MAST90069 Introduction to String Theory

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	This subject is not offered in 2013.
Time Commitment:	Contact Hours: 36 hours comprising two 1-hour lectures and one 1-hour practice class per week. Total Time Commitment: 3 contact hours and 7 hours private study per week.
Prerequisites:	Both of the following, or equivalent.

Subject	Study Period Commencement:	Credit Points:
MAST30021 Complex Analysis	Not offered 2013	12.50
MAST20009 Vector Calculus	Not offered 2013	12.50

Corequisites:	None
Recommended Background Knowledge:	No prior knowledge of physics is assumed.
Non Allowed Subjects:	No disallowed subject combinations among new-generation subjects.
Core Participation Requirements:	For the purposes of considering requests for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements for this entry. The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison Unit website: http://www.services.unimelb.edu.au/disability/
Contact:	Coordinator: Prof Omar Foda Email: **omar.foda@unimelb.edu.au (mailto:omar.foda@unimelb.edu.au)**
Subject Overview:	About one-half of the course is a solid introduction to two-dimensional conformal field theory with emphasis on the operator formalism and explicit calculations. The second half is an introduction to string theory based on the first half. Time allowing, one or more of the following topics will be discussed: D-branes, compactification, dualities and matrix models. For concreteness bosonic strings will be emphasized.
Objectives:	After completing this subject students should: # have learnt the basics of two-dimensional Conformal Field Theory (CFT), including Virasoro algebra and central charges, Hilbert space of states, free bosons, the conformal anomaly, bosonic strings,spectrum, tree amplitudes etc; # understand the basic concepts of one or more of the following topics: D-branes, compactification, T-duality, S-duality and AdS/CFT duality; # appreciate the role of role of conformal field theory in string theory; # have the ability to pursue further studies in these and related areas.
Assessment:	Up to 40 pages of written assignments (40%: two assignments worth 20% each, due mid and late in semester), a 3-hour written examination (60%, in the examination period).
Prescribed Texts:	None
Recommended Texts:	E. Kiritsis, String Theory in a Nutshell, Princeton University Press, 2007

	Lecture notes available online.
Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	In addition to learning specific skills that will assist students in their future careers in science, they will have the opportunity to develop generic skills that will assist them in any future career path. These include: # problem-solving skills: the ability to engage with unfamiliar problems and identify relevant solution strategies; # analytical skills: the ability to construct and express logical arguments and to work in abstract or general terms to increase the clarity and efficiency of analysis; # collaborative skills: the ability to work in a team; # time-management skills: the ability to meet regular deadlines while balancing competing commitments.
Related Course(s):	Master of Philosophy - Engineering Master of Science (Mathematics and Statistics) Ph.D.- Engineering
Related Majors/Minors/ Specialisations:	Mathematics and Statistics