

ANNUAL REPORT

[October 2010 – September 2011]

AMERICAN SOCIETY FOR ENGINEERING EDUCATION



**Editor's Note:
The Fiscal 2011 ASEE
annual report is somewhat
different in format from past
annual reports. This document
addresses our successes, progress,
and efforts as a society as defined by
our mission and vision statements, using
metrics where necessary to better
indicate results. We hope this gives our
members, as well as other audiences, an
accurate understanding of how the day-
to-day efforts of ASEE volunteers and
staff contribute to our stated mission
of improving education in engineering
and engineering technology, supporting
educators, and being an international
leader in these areas.**

BY RENATA S. ENGEL

I had the privilege and pleasure of working alongside dedicated volunteers and staff as president of the American Society for Engineering Education in 2010-2011. The year was one of transitions, progress, and accomplishments.

The fiscal year began with Dr. Frank Huband serving his final month as Executive Director, concluding 20 years of dedicated service to ASEE. Dr. Lyle Feisel (ASEE President, 1997-1998) served as Interim Executive Director while we conducted an international search for Frank's replacement. From November 2010 through April 2011, Dr. Feisel led the organization through a successful audit, the final stage of renovations at ASEE Headquarters, and provided valuable support to the Board of Directors and staff.

Dr. Norman Fortenberry was hired as Executive Director in May, bringing valuable experience from positions at the National Academy of Engineering, the National Science Foundation, and Florida A&M University. His leadership has reinforced efforts to secure ASEE's financial position, expand opportunities for partnerships, and address the needs of members while exploring ways to increase the effectiveness of our resources.

The financial success of the 2011 Annual Conference in Vancouver, the vitality of the Fellowships

and Research Opportunities department, and the notable efforts by the ASEE staff to examine internal operations with an eye toward cost savings were instrumental throughout 2010-2011 in our ability to minimize the negative impact of the economic situation which affected other components of our operations. ASEE continues to benefit from the strong support by corporate members and volunteers.

In addition to providing high quality programs and publications that are the hallmark of its member benefits, ASEE accomplished much last year. A new technology infrastructure became fully operational when the systems for membership, conference registration, and paper submission and review were integrated. ASEE staff and volunteers played critical roles in planning the World Engineering Education Forum (WEEF) held in Singapore in October 2010. WEEF included ASEE's Global Colloquium and Global Engineering Deans Council and enabled ASEE to join with international engineering education societies to discuss advancements in engineering education.

The Journal for Engineering Education (JEE) celebrated its 100th anniversary—an achievement which was marked, in part, by the launch of a new

website to expand access to the JEE's archives. ASEE's members continued to provide notable contributions via surveys and feedback to the "Creating the Culture of Scholarly and Systematic Innovation in Engineering Education" project, which began in 2006. This past year, preliminary findings for the culminating report were presented in ASEE meetings, such as the Engineering Deans Institute, the Global Colloquium, and most recently at the 2011 Annual Conference. At the same conference, the main plenary, inspired by the report's attention on educational scholarship, provided a glimpse of the engineering educational research-to-practice cycle.

ASEE continues to make progress in advancing the understanding of the engineering profession, with goals of increasing participation by underrepresented groups and informing the public of the value of STEM education for our nation's economic health, productivity, and safety. As in past years, the 2011 Public Policy Colloquium and Engineering Research Council Symposium in Washington, D.C., provided venues for academic lead-

ers to discuss opportunities with each other and engage in dialogue with our nation's leaders and federal agencies—both to deliver the message to decision-makers and to listen to their concerns. Beyond discussion, ASEE continues to put into action the messages they deliver. The K-12 & Pre-College Division, Minorities in Engineering Division, and Women in Engineering Division have robust programs and participation by members. In addition, ASEE again experienced high participation in the K-12 Workshop that preceded the Annual Conference. Similar strong interest in ASEE's Engineering, Go For It materials is evidence that the opportunities to open young minds to our exciting and rewarding profession are well-received and worthy of our attention.

I close with my deepest appreciation to staff and volunteers who contributed to ASEE's progress during my time as President, and I extend special recognition to ASEE's Board of Directors and management team for their efforts that led to a very successful Society year.



PRESIDENT'S LETTER



ANNUAL REPORT

[October 2010 - September 2011]

Enhance services
to its **members**

Work with
educational
institutions
to improve
**engineering
education
and promote
faculty
development**

ANNUAL CONFERENCE

Central to ASEE's mission is its role of providing benefits to members. Feedback tells us that one of the most value-added perks of membership is the opportunity to network and learn from a community of peers, primarily at the annual conference.

The 2011 conference in Vancouver had the highest attendance of any in ASEE's history. The meeting brought together 3,832 people, many of whom would not otherwise interact face-to-face outside of the society.

At the conference, participants took part in professional interest-specific division meetings, plenary

sessions, an expansive exhibit hall, and social events.

The conference featured over 1,700 published papers, 125 business meetings, and over 400 technical sessions, as well as 121 exhibiting companies and 27 sponsoring companies.

In addition to the annual conference, headquarters office staff supported 12 other meetings in fiscal 2011.

ASEE Annual Conference Total Registration

2008 = 3,430

2009 = 3,269

2010 = 3,248

2011 = 3,832

FELLOWSHIP PROGRAMS

Working with the Department of Defense, the National Science Foundation, and NASA, ASEE has become a significant player in administering fellowships in engineering, math, science, and technology. These programs have many potential positive outcomes, including the creation of a larger pool of potential faculty members, a more educated engineering faculty, and improvement of U.S. long-term national security by creating a stronger defense establishment and a better workforce. The budget for all such programs handled by ASEE totaled

\$87 million

last year, with 4,400 fellowships granted.

ASEE was tasked to manage two new programs this year, in addition to 15 it already oversaw. The Small Business Postdoctoral Research Diversity Fellowship program encourages creative and highly trained recipients of doctoral degrees in NSF-supported STEM disciplines to engage in hands-on research projects in their areas of expertise at the kind of small, innovative businesses that historically have fueled the nation's economy. The Engineering

Innovation Fellows Program was launched to provide summer internship opportunities for NSF Graduate Research Fellows in engineering. This program allows Fellows to obtain experience in industry so they may expand their perspectives and skills in innovation as well as to gain a broader understanding of the impact of their work on the host company and the high tech business. In addition, in February ASEE was awarded a major DOD contract to continue its administration of the DOD National Defense Science and Engineering Graduate Fellowship program. The full list of opportunities can be found at right.

Students/Faculty Supported by ASEE through Administration of Grants/Fellowship Support

	2009	2010	2011
High School Students	200	226	244
Undergraduate Students	411	510	573
Graduate Students	2,341	3,362	3,362
Programs for Postdoctoral Research	97	92	67
Faculty	173	207	232
Total Students/Faculty	3,222	4,397	4,478

FELLOW FEATURE

The Stimulus-funded Corporate Research Postdoctoral Fellowship for Engineers, a partnership of ASEE and NSF (Grant EEC-0946373), placed post-docs in one-year corporate R&D jobs at a time when few firms were hiring. One was materials scientist Gordon Nameni.

Gordon Nameni's post doctoral industrial fellowship at A.O. Smith Corporation, which manufactures an array of water-treatment products, yielded two publications and progress on a third, an invited talk, and two distinct patent disclosures. He also assessed competitors' patents and emerging technologies worldwide. Nameni says he began "relating to technology through a different lens . . . the way you approach technology with capital behind you." Mentor Ernie Lee notes that Nameni helped A.O. Smith expand its view of potential products, spurred development of a new water-treatment process, and developed new testing methods.

Nameni's Fellow status spared him from having to submit quarterly reports and the profit-driven pressures his colleagues were exposed to. Still, he gained enough exposure to the business end of R&D to get hooked. "It ignited my curiosity to explore more the interface between technology and business. And so it was key to my being able to start to harness the education I worked so hard to get." Following his Fellowship, Nameni accepted a role as management consultant for Pittsburgh-based PPG Industries. Nameni says he frequently draws on his A.O. Smith experience in developing commercialization strategies for emerging technologies.

FELLOWSHIPS & RESEARCH OPPORTUNITIES

- SCIENCE AND ENGINEERING APPRENTICE PROGRAM (SEAP)
- NAVAL RESEARCH ENTERPRISE INTERN PROGRAM (NERIP)
- NASA AERONAUTICS SCHOLARSHIP PROGRAM (NASA ASP)
- SCIENCE MATH AND RESEARCH FOR TRANSFORMATION SCHOLARSHIP FOR SERVICE PROGRAM (SMART)
- NATIONAL DEFENSE SCIENCE AND ENGINEERING GRADUATE FELLOWSHIP (NDSEG)
- NSF GRADUATE RESEARCH FELLOWSHIP PROGRAM (GRFP)
- NSF ENGINEERING INNOVATION FELLOWSHIP PROGRAM (EIFP)
- NSF EAST ASIA AND PACIFIC SUMMER INSTITUTES
- ECOCAR2: PLUGGING INTO THE FUTURE (ECOCAR)
- ALTERNATIVE MOTOR FUELS (AMF)
- NRL POSTDOCTORAL FELLOWSHIP PROGRAM
- CHINA LAKE POSTDOCTORAL FELLOWSHIP PROGRAM
- INDIAN HEAD POSTDOCTORAL FELLOWSHIP PROGRAM
- CORPORATE RESEARCH POSTDOCTORAL FELLOWSHIP FOR ENGINEERS PROGRAM
- SBIR POSTDOCTORAL DIVERSITY FELLOWSHIP
- ONR SUMMER FACULTY AND SABBATICAL LEAVE PROGRAM
- AIR FORCE SUMMER FACULTY FELLOWSHIP PROGRAM

MEMBERSHIP

The value of ASEE membership is reflected in our overall number of members as well as the number of higher education institutions, corporate organizations, and nonprofits that participate with ASEE. In spite of slightly decreased membership in 2011, we increased the number of institutions with which

we participate, via our members and through other member-focused activities. Having more external connections across activities gives ASEE increased visibility and leverage in engineering education and in government circles, ultimately benefitting our membership.

The ASEE Deans Program, through which deans of member schools sponsor faculty for one year of ASEE membership and ASEE provides a second year free, brought in 359 new members in Fall 2011 – more than triple the total from the previous 12 months. Leading the way were the deans at the University of Tennessee, Knoxville and the University of Southern California, each of whom sponsored over 50 new ASEE members.

INFORMATION TECHNOLOGY

The IT department completed and put into production Phase 1 of the new integrated membership, paper management, and conference registration system, eliminating previous problems of duplicate accounts and data sharing and adding a more holistic view of member activity. The system is built on a platform which

allows advanced user interface support and highly maintainable and adaptable software. Enhanced member experiences will be part of each rollout, and improvements over the Phase 1 system are planned in future releases. For the first time we supported all panelists simultaneously for the offsite Graduate Research Fellowship Program

panel evaluations. This very successful implementation allowed over 700 panelists, each with his/her own laptop computer networked to a central server, to enter scores and comments for several thousand applicants. In addition, this year all headquarters staff received new computers and bandwidth into the headquarters office was

increased, allowing for greater staff efficiency and faster response time for those accessing ASEE websites.

ASEE Individual Membership – Number of Members

	2006	2007	2008	2009	2010	2011
Total Professional	9,485	9,614	10,071	9,911	9,246	8,703
Total Contact	775	881	1,055	1,178	1,299	1,364
Life	722	717	712	704	719	702
Retired	534	524	540	546	546	498
Student	601	622	663	684	728	796
K-12	127	139	108	133	129	145
Global	719	662	674	834	847	855
TOTAL	12,963	13,159	13,823	13,990	13,514	13,063

Institutional Membership

	2006	2007	2008	2009	2010	2011
Engineering College	308	311	318	324	323	310
Engineering Technology College	82	83	83	89	94	89
Affiliate College	35	37	38	38	36	34
Non-U.S.	21	25	30	34	33	31
K-12 School Membership	2	1	2	2	6	3
ACADEMIC TOTAL	448	457	471	487	492	467
Corporate/Government/Association	90	97	117	136	147	141
GRAND TOTAL	538	554	588	623	639	608

SMART PROFILES

ASEE administers the Science, Mathematics and Research for Transformation (SMART) Scholarship for Service Program for the Department of Defense to support undergraduate and graduate students pursuing STEM degrees. The program provides students with full tuition payment and a cash stipend.

JACLYN MATHIS

“Even at a young age I was interested in mathematics and science. Math and science have revolutionized the world we live in today and always will with the technology that is constantly being invented. I want to be a part of it because it is fascinating to build something from nothing, especially when the end result can benefit people.”



LONNIE T. PARKER, IV

“After an introductory summer engineering program at Georgia Tech my junior year of high school, I knew engineering would be my major. My academic path has been very diverse...It was not until I considered graduate school and my current work designing intelligent robotic surveyor systems for unexplored terrain that a special, lasting interest was formed.”



JOURNAL OF ENGINEERING EDUCATION

The *Journal of Engineering Education* is a highly respected journal showcasing peer-reviewed papers on rigorously tested engineering education tactics and initiatives. The journal receives submissions from approximately 600 authors from

dozens of countries annually, documenting successful examples of instructional methods and concepts. These exemplars, available free electronically to members, can be used to improve engineering education at institutions worldwide. The *Journal* is internationally

recognized, rated in the top five percent of 21,000 journals by the Australian Research Council, and placed in the top 10 percent of over 2,000 journals in the Thomson-Reuters Social Sciences Citation Index, and the top 15 percent of over 7,000 journals in the Science Citation Index.

ADVANCES IN ENGINEERING EDUCATION

ASEE recognizes the growing number of outstanding, proven engineering education innovations in the peer-reviewed *Advances in Engineering Education*. This journal is archived online and made available to the engineering education community, incorporating creative media such as animation, audio, graphics, and video as a means of enhancing the written text. In this manner, we feel that we will not only be on the frontier of engineering education, but also can set a standard for other online journals. The journal is particularly interested in applications both inside and outside the classroom based on a foundation of accepted learning science principles that have been found to increase student learning and/or achievement.

Promote the value of the engineering profession to society

ASEE PRISM

ASEE's award-winning *Prism* magazine is distributed to over 12,000 people. This general-audience magazine reports on cutting-edge technology and other important trends in engineering education, including instructional methods, innovative curricula, research opportunities, trends and developments, and K-12 outreach activities that encourage youth to pursue studies and careers in engineering. Last year *Prism* won the Distinguished Achievement Award for cover design from the Association of Educational Publishers; the Grand Award for Writing and a technology and science writing award from Awards for Publication Excellence; and interior design and copywriting awards from the Communicator Awards. In addition, ASEE uses its website, social media pages, and newsletters to showcase high-profile *Prism* stories about engineers and engineering.

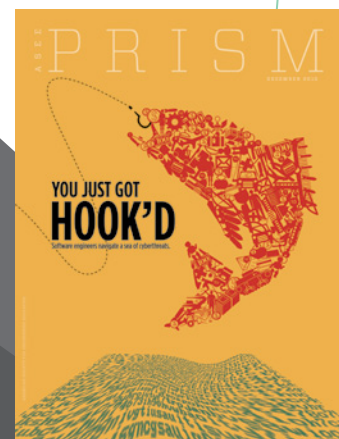
PRISM MAGAZINE

SEEING AND DOING (SEPTEMBER 2011)

Forget forced marches through foundational math or slogs through theory. Students nationwide are gaining a freshman engineering experience their instructors never had. Some get tossed their first screwdriver and learn "righty tighty, lefty loosey" while fumbling to reassemble a cam shaft. Others devise products for destitute developing-world villagers, race mousetrap cars, or dismantle bicycles to develop a feel for physics. Chemistry boot camps, grade-free first semesters, even engineering-themed dorms are becoming more common. So are introductory classes that demonstrate how even limited engineering knowledge can be applied in important ways.

UNDER ATTACK (DECEMBER 2010)

In universities across the country, software engineers are searching for ways to defeat an often mysterious and faceless foe, one who thrives in an online world designed for easy collaboration and access to information. Intriguingly, because of the varied ways the Web cuts across human life, the tactics aren't limited to algorithms and computer code. Traditional coding and software analysis remain essential, but engineers are also delving into psychology, sociology, economics, law, and public policy, among other fields. In order to fix cyberspace, they need to know not only how information technology works and how cybercrooks exploit its weaknesses but also how people interact with it, what financial incentives drive it, and what legal frameworks might help strengthen defenses.



Facilitate international cooperation in matters pertaining to engineering education

INTERNATIONAL

ASEE has developed a worldwide network of associations and contacts primarily through - but not limited to - its international conferences, colloquium, and meetings. These activities result in more highly educated engineering professors and deans who, through a more global view of the engineering profession, can prepare students and their home institutions for the challenges of the global economy. ASEE prepared for its Global Symposium in Shanghai in the fall of 2011 with a revamped approach, creating a smaller, less-expensive meeting than the normally held Global Colloquium. The meeting ultimately brought a small but influential group of leaders to the table, with over 100 people in attendance. The international office has been instrumental in launching engineering deans' councils in multiple countries.

Number of Attendees

	2008	2009	2010	2011
ASEE Global Colloquium	434	387	405	-
ASEE Global Symposium	-	-	-	106

Encourage youth to pursue studies and careers in engineering and engineering technology

K-12

The K-12 focused Engineering, Go for It (eGFI) program continues to reach an audience in the tens of thousands, with 2011 showcasing a new edition of the eGFI magazine, featuring articles on robots inspired by nature, trailblazing engineers, and advances in prosthetics. The eGFI Facebook page grew to an audience of over 30,000 fans, and a new partnership with the National Science Teachers Association sent staff to three workshops around the country to interact face-to-face with K-12 educators and share lesson plans and best practices on teaching engineering concepts to children. Staff continued weekly updates of two blogs, one geared toward middle- and high-school

students and another for teachers.

In conjunction with the annual conference, ASEE held its 8th annual K-12 workshop, drawing over 200 educators from around the world for intensive, day-long activities, including 35 separate sessions, allowing them to network and learn about innovative curricula. During a working lunch, these teachers contributed to an action plan for ASEE's K-12 division on further implementing engineering concepts in the K-12 classroom. Presenters provided their materials for inclusion on ASEE's teachers' website, helping to broaden dissemination.

Number of Attendees

Conferences	2008	2009	2010	2011
ASEE Workshop on K-12 Engineering Education	60	74	298	202

Recognize outstanding contributions of individuals and organizations

AWARDS

ASEE granted 20 awards last year, totaling \$38,500, to honor outstanding faculty for innovation and excellence in education. An important function of the awards program toward furthering ASEE's mission is to raise the profile of good teachers among engineering faculty. The awards also encourage faculty to improve their scholarship through competition. ASEE used multiple communication platforms to highlight the awardees.



AWARDS

ASEE debuted a new award last year, the Isadore T. Davis Award for Excellence in Collaboration of Engineering Education and Industry (pictured is 2011 award winner Dharmaraj Veeramani with Renata Engel). Jointly established and endowed by the four ASEE Councils and the College-Industry Partnership Division, it celebrates the spirit and leadership of individuals who make a mark in the collaborative efforts of engineering or engineering technology education with industry toward the improvement of partnerships or collaborations. The awardee receives a plaque and a \$1,000 honorarium.

Influence government policies and involvement

PUBLIC AFFAIRS

Through its public policy meetings, newsletters on policy issues, and participation in Washington, D.C., events, ASEE is involved in the policy debate on a number of key issues, such as workforce health and R&D investments. These programs make the country's engineering leadership more informed about public policies that impact engineering education and research as well as enable the

community to leverage its resources in federal agencies and on Capitol Hill. The annual Engineering Deans Institute (EDI) provides an opportunity for engineering deans to gather and discuss the crucial issues facing their schools, colleges, and profession, and the annual Engineering Research Council meeting informs ASEE constituents of federal research trends and opportunities.

Number of Attendees

Conferences	2010	2011
Engineering Deans Council Public Policy Colloquium	110	126
Engineering Research Council Meeting	128	122

DEANS' UPDATES

Education Innovations from ASEE's Members

The University of Southern California features the Center for the Instruction of Mathematics to Engineering Students, a joint initiative by the USC Viterbi School of Engineering — led by Dean Yannis Yortsos— and the USC Dornsife College of Letters, Arts and Sci-

ences to strengthen instruction in USC's undergraduate calculus sequence. The two schools collaborate to identify full-time engineering faculty members prepared to deliver special engineering sections of the calculus courses required of engineering undergraduates. These special sections are identified in the schedule of classes, and are part of a broad-based effort to continue to increase retention of engineering undergraduates. A notable increase in retention

Increase the participation and success of under-represented groups in the engineering profession

DIVERSITY

ASEE created a Diversity Committee in fiscal 2011 which has a strategic plan to position the Society in partnership with appropriate organizations to increase diversity in the profession. The committee encourages each member division to hold at least one activity per year that features inclusiveness and engages ASEE leaders and members 1) to articulate the importance to the profession of advancing diversity and 2) promote individual and organizational opportunities and responsibilities in developing an engineering community that "looks like" America.

In 2011-12, the committee is focusing its efforts on developing tools and processes to support ASEE members in promoting diversity. Specific activities include devising methods for reaching out to diverse groups and collaborating with diversity organizations, as well as developing tools for diversity education and training. The root causes of diversity will be used to educate ASEE members on the history of exclusion, enabling them to better understand why we must be proactive in addressing this issue. The overall goal is to help ASEE members, particularly elected officers, learn about and promote diversity.

has been attributed to this innovation.

In the aftermath of Hurricane Katrina, Tulane University revamped its structure and created a new School of Science and Engineering, led by Dean Nicholas Altiero. Seven years later, Tulane is enjoying record enrollments at all levels, with the School of Science and Engineering experiencing the most rapid growth. The school has defined a vision focused on the integration of science and engineering in a rich interdisciplinary environment. A third engineering degree program has been added, Engineering Physics, and engineering students now comprise one quarter of the school's total enrollment. Future plans involve the creation of programs in computer science, geological engineering, and perhaps engineering psychology. Says Dean Altiero, "Our goal has been to establish a leadership role in a world where science and engineering are increasingly interconnected and I believe we could not

be more pleased with what we have been able to accomplish."

The University of Wisconsin-Madison College of Engineering and Dean Paul Percy launched an initiative in 2011 challenging the limitations of the traditional classroom lecture. The Wisconsin Collaboratory for Enhanced Learning (WisCEL) provides an alternative space that allows instructors to adopt a new paradigm of individual-focused, technology-enhanced teaching — instead of attending lectures, students listen to a recorded lecture online and then go to the WisCEL to tackle practice problems at multi-student workstations. Students receive immediate computer feedback on answers, plus one-on-one support from available instructors and teaching assistants. WisCEL is distinguished by its flexibility, offering a combination of both teaching space and group study space for engineers.



CONSOLIDATED STATEMENTS OF ACTIVITIES

(EXCLUDING PASS-THROUGH FUNDS FOR FEDERAL AWARDS)
For the Fiscal Year Ending September 30

The society strengthened its financial governance by creating an audit committee in FY2011 to better ensure accountability, particularly in dealing with complex government contracts related to the extensive fellowship programs noted elsewhere in this document. In addition, the accounting department successfully completed FY2011 financial and A-133 audits by independent auditors with no audit findings.

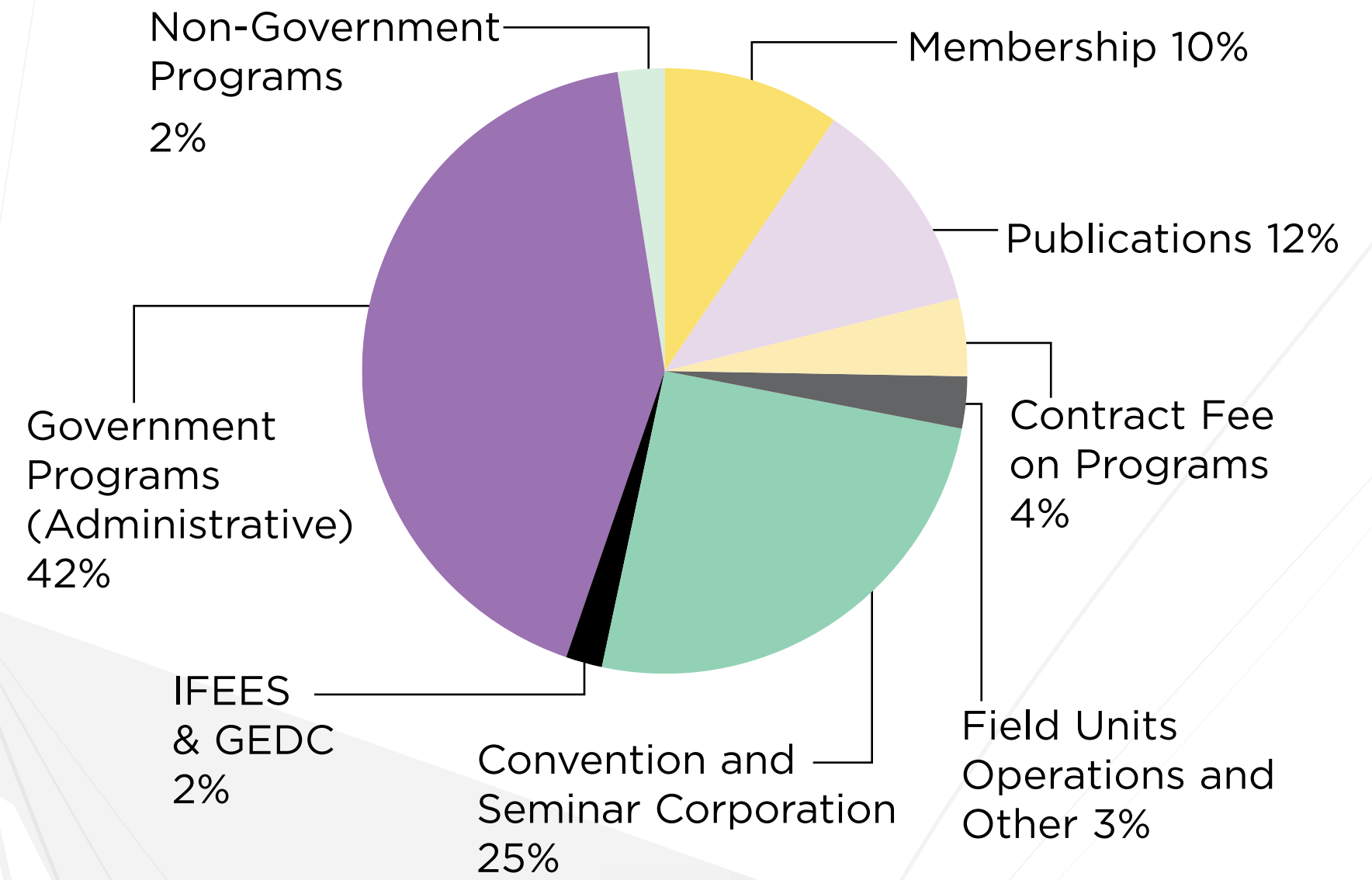
CONSOLIDATED STATEMENTS OF ACTIVITIES

(EXCLUDING PASS-THROUGH FUNDS FOR FEDERAL AWARDS)
For the Fiscal Years Ended September 30

REVENUE	FY2011	FY2010	FY2009	Percent
Membership	1,159,987	\$1,239,883	\$1,260,708	9.7
Publication	1,375,572	1,204,177	1,712,454	11.5
Contract Fee on Programs	488,601	457,807	302,254	4.1
Field Units Operation and Other	331,551	581,459	533,785	2.8
Convention and Seminar Corporation	3,033,956	2,858,255	2,381,325	25.3
IACEE	-	13,714	5,920	
IFEES & GEDC	227,390	-	-	1.9
Tau Alpha Pi	24,751	25,597	20,827	.2
Government Programs (Administrative)	5,064,210	4,714,870	4,149,452	42.2
Non-Government Programs	287,425	142,157	-	2.4
TOTAL	11,993,443	11,237,919	10,366,725	100
EXPENSES				
Membership	490,900	505,845	556,012	4
Publication	2,284,729	2,202,856	2,479,743	19
Field Units Operation and Other	720,746	661,933	638,576	6
Convention and Seminar Corporation	3,126,952	3,056,086	2,750,918	26
IACEE	759	16,634	15,011	0
IFEES & GEDC	157,581	-	-	1
Tau Alpha Pi	16,702	12,296	43,073	0
Government Programs (Administrative)	5,064,210	4,714,870	4,149,452	42
Non-Government Programs	290,748	142,157	-	2
TOTAL	12,153,327	11,312,677	10,632,785	100
Change in Net Assets	(159,884)	(74,758)	(266,060)	
Net Assets - Beginning of Year	3,046,516	3,121,274	3,387,334	
NET ASSETS - END OF YEAR	2,886,632	3,046,516	3,121,274	

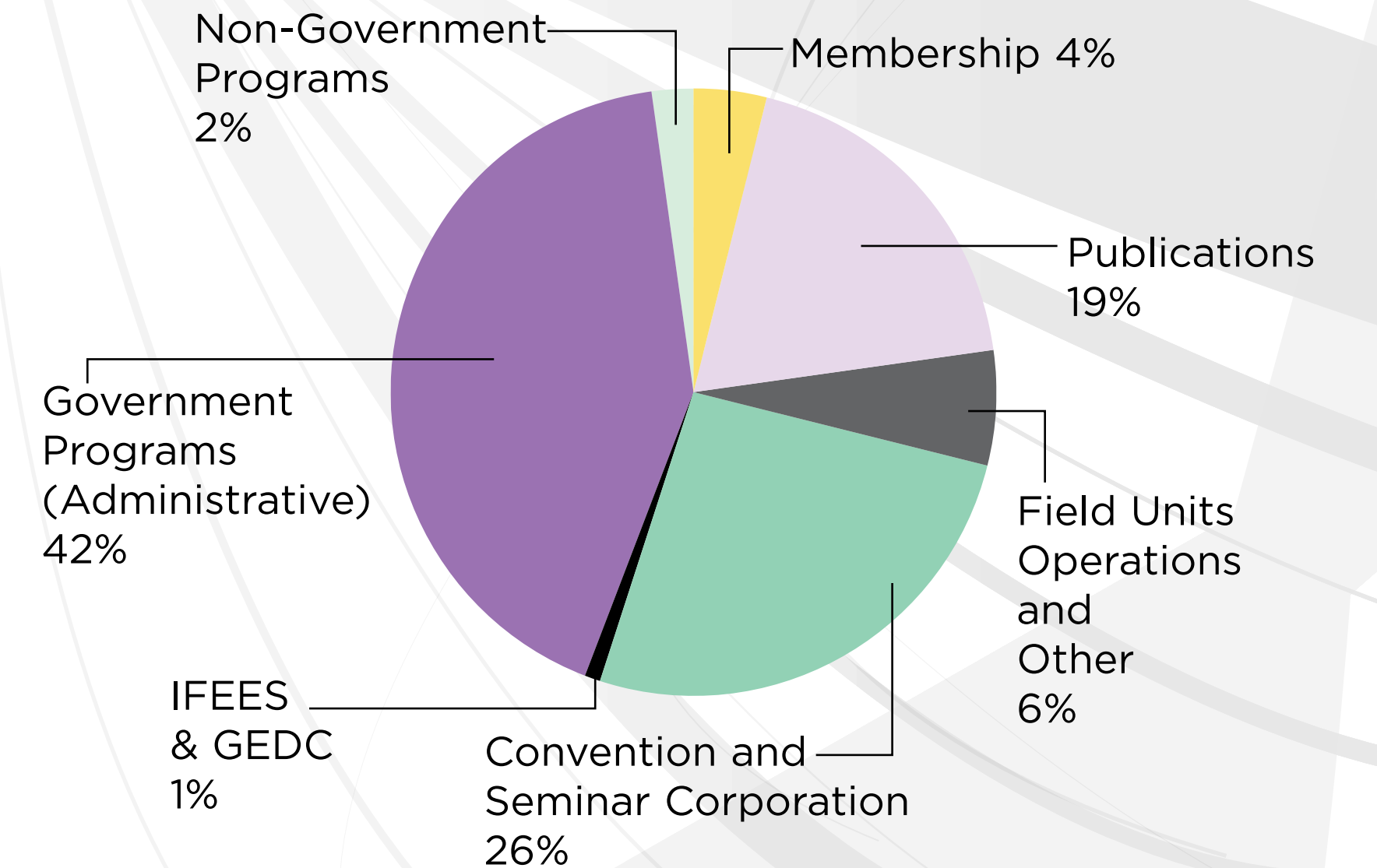
PERCENTAGE OF REVENUE BY PROGRAM IN FY 2011

\$11,993,433



PERCENTAGE OF EXPENSES BY PROGRAM IN FY 2011

\$12,153,327



CHANGE IN NET ASSETS FY09 - FY11

- FY 2011
- FY 2010
- FY 2009

