Presentation: Linking the Mathematical, Scientific and Engineering Practices

Abstract: A rich STEM program in primary, middle and secondary education should consider the relationship among the practices defined for science, mathematics and engineering learning and student outcomes. We will examine each set of practices described in recent documents from the United States including the Common Core Mathematics Standards and the Next Generation Science Standards. These practices describe how students think about and do mathematics, science and engineering. Participants will discuss how the connections among these practices form a foundation for designing a substantive STEM program.

Workshop: Design a Building: Incorporating Mathematics, Science and Engineering

Abstract: Participants will experience a hands-on middle grades STEM lesson which includes substantive mathematical concepts and applications, scientific inquiry and engineering principles. The mathematics concepts of volume and surface area (including min and max values) will be incorporated in the lesson. Engineering design principles and scientific inquiry will be the focus of the activity. The purpose of this sample lesson is to begin a conversation on other types of STEM activities which not only give students an opportunity to apply what they already know, but also help students to learn mathematics and science content as they apply engineering principles.