

Applied Studies (APST) 230

Materials, Properties, and Applications (Revision 3)

Delivery Mode: Individualized Study Online [↗](#)

Credits: 3


Area of Study: Applied Study

Prerequisites: None

Precluded: None

Challenge: APST 230 is not available for Challenge.

Faculty: Faculty of Science and Technology [↗](#)

Status: Replaced with new revision, see the [course listing](#) [↗](#) for the current revision 

Notes: APST 230: Materials, Properties, and Applications is intended for students enrolled in the BSc (Architecture) program at the RAIC Centre for Architecture at Athabasca University. For those students interested in pursuing a career as a registered architect, this course also contributes to the [RAIC Syllabus Diploma](#) [↗](#).



Overview

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APST230 introduces characteristics of construction materials and discusses their appropriate application. Throughout this course students will examine building systems, assemblies, components, and material characteristics and will learn to analyze and identify materials, the impact of environmental factors on materials, and the impact that building materials have on the environment, occupant health, and the sustainability of resources.

Designers have an enormous impact on the environment. The architect's design decisions and selection of materials have an impact on every aspect of the building, from its presence in the urban fabric to the operation of the ventilation system. It is imperative that members of architecture profession understand the impact of their art and craft and become stewards of a sustainable future.

Outline

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PART 1 The Context of Building: Site and Substructure

- Unit 1 Concepts in Sustainable Design
- Unit 2 Site Analysis, Evaluation, and Design
- Unit 3 Building Substructures—Part of the Building Envelope

PART 2 Structural Systems and Materials

- Unit 4 Wood and Wood Structural Systems
- Unit 5 Masonry Systems: Brick, Block, and Stone



- Unit 6 Steel-Frame Construction
- Unit 7 Concrete

PART 3 Envelope Systems and Materials

- Unit 8 Building Envelope: Cladding Systems
- Unit 9 Building Envelope: Glazing, Windows, and Doors
- Unit 10 Building Envelope: Roofing Systems

PART 4 Interior Materials and Finishing; Environmental Systems

- Unit 11 Interior Materials and Finishing
- Unit 12 Building Services

Learning Outcomes

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After completing this course, students should be able to achieve the following learning objectives:

1. Describe the functions and characteristics of common building systems and assemblies, including building envelope, structure, environmental management systems, and building services systems.
2. Discuss the characteristics of building components and materials, including function, physical properties, grades, life cycle economics, embodied energy, availability, and the impact that materials' production, use, and disposal have on the environment.

Evaluation

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Students work will be evaluated based on eight assignments. The four major assignments consist of essays, field reports, and video and/or multimedia



presentations; four smaller assignments require drawing and/or interpretation of construction details or reports.


A final course grade of 67% or higher is required to pass the course.

Note that students who wish to be certified by the CACB must achieve and maintain a final grade point average of 2.3 (67%) or greater.

There is no final examination for this course.


The grading weights for all assignments are summarized in the table below

Activity	Weight
Assignment 1	5%
Assignment 2	20%
Assignment 3	5%
Assignment 4	20%
Assignment 5	5%
Assignment 6	20%
Assignment 7	5%
Assignment 8	20%
Total	100%

To learn more about assignments and examinations, please refer to Athabasca University's [online Calendar](#) .

Materials

Allen, E., & Iano, J. (2014). *Fundamentals of Building Construction: Materials and Methods*, 6th ed. New York: Wiley.  (eText)

Lechner, N. (2014). *Heating, cooling, lighting: Sustainable design methods for architects*, 4th ed. New York: Wiley.  (eText)

Course Home Page (online): The course home page houses all the online components of your course.

Study Schedule (online): The study schedule on your course home page includes the Course Information, the twelve units of the Study Guide, links to the online readings, and links to your assignments.

Course Information (online): The Course Information provides specific information about how to proceed through the course. Read the Course Information carefully before you begin reading the Study Guide.





Study Guide (online): The Study Guide units are embedded in the Study Schedule on the course home page.

Assignments (online): The assignments are on the course home page, along with helpful instructions.

Forms: Forms you may need are available through the [myAU](#)  portal.

Important Links

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- > [Academic Advising](#) 
- > [Program Planning](#) 
- > [Request Assistance](#) 
- > [Support Services](#) 



Athabasca University reserves the right to amend course outlines occasionally and without notice. Courses offered by other delivery methods may vary from their individualized-study counterparts.

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View [previous revision](#) 

