The Current State and Future Needs of Systems Engineering Education: A
Proposed Curriculum
(Technical Report)

The Promotion of Online Education in U.S. Universities
(STS Research Paper)

An Undergraduate Thesis Portfolio
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Bachelor of Science in Systems Engineering

by

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Preface

Proposals to supplement or replace in-person classrooms with online education platforms are controversial. How may online higher education programs approximate conventional programs in educational quality?

To diversify access to graduate engineering programs at the University of Virginia (UVA), the project team designed a one-year, hybrid Accelerated Master's in Systems Engineering Program. The program began in May 2023. To develop a model suited to UVA, the team conducted market research on similar graduate programs in Northern Virginia. The second phase consisted of proposing course sequences, marketing ideas, and admission requirements for the new rollout. More than 15 students have been admitted in the first cohort, yielding revenues sufficient to cover costs. Over its first semesters, researchers should monitor and assess the new program, collect comments from students and instructors, identify successes and failures, and propose improvements.

Over the last two decades, distance learning has grown rapidly, especially due to the recent COVID-19 pandemic. While technology can support online education far better than it could just five years ago, technical feasibility is not the sole consideration. Because social groups are divided about what education is for and what good access to educational opportunities means, they are also divided about the optimal extent and applications of online education. To advance their diverse perspectives on online learning, these groups offer open membership, provide online statements and resources, and engage in social media discussions and blogs. Among professional associations, nonprofits, tech vendors, students, and educators, disagreements about the potential of

online education are attributable to differences in educational values. These, in turn, reflect divergent views of education's purpose. While such views are numerous and diverse, most are consistent with either of two perceptions: education as training, or education as liberating. People who associate education primarily with training tend to welcome extensive implementation of online education, even to the point of displacing classrooms. Others, however, tend to perceive face-to-face education as irreplaceable and therefore seek to limit online education to a supplementary role. Going forward, organizations should reevaluate their definition of education before figuring out the ideal mode of instruction.