

Undergraduate Academic Board Agenda

September 25, 2009
ADM 204 at 2:00-5:00

I. Roll

() Hilary Davies	() Cheryl Smith	() Deborah Fox	() Bart Quimby
() Bettina Kipp Lavea	() Toni Croft	() David Meyers (Alberta Harder)	
() Suzanne Forster	() Oliver Hedgepeth	() Jeanne Eder	
() Utpal Dutta	() Kenrick Mock	() Kitty Deal	
() Susan Wilson	() Marion Yapuncich	() (VACANT)	
() Hilary Seitz (Liz Boario)	() Kevin Keating	() (VACANT, USUAA)	

II. Approval of the Agenda (pg. 1-2)

III. Approval of Meeting Summary for September 18, 2009 (pg. 3-4)

IV. Administrative Report

A. Associate Vice Provost Bart Quimby

B. Registrar John Allred

V. Chair's Report

A. UAB Chair- Hilary Davies

B. GERC Chair- Len Smiley

C. Assessment Committee Report- Marion Yapuncich and Kenrick Mock

VI. Program/Course Action Request – Second Reading

Add	MUS A144	Functional Piano I (1 cr) (1+0)
Add	MUS A145	Functional Piano II (1 cr) (1+0)
Chg	MUS A154	Functional Piano III (1 cr) (1+0)
Chg	MUS A155	Functional Piano IV (1 cr) (1+0)
Chg	MUS A161	Private Lessons (1-2 cr) (1-2+3-6)
Chg	MUS A162	Private Lessons (1-2 cr) (1-2+3-6)
Chg	MUS A261	Private Lessons (1-2 cr) (1-2+3-6)
Chg	MUS A262	Private Lessons (1-2 cr) (1-2+3-6)
Chg	MUS A361	Private Lessons (1-2 cr) (1-2+3-6)
Chg	MUS A362	Private Lessons (1-2 cr) (1-2+3-6)
Chg	MUS A461	Private Lessons (1-2 cr) (1-2+3-6)
Chg	MUS A462	Private Lessons (1-2 cr) (1-2+3-6)
Chg	MUS A466	String and Wind Master Class (1 cr) (1+0)
Chg	MUS A467	Piano Master Class (2 cr) (2+0)
Chg	MUS A468	Voice Master Class (2 cr) (2+0)
Chg	MUS A469	Guitar Master Class (2 cr) (2+0)

No MUS revisions received

VII. Program/Course Action Request – First Reading

Add RE A100 Introduction to Renewable Energy (3 cr) (3+0) (pg. 5-10)

Add RE A102 Applied Physics for Renewable Energy (3 cr) (3+0) (pg. 11-16)

Add RE A106 Introduction to Diesel Engines (3 cr) (2+2) (pg. 17-21)

VIII. Old Business

A. Curriculum Handbook
Faculty Initiator Memo (pg. 22-23)

Second Reading:

Only individuals whose appointment is 50% or more faculty may initiate and present curriculum from their discipline at UAB/GAB.

Faculty with any administrative role may initiate/present only those courses that they regularly teach.

First Reading:

(a) Currently the Curriculum Handbook contains Distance Education information that was written in 2000 (pages 71-74). I recommend that these pages be deleted, and replaced by a link to the updated Distance Education Handbook approved by the Faculty Senate in Spring 2009.

(b) I recommend that faculty initiators be required to type their name in the appropriate line on the CAR/PAR.

IX. New Business

A.

X. Informational Items and Adjournment

A. Curriculum Workshop October 2nd 10:00 - 11:30 am in Library 214

<http://www.uaa.alaska.edu/governance/>

B. [Curriculum Log](#)

C. [Curriculum Handbook](#)

D. [Catalog Copy](#)

E. [Accreditation website](#) (core themes listed at bottom of website)

*** Reminder:**

Please email all CCG recommendations to Christine Lidren at ancmt3@uaa.alaska.edu.

Undergraduate Academic Board Summary

September 18, 2009
ADM 204 at 2:00-5:00

I. Roll

(x) Hilary Davies	(x) Cheryl Smith	(x) Deborah Fox	(x) Bart Quimby
(x) Bettina Kipp Lavea	(x) Toni Croft	(x) David Meyers (Alberta Harder)	
(x) Suzanne Forster	(x) Oliver Hedgepeth	() Jeanne Eder	
(e) Utpal Dutta	(x) Kenrick Mock	(x) Kitty Deal	
(x) Susan Wilson	(x) Marion Yapuncich	() (VACANT)	
(e) Hilary Seitz (Liz Boario)	(x) Kevin Keating	() (VACANT, USUAA)	

II. Approval of the Agenda (pg. 1-2) Approved

III. Approval of Meeting Summary for September 11, 2009 (pg. 3-4) Approved

IV. Administrative Report

A. Associate Vice Provost Bart Quimby

B. Registrar John Allred-

Language on all policy issues will go to GAB and the Faculty Senate Honors for International Students NB Grade - input received from KPC and other faculty Delete "Internship Language"

V. Chair's Report

A. UAB Chair- Hilary Davies

B. GERC Chair- Len Smiley

GERC 2009-2010 Goals

1. Review UAA Catalog text pertaining to Goals, Outcomes, and Purpose of (Baccalaureate) General Education at UAA and recommend revisions to UAB.
2. Clarify and formalize, in consultation with UAB, the relationship of GERC and the Assessment Committee.
3. Evaluate the quality and usability of data gathered in the Integrative Capstone Pilot Project of 2008-2009.

C. Suzanne Forster reported on the meeting about the possibilities of a joint Associate of Arts Assessment plan

VI. Program/Course Action Request – Second Reading

VII. Program/Course Action Request – First Reading

Add	MUS A144	Functional Piano I (1 cr) (1+0) (pg. 5-8)
Add	MUS A145	Functional Piano II (1 cr) (1+0) (pg. 9-12)
Chg	MUS A154	Functional Piano III (1 cr) (1+0) (pg. 13-17)
Chg	MUS A155	Functional Piano IV (1 cr) (1+0) (pg. 18-22)
Chg	MUS A161	Private Lessons (1-2 cr) (1-2+3-6) (pg. 23-26)
Chg	MUS A162	Private Lessons (1-2 cr) (1-2+3-6) (pg. 27-30)
Chg	MUS A261	Private Lessons (1-2 cr) (1-2+3-6) (pg. 31-34)
Chg	MUS A262	Private Lessons (1-2 cr) (1-2+3-6) (pg. 35-38)
Chg	MUS A361	Private Lessons (1-2 cr) (1-2+3-6) (pg. 39-42)
Chg	MUS A362	Private Lessons (1-2 cr) (1-2+3-6) (pg. 43-46)
Chg	MUS A461	Private Lessons (1-2 cr) (1-2+3-6) (pg. 47-50)
Chg	MUS A462	Private Lessons (1-2 cr) (1-2+3-6) (pg. 51-54)
Chg	MUS A466	String and Wind Master Class (1 cr) (1+0) (pg. 55-59)
Chg	MUS A467	Piano Master Class (2 cr) (2+0) (pg. 60-64)
Chg	MUS A468	Voice Master Class (2 cr) (2+0) (pg. 65-69)

Chg MUS A469 Guitar Master Class (2 cr) (2+0) (pg. 70-74)
All MUS courses accepted

VIII. Old Business

A. Curriculum Handbook

Second Reading:

Only individuals whose appointment is 50% or more faculty may initiate and present curriculum from their discipline at UAB/GAB.

Faculty with any administrative role may initiate/present only those courses that they regularly teach.

Kristen Owens submitted concerns regarding this policy.

First Reading:

(a) Currently the Curriculum Handbook contains Distance Education information that was written in 2000 (pages 71-74). I recommend that these pages be deleted, and replaced by a link to the updated Distance Education Handbook approved by the Faculty Senate in Spring 2009.

(b) I recommend that faculty initiators be required to type their name in the appropriate line on the CAR/PAR.

IX. New Business

A. Request for examples of CCG documents to post online.

Email all recommendations to Christine Lidren at ancmt3@uaa.alaska.edu.

X. Informational Items and Adjournment

A. [Curriculum Log](#)

B. [Curriculum Handbook](#)

C. [Catalog Copy](#)

D. [Accreditation website](#) (core themes listed at bottom of website)

**Course Content Guide
University of Alaska Anchorage
Mat-Su College**

I. Date Initiated: August 1, 2009

II. Information for the Course Action Request

College/School: Mat-Su College

Department: n/a

Subject: RE

Course Number: A100

Title: Introduction to Renewable Energy

Credits: 3 (3+0)

Grading Basis: A-F

Implementation Date: Spring 2010

Course Description: Introduces students to the field of renewable energy. Topics include renewable energy resources, technologies, terminology, principles of conservation and efficiency, storage and hardware options, thermal energy systems, regulations, applicable codes, and career pathways.

Course Prerequisites: none

Test Scores: n/a

Co-requisite: n/a

Registration
Restrictions: n/a

Course Fee: Yes No

III. Instructional Goals, Student Outcomes and Assessment Procedures

A. Instructional Goals

The instructor will:

1	Introduce the principles, technical requirements, and applications of solar, wind, hydro, geothermal and thermal energy, and energy storage
2	Introduce the concepts and principles of energy conservation and efficiency
3	Introduce standardized vocabulary and terminology
4	Introduce the legislative framework surrounding small and large scale renewable energy systems, local codes and laws governing the construction and operation of systems
5	Introduce the different career pathways in the field of renewable energy resources (planning, permits, design, construction, maintenance, and operations)

B. Student Outcomes/Assessment Procedures

Student Outcomes

Upon successful completion of the course, the student will be able to do the following:

Assessment Procedures

This outcome will be assessed by one or more of the following:

1	Demonstrate understanding of the principles, applications, and technical requirements of renewable energy systems	Quizzes, exams, class discussion, and written assignments
2	Demonstrate understanding of the principles and importance of energy conservation and efficiency	Quizzes, exams, class discussion, written assignments, and presentations
3	Demonstrate understanding of standardized vocabulary and terminology	Quizzes, exams, and reports

4	Demonstrate understanding of the different legislative requirements (federal and state), permits, and related legal framework for small and large commercial scale renewable energy systems	Written assignments, class discussion, and exams
5	Demonstrate knowledge of the current career pathways in renewable energy	Projects, class discussion, and exams

IV. Course Level Justification

This course introduces vocabulary, fundamental concepts, and skills required to pursue employment and further training as a renewable energy system technician. No previous knowledge or experience necessary.

V. Course Outline (sample)

1. Introduction to Renewable Energy
 - 1.1 Types of renewable systems
 - 1.2 Energy applications (electricity and heat)
 - 1.3 Renewable energy resources
 - 1.4 Energy science basics
2. Energy Conservation and Efficiency
 - 2.1 Design considerations, audits
 - 2.2 Calculating energy loss, gains, and overall efficiency
 - 2.3 Building efficiency overview
3. Inverters and Rectifiers
 - 3.1 Principles of AC and DC electricity
 - 3.2 Inverter principles and application
 - 3.3 Principles of DC voltage regulation
4. Energy Storage
 - 4.1 Principles of energy storage
 - 4.2 Operation, configuration, and maintenance of battery systems
 - 4.3 Safety issues with batteries
5. Photovoltaic (PV) Electricity Generation
 - 5.1 Solar resource assessment
 - 5.2 Principles of PV technology

- 5.3 PV module installation and operation
- 5.4 System configuration and limitations

- 6. Electricity from the Wind
 - 6.1 Resource assessment
 - 6.2 Turbine components and configuration
 - 6.3 Turbine rating
 - 6.4 System installation, operation, and limitations

- 7. Hydropower Electricity Generation
 - 7.1 Resource assessment
 - 7.2 Run-off the river and dam-based systems
 - 7.3 Turbine types
 - 7.4 Penstock design, transmission, and construction
 - 7.5 Diversion loads
 - 7.6 System operation, limitations, and configuration

- 8. Geothermal Energy
 - 8.1 Resource assessment
 - 8.1.1. High temperature
 - 8.1.2. Low temperature
 - 8.2 Power plant configuration for high- and low-temperature sources
 - 8.3 Re-injection requirements
 - 8.4 System operation, limitations, and outlook

- 9. Heating with Renewable Energy
 - 9.1 Principles of heat transfer
 - 9.2 Principles of passive and active space and water heating

- 10. Legal Framework
 - 10.1 Overview of federal legislation
 - 10.2 Overview of state legislation
 - 10.3 Permit requirements for construction and operation
 - 10.4 Current initiatives

- 11. Employment Considerations
 - 11.1 Political, social, and economic considerations
 - 11.2 Overview of duties, skills, and responsibilities
 - 11.3 Legal aspects of the profession

VI. Suggested Text

Kemp, W.H. (2005). *The Renewable energy handbook*. Ontario, Canada: Aztext Press.

VII. Bibliography

Boyle, G. (2004). *Renewable energy*. NY: Oxford University Press.

Chiras, D. (2006). *The Homeowner's guide to renewable energy*. BC, Canada: New Society Publishers.

Kemp, W.H. (2005). *The Renewable energy handbook*. Ontario, Canada: Aztext Press.

Komor, P. (2004). *Renewable energy policy*. Lincoln, NE: iUniverse.

**Course Content Guide
University of Alaska Anchorage
Mat-Su College**

I. Date Initiated: August 1, 2009

II. Information for the Course Action Request

College/School: Mat-Su College

Department: n/a

Subject: RE

Course Number: A102

Title: Applied Physics for Renewable Energy

Credits: 3 (3+0)

Grading Basis: A-F

Implementation Date: Spring 2010

Course Description: Introductory course for students considering a career in renewable energy. Includes the physical principles for various renewable energies including solar, wind, hydropower, and geothermal. Demonstrates how the principles of physics relate to the design, basic operation, advantages, and limitations of renewable energy sources.

Course Prerequisites: RE A100 or concurrent enrollment

Test Scores: n/a

Co-requisite: n/a

Registration
Restrictions: placement into MATH A055 or higher

Course Fee: Yes No

III. Instructional Goals, Student Outcomes, and Assessment Procedures

A. Instructional Goals

The instructor will:

1	Introduce applicable terminology
2	Introduce the basic laws of physics that apply to renewable energies
3	Introduce the mechanical and electrical principles required to understand renewable energy systems
4	Explain the laws of physics as applied to renewable energy technologies

B. Student Outcomes/Assessment Procedures

Student Outcomes

Upon successful completion of the course, the student will be able to do the following:

Assessment Procedures

This outcome will be assessed by one or more of the following:

1	Demonstrate understanding of the terminology related to the physical laws of renewable energy	Quizzes, class discussions, and exams
2	Demonstrate understanding of the laws of physics that apply to renewable energy	Quizzes, class discussion, written assignments, and exams
3	Demonstrate understanding of mechanical and electrical principles relevant to renewable energy systems	Quizzes, class discussion, and written assignments
4	Demonstrate understanding of the laws of physics as applied to the production and control of electrical energy systems	Written assignments, class discussion, demonstration, and testing

IV. Course Level Justification

Introduces the vocabulary, physical laws, and underlining concepts of systems required in the renewable energy field.

V. Course Outline (sample)

1. Matter and Molecules
 - 1.1 Bohr's Law
 - 1.2 Quarks and leptons
 - 1.3 Physical properties
 - 1.4 Mass and weight
 - 1.5 Heat vs. temperature
 - 1.5.1 Molecular movement
 - 1.5.2 Applications to thermal storage
 - 1.6 Changes of state

2. Newton's Laws
 - 2.1 The First Law of Motion
 - 2.2 The Second Law of Motion
 - 2.3 The Third Law of Motion
 - 2.4 Applications to RE

3. Forms of Energy used in RE Technologies
 - 3.1 Chemical
 - 3.1.1 Combustion
 - 3.1.2 Batteries
 - 3.1.3 Biochemical
 - 3.2 Mechanical
 - 3.3 Thermal
 - 3.4 Radiant
 - 3.5 Electrical

4. Thermodynamics of RE
 - 4.1 Law of Conservation of Energy
 - 4.2 Energy conversions
 - 4.3 Conversion efficiencies
 - 4.4 Perfect-Gas Law
 - 4.5 Examples of thermodynamic processes in RE

5. Basic Electricity Concepts
 - 5.1 Electron movement
 - 5.2 Bohr's Theory of Atomic Structure
 - 5.3 Energy forms causing electron movement

- 5.4 Complete circuits
 - 5.5 Series and parallel circuits
 - 5.6 Conductors, semi-conductors, and insulators
 - 5.7 Voltage, current, resistance, and power
 - 5.8 Ohm's Law and The Power Law
 - 5.9 DC and AC
6. Use of Magnetism in RE
- 6.1 Natural and artificial magnets
 - 6.2 Magnetic polarity
 - 6.3 Electromagnets
 - 6.4 Left Hand Rule for a conductor
 - 6.5 Left Hand Rule for a coil
 - 6.6 RE applications for electromagnetic devices
7. Magnetoelectric Effect
- 7.1 Electrical generation by magnetism
 - 7.2 Electrical waveforms
 - 7.3 Left Hand Rule for a generator
 - 7.4 Generators vs. alternators
 - 7.5 Transformers
8. Photovoltaic
- 8.1 PN junctions
 - 8.2 PV cell construction
 - 8.3 The PV array
9. Electrical Safety
- 9.1 Factors affecting current flow through the body
 - 9.2 Effects of current flow through the body
 - 9.3 Hazardous working conditions and equipment safety in RE technologies
 - 9.4 Grounding
 - 9.5 Emergency response for electrical injury
10. Phase Shift and Power Factor
- 10.1 Capacitive circuits
 - 10.2 Inductive circuits
 - 10.3 Power factor correction

VI. Suggested Text

No text selected. Instructor may use handouts and multimedia.

VII. Bibliography

Boyle, G. (2004). *Renewable energy*. Oxford: Oxford University Press.

Craddock, D. (2008). *Renewable energy made easy: Free energy from solar, wind, hydropower, and other alternative energy sources*. Ocala, FL: Atlantic Publishing Group.

Da Rosa, A. V. (2009). *Fundamentals of renewable energy processes*. Amsterdam: Elsevier Academic Press.

Gussow, M., & Gussow, M. (2007). *Schaum's outline of basic electricity*. NY: McGraw-Hill.

Hafemeister, D. W. (2008). *Physics of sustainable energy: Using energy efficiently and producing it renewably*. Melville, NY: American Institute of Physics.

Kreith, F., & Goswami, D. Y. (2007). *Handbook of energy efficiency and renewable energy*. Boca Raton, FL: CRC Press.

Kruger, P. (2006). *Alternative energy resources: The quest for sustainable energy*. Hoboken, NJ: John.

Lichtenberg, D. B. (2007). *The universe and the atom*. Singapore: World Scientific.

Paksoy, H. O. (2007). *Thermal energy storage for sustainable energy consumption: Fundamentals, case studies and design*. NATO science series. Dordrecht, Germany: Springer.

Quaschnig, V. (2005). *Understanding renewable energy systems*. London: Earthscan.

Reliable, affordable, and environmentally sound energy for America's future. (2001). Washington, DC: National Energy Policy Development Group.

Sørensen, B. (2004). *Renewable energy: Its physics, engineering, use, environmental impacts, economy, and planning aspects*. Amsterdam: Elsevier Academic Press.

Tiwari, G. N., & Ghosal, M. K. (2007). *Fundamentals of renewable energy sources*. Oxford: Alpha Science International.

Wengenmayr, R., & Bürke, T. (2008). *Renewable energy: Sustainable energy concepts for the future*. Weinheim, Germany: Wiley.



Course Action Request

University of Alaska Anchorage

Proposal to Initiate, Add, Change, or Delete a Course

1a. School or College MA Mat-SU		1b. Division No Division Code		1c. Department	
2. Course Prefix RE	3. Course Number A106	4. Previous Course Prefix & Number	5a. Credits/CEUs 3	5b. Contact Hours (Lecture + Lab) (2+2)	
6. Complete Course Title Introduction to Diesel Engines Intro to Diesel Engines Abbreviated Title for Transcript (30 character)					
7. Type of Course <input checked="" type="checkbox"/> Academic <input type="checkbox"/> Preparatory/Development <input type="checkbox"/> Non-credit <input type="checkbox"/> CEU <input type="checkbox"/> Professional Development					
8. Type of Action: <input checked="" type="checkbox"/> Add or <input type="checkbox"/> Change or <input type="checkbox"/> Delete			9. Repeat Status No # of Repeats Max Credits		
<i>If a change, mark appropriate boxes:</i> <input type="checkbox"/> Prefix <input type="checkbox"/> Course Number <input type="checkbox"/> Credits <input type="checkbox"/> Contact Hours <input type="checkbox"/> Title <input type="checkbox"/> Repeat Status <input type="checkbox"/> Grading Basis <input type="checkbox"/> Cross-Listed/Stacked <input type="checkbox"/> Course Description <input type="checkbox"/> Course Prerequisites <input type="checkbox"/> Test Score Prerequisites <input type="checkbox"/> Co-requisites <input type="checkbox"/> Other Restrictions <input type="checkbox"/> Registration Restrictions <input type="checkbox"/> Class <input type="checkbox"/> Level <input type="checkbox"/> College <input type="checkbox"/> Major <input type="checkbox"/> Other (please specify)			10. Grading Basis <input checked="" type="checkbox"/> A-F <input type="checkbox"/> P/NP <input type="checkbox"/> NG		
			11. Implementation Date <small>semester/year</small> From: Spring/2010 To: /9999		
			12. <input type="checkbox"/> Cross Listed with _____ <input type="checkbox"/> Stacked with _____ Cross-Listed Coordination Signature		
13a. Impacted Courses or Programs: List any programs or college requirements that require this course. Please type into fields provided in table. If more than three entries, submit a separate table. A template is available at www.uaa.alaska.edu/governance .					
<i>Impacted Program/Course</i>		<i>Catalog Page(s) Impacted</i>	<i>Date of Coordination</i>	<i>Chair/Coordinator Contacted</i>	
1. RE Occupational Endorsement Certificate		tbd	8/17/09	n/a	
2. Auto-Diesel Technology		n/a	8/17/09	Kelly Smith, CTC	
3.					
Initiator Name (typed): <u>Dan Mielke</u> Initiator Signed Initials: _____ Date: _____					
13b. Coordination Email Date: <u>8/31/09</u> submitted to Faculty Listserv: (uaa-faculty@lists.uaa.alaska.edu)			13c. Coordination with Library Liaison Date: <u>n/a</u>		
14. General Education Requirement <input type="checkbox"/> Oral Communication <input type="checkbox"/> Written Communication <input type="checkbox"/> Quantitative Skills <input type="checkbox"/> Humanities <i>Mark appropriate box:</i> <input type="checkbox"/> Fine Arts <input type="checkbox"/> Social Sciences <input type="checkbox"/> Natural Sciences <input type="checkbox"/> Integrative Capstone					
15. Course Description (<i>suggested length 20 to 50 words</i>) Introduces the knowledge, vocabulary, and technical skills required to maintain, diagnose, and make minor repairs to diesel engines. Topics include diesel engine theory, components, engine performance, cycle of operation, cooling systems, electrical systems, fuels, fuel systems, and the proper selection and use of tools.					
16a. Course Prerequisite(s) (<i>list prefix and number</i>)		16b. Test Score(s)		16c. Co-requisite(s) (<i>concurrent enrollment required</i>)	
16d. Other Restriction(s) <input type="checkbox"/> College <input type="checkbox"/> Major <input type="checkbox"/> Class <input type="checkbox"/> Level		16e. Registration Restriction(s) (<i>non-codable</i>)			
17. <input checked="" type="checkbox"/> Mark if course has fees		18. <input type="checkbox"/> Mark if course is a selected topic course			
19. Justification for Action program requirement					
Initiator (faculty only) <u>Dan Mielke</u> Initiator (TYPE NAME)		Date _____		<input type="checkbox"/> Approved _____ <input type="checkbox"/> Disapproved _____ Dean/Director of School/College Date	
<input type="checkbox"/> Approved _____ <input type="checkbox"/> Disapproved _____ Department Chairperson Date		<input type="checkbox"/> Approved _____ <input type="checkbox"/> Disapproved _____ Undergraduate/Graduate Academic Board Chairperson Date		<input type="checkbox"/> Approved _____ <input type="checkbox"/> Disapproved _____ Provost or Designee Date	

**Course Content Guide
University of Alaska Anchorage
Mat-Su College**

I. Date Initiated: June 26, 2009

II. Information for the Course Action Request

College/School: Mat-Su College

Department: n/a

Subject: RE

Course Number: A106

Title: Introduction to Diesel Engines

Credits: 3 (2+2)

Grading Basis: A-F

Implementation Date: Spring 2010

Course Description: Introduces the knowledge, vocabulary, and technical skills required to maintain, diagnose, and make minor repairs to diesel engines. Topics include diesel engine theory, components, engine performance, cycle of operation, cooling systems, electrical systems, fuels, fuel systems, and the proper selection and use of tools.

Course Prerequisites: n/a

Test Scores: n/a

Co-requisite: n/a

Registration
Restrictions: n/a

Course Fee: Yes No

III. Instructional Goals, Student Outcomes and Assessment Procedures

A. Instructional Goals

The instructor will:

1	Introduce the safety requirements needed to operate and service diesel engines
2	Introduce the proper handling, storage, and disposal of materials to minimize the possibility of negative environmental impact
3	Introduce the proper selection, care, and usage of tools
4	Introduce preventative maintenance, diagnosis, and repair techniques for diesel engines
5	Introduce petroleum- and bio-based diesel fuel characteristics

B. Student Outcomes/Assessment Procedures

Student Outcomes

Upon successful completion of the course, the student will be able to do the following:

Assessment Procedures

This outcome will be assessed by one or more of the following:

1	Explain and demonstrate safe practices while working on and around diesel engines	Written assignments, laboratory activities, demonstrations, and exams
2	Identify potentially hazardous materials utilized in the maintenance and operation of diesel engines; explain and demonstrate proper handling of these materials	Written assignments, laboratory activities, demonstrations, and exams
3	Explain and demonstrate proper selection, care, and usage of tools	Written assignments, laboratory activities, demonstrations, and exams

4	Explain and demonstrate preventative maintenance, diagnosis, and repair techniques for diesel engines	Demonstrations, laboratory activities, and exams
5	Explain characteristics of petroleum- and bio-based diesel fuels	Written assignments and exams

IV. Course Level Justification

This course introduces the basic diesel engine skills required for employment in the renewable energy field.

V. Course Outline (sample)

1. Safe Practices in the Maintenance, Repair, and Operation of Diesel Engines
 - 1.1 Material Safety Data Sheets
 - 1.2 Regulatory requirements relating to maintenance and waste products
 - 1.3 Workplace safety

2. Tools
 - 2.1 Tool selection
 - 2.2 Tool usage
 - 2.3 Measuring devices

3. Operating Principles of Diesel Engines
 - 3.1 Diesel engine terminology
 - 3.2 Energy efficiencies of diesel engines
 - 3.3 Two and four stroke operation
 - 3.3.1 Lower end
 - 3.3.2 Cylinder head and valve train
 - 3.4 Cooling systems
 - 3.4.1 Heat transfer
 - 3.4.2 Thermostats
 - 3.4.3 Water pumps
 - 3.5 Lubrication systems
 - 3.5.1 Lubricant properties and ratings
 - 3.5.2 Lubricant analysis
 - 3.5.3 Lubricant disposal
 - 3.5.4 Oil pumps and pressure relief
 - 3.6 Engine breathing
 - 3.6.1 Air intake system components
 - 3.6.2 Air heat exchanger testing

- 3.6.3 Exhaust system components
- 3.6.4 Exhaust gas recirculation

4. Fuel Systems

- 4.1 Fuel characteristics
- 4.2 Fuel pumps and filters
- 4.3 Common rail fuel systems
- 4.4 Fuel injection
- 4.5 Introduction to combustion chemistry and engine emissions

5. Engine Electrical

- 5.1 Circuit basics
- 5.2 Starting systems overview
- 5.3 Charging systems overview
- 5.4 Engine safety circuits

6. Generator Drive System

VI. Suggested Text

Bennett, S. (2010). *Modern diesel technology*. Clifton Park, NY: Delmar.

VII. Bibliography

Dempsey, P. (2008). *Troubleshooting and repairing diesel engines*. NY: McGraw-Hill.

Bosch, R. (2005). *Diesel-engine management*. Hoboken, NJ: John Wiley and Sons.

Norman, A., Chorinchock, J., & Dempsey, P. (2007). *Diesel technology: Fundamentals, service, repair*. Tinley Park, IL: Goodheart Wilcox Co.

Schilling, A. (2009). *Model-based detection and isolation of faults of diesel engines*. (Retrieved from WorldCat database).

Date: September 21, 2009
From: M. Hilary Davies, UAB Chair
Subj: Selected Curriculum Handbook References - Initiation of Curriculum

NOTE: The Curriculum Handbook was approved by the UAA Faculty Senate in Spring 2009. Additional duties assigned to the faculty initiator are specified in the Curriculum Handbook.

Page 3. 2.1.2

Academic Considerations Addressed in Review

The faculty member initiating the curriculum action should be prepared to address the following and any other appropriate issues that members of the curriculum review committees may ask when the curriculum action is presented to the appropriate boards/committees at each level of review.

Page 5. 3.1 Overview

1. Curriculum must be initiated by a faculty member, reviewed by the department's curriculum committee/chair, the school/college curriculum committee, and finally the dean/director of the school/college.
6. Initiating faculty member or representative must present courses, programs and prefixes to UAB/GAB. Representatives should be prepared to answer all relevant questions as described in 2.1.2.
7. After the final reading by UAB/GAB, the initiating faculty member is responsible for the preparation of the corrected final documents and submission to the Governance Office before UAA Faculty Senate takes action.

Page 18. 7.1 Minor Revisions to Programs

1. Program proposals or program changes must be initiated by a faculty member, reviewed by the department's curriculum committee/chair, the school/college curriculum committee, and finally the dean/director of the school/college.

Page 19. 7.2 New Programs and Major Changes to Programs

2. Curriculum must be initiated by a faculty member, reviewed by the department's curriculum committee/chair, the school/college curriculum committee, and the dean/director of the school/college.

The following information will be sent from the Governance Office to OAA. They will not be reviewed by the academic boards.

2. The Dean's office, in consultation with the initiating faculty, prepares a budget and complete fiscal plan which projects all revenue and expenses for the implementation and continued operation of the program, documents both student and community demand and projects enrollments and graduates over a five year period. This includes a signed Resource Implication Form and a signed Fee Request Form.

3. Initiating faculty, department chair and dean collaborate in presenting projected faculty assignments and qualifications.

Page 20. 7.2 New Programs and Major Changes to Programs

The following must be submitted to the Governance Office: aygov@uaa.alaska.edu):

7. After the final reading by UAB/GAB, the initiating faculty member is responsible for the preparation of the corrected final documents and submission to the Governance Office before UAA Faculty Senate takes action.

Page 44. Box 13a. D. Email notification.

In addition to coordination and sending proposed curriculum (or making it available on the web) to the director and department chair/coordinator of affected units, initiating faculty are also required to send an email notification to faculty listserv at: uaa-faculty@lists.uaa.alaska.edu giving a brief overview of the proposal including:

Page 44. Box 13b. Coordination Email Submitted to Faculty Listserv.

Enter the date of the email send to the faculty listserv (uaa-faculty@lists.uaa.alaska.edu). Initiating faculty are required to send an email notification to faculty listserv giving a brief overview of the proposal including:

Page 50. 6b. Coordination Email Submitted to Faculty Listserv

Initiating faculty are required to send an email notification to faculty listserv at: uaa-faculty@lists.uaa.alaska.edu giving a brief overview of the proposal including:

Page 66. Appendix D. The Undergraduate & Graduate Academic Boards.

The Undergraduate and Graduate Academic Boards review and approve academic policies. They also review and approve new or revised courses/programs/prefixes initiated by faculty and undertake other tasks assigned by the UAA Faculty Senate (Reference: UAA Faculty Senate Bylaws of the Constitution Article V Section 3[a-d]).

Page 68. CARs and PARs

CARs and PARs initiated by faculty are required to request curriculum actions. For more information, see the chapters on CARs and PARs.