

## MIT MENTOR **ED MORIARTY** FOR “HANDS ON PHYSICS PROJECT”

<https://edgerton.mit.edu/users/ed-moriarty>

Ed has been with the Edgerton Center since 2000. He is the instructor for the fall EC.A790 [Engineering, Art, and Science](#) Freshman Advising Seminar (co-taught with Alban Cobi) and is involved in the high school levels of our K–12 outreach program, where he has focused on STEM (science, technology, engineering, and mathematics) outreach, initiating programs and partnerships from Florida to Alaska that inspire in young students a love for engineering.

Always willing to follow students' lead and to let them discover their own voice, Moriarty offers the intellectual and emotional support that enables students of all ages to learn to engineer by doing. Ed also works closely with student clubs and teams.

*Ed Moriarty '76, an instructor with the MIT Edgerton Center, has been around MIT off and on ever since he showed up as a freshman in 1971. He has worked in various departments and labs around the institute and has been involved in numerous projects ranging from large scale electric generation analysis packages, to the MIT Shakespeare Electronic Archive. He has been a member of the MIT Logarithms, Chorallaries, and the BackLogs Quartet. As a resident of "strobe alley" Ed relies mostly on fun, hands-on, in-lab, experience for presenting concepts ... a refreshing change of approach from most of the book-learning done around here. He is active with many MIT student clubs and teams as well as with high-school engineering outreach.*

Ed has been a designer and leader of engaging, hands-on science and engineering programs in sites ranging from the MIT Student Project Lab, through a selective Boston high school and a small village in the Alaskan bush, to a large regional event in Beijing, China. Common to all these experiences is Ed's ability to connect with people and inspire them to question, learn, and do. Ed has been a driver in the maker movement since long before it was coined "maker."

For the past five years he has been running the month-long Engineering Design Workshop at the MIT Edgerton Center. Ed has also developed an informal non-program called "The Saturday Thing" in which students have a rich opportunity for unstructured play in a constructive community environment.

Ed holds a BS in Mechanical engineering and over 30 years of experience at MIT. For the past 17 years he has been an instructor with the MIT Edgerton Center, teaching seminars and labs and mentoring many of the MIT student clubs and teams that take part in local, national, and international engineering design endeavors.

Along with Diane Brancazio, Ed also teaches a popular freshman advising seminar entitled, "Engineering, Art, and Science".

Watch the seven-minute [Engineering Design Workshop](#) video from MIT News.

**Award by MIT:** <http://hrweb.mit.edu/rewards/recipient/award-recipients/2007/creating-connections/edward-moriarty>:

Edward Moriarty firmly believes in hands-on learning. His intriguing projects engage students so theory and concepts follow naturally. Staff liaison to twenty student teams, he spreads contagious energy and helps people interact well. He also builds strong connections with local schools, opening MIT's resources to area youngsters. He redesigns the MITES program annually, incorporating exciting technologies like underwater robots. Middle and High School teachers regularly seek his ideas to excite students about science. As an MIT grad himself, he understands the pressures of students' lives and gives his cell phone number freely.

When students called him at 3:30 AM about plane tickets locked in an office, he drove in, unlocked the door, and saved the trip. Policy-makers nation-wide agree that fostering interest in science and engineering is critical for solving emerging problems. The full-time energy and passion he devotes to supposedly part-time work make Edward Moriarty our champion.

### Recent activities

<https://edgerton.mit.edu/workshop-k-12-maker-educators-june-2017>

<https://edgerton.mit.edu/Fall2017MakerWorkshops>

<https://oel.mit.edu/beijing-high-school-students-build-20-rovs-in-3-day-workshop>

<http://news.mit.edu/2017/wisdom-gained-good-engineer-should-have-artisan-spirit-0327>

### Curriculum Until 1990

Edward J. Moriarty <http://trillian.mit.edu/~mory/moryres.html>

Director of Departmental Computing  
[Department of Electrical Engineering and Computer Science](#)  
[Massachusetts Institute of Technology](#)  
[Cambridge, Massachusetts 02139](#)  
Room 38-394

voice: 617-253-0958

fax: 8-7354

email: mory@mit.edu

### EMPLOYMENT EXPERIENCE

**Massachusetts Institute of Technology, Cambridge, MA: 3/90 to present**  
**Electrical Engineering and Computer Science Department:**  
**Director of Departmental Computing**

Responsible for the department's use of computing to support academic and administrative needs. Supervising the [Education Computing Facility \(ECF\)](#) technical staff that supports over 400 networked workstations, PC's and Macintoshes. Designed and coordinated the construction of 3 large computer clusters for student use. Group responsibilities include support of educational software, licensing of third party software, hardware maintenance support, network support, user training, long range planning, World Wide Web development, etc.

**Massachusetts Institute of Technology, Cambridge, MA: 12/85 to 3/90**  
**Electrical Engineering and Computer Science Department: Project Manager**

Responsible for the deployment and support of the Department's 200 Athena workstations and printers. Assisted in various faculty initiatives to develop educational software. Developed the Courseware Development System and used it for creating applications in the area of applied probability and ordinary differential equations. Software is written in C++, C and SCHEME under UNIX/X11 and runs on a VaxStations, IBM PC/RTs, DECstations, and Sun SPARCstations.

**Massachusetts Institute of Technology, Cambridge, MA: 9/84 to 10/85**  
**Project Athena: Course Consultant, Task Force Coordinator**

Assisted MIT faculty incorporating computer-based educational materials into their courses. Coordinated initial allocation and

deployment of 160 networked Athena AT workstations. Supervised Athena student programmers providing support for faculty educational software development using the workstation model. Coordinated a process for term by term allocation of computer resources among development projects and courses in Athena's distributed environment. Project currently supports a network of Vax 11/750's, MicroVax II's provided by DEC, and RT/PC's and PC/AT's provided by IBM.

**The Saddlebrook Corporation, Cambridge, MA: 5/82 to 12/82**

**Project Manager**

Responsible for the design of an interactive Marketing Information System to be included with a Front Office computer system developed for use by thrift institutions in the USA. Project based on VAX 11/780's using VMS.

**Massachusetts Institute of Technology, Cambridge, MA: 10/78 to 1/81**

**Energy Laboratory: Sponsored Research Staff**

Responsible for the development of electric utility capacity planning methodologies. Primary assignment to the "Electric Generation Expansion Analysis System" (EGEAS) Project. Responsibilities included project planning, user needs assessment, methodology development, database design, and research programming coordination. My role also required significant travel to utilities, agencies and research organizations across the country and involved many design presentations to both large and small groups. Project based on IBM 370 and 3033 using VP/CMS and TSO respectively.

**Stone & Webster Engineering Corp., Boston, MA: 9/76 to 1/78**

**Electrical Division: Engineer**

Responsible for the development of computer models for electric utility system planners. My role involved contract negotiations, preparation for advisory board reviews, and coordination of model development efforts.

**Massachusetts Institute of Technology, Cambridge, MA: 6/75 to 8/76**

**Energy Laboratory: Programmer / Analyst**

Assigned to an Energy Lab project in which an electric generation expansion model that incorporated environmental constraints was revised and tested.

**State Street Bank & Trust Co., Boston, MA: 1/73 to 1/75**

**Management Sciences: Programmer**

Responsible for maintenance of an interactive managerial accounting system for use by the company's Computer Services Division.

**CONSULTING EXPERIENCE**

**Queues Enforth Development, Inc., Cambridge, MA: 11/89 to 11/94**

Developed and implemented algorithms for use in a system that infers queueing statistics from service time information.

**U.S. Windpower, Inc., Burlington, MA: 12/82 to 5/84**

Developed specifications for a Windplant Economic Model to be used in evaluating the costs and benefits of alternative windplant proposals. Suggested organizational changes required to accommodate the growing role of computer applications development within the company. Assisted in development of standards for microcomputer purchases and in the selection of a DBMS.

**Citibank, N.A., Sao Paulo, Brazil; 6/81 to 9/81**

Retained to design a planning methodology tailored to management of distributed development and maintenance. Developed general specifications for a project planning and control package to assist managers on the world, regional, and country levels, with built-in interfaces to improve coordination.

**Science Applications, Inc., McLean, Va.; 8/78 to 10/78**

Designed a modeling approach for evaluating the impact of solar generating technologies on electric utilities. Authored sections of a proposal to DOE regarding use of this modeling approach as part of a technology assessment of solar energy in the South Central U.S.A. (SAI was awarded the \$1m project).

**Massachusetts Institute of Technology, Cambridge, MA: 3/78 to 7/78**

Retained by the Energy Laboratory to evaluate a decomposition optimization technique for modeling electric utility capacity expansion to see if the problem formulation could include distributed and centralized Photovoltaic generation within the utility grid. Also assisted with the development of the computer code to test the technique, using FORTRAN under VP/CMS on an IBM 370.

**Massachusetts Energy Facilities Siting Council, Boston, MA: 1/78 to 5/78**

As an associate with Clark-McGlennon Associates, Inc., Boston, Ma. I consulted for the MEFSC on a project entitled "An Integrated Approach to Regulated Energy Facility Siting". Worked closely with the MEFSC staff to establish realistic user needs. Coordinated a survey of existing models and databases relevant to siting issues. Designed a methodology that integrated demand forecasting, supply planning, siting, and environmental impact modeling capabilities.

## **EDUCATION**

**Massachusetts Institute of Technology, Cambridge, MA: 2/81 to 6/81**

Enrolled in the Technology and Policy Program program within the Mechanical Engineering Department. DOE funding cuts eliminated financial support in the second term. Withdrew with option to return.

**Massachusetts Institute of Technology, Cambridge, MA: 9/71 to 6/76**

Awarded Bachelor of Science degree in Mechanical Engineering. Emphasis in design and computer science. Humanities concentration in creative writing.

## **PAPERS/PUBLICATIONS**

**Electric Generation Expansion Analysis System, Volume 1: Solution Techniques, Computing Methods, and Results**, co-author, EPRI EL-2561, August 1982.

**"A Structural Re-Development of an Economic, Environmental Generation Expansion Model"**, 1976, B.S. Thesis, M.I.T., Cambridge, Ma.

## MIT EDGERTON CENTER

<https://www.youtube.com/watch?v=cqq1kf2zMqw> "Don't let them know they're learning"

**Edgerton K-12 Program** <https://edgerton.mit.edu/k-12/about>

The Edgerton Center's hands-on science and engineering challenges educate and inspire kindergarten through 12th-grade students, aiming to increase their curiosity and desire to pursue these fields in their future.

From intensive summer programs to daily classroom visits, from the curriculum we develop to the teachers we train, the spirit of learning by doing is embedded into all that we do. Focused on the Greater Boston area, with selected out-of-state and foreign endeavors, the Edgerton Center's multifaceted approach supports over **150 on-campus classroom workshops** annually, plus intensive summer programs, innovative curriculum, and teacher professional development.

Thanks to the support of the Edgerton Family Foundation as well as the generous support of MIT alumni, students, friends, the GE Foundation, the Highland Street Foundation, and i2 Camp, the Edgerton Center is able to provide these opportunities at no or minimal cost.

Our collaborative relationships with other groups at and outside of MIT are dearly valued. These partners include, but are not limited to, the **Center for Environmental Health Sciences**, the **MIT Museum**, and beyond MIT, **i2 Camp**, **Fletcher-Maynard Academy**, **The Winsor School**, **The Meadowbrook School**, **Cranbrook Schools**, **Benjamin Banneker Charter Public School**.

The Edgerton Center approach to educating the K-12 community is best summarized in the following video, "Don't Let Them Know They're Learning."

<https://edgerton.mit.edu/celebrating-the-edgerton-center-an-original-mit-makerspace>

[https://www.youtube.com/watch?time\\_continue=297&v=WQvgfjLmO8w](https://www.youtube.com/watch?time_continue=297&v=WQvgfjLmO8w)