

# **Keeping Ahead of the Future: A Blueprint of the Institute for the Advancement of Science and Engineering (IASE)**

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A Proposal by the Provost's Advisory Committee for the Institute for the Advancement of Science and Engineering

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## Executive Summary

The Institute for the Advancement of Science and Engineering will be a system-wide, premier research institute dedicated to contributing knowledge and providing solutions to great challenges that require multidisciplinary approaches across the sciences and engineering. It will establish the University of Minnesota as a leader in interdisciplinary research at the intersection of biological, chemical, physical, engineering, and computational sciences. The hallmarks of this institute are excellence, faculty engagement, and focused investments to maximize the impact of the Institute.

The advisory committee identified the following recommendations as critical to the success of the Institute.

Themes: The research at the Institute will concentrate on a small number of themes that are selected through a community process to ensure that the strength of the University is optimally leveraged. Research themes will change over time.

Membership: About twelve, extramurally funded, interdisciplinary teams of about three to four faculty each will form the core of the Institute. Membership in the Institute will be temporary to ensure a dynamic environment.

Faculty Engagement: Faculty are the key to the success of the Institute and the Institute's success will rest on faculty initiative to form teams, to develop successful themes, and to successfully compete nationally for extramural funding to support the research.

Training and Education: This Institute offers unique opportunities to train students and postdoctoral researchers in a collaborative environment across disciplines. Members of the Institute should develop training opportunities, including but not limited to training grants.

University Commitment: The Institute will only thrive if departments, colleges, and central administration embrace this concept and provide support. College and University administration need to collaborate to meet the needs of the Institute, including identifying space and removing bureaucratic barriers.

Grants Program: A Grants Program will provide a mechanism to allow new collaborative efforts to flourish and will be the main mechanism to attract new teams to the Institute. Researchers at other organizations and businesses should be engaged to broaden the reach and to increase competitiveness at the national level.

Infrastructure: The Institute will need a physical space to facilitate collaborations. This space should be designed to serve as a highly visible showcase for interdisciplinary research. Beyond physical space, the Institute will need well-equipped laboratories with state-of-the-art research equipment and permanent staff to provide technical expertise for the operation of the equipment and to meet cyberinfrastructure needs.

Administration: The Institute should be led by an internationally recognized director who should receive advice from internal and external advisory committees.

Funding: Multiple funding sources will be necessary to provide financial support. The advisory committee recommends dedicating a development officer to foster links with the private sector.

Assessment: External evaluation of research and Institute activities will ensure excellence and focus on high impact.

Disciplinary Strength: This Institute will only thrive if investments in disciplinary research remain strong for strong traditional disciplines are essential for high impact interdisciplinary research.