

Peninsula College Syllabus

COMP 215 – Advanced Composites Technology I – 11Credits

Year/Quarter – WINTER 2011

Date: January 3 – March 14, 2011

Classroom: Lincoln Center – Composites Lab

904 W. 9th.

Port Angeles, WA 98363

- 1. Instructor's name -** Don Marshall
- 2. dmarshall@pencol.edu**
- 3. Phone number, extension:**
360. 477.3333
- 4. Office hours:** 3:00 p.m. – 3:15 pm M-F.
- 5. Office location:** Lincoln Center

Course Catalog Description: This course is a combination of classroom and laboratory experience. Introduction will include a brief history of composites. Emphasis will be on composite terminology, adherence to laboratory safety rules and strict conformance to directions. While this course is intended to form the foundation for advanced composite courses it will have direct ties to industry required skills. Prerequisites: None, (COMP 115, 116, & 117 recommended).

Course Outcomes

Upon successful completion students should be able to:	Method of Assessment
Demonstrate an understanding of composite terminology with the ability to define, utilize and explain composite terminology.	Quizzes, class participation, final exam
Demonstrate an understanding of safety rules for equipment in the composites laboratory.	Quizzes, observation, final exam
Demonstrate an understanding of strict adherence to instructions for laboratory activities.	Observation
Demonstrate an understanding laboratory experiments by composing detailed reports.	Report Evaluations
Demonstrate an understanding of facts and information that are emphasized in lecture and /or handouts by recall.	Quizzes, observation, final exam.
Demonstrate an understanding of composite builds by evaluating composites builds that you and or classmates have created.	Observation
Demonstrate an understanding of basic materials used for vacuum bagging by identification.	Quizzes, final exam.
Demonstrate the ability to construct composite parts in group projects.	Observation of construction,

	inspection of part.
Demonstrate the ability to construct composite parts as individual projects.	Observation of construction, inspection of part
Demonstrate an understanding of the advantages and disadvantages of defined or built composite parts.	Quizzes, final exam.

Text(s): No text is required for this class.

Grading Method:

Observations and class participation -----	(20%) 100 points
Quizzes (3 rd , 5 th , 7 th and 9 th week -----	(20%) 100 points
Laboratory reports (# TBD) -----	(20%) 100 points
Final Exam -----	(20%) 100 points
Attendance* -----	(20%) 100 points

*Each class absence will result in the loss of 10 points NOTE that three (3) late arrivals and/or early exits will be equal to one (1) absence

Grade will be determined by an average of the total points in the five categories as follows:

A	will be 95 to 100 points
A-	will be 90 to 94 points
B	will be 85 to 89 points
B-	will be 80 to 84 points
C	will be 75 to 79 points
C-	will be 70 to 74 points
D	will be 65 to 69 points
D-	will be 60 to 64 points
F	will be 59 or less points

TOPIC/CONTENT LIST - WEEKLY SCHEDULE OF CLASSES

C= Classroom, L=laboratory

WK. 1 -C- Composite history, common uses

L- Introduction to laboratory and safety

WK. 2- C-Fabrics, weaves, material, resins, molds, and matrix system overview

L-utilization of materials to build a matrix system

WK. 3- C- Resin mix ratios, viscosity, shelf life, storage considerations

L- Demonstrations of classroom considerations and part builds

WK.4- C-Prepegs, manufacturing methods, handling considerations, stages

L-part builds with prepegs, demonstrations of handling considerations

WK. 5- C-Vacuum bagging, matrix properties, fiber properties, drawings

L-part builds to demonstrate properties

WK. 6 C-Sandwich core panels, environmental effects on cured composites

L- Demonstrations of environmental effects on cured composites

WK. 7 C-Molding methods, vacuum infusion, pit falls of wet lay-ups

L- Demonstrations of classroom methods and pit falls

WK. 8 C-Oven and autoclave equipment, cure schedules, automated lay up

L-Oven and/or heat blanket part builds with and without vacuum

WK. 9 C-Tooling tooling materials and product materials considerations

L-simple tooling builds and use

WK. 10 C-Inspection and test methods, non-destructive and destructive

L-Testing of part builds by means of non-destructive and destructive methods

WK. 11 C-Bonding and repair of composite structures, identification of damage

L- Basic bonding and repair of part builds

INSTRUCTIONAL METHOD AND TEACHING STYLE

General: My teaching style is one of open communication with my students. I do not pretend to be an “all knowing” expert on the subject matter even though I have considerable experience and knowledge to share with students. We are on a journey of discovery and I am here to assist in understanding the material.

Lectures: Since there is no textbook required for this class there will be handouts at least weekly that will outline the topics to be discussed and terminology to be learned. Important material from several sources will be discussed so students should plan to take careful notes of details that are presented. Discussion is encouraged as is student-procured outside material relevant to topics being covered.

Assignments: Terminology for the week will be included on handouts. It is suggested that students learn this by dividing the list into five parts and learn a part per day to prevent the list from being overwhelming prior to quizzes and final exam. It is imperative that we all learn the “language”! Information that is presented in class will be reviewed at the end of each class to emphasize that material which is expected to be retained and/or contained on quizzes and final exam. This will be your assignment for that day’s activities.

Quizzes and exams: will be announced at least three classes prior and there will be none unannounced. Make-ups are rarely allowed except in rare real emergencies.

Laboratory: There will be no horse-play and all safety procedures will be followed. Instructions may be written and/or oral and students will not proceed with any operation until instructed to do so. If there is any doubt ask! There will be a requirement to submit laboratory reports as requested.

CLASSROOM POLICIES:

- Follow directions and safety rules
- Follow the three “R’s”
 - Respect for self
 - Respect for others
 - Responsible for my actions
- When one person speaks, all others listen; no sidebars.
- Maintain a positive attitude
- Act like you would on a job
- Turn your cell phones off or on vibrate; no texting

COLLEGE POLICIES

The Americans with Disabilities Act of 1990 “is designed to ensure that students with disabilities have an equal opportunity to access academic programs and successfully complete their studies.” Peninsula College is committed to providing accessibility to all students. Any student with special needs must complete a self-identification form available in the counseling office. This information will remain strictly confidential.

Plagiarism and/or cheating “is not condoned by Peninsula College. A student who cheats or plagiarizes the works of others is at risk of receiving a failing grade for the course in which such action takes place” (*PC Catalog*)

Understanding Peninsula College’s **Academic Policies and Procedures** is the responsibility of all students, for such regulations shall be adhered to by all faculty (Please see *PC Catalog*)

Peninsula College is committed to assuring that all programs and activities are readily accessible to all eligible persons without regard to race, color, religion, national origin, sex, age disability, marital status, sexual orientation, or Vietnam-era or disabled veteran status. (*Please see PC catalog*)

Peninsula College Syllabus

COMP 216 – Advanced Composites Technology II – 11Credits

Year/Quarter – Spring 2011

Date: April 4 – June 17, 2011

Classroom: Lincoln Center – Composites Lab

904 W. 9th.

Port Angeles, WA 98363

- 1. Instructor's name** - Don Marshall
- 2. dmarshall@pencol.edu**
- 3. Phone number, extension:**
360.477.3333
- 4. Office hours:** 3:00 p.m. – 3:15 pm M-F.
- 5. Office location:** Lincoln Center

Course Catalog Description: This course is a combination of classroom and laboratory experience. It builds on the skills learned in COMP 215. Advanced terminology will be included in a course long class project, that will demonstrate industry work environment and quality standards. Prerequisite: COMP 215 or instructor permission.

Course Outcomes

Upon successful completion students should be able to:	Method of Assessment
Demonstrate an understanding of composite terminology with the ability to define, utilize and explain composite terminology.	Quizzes, class participation, final exam
Demonstrate an understanding of safety rules for equipment and materials used in the composites laboratory.	Quizzes, observation, final exam
Demonstrate an understanding of matrix materials: resins and fiber reinforcements.	Quizzes, Final Exam
Demonstrate an understanding of basic design considerations for composite structures.	Quizzes, observation and Final Exam
Demonstrate an understanding storage and handling requirements of prepreg.	Quizzes, observation, final exam.
Demonstrate an understanding of unique properties of composite reinforcement fibers.	Quizzes and Final Exam
Demonstrate an understanding of cure profiles.	Quizzes, final exam.

Text(s): Essentials of Advanced Composite Fabrication & Repair

Author: Louis C. Dorworth; Ginger L. Gardiner; Greg M. Mellema

ISBN 978-1-56027-752-1

Grading Method:

Observations and class participation -----	(20%) 100 points
Quizzes (3 rd , 5 th , 7 th and 9 th week -----	(20%) 100 points
Laboratory reports (# TBD) -----	(20%) 100 points
Final Exam -----	(20%) 100 points
Attendance* -----	(20%) 100 points

*Each class absence will result in the loss of 10 points NOTE that three (3) late arrivals and/or early exits will be equal to one (1) absence

Grade will be determined by an average of the total points in the five categories as follows:

A	will be 95 to 100 points
A-	will be 90 to 94 points
B	will be 85 to 89 points
B-	will be 80 to 84 points
C	will be 75 to 79 points
C-	will be 70 to 74 points
D	will be 65 to 69 points
D-	will be 60 to 64 points
F	will be 59 or less points

TOPICS/CONTENT LIST - WEEKLY SCHEDULE OF CLASSES

C= Classroom, L=laboratory

WK. 1- C- Chapters 1 and 11 in text.

L- Laboratory capabilities and safety review of equipment and materials.

WK. 2- C- Chapter 2 pages 13 through 26 in text.

L- Inventory of materials to build a matrix system; project build.

WK. 3- C- Chapter 2 pages 26 through 39

L- Determination of class considerations for class project (or assigned).

WK.4- C- Chapter 3 pages 41 through 57

L- Commence five week class project; assign individual responsibilities.

WK. 5- C- Chapter 3 pages 58 through 69

L- Continue class project

WK. 6 C- Chapter 4 pages 71 through 88

L- Continue class project

WK. 7 C- Chapter 5 pages 89 through 116

L- Continue class project.

WK. 8 C- Chapter 6 pages 117 through 138

L- Complete class project.

WK. 9 C- Chapter 7 pages 139 through 172

L- NDI class project, individual vacuum bagging on part builds.

WK. 10 C- Chapter 9 pages through 173 throughout 194

L- Continue vacuum bagging individual practice.

WK. 11 C- Chapter 10 pages 195 through 210 only.

L- Basic bonding and repair of part builds

INSTRUCTIONAL METHOD AND TEACHING STYLE

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Lectures: Since there is no textbook required for this class there will be handouts at least weekly that will outline the topics to be discussed and terminology to be learned. Important material from several sources will be discussed so students should plan to take careful notes of details that are presented. Discussion is encouraged as is student-procured outside material relevant to topics being covered.

Assignments: Terminology for the week will be included on handouts. It is suggested that students learn this by dividing the list into five parts and learn a part per day to prevent the list from being overwhelming prior to quizzes and final exam. It is imperative that we all learn the “language”! Information that is presented in class will be reviewed at the end of each class to emphasize that material which is expected to be retained and/or contained on quizzes and final exam. This will be your assignment for that day’s activities.

Quizzes and exams: will be announced at least three classes prior and there will be none unannounced. Make-ups are rarely allowed except in rare real emergencies.

Laboratory: There will be no horse-play and all safety procedures will be followed. Instructions may be written and/or oral and students will not proceed with any operation until instructed to do so. If there is any doubt ask! There will be a requirement to submit laboratory reports as requested.

Peninsula College Syllabus

**COMP 217 – Advanced Composites Technology III – 11Credits
Year/Quarter – Summer 2011**

Date: TBD

**Classroom: Lincoln Center – Composites Lab
904 W. 9th.
Port Angeles, WA 98363**

- 1. Instructor's name** - Don Marshall
- 2. dmarshall@pencol.edu**
- 3. Phone number, extension:**
360.477.3333
- 4. Office hours:** 3:00 p.m. – 3:15 pm M-F.
- 5. Office location:** Lincoln Center

Course Catalog Description: This course is a combination of classroom and laboratory experience. It builds on the skills learned in COMP 215 and COMP 216. Advanced terminology will be included in a course long individual project that will demonstrate industry work environment and quality standards. Prerequisite: COMP 216 and PHYS& 121L or instructor permission.

Course Outcomes

Upon successful completion students should be able to:	Method of Assessment
Demonstrate an understanding of composite terminology with the ability to define, utilize and explain composite terminology.	Quizzes, class participation, final exam
Demonstrate an understanding of safety rules for equipment and materials used in the composite laboratory.	Quizzes, observation, final exam
Demonstrate an understanding to select an individual project.	Instructor observation
Demonstrate an understanding/ ability to schedule a project over a five week period-approximately 2hrs/day (total of 50 hours).	Instructor observation
Demonstrate an understanding and ability to build project-NDI of part to determine quality.	Instructor observation
Demonstrate an understanding and ability to complete project as planned.	Instructor observation

Text(s): Essentials of Advanced Composite Fabrication & Repair

Author: Louis C. Dorworth; Ginger L. Gardiner; Greg M. Mellema
ISBN 978-1-56027-752-1

Grading Method:

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Laboratory reports (# TBD) -----	(20%) 100 points
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TOPICS/CONTENT LIST - WEEKLY SCHEDULE OF CLASSES

C= Classroom, L=laboratory

WK. 1- C- Chapter 10 in text.

L- Laboratory capabilities and safety review of equipment and materials.

WK. 2- C- Chapter 1 through 4 review and project suggestions.

L- Inventory of materials to build a matrix system; selection or assignment of project, develop project schedule.

WK. 3- C- Chapters 5 through 7 review. selected project build required materials/skills

required for review (five week project average of two hours/day for project-total of fifty hours).

L- Individual project, gather materials, build mold or shape core if required.

WK.4- C- Chapters 8 through 9 review for project build.

L- Commence individual project.

WK. 5- C- Start project report and include schedule, and track schedule to actual build.

L- Continue individual project.

WK. 6- C- Continue project report; bring successes/problems for class discussion.

L- Continue individual project

WK. 7 C- Continue project report; bring successes/problems for class discussion.

L- Continue individual project.

WK. 8 C- Continue project report; bring successes/problems for class discussion.

L- Complete individual project.

WK. 9 C- Complete project report: bring successes and problems for class discussion; review Chapter 8 for inspection and test methods.

L- NDI individual projects, each student will NDI all individual projects and write a summary for each (due at the end of the last day of this week).

WK. 10 C- All individual project reports are due at the first class of this week; review NDI reports; review Vacuum Bagging pages 91 through 95 in text.

L- Vacuum bagging individual practice.

WK. 11 C- Chapter 10 pages 195 through 210 only.

L- Basic bonding and repair of part builds.

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Peninsula College is committed to assuring that all programs and activities are readily accessible to all eligible persons without regard to race, color, religion, national origin, sex, age disability, marital status, sexual orientation, or Vietnam-era or disabled veteran status. (*Please see PC catalog*)