



BIODEGRADABLE MATERIALS

Do you know the attributes and advantages of biodegradable materials?

Students make, test, and evaluate biodegradable films and gels. They use their knowledge to design devices that release a dye in a controlled manner as they degrade.

By incorporating everyday materials into science lessons, the Materials World Modules (MWM) program at Northwestern University has found the solution to getting students excited about learning science while helping teachers meet national and state education standards.

The modules are easy to organize and inexpensive to run. They can be incorporated into any science class because of the breadth of subjects covered in the Activity and Design Project sections. Each module is a supplemental science unit that takes 1-3 weeks of class time (approximately 10 hours) to complete.

Module At-a-Glance:

Activities

- Comparing Packing Materials
- Hunting for Biodegradable Objects
- Processing and Comparing Their Mechanical Properties
- Measuring Degradation Rates
- Researching Biodegradable Materials

Design Project

- Designing a Medicine Delivery Device
- Designing a New Biodegradable Product



MWM will give students an opportunity to understand the world around them in a way they have never experienced before. The modules promote an awareness of the roles science and technology play in society and guide students to take increased control of their work.



MWM is designed to

Interdisciplinary
Integrates science & non-science subjects

Flexible
Modify to your teaching style, students' ability and class time

Hands-on
Contains activities that lead up to inquiry-centered design projects

Cutting-edge
Introduces issues on the forefront of technological research

improve STEM education
Science • Technology • Engineering • Math



- Chemistry**
- Structure of Molecules ■ Compounds ■ Polymers ■ Bonding ■ Hydrogen Bonds ■ Van der Waals Forces ■ Ionic Bonds ■ Covalent Bonds ■ Chemical Reactions ■ Solutions ■ Acids and Bases
- Biology & Life Sciences**
- Cell Structure and Function ■ Carbohydrates ■ Lipids ■ Proteins ■ Nucleic Acids ■ Ecosystems ■ Cycles ■ Decomposing ■ Environmental Pollution
- Mathematics**
- Measuring ■ Graphing (Making and Interpreting) ■ Computing ■ Averages ■ Rates ■ Percentages
- Physics & Physical Sciences**
- Electromagnetic Radiation ■ Tensile and Compressive Forces
- Geology & Earth Science**
- Geochemical Cycles ■ Ground Water ■ Acid Rain
- Technical Education**
- Designing ■ Drafting ■ Materials ■ Plastics
- Language Arts**
- Writing a report ■ Public speaking

Materials World Modules

An Inquiry & Design Based STEM Education Program
Northwestern University ■ www.materialsworldmodules.org
847-467-2489 ■ mwm@northwestern.edu

