

Maggie Benston Student Services      TEL 778.782.3042  
Centre 1100      FAX 778.782.3080  
8888 University Drive  
Burnaby, BC  
Canada V5A 1S6

report-dgs@sfu.ca  
www.sfu.ca/Dean-  
GradStudies

**MEMORANDUM**

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**ATTENTION**    Senate      **DATE**    7 October 2014  
**FROM**        Mary-Ellen Kelm, Acting Dean of      **No.**      GS2014.38  
                  Graduate Studies  
**RE:**  
                  Faculty of Science

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For information:

Acting under delegated authority at its meeting of October 6, 2014, SGSC approved the following curriculum revisions effective Summer 2015:

**Faculty of Science**Department of Earth Sciences

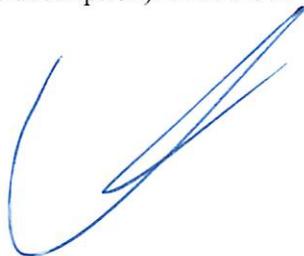
Course change (units): EASC 898

Department of Physics

Course change (description): PHYS 812

Course change (description and title): PHYS 821

Course change (co-requisite and description): PHYS 871



MEMO

Faculty of Science

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ATTENTION Krista Gerlich-Fitzgerald, Graduate Studies

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FROM Peter Ruben, Associate Dean, Faculty of Science

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RE Minor Course Change – Earth Science

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DATE September 8, 2014

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TIME 8:21 PM

The graduate program in the Department of Earth Sciences seeks to change the number of credits for its MSc thesis course, EASC 898, from 6 to 18 credits to conform to the 30-credit university standard. The Minor Course Change form is attached, along with a memo from the Chair of the Earth Sciences Graduate Studies Committee. This change has my approval and that of the Faculty of Science Graduate Studies Committee.



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P. Ruben

# Graduate Course Minor Change Form

This form is for an SFU department or program to request a minor change to an existing graduate course. After approval and signature by the faculty graduate studies committee, this form should be forwarded to the Dean of Graduate Studies for approval by the Senate Graduate Studies Committee (SGSC). SGSC will forward the approval to Senate for information.

## DEPARTMENT

Department / School / Program <b>Earth Sciences</b>	Contact name <b>Andrew Calvert</b>	Contact email <b>acalvert@sfu.ca</b>
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Please revise the following elements of the indicated graduate course:  Units  Title  Description  Pre-requisites  Other

Rationale for this change:

To conform with proposed SGSC regulation change requiring a minimum of 30 units for a Masters degree

## CURRENT COURSE

Please complete only the fields to be changed.

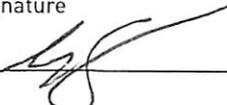
Course subject <b>EASC</b>	Number (eg. 810) <b>898</b>	Units (credits) <b>6</b>
Course title (max 100 characters)		
Short title (appears on transcripts, max 30 characters)		
Course description for SFU Calendar <input type="checkbox"/> see attached		
Available course components <input type="checkbox"/> Lecture <input type="checkbox"/> Seminar <input type="checkbox"/> Laboratory <input type="checkbox"/> Practicum <input type="checkbox"/> Online <input type="checkbox"/> _____		
Practicum work done in this class will involve children or vulnerable adults <input type="checkbox"/> Yes <input type="checkbox"/> No		
Grading basis <input type="checkbox"/> Graded <input type="checkbox"/> Satisfactory / Unsatisfactory <input type="checkbox"/> In Progress / Complete <input type="checkbox"/> _____		
Prerequisites (if any)		
This is combined with an undergrad course. <input type="checkbox"/> Yes <input type="checkbox"/> No		
Course number and units: _____		
Additional course requirements for graduate students		

## REVISED COURSE

Please complete only the fields to be changed.

Course subject <b>EASC</b>	Number (eg. 810) <b>898</b>	Units (credits) <b>18</b>
Course title (max 100 characters)		
Short title (appears on transcripts, max 30 characters)		
Course description for SFU Calendar <input type="checkbox"/> see attached		
Available course components <input type="checkbox"/> Lecture <input type="checkbox"/> Seminar <input type="checkbox"/> Laboratory <input type="checkbox"/> Practicum <input type="checkbox"/> Online <input type="checkbox"/> _____		
Practicum work done in this class will involve children or vulnerable adults <input type="checkbox"/> Yes <input type="checkbox"/> No		
Grading basis <input type="checkbox"/> Graded <input type="checkbox"/> Satisfactory / Unsatisfactory <input type="checkbox"/> In Progress / Complete <input type="checkbox"/> _____		
Prerequisites (if any)		
This is combined with an undergrad course. <input type="checkbox"/> Yes <input type="checkbox"/> No		
Course number and units: _____		
Additional course requirements for graduate students		

## APPROVALS

Faculty graduate studies committee name <b>Peter Ruben</b>	Signature 	Date <b>8 September 2014</b>
Senate graduate studies committee name <b>George Agnes</b>	Signature 	Date <b>25 Sept 2014</b>

SFU

MEMO

Faculty of Science

ATTENTION Sheilagh MacDonald, Graduate Studies

FROM Peter Ruben, Associate Dean, Faculty of Science

RE Minor Course Change - Physics

DATE September 2, 2014

TIME 4:01 PM

The graduate program in the Department of Physics seeks a number of changes, as follows:

1. Updated course description for PHYS 812;
2. Updated course description and course title for PHYS 821;
3. Updated co-requisite and course description for PHYS 871.

These changes have my approval and that of the Faculty of Science Graduate Studies Committee.



P. Ruben



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# Graduate Course Minor Change Form

This form is for an SFU department or program to request a minor change to an existing graduate course. After approval and signature by the faculty graduate studies committee, this form should be forwarded to the Dean of Graduate Studies for approval by the Senate Graduate Studies Committee (SGSC). SGSC will forward the approval to Senate for information.

## DEPARTMENT

Department / School / Program <b>Physics</b>	Contact name <b>Eldon Emberly</b>	Contact email <b>eemberly@sfu.ca</b>
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Please revise the following elements of the indicated graduate course:  Units  Title  Description  Pre-requisites  Other

Rationale for this change:

**Updated course description.**

## CURRENT COURSE

Course subject <b>PHYS</b>	Number (eg. 810) <b>812</b>	Units (credits) <b>3</b>
Course title (max 100 characters) <b>Introduction to Quantum Field Theory</b>		
Short title (appears on transcripts, max 30 characters)		
Course description for SFU Calendar <input type="checkbox"/> see attached A first course in relativistic Quantum Field Theory (QFT), specifically Quantum Electrodynamics (QED). The basic formalism underlying QED is developed, generalizing the canonical quantization procedure of Schrodinger quantum mechanics. Feynman diagrams and rules are derived and applied at leading order to several fundamental processes. An introduction to ultraviolet infinities and the renormalization of QED is given. Renormalization is illustrated by calculations of the anomalous magnetic moment of the electron and the Lamb shift.		
Available course components <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Seminar <input type="checkbox"/> Laboratory <input type="checkbox"/> Practicum <input type="checkbox"/> Online <input type="checkbox"/>		
Practicum work done in this class will involve children or vulnerable adults <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Grading basis <input checked="" type="checkbox"/> Graded <input type="checkbox"/> Satisfactory / Unsatisfactory <input type="checkbox"/> In Progress / Complete <input type="checkbox"/>		
Prerequisites (if any)		
This is combined with an undergrad course. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Course number and units: _____		
Additional course requirements for graduate students <b>PHYS 810 or equivalent</b>		

## REVISED COURSE

Please complete only the fields to be changed.

Course subject	Number (eg. 810)	Units (credits)
Course title (max 100 characters)		
Short title (appears on transcripts, max 30 characters)		
Course description for SFU Calendar <input type="checkbox"/> see attached A first course in relativistic quantum field theory, mainly quantum electrodynamics. Canonical quantization of the Klein-Gordon, electromagnetic, and Dirac fields; gauge freedom; Feynman diagrams and rules, with applications to scattering cross sections and pair creation; renormalization, with applications to the anomalous magnetic moment of the electron and the Lamb shift.		
Available course components <input type="checkbox"/> Lecture <input type="checkbox"/> Seminar <input type="checkbox"/> Laboratory <input type="checkbox"/> Practicum <input type="checkbox"/> Online <input type="checkbox"/>		
Practicum work done in this class will involve children or vulnerable adults <input type="checkbox"/> Yes <input type="checkbox"/> No		
Grading basis <input type="checkbox"/> Graded <input type="checkbox"/> Satisfactory / Unsatisfactory <input type="checkbox"/> In Progress / Complete <input type="checkbox"/>		
Prerequisites (if any)		
This is combined with an undergrad course. <input type="checkbox"/> Yes <input type="checkbox"/> No		
Course number and units: _____		
Additional course requirements for graduate students		

## APPROVALS

Faculty graduate studies committee name <b>Peter Ruben</b>	Signature 	Date <b>2 Sept 2014</b>
Senate graduate studies committee name <b>George Agnes</b>	Signature 	Date <b>25 Sept 2014</b>

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OFFICE OF GRADUATE STUDIES  
AND POSTDOCTORAL FELLOWS**Graduate Course Minor Change Form**

This form is for an SFU department or program to request a minor change to an existing graduate course. After approval and signature by the faculty graduate studies committee, this form should be forwarded to the Dean of Graduate Studies for approval by the Senate Graduate Studies Committee (SGSC). SGSC will forward the approval to Senate for information.

**DEPARTMENT**

Department / School / Program <b>Physics</b>	Contact name <b>Eldon Emberly</b>	Contact email <b>eemberly@sfu.ca</b>
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Please revise the following elements of the indicated graduate course:  Units  Title  Description  Pre-requisites  Other

Rationale for this change:

**Updated course description. + title.****CURRENT COURSE**

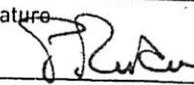
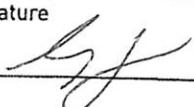
Course subject <b>PHYS</b>	Number (eg. 810) <b>821</b>	Units (credits) <b>3</b>
Course title (max 100 characters) <b>Electromagnetic Theory</b>		
Short title (appears on transcripts, max 30 characters)		
Course description for SFU Calendar <input type="checkbox"/> see attached Advanced topics in classical electromagnetic theory: review of Maxwell's equations, wave propagation, radiation theory, special relativity and electromagnetic theory, magnetohydrodynamics and plasma physics, radiation damping. Course offered regularly.		
Available course components <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Seminar <input type="checkbox"/> Laboratory <input type="checkbox"/> Practicum <input type="checkbox"/> Online <input type="checkbox"/>		
Practicum work done in this class will involve children or vulnerable adults <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Grading basis <input checked="" type="checkbox"/> Graded <input type="checkbox"/> Satisfactory / Unsatisfactory <input type="checkbox"/> In Progress / Complete <input type="checkbox"/>		
Prerequisites (if any) <b>PHYS 421 or equivalent</b>		
This is combined with an undergrad course. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Course number and units: _____		
Additional course requirements for graduate students		

**REVISED COURSE**

Please complete only the fields to be changed.

Course subject	Number (eg. 810)	Units (credits)
Course title (max 100 characters) <b>Advanced Electromagnetism I</b>		
Short title (appears on transcripts, max 30 characters) <b>Electromagnetism I</b>		
Course description for SFU Calendar <input type="checkbox"/> see attached Advanced topics in classical electromagnetic theory: review of Maxwell's equations in free space and in macroscopic media, with applications in contemporary research; relativistic unification of electromagnetism; Lagrangian and Hamiltonian methods in electromagnetism.		
Available course components <input type="checkbox"/> Lecture <input type="checkbox"/> Seminar <input type="checkbox"/> Laboratory <input type="checkbox"/> Practicum <input type="checkbox"/> Online <input type="checkbox"/>		
Practicum work done in this class will involve children or vulnerable adults <input type="checkbox"/> Yes <input type="checkbox"/> No		
Grading basis <input type="checkbox"/> Graded <input type="checkbox"/> Satisfactory / Unsatisfactory <input type="checkbox"/> In Progress / Complete <input type="checkbox"/>		
Prerequisites (if any)		
This is combined with an undergrad course. <input type="checkbox"/> Yes <input type="checkbox"/> No		
Course number and units: _____		
Additional course requirements for graduate students		

**APPROVALS**

Faculty graduate studies committee name <b>Peter Ruben</b>	Signature 	Date <b>2 Sept 2014</b>
Senate graduate studies committee name <b>George Agnes</b>	Signature 	Date <b>26 Sept 2014</b>

Revised January 2014



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# Graduate Course Minor Change Form

This form is for an SFU department or program to request a minor change to an existing graduate course. After approval and signature by the faculty graduate studies committee, this form should be forwarded to the Dean of Graduate Studies for approval by the Senate Graduate Studies Committee (SGSC). SGSC will forward the approval to Senate for information.

## DEPARTMENT

Department / School / Program <b>Physics</b>	Contact name <b>Eldon Emberly</b>	Contact email <b>eemberly@sfu.ca</b>
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Please revise the following elements of the indicated graduate course:  Units  Title  Description  Pre-requisites  Other

Rationale for this change:

**Updated co-requisite. + description.**

## CURRENT COURSE

Course subject <b>PHYS</b>	Number (eg. 810) <b>871</b>	Units (credits) <b>3</b>
Course title (max 100 characters) <b>Introduction to Elementary Particle Physics</b>		
Short title (appears on transcripts, max 30 characters)		
Course description for SFU Calendar <input type="checkbox"/> see attached <b>Elementary particle phenomenology; classification of particles, forces, conservation laws, relativistic scattering theory, electromagnetic interactions of leptons and hadrons, weak interactions, gauge theories, strong interactions. Course offered occasionally.</b>		
Available course components <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Seminar <input type="checkbox"/> Laboratory <input type="checkbox"/> Practicum <input type="checkbox"/> Online <input type="checkbox"/>		
Practicum work done in this class will involve children or vulnerable adults <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Grading basis <input checked="" type="checkbox"/> Graded <input type="checkbox"/> Satisfactory / Unsatisfactory <input type="checkbox"/> In Progress / Complete <input type="checkbox"/>		
Prerequisites (if any)		
This is combined with an undergrad course. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Course number and units: <b>PHYS 485 - 3</b>		
Additional course requirements for graduate students		

## REVISED COURSE

Please complete only the fields to be changed.

Course subject	Number (eg. 810)	Units (credits)
Course title (max 100 characters)		
Short title (appears on transcripts, max 30 characters)		
Course description for SFU Calendar <input type="checkbox"/> see attached <b>Elementary particle phenomenology; classification of particles, forces, conservation laws, relativistic scattering theory, electromagnetic interactions of leptons and hadrons, weak interactions, gauge theories, strong interactions.</b>		
Available course components <input type="checkbox"/> Lecture <input type="checkbox"/> Seminar <input type="checkbox"/> Laboratory <input type="checkbox"/> Practicum <input type="checkbox"/> Online <input type="checkbox"/>		
Practicum work done in this class will involve children or vulnerable adults <input type="checkbox"/> Yes <input type="checkbox"/> No		
Grading basis <input type="checkbox"/> Graded <input type="checkbox"/> Satisfactory / Unsatisfactory <input type="checkbox"/> In Progress / Complete <input type="checkbox"/>		
Prerequisites (if any) <b>Recommended corequisite: PHYS 812.</b>		
This is combined with an undergrad course. <input type="checkbox"/> Yes <input type="checkbox"/> No		
Course number and units: _____		
Additional course requirements for graduate students		

## APPROVALS

Faculty graduate studies committee name <b>Peter Rubow</b>	Signature 	Date <b>2 Sept 2014</b>
Senate graduate studies committee name <b>George Agnes</b>	Signature 	Date <b>25 Sept 2014</b>