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 2001 Advanced Science Project A (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats2001/>) **Legacy Code:** 300937

The subject is design to teach students what is required to successfully begin to answer a scientific question. It specially focuses on teaching students how to access and critically review literature on a given topic, chosen in consultation with a supervisor in the student's preferred field of study. Students will present their findings in both written and poster formats. Students also attend a one day workshop where they engage with researchers in a wide variety of fields to broaden their understanding of research.

Level: Undergraduate Level 2 subject

Equivalent Subjects: LGYA 6165 - Advanced Science Research Project A

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 2002 Advanced Science Project B (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats2002/>) **Legacy Code:** 300938

This subject continues the students' training in thinking as a research scientist whilst developing analytical and critiquing skills in a range of science disciplines. In this subject, students gain theoretical knowledge of common methods and techniques and choose to gain hands-on experience in interdisciplinary laboratory sessions, focusing on current techniques and methods in a range of science disciplines including but not limited to cell and molecular biology, chemistry, physics, biomedical science, microbiology, anatomy and physiology, and nutrition. Students will develop a strong foundation in understanding the relationship between practical techniques and data quality and reliability, which is crucial for validating research outcomes. Training in laboratory notebook best practices will be provided, emphasising the importance of accurate record-keeping in both academic and industrial research settings. Students will prepare summaries of research findings, project proposals, and progress reports from their chosen laboratory sessions using discipline-specific formats and notation. By engaging in discussions, feedback, and data analysis, students will enhance their scientific communication, presentation, and collaborative decision-making skills.

Level: Undergraduate Level 2 subject

Pre-requisite(s): NATS 2001

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 2004 Anatomy of the Thorax and Abdomen (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats2004/>) **Legacy Code:** 300894

This subject builds on the systems anatomy studied during first year, and explores the regional anatomy of the contents and walls of the human thorax and abdominopelvic cavities. Emphasis is placed on the relationship between structures, and the nexus between form and function. Cadaveric specimens are used in this subject to illustrate the array of normal anatomical variation.

Level: Undergraduate Level 2 subject

Pre-requisite(s): NATS 1010

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 2006 Approved Industrial Experience (0 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats2006/>) **Legacy Code:** 300655

This is a "Work Experience" subject, for which no student contribution fee is charged, nor will it consume Student Learning Entitlement (SLE). Students are required to obtain at least ten weeks, vocationally relevant, industrial experience during their course of study. The aim of this is to provide students with opportunities to apply theoretical concepts to real world situations, assisting their personal and professional development. Approved industrial experience aims to provide flexibility for students to pursue areas of interest and to assist in their selection of appropriate elective subjects in their program and to meet the professional accreditation requirements as maybe required in your key program. Students are required to organise, formalise and validate at least ten weeks of university approved industry experience within an industrial, commercial or government situation during the course of their study.

Level: Undergraduate Level 2 subject

Equivalent Subjects: NATS 2007 - Approved Industrial Experience LGYB 8194 - Approved Industrial Experience

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 2008 Clinical Pharmacology (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats2008/>) **Legacy Code:** 400981

This subject explores in depth clinical pharmacology fundamental to the practice of allied health (Physiotherapy, Podiatric Medicine and Paramedicine) and complementary medicine (Traditional Chinese Medicine). General principles of pharmacology will be briefly discussed. This subject imparts detailed knowledge on the classification, mechanism of action, therapeutic effects, clinical applications and side effects of major drug classes acting on musculo-skeletal, nervous, cardiovascular, respiratory, gastrointestinal, endocrine, urinary and reproductive system diseases. In the context of antimicrobial pharmacology, general concepts of microbiology will be introduced offering students an understanding of the causative microorganisms, the complex relationship between host and pathogen, the pharmacological actions, mechanism of action, and clinical uses of antimicrobial drugs and the principles of infection control.

Level: Undergraduate Level 2 subject

Pre-requisite(s): NATS 2038 or NATS 2045

Equivalent Subjects: LGYA 7037 - Clinical Pharmacology and Microbiology

Incompatible Subjects: NATS 2026 - Pharmacology

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 2010 Crime Scene Investigation (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats2010/>) **Legacy Code:** 300873

A substantial amount of forensic evidence used in the prosecution of criminal cases is initially established at the crime scene. Recognising, detecting, recovering, preserving and recording this evidence forms a critical function within forensic science and criminal investigation. This subject introduces the student to a range of crime scene practices that provides the knowledge and skill to interpret a complex scene with voluminous detail, into a more specifically targeted range of forensic evidence items. This subject will explore aspects of crime scene investigation including; crime scene processes, recognition of evidence, documentation of crime scenes, evidence detection and enhancement, and maintaining evidence integrity. It also introduces professional practices associated with maintaining evidence integrity and continuity.

Level: Undergraduate Level 2 subject

Pre-requisite(s): NATS 1003

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 2015 Evidence and Crime Scene Management (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats2015/>) **Legacy Code:** 300935

Evidence and Crime Scene Management is a subject designed to provide students with an understanding and knowledge of critical principles associated with the management of evidence and sites considered as crime scenes. The subject is particularly designed for students wishing to enter professional domains involving; policing, nursing, animal welfare, workplace investigators, health inspectors, WHS officers, fire investigation, council and park rangers, social welfare, environmental protection, fraud and insurance investigation and others where the collection of evidence is a component of professional practice within the discipline. The subject covers topics such as; recognition of various evidence, the recording and documentation of evidence, crime scene or site photography, managing scenes, maintaining evidence integrity, sexual assault evidence, the reporting and presentation of evidence in court and others.

Level: Undergraduate Level 2 subject

Equivalent Subjects: NATS 2014 - Evidence and Crime Scene Management

Incompatible Subjects: NATS 2010 - Crime Scene Investigation
NATS 3053 Crime Scene Investigation

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 2019 Forensic and Environmental Analysis (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats2019/>) **Legacy Code:** 300843

This subject extends the student's knowledge and experience of analytical techniques by applying them to forensic investigations and analysis in the environmental and food sciences. It will provide an understanding of the chemical and physical principles underlying the use of instrumentation in chemical analysis. Topics include principles of spectroscopic techniques, separation methods; sample collection and storage; presumptive testing; modern chemical instrumentation for gas and liquid chromatography; atomic spectroscopy; mass spectroscopy; x-ray methods and spectroscopic methods.

Level: Undergraduate Level 2 subject

Pre-requisite(s): CHEM 1008 - Introductory Chemistry

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 2021 Imaging Science (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats2021/>) **Legacy Code:** 401171

Imaging science is a key area within the forensic sciences. This subject explores the application of imaging science and forensic photography practices to detect, preserve, enhance and examine forensic evidence. The subject focuses on optical and digital enhancement methods that provide essential non-destructive methods for evidence preservation and analysis. The subject provides the learner with necessary theoretical concepts of imaging science that underpin the practice of forensic photographic evidence.

Level: Undergraduate Level 2 subject

Pre-requisite(s): NATS 1003 - Digital Forensic Photography

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 2023 Integrated Science (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats2023/>) **Legacy Code:** 300931

Science and the scientific process of discovery have been successful in offering explanations for the world we live in. Due to scientific advances, we have eradicated some disease, explored the moon and the deepest parts of our oceans and created communication across distances on the planet previously unimaginable. We now face the major challenge of creating a future world which is sustainable for life on Earth. Solving our contemporary complex human and environmental issues to create a sustainable future, however, requires integrative and multidisciplinary research frameworks, an understanding of the relationship between science and society including cultural, social, economic and political and ethical factors. Students will critically examine such perspectives in a series of contemporary 'real-life' case studies such as climate change, medical breakthroughs, biodiversity loss, environmental sustainability and human-animal interactions. They will undertake research into the relationship of science integrated with society, and the uncertainty and bias of evidence in decision making.

Level: Undergraduate Level 2 subject

Equivalent Subjects: NATS 1011 - Integrated Science AGEN 2001 - Science in Society NATS 2024 - Integrated Science (WSTC)

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 2024 Integrated Science (WSTC) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats2024/>) **Legacy Code:** 700096

Science and the scientific process of discovery have been successful in offering explanations for the world we live in. Due to scientific advances, we have eradicated some disease, explored the moon and the deepest parts of our oceans and created communication across distances on the planet previously unimaginable. We now face the major challenge of creating a future world which is sustainable for life on Earth. Solving our contemporary complex human and environmental issues to create a sustainable future, however, requires integrative and multidisciplinary research frameworks, an understanding of the relationship between science and society including cultural, social, economic, political and ethical factors. Students will critically examine such perspectives in a series of contemporary 'real-life' case studies such as climate change, indigenous health, medical breakthroughs, biodiversity loss, environmental sustainability and human-animal interactions. They will undertake research into the relationship of science integrated with society, and the uncertainty and bias of evidence in decision making. They will demonstrate their understanding by analysis of a contemporary issue by producing a scientific report and a powerpoint or video.

Level: Undergraduate Level 2 subject

Equivalent Subjects: NATS 1011 - Integrated Science 1 AGEN 2001 - Science in Society NATS 2023 - Integrated Science

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 2027 Pharmacology (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats2027/>) **Legacy Code:** 300884

Pharmacology is the study of the therapeutic interactions of drugs with the human body, focusing on mechanisms of action at the biochemical and cellular level, on adverse reactions and on clinical applications. This subject provides students with a sound understanding of fundamental aspects of this field to prepare for further study of advanced pharmacology or other biomedical sciences. General principles of pharmacokinetics and pharmacodynamics, will be discussed in detail. The major drug categories that affect different organ systems will be addressed, and research methods in pharmacology and the drug development process will also be introduced.

Level: Undergraduate Level 2 subject

Pre-requisite(s): BIOS 1025 OR

BIOS 1026 OR

BIOS 1033 OR

BIOS 1033

Equivalent Subjects: NATS 2026 - Pharmacology

Incompatible Subjects: NATS 2008 - Clinical Pharmacology LGYA 7037 - Clinical Pharmacology and Microbiology

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 2031 Toxicology (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats2031/>) **Legacy Code:** 300877

Toxicology is the study of toxicants or poisonous substances: their nature, effects on the human body, and on human, animal and plant populations. Poisonous substances have been used by humans from antiquity for both beneficial and malevolent purposes and today a vast array of toxic industrial chemicals are produced. Both accidental (workplace and environmental) and intentional (forensic) exposure are covered, in terms of group properties, chronic and acute, toxicity, exposure potential, health impact and intervention are presented through forensic case studies. Students carry out a toxicology audit of an operation or premises of their choice.

Level: Undergraduate Level 2 subject

Equivalent Subjects: NATS 2030 - Toxicology

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 2033 Cell Form and Function (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats2033/>) **Legacy Code:** 301267

This subject will develop a comprehensive understanding of eukaryotic cellular components, with an emphasis on animal cells. The subject will focus on distinct functions of organelles/cellular structures, the relevant mechanisms involved, and the broader role of such functions in a whole cell context. The subject will encompass a detailed study of cellular components including: the nucleus, ribosomes, the endoplasmic reticulum, the Golgi apparatus, lysosomes, the plasma and organellar membranes, mitochondria, peroxisomes and the cytoskeleton. This subject will also investigate how organellar function is relevant to an appropriately functioning cell, and how cell dysfunction impacts the cell and leads to disease. The subject covers contemporary techniques used to study cells including: cell culture, advanced cell imaging, a range of investigative and analysis techniques, and additional experimental approaches enabling thorough understanding of the incredibly fascinating yet complex nature of cells.

Level: Undergraduate Level 2 subject

Pre-requisite(s): BIOS 1012

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 2034 Human Systems Physiology 1 (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats2034/>) **Legacy Code:** 301269

This subject builds upon the core concepts and terminology introduced in foundational physiology, focussing on the function of body organ systems, exploring the knowledge of how these organ systems are regulated, integrated, and function within the human body. The focus will be on the muscular, nervous, cardiovascular, respiratory and endocrine organ systems. Students will collect, interpret and analyse data to develop an understanding of the physiological responses of the human body.

Level: Undergraduate Level 2 subject

Pre-requisite(s): NATS 1009 - Human Anatomy and Physiology 1

Incompatible Subjects: BIOS 1025 - Introduction to Physiology

BIOS1022 - Introduction to Human Biology

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 2035 Human Systems Physiology 2 (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats2035/>) **Legacy Code:** 301270

Human Systems Physiology 2 builds upon the core concepts and terminology introduced in Concepts in Physiology and Human Systems Physiology 1, focusing on the function of visceral organs and explore how these organ systems are regulated, integrated, and function within the human body. The focus will be on the lymphatic, immune, digestive, renal and reproductive systems. Students will collect, interpret and analyse data to develop an understanding of the physiological responses of the human body.

Level: Undergraduate Level 2 subject

Pre-requisite(s): NATS 1010 - Human Anatomy and Physiology 2

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 2038 Pathophysiology 1 (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats2038/>) **Legacy Code:** 401407

This subject is intended for students enrolled in Health and Medical Science courses and is designed to equip students with a detailed knowledge of pathophysiological processes evident in a number of key human diseases that are vocationally relevant to these students. The content is organised using a systems-based approach. Problem-based learning methods will be adopted in the tutorial component of this subject to help students develop crucial problem-solving skills.

Level: Undergraduate Level 2 subject

Pre-requisite(s): NATS 1010 - Human Anatomy and Physiology 2

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 2039 Pathophysiology 2 (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats2039/>) **Legacy Code:** 401409

From 2020 this subject replaces 400267 - Pathophysiology. This subject extends the scope of topics explored in Pathophysiology 1 and is designed to equip students enrolled in health science courses of the School with detailed knowledge of pathophysiological processes evident in a number of key human diseases that are vocationally relevant to these students. Problem-based learning methods will be adopted in the tutorial component of this subject to help students develop crucial problem solving skills.

Level: Undergraduate Level 2 subject

Pre-requisite(s): NATS 2038 - Pathophysiology 1

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 2040 Physical Activity, Nutrition and Health (10 Credit Points)
Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats2040/>) **Legacy Code:** 401411

From 2020 this subject replaces 400892 - Physical Activity, Nutrition and Health. This subject examines the interdependence between physical activity, nutrition and health and the role of key lifestyle behaviours in improving health outcomes, longevity, and quality of life. Throughout this theoretical and practical subject, students explore personal and socio-cultural health issues, and identify how these health issues can be addressed in a proactive, holistic, and sustainable manner at an individual and population level.

Level: Undergraduate Level 2 subject

Equivalent Subjects: HLTH 1007 - Nutrition Physical Activity Mental Health HLTH 2019 - Physical Activity Nutrition and Health

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 2041 Functionality of Food Ingredients (10 Credit Points)
Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats2041/>) **Legacy Code:** 301455

Developing innovative foods requires an understanding of food science and the principles that are applied when experimenting with food ingredients and processes. This subject will enable you to gain the scientific knowledge and methodology skills the food industry employs in the sustainable production of nutritious, healthy and appealing foods. Understanding the physical and chemical properties of, and current process techniques to produce different food types, will enable you to develop attributes required by the world's largest employment sector.

Level: Undergraduate Level 2 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 2042 Science Research Methods (10 Credit Points)
Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats2042/>) **Legacy Code:** 301445

This subject aims to introduce you to the theories and practices underpinning scientific method. Through the course of the subject, you will develop analytical skills to quantify and interpret agricultural, zoological, and environmental data. You will use real-world issues, formulate an aim and research hypothesis and explore research methods and designs to conduct an experiment to test the hypothesis. You will also be introduced to the types of biological variables, sources of measurement error, and the relationship between sample size and the conclusions that can be drawn from data; This subject enables you to develop skills in data analysis, interpretation and how to report on the findings of the research. The subject is structured so that lectures will provide theoretical expertise and workshops will reinforce your learning with practical experience preparing you for a career in science.

Level: Undergraduate Level 2 subject

Equivalent Subjects: LGYA 5920 - Research Communities and their Environments NATS 2028 - Research Methods LGYA 6151 - Animal Research NATS 2025 - Natural Science Research Methods

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 2045 Introduction to Pharmacology (10 Credit Points)
Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats2045/>)

This subject provides the fundamental knowledge in pharmacology required by students enrolled in the Pharmacology minor. The subject covers basic introduction to drugs, drug dosage forms and routes of drug administration, introducing students with fundamental principles and basic concepts of pharmacokinetics, pharmacodynamics, and understanding receptor theory of drug action. The subject covers the general principles of absorption, distribution, metabolism and excretion of drugs as well as the basic mechanisms of drug action at the biochemical and cellular levels on important drug targets. The subject also covers factors of individual variation to drugs, types of adverse drug reactions and types of drug interactions including common drug-drug and herb-drug interactions. The subject also introduces general concepts of neuropharmacology and neurohumoral transmission in the body.

Level: Undergraduate Level 2 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3001 Advanced Immunology (10 Credit Points)
Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3001/>) **Legacy Code:** 300905

The human immune system is a milieu of cells, cytokines, chemokines, growth factors and cell adhesion molecules which form an elaborate molecular communication network through a number of signalling networks and molecules. The relevance of this knowledge for understanding the pathology and specific diseases of the human immune system are emphasised through the subject. This subject also provides an in depth analysis of the molecular mechanisms of cell to cell communication, cell activation, the immunological synapse, transplant rejection (including adoptive transfer experimentation), antigen presentation, B and T cell recruitment and MHC restriction. Medical and diagnostic applications of hybridoma technology, antibody engineering and advances in vaccine development are discussed. The laboratory course will develop technical and interpretative skills in relevant techniques, in particular the ImmunoCAP technology for asthma and allergy diagnosis.

Level: Undergraduate Level 3 subject

Pre-requisite(s): BIOS 2014

Equivalent Subjects: NATS 3033 - Molecular Biological of the Immune System

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3002 Advanced Medicinal Chemistry (10 Credit Points)
Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3002/>) **Legacy Code:** 300891

Medicinal Chemistry is an interdisciplinary science that exists at the intersection of chemistry, pharmacology, physiology and human health. Students will explore the multidisciplinary nature and interconnectedness of medicinal chemistry through in-depth study of topics that relate medicinal chemistry to disciplines such as physiology, natural product science, biochemistry and pharmacology. It will also explore the expectations of a professional medicinal chemist.

Level: Undergraduate Level 3 subject

Pre-requisite(s): CHEM 1005

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3003 Advanced Mortuary Practice (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3003/>) **Legacy Code:** 301128

This subject further develops skills in a forensic mortuary practice. Students will undertake a placement within a NSW Forensic and Analytical Science Service (FASS) facility or NSW Organ and Tissue Donation Service. This subject, together with completion of 301127 Mortuary Practice is essential for graduates of this course seeking employment as a forensic technician with FASS.

Level: Undergraduate Level 3 subject

Pre-requisite(s): MEDI 3008 - Mortuary Practice

Co-requisite(s): NATS 3006

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3004 Advanced Science Project C (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3004/>) **Legacy Code:** 300910

This subject advances the students' training in thinking as a research scientist whilst developing practical skills in a particular area of interest. The student undertakes a minor research project under supervision, during which they plan how to answer a research problem, conduct research and present their findings in a research paper format and seminar.

Level: Undergraduate Level 3 subject

Pre-requisite(s): NATS 2002

Equivalent Subjects: LGYA 6169 - Advanced Science Research Project C

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3006 Anatomy of the Head and Neck (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3006/>) **Legacy Code:** 300897

This subject builds on the systems anatomy taught during the first year, offering a regional study of the human head & neck. Emphasis is placed on the identification and description of the structures, including the correlation of structure and function. Cadaveric specimens are used to aid the learning of these regions and their three-dimensional aspect, including the anatomical variation found in these regions.

Level: Undergraduate Level 3 subject

Pre-requisite(s): NATS 1010 - Human Anatomy and Physiology 2

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3008 Complex Forensic Studies (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3008/>) **Legacy Code:** 300911

This is an advanced and integrating capstone subject for students studying forensic science. It incorporates previous science, forensic science and social science subjects to form a comprehensive examination of the functionality of forensic evidence within the contemporary Australian judicial system. This capstone highlights the needs for an interdisciplinary approach to define and critique forensic science evidence from various perspectives including science, law, criminology, policing and social science. Students are required to use their skills and knowledge with additional independent research and inquiry using a range of set literature. The subject will study a range of contemporary issues including how the judicial system evaluates the reliability of evidence from an admissibility threshold, identification evidence from CCTV, contextual bias with forensic examination, contamination issues with forensic evidence and methods of expressing forensic findings and/or significance.

Level: Undergraduate Level 3 subject

Pre-requisite(s): NATS 3026 - Forensic Biology

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3012 Environmental Forensic Investigations (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3012/>) **Legacy Code:** 300981

This subject examines the forensic processes required to conduct investigations into environmental crime and incidents. The subject extends the student's knowledge and understanding of forensic science concepts to environmental scenarios, including illegal dumping, spills and water pollution incidents. The subject will discuss how scenes are investigated, what methods and techniques are used to analyse environmental samples, and how the results are interpreted and presented in the NSW Land and Environment Court. Factors effecting the collection, analysis and interpretation of evidence, such as weathering, are also discussed, as these are crucial to understand the scenes and to correctly present evidence in court.

Level: Undergraduate Level 3 subject

Pre-requisite(s): NATS 2019 - Forensic and Environmental Analysis

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3014 Experimental Foods (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3014/>) **Legacy Code:** 300879

This subject aims to build on students' knowledge of food preparation gained in Food Science 1 and 2, the focus of this subject includes; food science and principles, the interaction of ingredients and the added effects of physical procedures on the end product. Students develop advanced scientific methodologies to give reproducibility. This is a recommended subject for those intending to advance in the areas of recipe development and new product development.

Level: Undergraduate Level 3 subject

Pre-requisite(s): PROC 2002 - Innovative Foods

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3015 Field Project 1 (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3015/>) **Legacy Code:** 300913

Subject NATS 3015 Field Project 1 and the associated subject NATS 3017 Field Project 2 are designed as capstone subjects of study for either the Bachelor of Science or Bachelor of Natural Science degrees. They draw together the skills acquired in previous years of the course and apply them in the context of either a six-month or a year-long research project exploring a real world problem on behalf of an industry, government or community agency client. The student will develop skills in scoping, planning, implementing, reporting on the research project; reflecting on what has been learned in the context of their personal and professional development and how this can be used in future career planning. In this Field Project 1 subject the focus is on developing skills in designing an appropriate research project in collaboration with the industry client, contextualising the problem and appropriate research methods in the academic literature, developing and implementing a pilot study to test the proposed research methods, and reporting the results. Note: Students enrolling in the external offering of this subject must be externally enrolled in either the Bachelor of Science (Environmental Health) or Bachelor of Natural Science (Environment and Health) degrees. All other students enrolling externally will need Subject Coordinator approval.

Level: Undergraduate Level 3 subject

Equivalent Subjects: NATS 3016 - Field Project 1

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3017 Field Project 2 (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3017/>) **Legacy Code:** 300914

Field Project 2 allows the student to extend the research project undertaken as the pilot study in Field Project 1. Note: Students enrolling in the external offering of this subject must be externally enrolled in either the Bachelor of Science (Environmental Health) or Bachelor of Natural Science (Environment and Health) degrees. All other students enrolling externally will need Subject Coordinator approval. Students who completed the Field Project 1 Subject in a previous year (i.e. are not continuing directly into this unit) will need to demonstrate that they have the data from this earlier Subject that can be used to produce an analysis and a report for their original client.

Level: Undergraduate Level 3 subject

Pre-requisite(s): NATS 3015

Equivalent Subjects: NATS 3018 - Field Project 2

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3020 Food Microbiology and Safety (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3020/>) **Legacy Code:** 300859

Food safety is rapidly evolving with the emergence of new foodborne diseases, changing disease patterns, evolving approaches to risk analysis and an emerging requirement that food producers, processors, handlers and consumers take shared responsibility for food safety. This subject aims to equip students with the necessary skills to identify, evaluate and control foodborne hazards in order to protect the safety and quality of the food supply and reduce associated risks to human health. Content includes the key elements of food safety and regulation, food contamination, food spoilage agents, foodborne hazards, principles of good hygienic practice and preservation in food production, preparation and distribution.

Level: Undergraduate Level 3 subject

Pre-requisite(s): NATS 1019 - Scientific Literacy
CHEM 1088 - Introductory Chemistry

Equivalent Subjects: NATS 3021 - Food Safety

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3023 Forensic Anthropology (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3023/>) **Legacy Code:** 301120

The objectives of this subject are to gain an understanding of the changes to the human body from death to discovery and how we can use the biological variability of humans to assist in the identification of human remains. Students will learn the fundamentals of detection, excavation and identification of human and non-human remains and learn how to prepare their findings for court. Students will be required to apply the knowledge gained during lectures to a practical based excavation, analysis and preparation of a case file.

Level: Undergraduate Level 3 subject

Pre-requisite(s): NATS 1008 - Forensic Science

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3026 Forensic Biology (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3026/>) **Legacy Code:** 401170

This subject is designed to extend your knowledge and understanding regarding forensic biology and its relevance to forensic investigations. You will gain experience and understanding regarding the recognition and collection of biologically relevant evidence (including blood, semen and saliva), through to the application of presumptive testing, confirmatory testing, DNA profiling methods and evidence reporting. There is a focus on front-end forensic biology work (item examination, presumptive testing, DNA recovery via swabbing and isolation of biological material) coupled with a theoretical understanding of the scientific principles that underpin current DNA analysis techniques, presumptive tests and DNA profiling results.

Level: Undergraduate Level 3 subject

Pre-requisite(s): BIOS 2018

Equivalent Subjects: NATS 2017 - Forensic Analysis of Physical Evidence
BIOS 3017 - Invertebrate Biology

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3027 Laboratory Quality Management (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3027/>) **Legacy Code:** 300883

This capstone subject is directed towards the accreditation of a laboratory for chemical, microbiological or forensic testing, using the standards that are applicable in industry. The subject focuses upon the importance and coordination of good laboratory management, teamwork, calibration, record keeping and laboratory manuals. Groups of students are required to develop, establish and operate a comprehensive Laboratory Quality Management system designed for a specific class of chemical, microbiological or forensic test. The students' technical competence and quality system are then assessed using the guidelines laid down by the National Association of Testing Authorities (NATA).

Level: Undergraduate Level 3 subject

Equivalent Subjects: NATS 3029 - Laboratory Quality Management

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3030 Medical Microbiology (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3030/>) **Legacy Code:** 300826

Infectious diseases worldwide are the most common cause of illness. Medical microbiology is subdivided into four areas: virology, bacteriology, mycology (the study of fungi) and parasitology. The rapid evolution of microbes means that this is an area that does not remain static. This subject has a modern approach to the study of the balance between the host, humans, and the very large army of potential invaders. Students will embark on a journey into the world of pathogenic micro-organisms exploring the molecular mechanisms by which these override host defences leading to disease. Infectious diseases of the human body systems as well those of the immunocompromised and infections contracted in the healthcare setting (nosocomial) are discussed. The theory will be supported with laboratory experience representing diagnostic procedures for the identification of infectious agents.

Level: Undergraduate Level 3 subject

Pre-requisite(s): BIOS 2022

Equivalent Subjects: LGYA 5866 - Medical Microbiology
NATS 3031 - Medical Microbiology

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3032 Medical Science Project (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3032/>) **Legacy Code:** 300892

Students will undertake a short research project specific to the field of Medical Science. This will involve undertaking a review of the literature and generating appropriate hypotheses that will subsequently be tested and analysed. Findings will be presented orally and as a written manuscript.

Level: Undergraduate Level 3 subject

Equivalent Subjects: LGYA 6140 - Biomolecular Science Project

NATS 3039 Science Research Project

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3034 Molecular Medicine (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3034/>) **Legacy Code:** 300927

Molecular Medicine is an inquiry based capstone subject that integrates core concepts in molecular and cell biology with a focus on cancer as a framework to discuss autoimmune, infectious and genetic diseases. This subject aims to enhance critical thinking for the professional environment and prepares students for future innovations in prevention, management and cure of catastrophic diseases. Current research, diagnosis, treatment and policy issues, related to health and disease states, are placed in the context of real world experiences and changing imperatives.

Level: Undergraduate Level 3 subject

Equivalent Subjects: LGYA 6144 - Molecular Basis of Disease LGYA 6012 - Mammalian Molecular Medicine

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3037 Neuroanatomy (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3037/>) **Legacy Code:** 300754

This subject builds on the human anatomy and physiology studied in first and second year, equipping students with detailed knowledge of functional neuroanatomy, with particular emphasis on the central nervous system. Cadaver specimens are used to facilitate the learning of spatial relationships between structures. The study of neurological function and dysfunction integrates many previously learned scientific principles.

Level: Undergraduate Level 3 subject

Pre-requisite(s): NATS 1009 Human Anatomy and Physiology 1

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3038 Quality Assurance and Food Analysis (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3038/>) **Legacy Code:** 300922

This subject covers the knowledge and tools required to maintain food quality. Students will develop an awareness of food laws, regulations and codes at the state, national and international levels. Students will be introduced to elementary toxicology and risk analysis as it applies to the regulation of food additives. The subject also integrates previous studies in HACCP (Hazard Analysis Critical Control Point) to develop deeper understanding of food quality assurance and quality management systems as they are applied to the control and management of the food supply. Students are introduced to the standard methods of analysis of foods as used for nutritional and quality assessment of foods. Practicals include determination of major and minor food components; functionality tests and sensory analysis of foods.

Level: Undergraduate Level 3 subject

Pre-requisite(s): PROC 2002 - Innovative Foods

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3039 Science Research Project (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3039/>) **Legacy Code:** 300924

Science Research Project is a final-year capstone subject that gives students an introduction to scientific research, while extending their knowledge and practical skills. Each student undertakes a research project supervised by an academic staff member. With the assistance of their supervisor, students will research the literature and define the problem to be studied, carry out a risk assessment, develop the appropriate experimental methods, carry out research on their project, and present a final written report and a poster or oral presentation. This subject offers a challenge to final-year students, and allows innovation by the student with respect to both method and research direction.

Level: Undergraduate Level 3 subject

Equivalent Subjects: LGYA 6252 - Science Research Project

Incompatible Subjects: LGYA 6201 - Science Research Project 2 LGYA 5927 - Chemistry Project 3 LGYB 9720 - Biological Science Project 3 LGYA 3545 - Chemistry Project LGYA 6140 - Biomolecular Science Project

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3040 Topics in Medical Science (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3040/>) **Legacy Code:** 300893

This subject builds on the content and concepts developed across multiple discipline areas during the Bachelor of Medical Science, integrating them together into the context of human health and disease. Students will work in groups to undertake an in depth exploration of an issue related to Medical Science. Topics addressed each year will vary, and will include issues currently at the forefront of Medical Science, issues for which there is currently significant scientific debate, and issues in which students have expressed a particular personal interest.

Level: Undergraduate Level 3 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3043 Advanced Science Research Project C (20 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3043/>) **Legacy Code:** 301258

As the third instalment in the advanced stream, NAT3043 offers students in the Advanced Science and Advanced Medical Science programmes a unique chance to put into practice the research project design, implementation, and management skills acquired in Advanced Science Research Projects A and B. This is a 20 credit point year-long subject taken over two terms (10 credit points in each term). This subject provides a unique opportunity for Advanced Science and Advanced Medical Science students to work with and be mentored by academics in diverse areas of science. In this 20 credit point subject, students will complete a small research project aligned with the research activity of the academic and be integrated into the research environment of the School. Students will demonstrate time management skills, project design, data collection, analysis and communication. Students will be required to reflect on their capacity and areas of passion for transitioning into either further education or the workplace. Please note this subject is not timetabled so completion will be subject to approved timelines negotiated with the appropriate academic staff and subject co-ordinator. Students may be required to travel to a different campus or location to undertake this subject.

Level: Undergraduate Level 3 subject

Pre-requisite(s): NATS 2001 Advanced Science Project A

NATS 2002 Advanced Science Project B

Incompatible Subjects: NATS 3004 Advanced Science Project C

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3044 Complex Case Studies in Science (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3044/>) **Legacy Code:** 301261

Science and the scientific process of discovery have been successful in offering explanations for the world we live in. Even seemingly simple problems can disguise a far greater degree of complexity. Indeed, the more we develop our tools for scientific discovery the greater the degree of complexity that is revealed. Exploring and unravelling the complexity of the world we live in requires integrative and multidisciplinary research frameworks, and it can be complicated further by the relationship between science and society, culturally, socially, economically and politically. In this subject we will begin the life-long journey to develop the enquiring scientific mind by exploring the complexities of seemingly innocuous everyday elements. Students will critically examine such perspectives in a series of contemporary 'real-life' case studies such as foods and food security, medicines and drugs.

Level: Undergraduate Level 3 subject

Incompatible Subjects: NATS 2023 Integrated Science

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3045 Work Internship for Science Professionals (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3045/>) **Legacy Code:** 301259

This subject will provide second and third year science students with an opportunity to undertake a short work placement within a professional organisation. The placement will allow students to observe and develop professional skills and behaviour and integrate theoretical and practical science knowledge and conventions into a real world setting. Students will find their own placement but may be aided by the Subject Coordinator. In consultation with the Subject Coordinator and the workplace supervisor, students will develop a Professional Task to accomplish during their placement. The Professional Task will enhance their workplace skills and highlight how their science knowledge can be adapted and integrated into a professional career. The subject will assure that students have job readiness. Students may need to travel to other campuses or locations to complete this subject.

Level: Undergraduate Level 3 subject

Equivalent Subjects: NATS 2032 Work Integrated Learning in Science

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3046 Advanced Physiology (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3046/>) **Legacy Code:** 301355

From 2020 this subject replaces 300851 - Advanced Physiology. Physiology is the study of the way in which a living organism and its bodily parts function. This subject will examine integrative aspects of physiological control mechanisms comprising multiple organ systems and mechanisms of adaptation to environmental factors. It will focus on regulatory function of ion channels, neurophysiology, sensory physiology, motor control, metabolism, cardiovascular and respiratory systems. Students will have the opportunity to independently research, in depth, an area of physiology pertinent to their interest.

Level: Undergraduate Level 3 subject

Pre-requisite(s): NATS 2034 - Human Systems Physiology 1

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3047 Applied Physiology (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3047/>) **Legacy Code:** 401412

From 2020 this subject replaces 401146 - Applied Physiology.

This subject focuses on the application of exercise physiology in sporting and physically demanding occupation contexts. Concepts covered include: muscular fatigue, soreness & recovery, General Adaption Syndrome Theory, testing, training and periodisation in an individualised approach to the client. Students will develop skills to appropriately: select, justify perform and evaluate a number of laboratory, field and functional tests; analyse, interpret and communicate test results; prepare, justify, implement and evaluate individualised training and recovery plans (long and short term); incorporate other sport and exercise science sub-disciplines into plans and appropriately adjust plans for environmental challenges.

Level: Undergraduate Level 3 subject

Pre-requisite(s): HLTH 2005 AND

HLTH 2004 AND

BIOS 2012

Equivalent Subjects: BIOS 3022 - Sport Physiology BIOS 3003 -

Advanced Sport Physiology BIOS 3008 - Applied Physiology

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3048 Food Formulations and Sensory Evaluations (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3048/>) **Legacy Code:** 301453

This subject applies scientific principles to the development, preparation and presentation of food products. You will be encouraged to become autonomous learners through problem-solving activities and experiential techniques. You will integrate and apply knowledge and skills from areas such as chemistry, biology, food science and nutrition to nutritionally focussed food products. You will also be encouraged to keep abreast of food trends in the dynamic food industry as well as current nutritional issues within domestic, multicultural and indigenous communities. Students will utilise prior knowledge and skills to address specific nutritional issues and the development of new food products to fit within these boundaries.

Level: Undergraduate Level 3 subject

Pre-requisite(s): NATS 2041 - Functionality of Food Ingredients

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3051 Innovation in Design and Delivery (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3051/>)

What is innovation? Innovation can be thought of as the application of existing knowledge or processes to solve a problem. Innovation requires an interdisciplinary approach to problem solving, encompassing discipline-specific knowledge, as well as an awareness of social, economic, and environmental factors. You will work as part of a team to use existing data or processes to deliver an innovative solution to a problem. In this subject you will develop important job-ready skills to translate ideas into outcomes.

Level: Undergraduate Level 3 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3053 Crime Scene Investigation (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3053/>)

A substantial amount of forensic evidence used in the prosecution of criminal cases is derived from crime scenes. It is therefore critical that forensic practitioners understand appropriate crime scene investigation procedures for dealing with forensic evidence at the scene, and that they can apply these procedures in a practical manner during investigations. This subject will explore the practical aspects of crime scene investigation including scene preservation and documentation, scene searching and detection of forensic evidence as well as evidence enhancement and collection. Professional practices for maintaining evidence integrity and continuity will also be implemented. In addition to the practical components of this subject, a range of specialised crime scene investigation sub-disciplines will also be discussed along with crime scene legislation and the role of the crime scene investigator in court.

Level: Undergraduate Level 3 subject

Pre-requisite(s): NATS 1003

Equivalent Subjects: NATS 2010

Incompatible Subjects: NATS 2014

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3054 Human Systems Physiology 2 (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3054/>)

Human Systems Physiology 2 builds upon the physiological concepts and terminology introduced in level 1 and level 2 physiology subjects. The focus of this subject is on the function and regulation of the renal, lymphatic, immune, digestive, hepatic, and reproductive systems, and their physiological integration with other organ systems and processes within the body. This subject emphasises how visceral organ system function and integration is essential for maintaining homeostasis within the human body. The integrative physiology of the visceral organ systems is explored through problem-based learning activities assuring application of critical analysis and effective oral and written communication.

Level: Undergraduate Level 3 subject

Pre-requisite(s): NATS 1010

Equivalent Subjects: NATS 2035

Incompatible Subjects: BIOS 1025

BIOS 1022

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3055 Practicum 1 (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3055/>)

Practicum 1 will develop your job-readiness in areas of practical skills, problem solving, critical thinking, and teamwork. Working in real-world situations you will apply your knowledge of theory, experimental design, methodology, and analysis, in your discipline area to solving defined problems. The subject will provide you with the opportunity to initially discuss and plan methods to solve a defined problem, and then using laboratory experiments, fieldwork, or other activities relevant to professional practice, to test your approach to the problem.

Level: Undergraduate Level 3 subject

Pre-requisite(s): NATS 3044

OR NATS 3045

OR NATS 3053

Equivalent Subjects: NATS 3015

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3056 Practicum 2 (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3056/>)

In this subject you will build on the skills you developed in Practicum 1 to solve a defined problem. In Practicum 2 you will be expected design and deliver solutions to a complex problem using methodologies and data analysis approaches applicable to your area of professional practice. As this subject has a strong focus on job-ready skills, the reporting of outcomes of the project will include writing and presentation of a professional report and completing a resume of your skills and abilities.

Level: Undergraduate Level 3 subject

Pre-requisite(s): NATS 3055

Equivalent Subjects: NATS 3017

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3057 Topics in Pharmacology (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3057/>)

This subject builds on basic pharmacological principles and concepts, extending to advanced pharmacokinetics in the study of absorption, distribution, metabolism, and elimination (ADME) of pharmaceutical drugs in the human body. Students will understand the processes of bioavailability and bioequivalence testing of generic and innovator drugs. This subject also covers the drug development process including stages of drug discovery, preclinical development, clinical development, drug approval, and post-market drug safety monitoring. Phases of clinical development, types and design of clinical trials, drug regulatory and pharmacovigilance procedures will be introduced. This subject will also investigate the research methods used in pharmacological enquiry and examine the cellular signalling pathways targeted by different life-saving drugs. Pharmacogenetics, genetic polymorphism and its impact on drug metabolism and precision medicine will be covered. Drug toxicity and drug-induced organ toxicity will also be discussed. Practical classes and computer simulations will support the key concepts taught in this subject. Students are provided with opportunities in their tutorials to have site visits to manufacturing facilities, where they can observe the pharmaceutical production process firsthand. This experience aims to deepen their understanding of the industry's operations and bridge the gap between classroom learning and professional practice.

Level: Undergraduate Level 3 subject

Pre-requisite(s): NATS 2045

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 3058 Pharmacological Chemistry (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats3058/>)

This interdisciplinary subject covers the principles of medicinal chemistry, which combines chemistry, physiology, biochemistry, and pharmacology. The subject focuses on the principles of medicinal chemistry and aims to provide students with an understanding of the relationships between atomic interactions and molecular structure to biomolecular targets and quantitative structure-activity relationships of drugs. Through the exploration of lead compounds design and discovery strategies, chemical synthesis, structure-activity relationship analysis, and in silico-aided methods, students will gain an understanding of the principles of drug design. The subject also emphasises on selected topics of medicinal chemistry including anti-microbial and chemotherapeutic agents to understand and explore their chemistry and structure-activity relationships. Practical experience in compound isolation, synthesis, purification, and characterization is also provided, allowing students to gain hands-on knowledge of the dynamic field of medicinal chemistry.

Level: Undergraduate Level 3 subject

Pre-requisite(s): CHEM 1012

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 5001 Crime Scene Investigation (PG) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats5001/>)

A substantial amount of forensic evidence used in the prosecution of criminal cases is initially established at the crime scene. Recognising, detecting, recovering, preserving, and recording this evidence forms a critical function within forensic science and criminal investigation. This subject explores the main aspects of crime scene investigation, including: crime scene processes, recognition of evidence, documentation of crime scenes, evidence detection and enhancement, maintaining evidence integrity, and bloodstain pattern analysis. It also covers professional practices associated with evidence handling and case file management.

Level: Postgraduate Coursework Level 5 subject

Equivalent Subjects: NATS7006 Crime Scene Investigation (PG)

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 6001 Introduction to Neuroscience (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats6001/>) **Legacy Code:** 401471

This subject is an introduction to the nervous system with a focus on its role and the function. It provides a strong foundation in modern neuroscience for those wishing to apply the principles of sensory and motor system function with the aim of mimicking human biology via neuromorphic implementations. Students will have access to expertise from a multidisciplinary team, guiding their learning in the areas of cellular, computational, behavioural and biomedical neuroscience. Topics covered in the subject will include introductory biology, structure and function of the nervous system, computational modelling, bio-signal acquisition and signal processing. This subject will be undertaken at Parramatta City - Hassall St campus.

Level: Postgraduate Coursework Level 6 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7001 Advanced Criminalistics (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7001/>) **Legacy Code:** 301151

This subject is designed to provide an in-depth knowledge of the following eight evidence categories: glass, textile fibres, paint, fire debris, explosives, firearm discharge residues, illicit drugs, and hair. Each stand-alone module introduces the evidence type and its forensic significance, details the relevant distinguishing and discriminating characteristics for the trace material in question, presents the analytical techniques commonly applied in the criminalistics laboratory, and discusses data interpretation and evidential value. The subject is unique in terms of its coverage of these trace evidence categories from an operational forensic science perspective.

Level: Postgraduate Coursework Level 7 subject

Pre-requisite(s): None

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7002 Biological Agents 1 (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7002/>) **Legacy Code:** 301154

This subject introduces students to the key concepts involved in Biosecurity and Microbial Forensics, with a focus on understanding the types of biological agents that pose potential security risks and the system and practices involved in investigation and management of potential threats.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7003 Biological Agents 2 (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7003/>) **Legacy Code:** 301155

This subject builds on the knowledge gained in the Biological Agents 1 and develops students' understanding of the tools and processes involved in the field of biosecurity. This subject is taught by the University of Canberra as part of a collaborative venture between the University of Canberra and Western Sydney University. Note: Further information on this subject is available from the University of Canberra.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7004 Blood Distribution and Spatter (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7004/>) **Legacy Code:** 301149

This subject will provide an in-depth review of the principles of blood spatter creation, and blood stain interpretation as it pertains to biological evidence. This subject is taught by the University of Florida as part of a collaborative venture between the University of Florida and Western Sydney University. Note: Further information on this subject is available from the University of Florida.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7005 Chinese Medicine Specialities 1 (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7005/>) **Legacy Code:** 400687

This subject will enable practitioners to extend their understanding of the Traditional Chinese Medicine (TCM) diagnosis and management of a range of gastrointestinal and paediatric disorders. A feature of this subject is the integration of TCM and western medical approaches. Treatment will focus on acupuncture with common patent Chinese herbal medicine treatments included.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7006 Crime Scene Investigation (PG) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7006/>) **Legacy Code:** 301131

A substantial amount of forensic evidence used in the prosecution of criminal cases is initially established at the crime scene. Recognising, detecting, recovering, preserving and recording this evidence forms a critical function within forensic science and criminal investigation. This subject explores the main aspects of crime scene investigation, including: crime scene processes, recognition of evidence, documentation of crime scenes, evidence detection and enhancement, maintaining evidence integrity, and bloodstain pattern analysis. It also covers professional practices associated with evidence handling and case file management.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7007 Drug Biotransformation and Molecular Mechanisms of Toxicity (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7007/>) **Legacy Code:** 301139

This subject provides a strong conceptual foundation of enzymology and mechanisms of drug biotransformation pathways. As a foundation for learning we will provide examples of drugs and other xenobiotics that exhibit toxicity related to biotransformation. This subject is taught by the University of Florida as part of a collaborative venture between the University of Florida and Western Sydney University. Note: Further information on this subject is available from the University of Florida.

Level: Postgraduate Coursework Level 7 subject

Pre-requisite(s): NATS 7030

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7008 Environmental Forensics 1 (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7008/>) **Legacy Code:** 301152

The subject is designed for professionals working in environmental regulatory authorities and laboratories at the federal, state or local level. This includes but is not limited to police jurisdictions, environmental protection agencies (EPAs), coastguards, park rangers, customs and quarantine officials. It is designed to give the environment law enforcement officer a background in the principles of contaminant analysis and transport in the environment with the ultimate aim of determining liability for pollution. The syllabus includes the main modes of contaminant transport in air, water and land, as well as an in-depth look at hydrocarbon fingerprinting.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7009 Environmental Forensics 2 (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7009/>) **Legacy Code:** 301153

The subject is designed for professionals working in environmental regulatory authorities and laboratories at the federal, state or local level. This includes but is not limited to police jurisdictions, environmental protection agencies (EPAs), coastguards, park rangers, customs and quarantine officials. The subject consists of four case studies drawn from real-world scenarios. The skills and knowledge gained from Environmental Forensics 1 will be used to produce environmental forensic reports related to the case studies. The assessment is problem-based.

Level: Postgraduate Coursework Level 7 subject

Pre-requisite(s): NATS 7008

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7011 Experimental Design and Analysis PG A (20 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7011/>) **Legacy Code:** 401266

Experimental Design and Analysis can be taken independently or in combination in Autumn (Experimental Design and Analysis PG A) and/or Spring (Experimental Design and Analysis PG B) semesters. Working closely with their assigned supervisor(s), students in the health, medical, biomedical and natural sciences will enhance their expertise in experimental methodologies and knowledge of advanced discipline-specific concepts in the first year of the Masters of Research. Completion of one these two units will allow students to demonstrate theoretical and practical skills directly relevant to their proposed research project. Completion of both units will allow students to build upon initial results, and to gain experience in additional methodologies and experimental techniques. These units will also complement the Master of Research core units Research Design 1 and 2, providing a foundation for students to formulate their research question and thesis proposal.

Level: Postgraduate Coursework Level 7 subject

Incompatible Subjects: NATS 7010 - Experimental Design and Analysis PG NOTE Co-Requisite units removed from Spring 2021

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7012 Experimental Design and Analysis PG B (20 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7012/>) **Legacy Code:** 401267

Experimental Design and Analysis can be taken independently or in combination in Autumn (Experimental Design and Analysis PG A) and/or Spring (Experimental Design and Analysis PG B) semesters. Working closely with their assigned supervisor(s), students in the health, medical, biomedical and natural sciences will enhance their expertise in experimental methodologies and knowledge of advanced discipline-specific concepts in the first year of the Masters of Research. Completion of one these two units will allow students to demonstrate theoretical and practical skills directly relevant to their proposed research project. Completion of both units will allow students to build upon initial results, and to gain experience in additional methodologies and experimental techniques. These units will also complement the Master of Research core units Research Design 1 and 2, providing a foundation for students to formulate their research question and thesis proposal.

Level: Postgraduate Coursework Level 7 subject

Incompatible Subjects: NATS 7010 - Experimental Design and Analysis PG NOTE Co-Requisite units removed from Spring 2021

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7013 Explosives (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7013/>) **Legacy Code:** 301156

The subject provides information on the range of explosive compounds that may be encountered in incidents involving national security. It also covers improvised explosive devices, security screening applications, bomb scene management, and the forensic recovery and analysis of explosive residues. The subject concludes with case studies designed to illustrate the concepts covered in the preceding modules.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7014 Fingerprint Detection and Identification (10 Credit Points)
Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7014/>) **Legacy Code:** 301132

This subject aims to provide the student with a detailed understanding of the scientific methodologies applied to the detection, enhancement and identification of fingerprint evidence in a forensic context. The detection methods presented cover all of the current optical, physical and chemical techniques, as well as an insight into new approaches that are likely to have an impact over the next decade. The generally-accepted ACE-V methodology for fingerprint identification is discussed, together with the application of Bayesian statistics that has gained momentum as a preferred assessment method for this form of forensic evidence.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7015 Food Evaluation (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7015/>) **Legacy Code:** 301181

This subject aims to provide students with the knowledge and skills required to evaluate food quality and safety. Students are introduced to contemporary methods of analysis of foods as used for nutritional, quality and safety assessment. Practical work includes determination of major and minor food components; physical and functionality tests; sensory assessment and microbiological analysis of foods.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7016 Food Preservation and Packaging Technologies (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7016/>) **Legacy Code:** 301180

The objective of this subject is to provide students with an understanding of food preservation and food packaging technologies. Contemporary physical and chemical food preservation technologies will be examined, including chilling, freezing, thermal processing, fermentation, dehydration, chemical agents and novel non-thermal techniques. The chemical, physical, functional and nutritional properties of food commodities will also be examined, providing a scientific context for food quality, safety and nutrition. Students will study packaging materials science to be able to select the most appropriate packaging solutions for a range of food applications.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7017 Food Product Design (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7017/>) **Legacy Code:** 301183

This subject introduces students to theories and practices underpinning new product development, including idea generation, market research and product lifecycles. Students will apply emerging technologies, new ingredients and other innovative concepts relating to food preservation and food evaluation to research and develop new food products. Students will work on formulation design, assessment of ingredient and additive functions, effects of processing, optimization of quality and acceptability of foods. They will assess product packaging and storage stability, along with developing a food safety plan. They will also produce a final product specification and labelling requirements compliant with current food regulations.

Level: Postgraduate Coursework Level 7 subject

Pre-requisite(s): None

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7018 Food Quality Management (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7018/>) **Legacy Code:** 301182

This subject introduces students to food quality management principles and their application in ensuring product quality and safety. Students will learn to develop, evaluate and audit food safety programs based on Hazard Analysis and Critical Control Point and total quality management systems. Students will also examine statistical process control, food laws, regulations and codes at the state, national and international levels, as well as the application of scientific risk assessment to the development of food regulations.

Level: Postgraduate Coursework Level 7 subject

Pre-requisite(s): NATS 7016

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7019 Forensic Analysis of DNA (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7019/>) **Legacy Code:** 301148

This subject will introduce students to the identification and evaluation of biological evidence in criminal matters using DNA technologies, including the methods routinely used for the isolation of DNA from cells and techniques applied to DNA quantitation, electrophoretic separation, sequence determination, as well as data interpretation, analysis and reporting. This subject is taught by the University of Florida as part of a collaborative venture between the University of Florida and Western Sydney University. Note: Further information on this subject is available from the University of Florida.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7020 Forensic Anthropology (PG) (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7020/>) **Legacy Code:** 301147

This subject will provide an introduction to the basic knowledge needed to perform some of the forensic anthropologist's tasks, especially anatomy and human osteology. Due to the impossibility of teaching a laboratory class, we will substitute the hands-on experience by a carefully selected set of pictures and material in order to familiarize you with the practice of the discipline. This subject is taught by the University of Florida as part of a collaborative venture between the University of Florida and Western Sydney University. Note: Further information on this subject is available from the University of Florida.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7022 Forensic Genetics (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7022/>) **Legacy Code:** 301144

The subject is designed to introduce genetics so that even if you haven't studied it before you will develop an understanding that will inform your practice in work. The context of this subject is forensic science but rather than jump straight into forensic DNA analysis this is a foundation subject, designed to give a framework of human molecular genetics. We will also look at some of the important issues in genetics including genome mapping and the role of gene dysfunction in disease. The first module is an overview and it is very important that you use the assignment time to check out some websites that will be very useful later on. This subject is taught by the University of Florida as part of a collaborative venture between the University of Florida and Western Sydney University. Note: Further information on this subject is available from the University of Florida.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7023 Forensic Immunology (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7023/>) **Legacy Code:** 301146

This subject will introduce students to the principles of immunology, immunological techniques, and their application to forensic analyses. This subject is taught by the University of Florida as part of a collaborative venture between the University of Florida and Western Sydney University. Note: Further information on this subject is available from the University of Florida.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7024 Forensic Medicine I (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7024/>) **Legacy Code:** 301133

This subject covers the basic elements of forensic medicine and focuses on the role of the forensic pathologist in the investigation of crime and death. Although much of forensic medicine, based as it is on observations made at a post-mortem examination, relies on the principles of morbid anatomy as discovered in earlier centuries, more recent techniques are also presented. This subject is taught by the University of Florida as part of a collaborative venture between the University of Florida and Western Sydney University. Note: Further information on this subject is available from the University of Florida.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7025 Forensic Medicine II (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7025/>) **Legacy Code:** 301134

This subject gives knowledge and understanding of relevant medical concepts, techniques and methods in order that the candidate has sufficient competence to interpret human diseases, conditions and behavior in a forensic setting. An understanding of the organizational structures involved in the practice of forensic medicine both locally and internationally, increase in the candidate's awareness of how forensic medicine relates to the wider context of society and how it contributes towards improving that society. This subject is taught by the University of Florida as part of a collaborative venture between the University of Florida and Western Sydney University. Note: Further information on this subject is available from the University of Florida.

Level: Postgraduate Coursework Level 7 subject

Pre-requisite(s): NATS 7024

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7026 Forensic Research 1 (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7026/>) **Legacy Code:** 301129

This subject provides the basic framework and methodology required for planning and executing forensic research. The subject encompasses the scientific methods, practical tools and organizational skills important for implementing independent and original forensic research at an international level.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7027 Forensic Research 2 (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7027/>) **Legacy Code:** 301130

This subject builds on the knowledge gained in the prerequisite subject Forensic Research 1 and further develops skills to enable the independent and confident planning, design and execution of an original forensic research project chosen by the student. The skills and tools acquired in Forensic Research 1 will help facilitate effective communication of research project findings through scientific report writing and presentation in formats appropriate for international journal publication and conferences.

Level: Postgraduate Coursework Level 7 subject

Pre-requisite(s): NATS 7026

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7028 Forensic Toxicology I (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7028/>) **Legacy Code:** 301136

This course has been developed to introduce students to the concepts, procedures, processes and terminology routinely encountered in the execution of applied forensic toxicological analyses. Our objective is to educate students in the theoretical aspects of drug and analytical chemistry applied to forensic toxicology. This subject is taught by the University of Florida as part of a collaborative venture between the University of Florida and Western Sydney University. Note: Further information on this subject is available from the University of Florida.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7029 Forensic Toxicology II (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7029/>) **Legacy Code:** 301137

This subject will expand on concepts encountered in Forensic Toxicology I, providing in-depth knowledge of pharmacology and toxicology as it pertains to commonly encountered abused and toxic substances. This subject is unique in offering modules in doping control, expert testimony and human performance and postmortem toxicology. This subject is taught by the University of Florida as part of a collaborative venture between the University of Florida and Western Sydney University. Note: Further information on this subject is available from the University of Florida.

Level: Postgraduate Coursework Level 7 subject

Pre-requisite(s): NATS 7028

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7030 General Toxicology (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7030/>) **Legacy Code:** 301135

This subject, which is primarily book-based, is structured to comprehensively provide the student with the fundamental concepts of toxicology as they relate to specific organ and tissue systems. We aim to supplement this information with online study guides, detailed module objectives and critical thinking exercises. The objective of this subject is to familiarize students with the procedures for using WWW resources for communication and educational purposes and to introduce students to the principles, concepts and terminology utilized in the field of toxicology. This subject is taught by the University of Florida as part of a collaborative venture between the University of Florida and Western Sydney University. Note: Further information on this subject is available from the University of Florida.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7033 MSc Research Project (20 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7033/>) **Legacy Code:** 401156

Science Research Project is a capstone subject that gives students the opportunity to conduct scientific research, while extending their knowledge and practical skills. Each student undertakes a research project supervised by an academic staff member which has as its central focus the scientific analysis and resolution of a complex problem. The research project is conducted in an area of relevance to professional discipline, and students can choose from a range of approved research designs. Students must undertake a review of the relevant literature, formulation of a research question, design of an appropriate method, collection and analysis of data, interpretation of findings, the production of a research report and presentation of these findings.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7035 Medicinal Chemistry of Drugs of Abuse (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7035/>) **Legacy Code:** 301140

This subject will address the fundamental concepts and principles involved in the examination of biological evidence and the practices of serology as they relate to crime scene and forensic investigation. This subject is taught by the University of Florida as part of a collaborative venture between the University of Florida and Western Sydney University. Note: Further information on this subject is available from the University of Florida.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7037 Natural Medicinal Products (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7037/>) **Legacy Code:** 301141

This subject has been developed to introduce students to the procedures and processes associated with the production, isolation, characterization and use of medicinal drugs of plant origin. This subject is taught by the University of Florida as part of a collaborative venture between the University of Florida and Western Sydney University. Note: Further information on this subject is available from the University of Florida.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7039 Pharmaceutical Analysis (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7039/>) **Legacy Code:** 301143

This subject focuses on the characterisation and the structural proof of drug compounds routinely encountered in Forensic and Pharmaceutical laboratories. This subject is taught by the University of Florida as part of a collaborative venture between the University of Florida and Western Sydney University. Note: Further information on this subject is available from the University of Florida.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7047 Synthetic Medicinal Chemistry (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7047/>) **Legacy Code:** 301142

This subject has been developed to introduce students to the chemical principles and procedures surrounding the synthesis of commonly encountered licit and illicit chemical substances, and to introduce you to the processes involved in the forensic analysis of clandestine drug laboratories. This subject is taught by the University of Florida as part of a collaborative venture between the University of Florida and Western Sydney University. Note: Further information on this subject is available from the University of Florida.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7048 Toxic Substances (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7048/>) **Legacy Code:** 301138

This subject, which is primarily book-based, will comprehensively provide the student with the fundamental concepts of toxicology as they relate to specific organ and tissue systems. We aim to supplement this information with online study guides, detailed module objectives and critical thinking exercises using online journal articles. The objective of this subject is to familiarize students with many of the most important toxic substances, their toxic effects, and ways to treat poisoned patients. Several example toxicants are presented and discussed in detail. There are literally tens of thousands of chemicals in commerce, and nature offers even greater numbers of chemicals to which individuals are exposed. According to the basic tenets of toxicology, any of these substances in sufficient doses is toxic, although some clearly are of greater health concern than others. The objective of this subject is to provide the student with information on the toxic properties of selected chemicals to illustrate principles regarding mechanisms of toxicity, the array of signs and symptoms associated with intoxication, approaches to clinical assessment of poisoning, and methods of treatment. Examples have been selected from several chemical classes and include agents that may be encountered occupationally, environmentally, in medicine, or in the context of substance abuse. This subject is taught by the University of Florida as part of a collaborative venture between the University of Florida and Western Sydney University. Note: Further information on this subject is available from the University of Florida.

Level: Postgraduate Coursework Level 7 subject

Pre-requisite(s): NATS 7030

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7049 Toxicology of Chemical Weapons (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7049/>) **Legacy Code:** 301150

This subject is structured to comprehensively provide the student with the fundamental toxicologically relevant concepts of weapons that can be used to create mass casualties. These weapons are often called weapons of mass destruction, a term that is closely related to but not synonymous with mass-casualty weapons (a technically more appropriate term). This subject will focus on chemical agents and toxins as the toxicologically relevant mass-casualty weapons. Each of the eight modules in the subject will consist of specific objectives, one or more illustrative cases, a list of the primary references that the student will be expected to acquaint himself or herself with, a brief introduction, a section of teaching material and study tips, and assignments designed to stimulate critical thinking. The general objectives of this subject are to familiarize the student with the toxicological concepts applicable to chemical and toxin weapons of mass destruction; to provide useful references for study, discussion, and reference; and to provide experience in critical thinking about the clinical toxicology of these agents. This subject is taught by the University of Florida as part of a collaborative venture between the University of Florida and Western Sydney University. Note: Further information on this subject is available from the University of Florida.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7050 Transferable Research Skills (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7050/>) **Legacy Code:** 401164

This subject is an elective subject as part of the Master of Research and provides training in essential skills for research students in the health, medical, biomedical and natural sciences. Students will select two modules that will provide experience in advanced techniques and methodologies directly relevant to a specific area of research. It is expected that this subject, together with the subject Experimental Design and Analysis, will provide students in the health, medical, biomedical and natural sciences with a solid foundation before commencing the research project in the second year of the Master of Research degree.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7051 Applied research with marginalised populations and sensitive health topics (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7051/>) **Legacy Code:** 800215

This subject will teach students practical knowledge and skills for conducting research with marginalised populations and on sensitive health topics. Students will learn ethical, methodological, and practical considerations in applied qualitative and mixed method research. Upon completion of the subject students will be able to develop a theoretically coherent qualitative or mixed method research protocol and justify their decision making at every stage of the research process. The skills developed in this subject will enable students to adapt research methods to ensure the integrity of the research process with marginalised populations and sensitive health topics.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7053 MSc Research Project (extended) (20 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7053/>) **Legacy Code:** 301372

This subject extends the research project undertaken in 401156 MSc Research Project into a substantial piece of research work. This subject provides a further opportunity for students to demonstrate that they can consolidate the knowledge acquired through their course of study, understand how existing evidence/information relates to research topics, and how their own work adds to this body of knowledge.

The finding of the project will be presented in a thesis and in an oral presentation. On completion of the MSc with this subject, the student should have sufficient research project work to qualify for entry into a PhD program.

Level: Postgraduate Coursework Level 7 subject

Co-requisite(s): NATS 7033

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7054 Professional Topic (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7054/>) **Legacy Code:** 301374

This subject is designed to allow high achieving students to comprehensively explore a relevant topic of interest to them, either through a minor supervised research project or an investigation of an issue directly related to their chosen discipline or a work internship in your chosen discipline. This unit's flexible delivery offers a unique experience specific to each project and student. Students in this subject will develop extensive skills through project-based learning essential for employment and/or higher degree studies.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7055 Experiment Design and Project Management (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7055/>) **Legacy Code:** 301371

Essential to a career in any branch of science is the ability to design the experiments of a project and manage this project to an outcome. This subject provides an introduction to the general theory of experiment design. The subject reviews the role of randomisation and replication in experiment design, considers the design techniques of constancy, blocking, and presents a number of experimental designs. This subject also covers the tools and techniques for effectively managing projects. Topics include development of project plans; estimation of time and resources; risk analysis and management; scheduling and control; resource allocation; project tracking; project closure and review.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7056 Clinical Research in Health Science (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7056/>) **Legacy Code:** 800225

This subject will teach students practical knowledge and skills for conducting clinical research within the field of Health Science. Students will learn ethical, methodological and practical considerations in applied quantitative and mixed- method research within the framework of a human clinical trial. Upon completion of the subject students will have an understanding of basic human clinical trial design, novel clinical trial designs, specialisation within various study fields. They will also have consideration of stakeholders and translational importance, trial governance, regulations and the Therapeutic Goods Administration (TGA), intellectual property, commercialisation, recruitment, and advertising and marketing. Finally, they will understand the importance of translational impact via publications and the media, and be able to synthesise trial data via knowing how to conduct systematic reviews and meta-analyses.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7057 Research Preparation in Post Graduate Studies (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7057/>) **Legacy Code:** 301387

Academic research operates on the cutting edge of what is known, creating new knowledge and informing the future. In this subject, students are introduced to the fundamentals of research including current research techniques and methodologies related to Science, Technology, Engineering & Mathematics (STEM). Students will explore and use advanced tools that support research activities as well as develop critical research skills in areas such as research design, academic writing, data collection and analysis, publishing and ethics. The skills developed in this subject will prepare students to engage in more complex research activities and positions in both academia and industry.

Level: Postgraduate Coursework Level 7 subject

Equivalent Subjects: ENGR 7018 - Research Preparation in Post Graduate Studies

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7058 Forensic Analysis of DNA 2 (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7058/>) **Legacy Code:** 301434

Forensic Analysis of DNA 2 is a continuation of 301148 Forensic Analysis of DNA where students learn about the methods routinely used for the isolation of DNA from cells and techniques applied to DNA quantitation and electrophoretic separation, as well as data analysis, interpretation and reporting. In DNA 2, students learn how to interpret DNA data to include mixture deconvolution and the statistics that apply to DNA matches/inclusions. Modules also guide the student through the basis of Y-STR and Kinship testing statistical applications. Students will also learn the report writing, review and testimony skills required of a DNA analyst. This subject is taught by the University of Florida as part of a collaborative venture with Western Sydney University. (Note: This subject description is as provided by the University of Florida; see: <https://forensicscience.ufl.edu/programs/courses/forensic-analysis-of-dna-2/>)

Level: Postgraduate Coursework Level 7 subject

Pre-requisite(s): NATS 7019

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 7059 Forensic Digital Imaging (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats7059/>) **Legacy Code:** 301442

This online subject is designed to provide an in-depth knowledge of scientific and forensic imaging. Forensic digital imaging serves important functions within forensic science for the purpose of scene and item documentation, detection and enhancement of forensic evidence, and as a means of communicating forensic observations and interpretations. The subject includes modules covering the following areas: physics of light, colour and optics; forensic photographic lighting techniques; image recording systems; image processing; and principles of forensic photography and imaging. This subject is taught by the University of Lausanne, Switzerland, as part of a collaborative venture between Western Sydney University and the University of Lausanne.

Level: Postgraduate Coursework Level 7 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 9001 Higher Degree Research Thesis - NICM Health Research Institute (80 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats9001/>) **Legacy Code:** 800214

Level: PhD and Research Masters Level 9 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 9002 Higher Degree Research Thesis - Food Science and Biotechnology (80 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats9002/>) **Legacy Code:** 800085

Level: PhD and Research Masters Level 9 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 9003 Higher Degree Research Thesis - Medicine (80 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats9003/>) **Legacy Code:** 800147

Level: PhD and Research Masters Level 9 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 9004 Higher Degree Research Thesis - Natural and Physical Sciences (80 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats9004/>) **Legacy Code:** 800177

Level: PhD and Research Masters Level 9 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 9005 Higher Degree Research Thesis - Natural and Physical Sciences (80 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats9005/>) **Legacy Code:** 800200

Level: PhD and Research Masters Level 9 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 9006 Higher Degree Research Thesis FT - Medical Science (80 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats9006/>) **Legacy Code:** 800131

Level: PhD and Research Masters Level 9 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject

NATS 9007 Higher Degree Research Thesis PT - Medical Science (80 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/nats9007/>) **Legacy Code:** 800130

Level: PhD and Research Masters Level 9 subject

Restrictions: Please see the Subject Details page for any restrictions for this subject