

SYLLABUS

Polysaccharide Chemistry

WOOD 5424, Fall 2008 Class Schedule

Cheatham 317A, Tuesday – Thursday, 8:00 – 9:15 am

Instructor: Kevin J. Edgar (kjedgar@vt.edu)

Polysaccharide Chemistry (WOOD 5424) is a graduate level course on polysaccharide structure-property relationships, sources, synthesis, and utilization. It is specifically designed to be of broad appeal to graduate students in scientific disciplines with an interest in polysaccharides. Knowledge of organic chemistry and some knowledge of polymer chemistry are assumed.

Text: There is no required text. We will work from lectures and literature articles for the most part. You may find the book *Polysaccharides: Structural Diversity and Functional Versatility* (Editor Severian Dimitriu, second edition, 2005, Marcel Dekker, ISBN 0-8247-5480-8) to be a useful reference and addition to your library.

Date	Professor	Topic
Aug. 26	Edgar	Intro to Polysaccharides
Aug. 28	Edgar	Carbohydrate Nomenclature
Sept. 2	Edgar	Polysaccharide Nomenclature
Sept. 4	Edgar	Cellulose
Sept. 9, 11, 16	Edgar	Cellulose Esters – Synthesis, Properties, Uses
Sept. 18, 23	Edgar	Cellulose Ethers – Synthesis, Properties, Uses
Sept. 25	Edgar	EXAM 1
Sept. 30, Oct. 2	Edgar	Hemicellulose Structure, Function, Modification
Oct. 7	Edgar	Pectin Structure, Biology, Derivatives, Uses
Oct. 9, 14	Edgar	Starch Structure, Derivatives, Properties, Uses
Oct. 16	Edgar	Cyclodextrins – Polysaccharide as Torus
Oct. 21, 23	Edgar	Chitin and Chitin Derivatives
Oct. 28	Edgar	Alginate Polymers – Sources, Structure, Properties
Oct. 30	Edgar	EXAM 2
Nov. 4, 6	Edgar	Hyaluronan – Structure and Function
Nov. 11	Edgar	Heparin and Heparan Sulfate
Nov. 13	Edgar	Glycosaminoglycans: Structure and Role in Living Organisms
Nov. 18, 20	Edgar	Polysaccharides in Drug Delivery, I, II
Nov. 25, 27	Thanksgiving	Enjoy!
Dec. 2	Edgar	Polysaccharides in Drug Delivery III
Dec. 4, 9	Edgar	Polysaccharides and the Biorefinery Economy
Dec. 11	Reading Day	
Dec. 15	Final Exam	Time: 10:05 am – 12:00 pm

Evaluation

Homework, two tests, and a final exam will be important elements of the evaluation. In addition, course requirements include written three-page summaries of the literature on current polysaccharide-related topics proposed by the student and agreed upon by the instructor. Writing style and content will both be factors in the evaluation of the literature summary. Grades determined on the basis of tests (40%), the comprehensive final (20%), the literature summary (20%), and homework (20%).

Teaching Philosophy and Course Objectives

Honor Code – The Virginia Tech Honor Code will be strictly enforced in this course. All assignments submitted shall be considered graded work, unless otherwise noted. All aspects of your course work are covered by the honor system. Any suspected violations of the honor code will be promptly reported to the honor system. Honesty in your academic work will develop into professional integrity. The faculty and students of Virginia Tech will not tolerate any form of academic dishonesty.

Special Needs – If you need adaptations or accommodations because of a disability (learning disability, attention deficit disorder, psychological, physical, etc.), if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please meet with me as soon as possible, but definitely within the first two weeks of class.

Class Website – Consult the Blackboard website to routinely obtain announcements, handouts, problem solutions, on-line assignments, and written homework assignments.

Assignments – Assignments must be prepared and presented in a professional manner. Due dates will be given for each assignment. Grades on late assignments will be reduced by 20% of the total available points for that assignment each day (24 hour period) that the assignment is late. All assignments must be submitted to complete the course.

Virginia Tech Principles of Community – Virginia Tech is a public land-grant university, committed to teaching and learning, research, and outreach to the Commonwealth of Virginia, the nation, and the world community. Learning from the experiences that shape Virginia Tech as an institution, we acknowledge those aspects of our legacy that reflected bias and exclusion. Therefore, we adopt and practice the following principles as fundamental to our on-going efforts to increase access and inclusion and to create a community that nurtures learning and growth for all of its members:

We affirm the inherent dignity and value of every person and strive to maintain a climate for work and learning based on mutual respect and understanding.

We affirm the right of each person to express thoughts and opinions freely. We encourage open expression within a climate of civility, sensitivity, and mutual respect.

We affirm the value of human diversity because it enriches our lives and the university. We acknowledge and respect our differences while affirming our common dignity.

We reject all forms of prejudice and discrimination, including those based on age, color, disability, gender, national origin, political affiliation, race, religion, sexual orientation, and veteran status. We take individual and collective responsibility for helping to eliminate bias and discrimination and for increasing our own understanding of these issues through education, training, and interaction with others.

We pledge our collective commitment to these principles in the spirit of the Virginia Tech motto of *Ut Prosim* (that I may serve).

Instructor - Dr. Kevin Edgar

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Wood 5424 office hours: Mondays and Tuesdays, 1-2 pm, or by appointment