

Systems Science, Engineering and Systems Design, and Design of Engineering Material Systems Programs at the National Science Foundation

Richard Malak, Program Director

Abstract

The Systems Science, or SYS; Engineering and Systems Design, or ESD; and Design of Engineering Material Systems, or DEMS, programs support fundamental research that advances knowledge about the design and development of engineered products and systems. However, they each focus on specific issues and challenges. In broad terms, SYS focuses on advancing theoretical understanding about the design and engineering of large-scale systems. The ESD program focuses on advancing knowledge about design methods for products and systems. Finally, the DEMS program focuses on advancing knowledge about how to design materials and material systems, with an emphasis on multidisciplinary research. Progress in these areas is important for improving the development of engineered products and systems and can have a major societal impact by leading to better-performing systems that are achieved for less cost and in less time. This talk will provide background on the motivation for the SYS, ESD and DEMS programs and clarify their respective scopes.

Program Synopses

SYS: https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504788

ESD: https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13340

DEMS: https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504809



Bio

Richard Malak currently serves as program director for the ESD, SYS and DEMS programs in the Division of Civil, Mechanical and Manufacturing Innovation, or CMMI, of the National Science Foundation. He is on leave from Texas A&M University where he is associate professor and Morris E. Foster Faculty Fellow I in the department of mechanical engineering. His personal research interests include decision making in systems design and computational design methods.