ELECTRIC POWER ENGINEERING EDUCATION RESOURCES 1995-96
IEEE POWER ENGINEERING SOCIETY COMMITTEE REPORT

Abstract - This subcommittee report is based on the fourteenth biennial survey of power engineering education resources in the U.S. and Canada, eleven of which have been previously published (1-12). This survey is conducted to determine the electric power engineering education resources available accredited engineering programs in the U.S. and Canada for the 1996-96 academic year. The report is limited to colleges and universities that reply to a questionnaire on a voluntary basis. For the 61 colleges and universities (58 U.S., 3 Canadian) that submitted data on their power programs, the report contains a list of faculty active during the 1995-96 academic year, their level of academic participation and professional experience. Statistics are also presented on student enrollments at the graduate level, degrees granted and research funding. A list of centers involved in power engineering research is also included. A tabulation of graduate and undergraduate electrical engineering power courses and their enrollments offered by each responding university is presented.

1. INTRODUCTION

The Power Engineering Education Resources Subcommittee (PEERS) of the Power Education Committee (PEEC) was appointed to make a survey of the power engineering education resources of U.S and Canadian universities and colleges during the year 1995-96, and provide a summary report. The survey form with some modifications from the previous survey of 1993-94 was approved for circulation to the various universities. The data requested in the survey fell into four major sections of information: Power program and the faculty; Research work in the power area; Graduate program enrollment, and Course offerings in power.

The survey forms were sent to the electrical engineering departments of 212 universities by email and/or post. The list of universities was obtained from the previous survey report, and the previous subcommittee chair. 58 U.S and 3 Canadian Universities responded and returned the forms. 8 of the responding universities had only an undergraduate program in power, while 53 had both undergraduate and graduate programs. The data supplied by these departments form the basis of this summary report. No ranking or categorization of the responding departments in terms of quality is implied or intended, and use of the data herein to do so is discouraged.

As in earlier surveys, the reporting includes only full time permanent teaching faculty. The restriction is stressed in the instructions for filling the survey form. The restriction reads as follows: “Faculty includes only permanent teaching instructors and/or those instructors supervising student research in the power area; excluded are visiting or temporary faculty, administrators, adjunct faculty, research engineers and other purely research personnel; also excluded are faculty not teaching power or energy-related courses and supervising student research, and faculty on leave during the subject year. Also exclude graduate assistants - they are included as students.”

2. ELECTRIC POWER ENGINEERING SCHOOLS AND FACULTY

The roster of faculty active in electric Power Engineering Education in each university during 1995-96 is shown in Table 1. The contact person for each university is shown with the telephone number and email address. Tables

2 and 3 represent summaries of the total number of power faculty and their cumulative experience. Explicit survey instructions were given relative to the percent academic activity for the 1995-96 academic year. Since the interest is in summarizing professional experience in power area, it is quite possible that a number of faculty will have more years of total experience than listed under separate subheadings of academic and power industry experience. The rules laid down in the survey instructions aim first at dividing the professional experience into appropriate parts such as power and nonpower academic, full and part time power engineering and research experience, and second at avoiding arbitrary experience measurement to provide consistency in the responses.

Information on co-op programs at the undergraduate level was elicited by the question, 'Do you have a co-op program for power students during 1995-96, and if yes, is it optional or compulsory?'. 44 of the 58 U.S universities had an optional co-op program, and in one university, the co-op program was compulsory.

3. RESEARCH WORK IN POWER AREA

Table 4 provides information on research areas pursued at the responding universities. Table 5 lists special centers for research in energy and power attached to different universities. Table 6 shows the amount of funding dollars in the individual categories as provided by the responding departments.

4. GRADUATE PROGRAM

Data obtained about the graduate programs are summarized in Table 7 . The enrollment data of individual departments and the totals are listed.

5. POWER ENGINEERING COURSE OFFERINGS IN 1995-96

Comprehensive lists of courses offered in power area during 1995-96 with enrollments in each course are shown in Table 8. Among the U.S universities, 43 had used distance learning facilities for teaching some power courses.

6. CONCLUSIONS

This subcommittee report provides information on the power engineering education services in the U.S and Canada during 1995-96. The information is in no way exhaustive, since the responses were from only 61 universities. Neither the IEEE (under whose auspices the subcommittee functions) nor the Power Engineering Education Committee intends any value judgment as to the quality of any program included in the report. It must be remembered that data are only part of the basis for forming any value judgments, and other factors not amenable for statistical quantification play an important role in evaluating the quality of such specialized programs such as power engineering. The subcommittee hopes that the report sheds some light on the status of power engineering education, and provides some valuable information for use by the readers.

The report will be available on the World Wide Web.

Power Engineering Education Resources Subcommittee Members are the following:

A. Chandrasekaran (Chair), R.L. King, V. Rajagopalan, M. T. Glinkowsky, B. Fischl, J. Mayer, T. S. Sidhu, T. Skvarenina.

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7. REFERENCES

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4. IEEE Power Engineering Society Committee Report, Electric Power Engineering Education Resources, 1975-1976, IEEE Transactions, PAS Vol. 97, No. 3, pp. 802-809, May-June 1978.
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6. IEEE Power Engineering Society Committee Report, Electric Power Engineering Education Resources, 1979-1980, IEEE Transactions, PAS Vol. 100, No. 11, pp. 4456-4463, November 1981.
7. IEEE Power Engineering Society Committee Report, Electric Power Engineering Education Resources, 1981-1982, IEEE Transactions, PAS Vol. 103, No. 5, pp. 921-932, May 1984.
8. IEEE Power Engineering Society Committee Report, Electric Power Engineering Education Resources, 1985-1986, IEEE Transactions, PAS Vol. 3, No. 3, pp. 1340-1353, August 1988.
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10. IEEE Power Engineering Society Committee Report, Electric Power Engineering Education Resources, 1989-1990, IEEE Transactions, PAS Vol. 7, No. 4, pp. 1611-1622, November 1992.
11. IEEE Power Engineering Society Committee Report, Electric Power Engineering Education Resources, 1991-1992, IEEE Transactions, PAS Vol. 9, No. 3, pp. 1182-1193, August 1994.
12. IEEE Power Engineering Society Committee Report, Electric Power Engineering Education Resources, 1993-1994, IEEE Transactions, PAS Vol. 11, No. 3, pp. 1146-1158 , August 1996.

1. Abbreviations of Rank
   - PPC : Professor & Sponsored Power Chair
   - P&C : Professor & Department Chair
   - P : Professor
   - ACP : Associate Professor
   - ATP : Assistant Professor
   - LCT : Lecturer
   - INS : Instructor
2. Degree
   - B - Bachelors E - Professional
   - M - Masters D - Doctorate
3. PE - Registered Professional Engineer
   - Y - Yes N- No
4. PES - Power Engineering Society Member Status
   - Y - Member PES
   - N - Not PES Member
5. IEEE : IEEE Membership Status
   - F - Fellow S - Senior Member
   - M - Member N - Not a Member
6. Other Abbreviations
   - Tch - Teaching Rsh - Research
   - Eng - Engineering.

Table 1 Faculty Engaged In Electrical Power Engineering Teaching In 1995 - 96

Name	Rank	Degree	PE	PES	IEEE	Academic Activity 95-96 (%)			Years Professional Experience Prior to 1995-96				
						Power		Other	Academic	Power		Industry	
										Part		Full	
						Tch	Rsh		Power	Other	Eng	Rsh	Eng	Rsh
ALABAMA														
U. of Alabama - Tuscaloosa													**Semester**	
A.A.El-Keib el-keib@coe.eng.ua.edu													**(205) 348-1756**	
El-Keib, A.A.	P	D	N	Y	S	50	50		16	3	1	2		
Haskew, T.A.	ACP	D	N	Y	S	50	50		7		1			
Morley, L.A.	P	D	N	Y	S	50	20	30	28					
Novak, T.	P	D	Y	N	n		20	80	19		5	1	2	
ARIZONA														
Arizona State U.													**Semester**	
G.G.Karady karady@asu.edu													**(602) 965-6569**	
Farmer, R.G.	P	M	Y	Y		75	25	0	40	2			35	5
Gorur, R.	P	D	Y	Y		30	60	10	9	0	3	0	0	0
Heydt, G.T.	P	D	Y	Y		25	50	25	30	0	3	0	19	8
Holbert, K.E.	ACP	D	Y	Y		25	25	50	7	0	2	1	1	1
Karady, G.G.	P	D	Y	Y		30	60	10	38	0	8	0	10	7
Tylavsky, D.	ACP	D	N	Y		75	25	0	17	0	2	0	1	0
ARKANSAS														
U. of Arkansas (Fayetteville)													**Semester**	
Juan Carlos Balda jcb@engr.uark.edu													**(501) 575-6578**	
Olejniczak, Kraig	ACP	D	Y	Y		50	40	10	5		5			
Balda, Juan Carlos	ACP	D	Y	Y		50	40	10	14				2	
CALIFORNIA														
California Polytechnic Institute													**Quarter**	
Ali Shabau ashabau@ohm.ee.calpoly.edu													**(805)796-2918**	
Shabau, Ali	P	D	N	Y		90	10		10	3	2			
U. of San Jose State													**Semester**	
Peter Reischl preischl@email.sjsu.edu													**(408) 924-3911**	
Reischl, Peter	P	D	N	Y		25	10	70	6	20	1	1		
Hsu, Ping	ACP	D	N	Y		20	20	60	4	10	2	2		
COLORADO														
U. of Colorado - Boulder													**Semester**	
Ewald F Fuchs fuchse@spot.colorado.edu													**(303) 492-7010**	
Fuchs, Ewald F.	P	D	N	Y		40	40	20	21	0	0	0	9	0
CONNECTICUT														
U. of Hartford													**Semester**	
Shertukde, H shertukde@uhavay.hartford.edu													**(860) 768-4847**	
Shertukde, H	P	D	Y						10				3	5
Alnajjar, H	ACP	D							2				2	
DISTRICT OF COLUMBIA														
Howard U.													**Semester**	
James A. Momoh jm@scs.howard.edu													**(202) 806-6585**	
Momoh, James A.	P	E	Y			40	40	20	15	3	2		2	4
Rubaii, Ahmed	ACP	E	Y						16		1			
Bofah, Peter	ATP	E	Y						12	2				
FLORIDA														
Florida Atlantic U.													**Semester**	
Roger Messenger messenge@fau.edu													**(561) 367-3407**	
DeGroff, Dolores	ATP	D	N	N		25		75	4					
Messenger, Roger	P	D	Y	N		20		80	26					
Ungvichian, Vichate	P	D	Y	N		10		90	15					
Florida International U.													**Semester**	
Osama Mohammed mohammed@servms.fiu.edu													**(305) 348-3040**	
Mohammed, Osama	P	D	Y			50	50		15	5				
Samra, Abdul H.	ATP	D	Y			50	50		8	4				
Roig, Gustavo	ACP	D	Y				50	15	5					
U. of Florida													**Semester**	
Alex Domijan alexd@admin.ee.ufl.edu													**(352) 392-0290**	
Caroll, P.	P	D	N	Y		50	25	25	29	1		1	1	
Ngo, K.D.T.	ACP	D	N	N		10	50	40	4	5			2	2
Rakov, V.A.	ACP	D	N	N		40	60		19					
Rashid, M.H.	P	D	Y	Y		10	25	65	25					3
Domijan, A. Jr	P	D	N	Y		50	45	5	10	1		1		1
U. of Central Florida													**Semester**	
Issa Batarseh batarseh@pegasus.cc.uct.edu													**(407) 823-0185**	
Batarseh, Issa	ACP	D	Y	Y		50	50		7					
Qu, Z	ACP	D	N	N		50	50							
IDAHO														
U. of Idaho													**Semester**	
Brian Johnson bjohnson@ee.uidaho.edu													**(208) 885-6902**	
Hess, Herbert	ATP	D	Y	Y		65	25	10	3	5				
Johnson, Brian	ACP	D	Y	Y		65	25	10	5		1			
Law, John	P	D	Y	Y		65	25	10	21		4	10		11
Law, Joseph	ACP	D	Y	Y		65	25	10	7	2		1		2
Wall, Richard	ACP	D	Y	Y		65	25	10	3	4			12	6
ILLINOIS														
Northern Illinois U.													**Semester**	
Donald S. Zinger zinger@ceet.niu.edu													**(815) 753-0540**	
Zinger, Donald S.	ATP	D	Y	Y		50	25	25	13			4		
U. of Illinois - Urbana-Champaign,													**Semester**	
Peter W. Sauer sauer@ece.uiuc.edu													**(217) 333-0394**	
Gross, G.	PPC	D	Y	F		50	40	10	3				20	
Krein, P.T.	ACP	D	Y	S		50	40	10	12	2	1			
Overbye, T.H.	ATP	D	Y	M		50	40	10	5		3		5	
Pai, M.A.	P	D	Y	F		50	40	10	33	6			4	
Sauer, P.W.	P	D	Y	F		50	40	10	21				5	
Turnbull, R.J.	P	D	N	S		50	20	30	18	14				
INDIANA														
Purdue U.													**Semester**	
Oleg Wasynchuk wasynczu@ecn.purdue.edu													**(765) 494-3475**	
Friedlaender, F.J.	P	D	N	Y		50			55	7		4		
Krause, P.C.	P	D	N	Y		75	25		40	20		1		
Ogborn, L.L.	ACP	D	Y	N		100			37			2		
Ong, C.M.	P	D	Y	Y		100			28			2		
Sudhoff.S.D.	ACP	D	N	Y		75	25		5		2			
Wasynczuk, O.	P	D	N	Y		75	25		18		5			

Name	Rank	Degree	PE	PES	IEEE	Academic Activity 95-96 (%)			Years Professional Experience Prior to 1995-96			
						Power			Academic	Power		Industry
										Part		Full
						Tch	Resh	Other	Power	Other	Eng	Resh	Eng	Resh

IOWA

Iowa State U. — **Semester**

James D. McCalley — **jdm@iastate.edu** — **(515) 294-4844**

Ajjarapu, Venkataramana	ACP	D	N	Y	S	30	50	20	14					
Kruempel, Ken	ACP	D	N	Y	M	25		75	27				3	
Lamont, John	P	D	Y	Y	S	25	50	25	24				4	1
McCalley, Jim	ATP	D	Y	Y	M	50	50		5	2			4	
Sheble, Gerry	P	D	N	Y	S	25	50	25	10				7	8
Vittal, Vijay	P	D	N	Y	F	50	50		15					2
Fouad, Aziz	P	D	Y	Y	F		50	50	40					5
Pavlat, John	ACP	M	N	Y	M	25		75						

KANSAS

Wichita State U. — **Semester**

Robert I. Egbert — **bobe@ee.twsu.edu** — **(316) 978-5509**

Egbert, Robert I.	P	D	Y	Y		50	25	25	21	4			4	
Jewell, Ward T.	P	D	N	Y		50	25	25	12				3	
Teshome, Asrat	ACP	D	N	Y		50	25	25	15				7	

Kansas State U. — **Semester**

Anil Pahwa — **pahwa@ksu.edu** — **(785) 532-4654**

Pahwa, Anil	P	D	N	Y	S	40	30	30	12	6		2		
Morcos, M. Medhat	P	D	N	Y	S	40	30	30	15	9		5		
Starrett, Shelli	ATP	D	N	Y	M	40	40	20	6					

KENTUCKY

U. of Kentucky — **Semester**

J.J.Cathey — **cathey@engr.uky.edu** — **(606) 257-8043**

Cathey, Jimmie J.	P	D	Y	Y		50	25	25	15	2				
Nasar, Syed A.	P	D	N	Y		50	50		25	4				
Trutt, Fred C.	P	D	N	Y		25	50	25	19	7				
Radun, Arthur V.	ACP	D	N	Y		25	50	25	3	2				

LOUISIANA

U. of New Orleans — **Semester**

Gill Richards — **ggree@uno.edu** — **(504) 280-7415**

Richards, Gill	P	D	N	Y		75	25		20				3	
Barcelo, Wayne	ATP	D	Y	Y		50	50		1				25	

MAINE

U. of Maine — **Semester**

James Patton — **patton@eece.maine.edu** — **(207) 581-2244**

Patton, J	ACP	D	Y	Y		33	33	33	8	11	8			
Dunning, S	ACP	M	Y	Y		60	40		5	7				

MASSACHUSSETTS

Worcester Polytechnic Institute — **7 week term**

John A. Orr — **orr@ece.wpi.edu** — **(508) 831-5273**

Clements, Kevin A.	P		D		Y	50	40	10	25				2	2
Emanuel, Alexander E.	P		D	Y	Y	70	20	10	30				6	2
Orr, John A.	P		D			20	20	60	2	16				
Ludwig, Reinhold	P		D			60	30	10	1	8	1			

MICHIGAN

Wayne State U. — **Semester**

Jerome Meisel — **jmeisel@ece.eng.wayne.edu** — **(313) 577-3530**

Meisel, Jerome	P		D	Y	N	30	40	30	38					

Michigan State U. — **Semester**

Robert Schlueter — **schluete@egr.msu.edu** — **(517) 355-5244**

Salam, F	P		D	N	N		20	80		14				
Schlueter, R	P		D	Y	Y	50	50		21	4				
Shanblatt, M	P		D	N			5	95	3	14				
Strangas, E	P		D	N	Y	50	50		14					
Surbrook, T	P		D	Y		50	25	25	23	7			2	4

Michigan Tech U. — **Quarter**

Dennis Wiitanen — **wiitanen@mtu.edu** — **(906) 487-2847**

Bohmann, Leonard	ACP	D	Y	Y		50	50		11		1			
Mork, Bruce	ATP	D	Y	Y		50	50		4		2	1	4	2
Schulz, Noel	ATP	D	N	Y		50	50			3	1			
Wiitanen, Dennis	P	D	Y	Y		25	25	50	3	2	2			

MINNESOTA

U. of Minnesota. — **Quarter**

Bruce Wollenberg — **wollenbe@ece.umn.edu** — **(612) 626-7192**

Albertson, Vernon	P	D	Y	Y	F	34	17	16	36			4	5	
Mohan, Ned	P	D	N	N	F	50	50		18			3		
Riaz, Mahmoud	P	D	N	N	S	34	17	16	41			5		
Wollenberg, Bruce	P	D	N	Y	F	40	40	20	7				23	

MISSISSIPPI

Missisippi State U. — **Semester**

Roger L.King — **rking@ece.msstate.edu** — **(601) 325-2189**

Grzybowski, Stan	P	D	N	S		35	35	30	40					
Halpin, Mark	ATP	D	N	M		50	50		3		1			
King, Roger L.	P	D	N	S		35	40	25	8		2			
Mazzola, Mike	ATP	D	Y	M			50	50	2					3

MISSOURI

U. of Missouri-Rolla — **Semester**

Max D. Anderson — **mda@ee.umr.edu** — **(573) 341-4552**

Anderson, M.D.	P	D	Y	Y	S	70	3		22	3	6	1	6	
Crow, M.L.	ACP	D	N	Y	S	50	5		7					
Hegler, B.E.	P	D	Y	N	M		25	25	19	24			6	
Morris, J.F.	ACP	M	N	N	N	25		25	25	14				
Richards, E.F.	P	D	Y	N	N	50			25	14	2		7	
Stanek, E.K.	P&C	D	Y	Y	F	25	25	5	29			1		
Sudhoff, S.D.	ATP	D	N	Y	M	50	5		4			1		

NEBRASKA

U. of Nebraska-Lincoln — **Semester**

Sohrab Asgarpoor — **sasgarpoor@unl.edu** — **(402) 472-6852**

Asgarpoor, S.	ACP	D	N	Y		50	25	25	11	3	1		2	1

NEW MEXICO

New Mexico State U. — **Semester**

W. Kersting — **wkerstin@nmsu.edu** — **(505) 646-2434**

Kersting, W.	P	M	N	Y		75	25		33		2		2	
Prasad, R.	ACP	D	N	Y		25	25	50	9				12	
Ranade, S.	P	D	N	Y		75	25		15					
Smolleck, H.	P	D	Y	Y		75	25		25	1				

NEW YORK

Rensselaer Polytechnic Institute — **Semester**

Keith J Nelson — **nelsoj@rpi.edu** — **(518) 276-6328**

Chow, J.H.	P	D	Y	Y			30	70	9	4		1	8	
Degeneff, R.C.	P	D	Y	Y		30	40	30	12				8	9
Glinkowski, M.T.	ACP	D	Y	Y		40	40	20	13					3
Greenwood, A.N.	PPC	D	N	Y		30		70	29		1		10	12
Nelson, J.K.	P&C	D	Y	Y		20	30	50	25			1	1	3
Salon, S.J.	P	D	Y	Y		35	35	30	18				7	
Torrey, D.A.	PPC	D	Y	Y		35	40	25	13					1

Clarkson U. — **Semester**

Thomas H. Ortmeyer — **ortmeyer@sun.soe.clarkson.edu** — **(315) 268-6536**

Ortmeyer, T. H.	P	D	N	Y		50	50		18				4	
Pillay, Pragasen	ACP	D	N	Y		40	50	10	14			8	1	
McGrath, Paul	P	D	N	Y		50	50		22	2		1		
Ahmad-Zaid, Said	ACP	D	N	Y		50	50		13				2	2

Cornell U. — **Semester**

Robert J. Thomas — **rjt1@cornell.edu** — **(607) 255-5083**

Thorp, James S.	P&C	D	N	Y			40	60	6	27		1	1	
Thomas, Robert J.	P	D	N	Y		25	40	35	25					3
Chiang, Hsiao-Dong	ACP	D	N	Y		33	40	27	10			1		

North Carolina State U. — **Semester**

Mesut E. Baran — **baran@eos.ncsu.edu** — **(919) 515-5081**

Baran, Mesut E.	ATP	D	N	Y		40	60		14				2	
Chow, Mo-Yeun	ACP	D	N	Y		40	60		9	6		1		
Goetze, Alfred J.	P	D	N	Y		100			23	20		1		
Grainger, John J.	P	D	Y	Y		40	60		21		3		17	
Kelley, Arthur W.	ACP	D	N	N		45	45	10	15				3	

Name	Rank	Degree	PE	PES	IEEE	Academic Activity 95-96 (%)			Years Professional Experience Prior to 1995-96					
						Power			Academic	Power		Industry		
						Tch	Resh	Other	Power	Other	Part Eng	Part Resh	Full Eng	Full Resh

NORTH DAKOTA

North Dakota State U.													**Semester**
Don L. Stuehm	**stuehm@badlands.nodak.edu**												**(701) 231-7614**
Rao, K.S.	P	D	Y	N		60	30	10	37		1	2	
Rao, V.V	P	D	N	N		60	30	10	17	19	1	1	
Stuehm, Don L.	P	D	N	Y		60	30	10	21	4	1	2	
Yuvarajan, S.	P	D	N	N		60	30	10	31		1		

OHIO

U. of Akron													**Semester**
Malik Elbuluk	**melbuluk@uakron.edu**												**(330) 972-6531**
Elbuluk, Malik	ACP	D	Y	Y		50	50		21			4	2
Husain, Iqbal	ATP	D	N	Y		50	50		10		1	1	

Ohio State U.													**Quarter**
Stephen A. Sebo	**sebo@ee.eng.ohio-state.edu**												**(614) 292-7410**
Kasten, Donald	ACP	D	Y	Y	S	60	30	10	23		2	1	3	
Keyhani, Ali	P	D	N	Y	S	50	40	10	21		2	1	4	1
Sebo, Stephen	PPC	D	N	Y	F	60	30	10	34		2	1	4	1
Xu, Longya	ACP	D	N	Y	S	50	40	10	6	6				2

OKLAHOMA

U. of Oklahoma													**Semester**
Arthur M. Breipohl	**breipohl@mailhost.ecn.ou.edu**												**(405) 325-2971**
Breipohl, Arthur M.	PPC	D	Y	Y					17	22			10
Lee, Fred N.	P	D	Y	Y		40	60		12				10

Oklahoma State U.													**Semester**
R. Ramakumar	**ramakum@master.ceat.okstate.edu**												**(405) 744-5157**
Gedra, Thomas	ACP	D	N	Y	M	50	50		5	2			
Ramakumar, R.	PPC	D	Y	Y	F	50	25	25	34	4		1	

U. of Tulsa													**Semester**
Marcus O. Durham	**mod@utulsa.edu**												**(918) 631-3276**
Durham, Marcus O.	P	D	Y	N		13	25		12				30
Strattan, Robert	P	D	Y	Y		13			30				
Ashenayi, Kaveh	ACD	D	Y	Y		13	25		10				

OREGON

Oregon State U.													**Quarter**
Alan Wallace	**wallace@ece.orst.edu**												**(541) 737-2995**
Spee, Rene	ACP	D	N	Y	SM	75	25		14				
Jouanne, Annette Von	ATP	D	Y	Y	M	50	50		2				
Wallace, Alan	P	D	N	Y	SM	50	50		19			5	5

PENNSYLVANIA

Villanova U.													**Semester**
Frank Mercede	**mercede@ece.vill.edu**												**(610) 519-4982**
McKeough, Charles	ATP	M	N	N		25	25	50	15	15			
Mercede, Frank	ATP	D	Y	N			25	75	4	5	1		5
Singh, Pritpal	ACP	D	N	N			50	50	4	8		3	

Drexel U.													**Quarter**
Chika Nwankpa	**nwankpa@ece.drexel.edu**												**(215) 895-2218**
Nwankpa, Chika	ACP	D	N	M		50	50		6				
Niebur, Dagmar	ATP	D	N	M		50	50		3				
Fischl, Robert	PPC	D	N	F		50	50		30	5	5	6	
Kaplan, Martin	P	M	Y	M		100			50		20	6	5
Kwatny, Harry	PPC	D	N	F		50	30	20	28	5		11	
Stagliano, Ernest	LEC	M	N	M		100			25	10	5		30
Grytko, Carl	LEC	M	Y	M		100			18	12	3		40

SOUTH CAROLINA

Clemson U.													**Semester**
Adly A.Girgis	**adly.girgis@ces.clemson.edu**												**(803)656-5936**
Collins, Randy E.	ACP	D	Y	SM		50	30	20	11	3			
Girgis, Adly A.	PPC	D	Y	F		40	40	20	21	3	2	2	
Lubkeman, David L.	ACP	D	Y	S		50	35	15	13	2	1	1	
Makram, Elham B	P	D	Y	S		40	40	20	13	7	7	1	7	1

TENNESSEE

Tennessee Technological U.													**Semester**
A. Chandrasekaran	**arunsekar@tntech.edu**												**(931)372-3626**
Alouani, A.T.	ACP	D	N	S			20	80	5	8			
Chandrasekaran, A	P	D	N	S		40	50	10	24	11		4	
Chowdhuri, P.	P	D	Y	S		40	50	10	10				33
Mahajan, S.M.	ACP	D	N	M		50	40	10	9			2	
Ojo, J.O.	ATP	D	N	M		50	50		17			1	
Radman, G.	ACP	D	N	M		80	20		9	3	2		

TEXAS

U. of Houston													**Semester**
Ovidiu Crisan	**ocrisan@uh.edu**												**(713) 743-4432**
Crisan, Ovidiu	P	D	N	Y		30	50	20	34	0	0	0	0	0

U. of Texas - Arlington													**Semester**
Mo Shing Chen	**munoz@ee.uta.edu**												**(817) 272-2268**
Chen, Mo Shing	P	D	Y	Y		50	50		32			1	2
Shoults, R.R.	P	D	Y	Y		50	50		18	1			8
Lee, W.J.	ACP	D	Y	Y		75	25		9				
Dillon, W.E.	ACP	D	Y	Y		25	25		20	1		5	1

Texas Tech U.													**Semester**
Michael Giesselmann	**michaelg@coe2.coe.ttu.edu**												**(806) 742-3462**
Geisselmann, Michael	ACP	D	N	Y	SM	50	40	10	10				
Kristiansen, Magne	P	D	Y	Y	F	30	60	10	25				
O'Hair, Edgar	P	D	Y	N		50	40	10	20				
Portnoy, William	P	D	N	Y	F	50	40	10	20				
Dickens, James	ATP	D	Y	Y	M		90	10	4				

Texas A&M U.													**Semester**
Mladen Kezunovic	**kezunov@ee.tamu.edu**												**(409) 845-7509**
Abur, A.	ACP	D	Y	Y		50	50		18				
Butler, K.	ATP	D	Y	Y		50	50		3				
Ehsani, M.	P	D	Y	N		50	50		17	7			
Enjeti, P.	ACP	D	Y	Y		40	50	10	17		2		2	15
Huang, G.	P	D	Y	Y		80	20		17	5		1		
Kezunovic, M.	P	D	Y	Y		40	50	10	18		2			4
Patton, A.	P	D	Y	Y		8	12	80	21	6			4	7
Russell, B.	P	D	Y	Y			20	80	22	4		1		
Singh, C.	P&C	D	Y	Y		50	50		18				10	5
Toliyat, H.	ATP	D	N	Y		75	25		13				3	

VIRGINIA

Virginia Polytechnic Institute and State U.													**Semester**
Carolyn Guynn	**guynncv@vt.edu**												**(540) 231-7283**
Broadwater, Robert	P	D	N	Y	M	60	30	10	13			2		8
Jaime De La Ree	ACP	D	N	Y	S	60	30	10	11					
Liu, Yilu	ACP	D	N	Y	M	50	40	10	13					
Mili, Lamine	ACP	D	N	N	S	40	40	20	15				3	2
Phadke, Arun G.	PPC	D	N	Y	F	30	55	15	15				16	
Tam, Kwa-Sur	ACP	D	N	Y	S	50	40	10	9		1			
Rahman, Saifur	P	D	N	Y	S	40	40	20	17			1		

U. of Virginia													**Semester**
Paxton Marshall	**marshall@virginia.edu**												**(804) 924-3164**
Marshall, Paxton P.	ACP	D	N	Y		30	10	60	7	13			

WASHINGTON

U. of Washington													**Quarter**
Chen-Ching Liu	**liu@ee.washington.edu**												**(206) 543-2198**
Liu, Chen-Ching	P	D	N	Y		40	50	10	9			4	
El-Sharkawi, Mohamed	P	D	N	Y		30	40	30	11			4	
Christie, Richard D.	ATP	D	N	Y		45	45	10	5			1	5
Lauritzen, Pete	P	D	N	N		50	30	20	27			7	
Venkata, S.S.	P	D	Y	Y		40	50	10	18			6	
Damborg, Mark	P	D	N	Y		20	10	70	20			6	
Yee, H.P.	ATP	D	N	N		50	50		1		1	1	

Gonzaga U.													**Semester**
Juan L. Bala	**bala@gonzaga.edu**												**(509) 328-4220**
Allwine, Gail H.	P	D	Y	N				100	2	23	1		2
Bala, Juan L. Jr.	ACP	D	N	Y		85	15		21	4	2	1	1
Braileanu, Grigore	P	D	N	N				100	1	31		1	
Tavora, Carlos	P	D	Y	N		15		85	2	23	1		10

Seattle U.													**Quarter**
Xusheng Chen	**xchen@seattleu.edu**												**(206) 296-5983**
Chen, Xusheng	ACP	D	N	Y		100			11				10	

Washington State U.													**Semester**
Kevin Tomsovic	**tomsovic@eecs.wsu.edu**												**(509) 335-8260**
Bose, A.	P&C	D	N	Y		50	50		16			8	1
Pedrow, P.	ACP	D	Y	N		25	25	50	11			9	
Venkatasubramanian, M.	ATP	D	N	Y		50	50		5				2
Tomsovic, K.	ACP	D	N	Y		50	50		10				
Oslen, R.	P	D	N	Y		25	25	50	21				3
Flechsig, A.	P	D		Y		100			35				
Mosher, C.	P	D	Y	Y		40			35				

Name	Rank	Degree	PE	PES	IEEE	Academic Activity 95-96 (%)			Years Professional Experience Prior to 1995-96			
						Power			Academic	Power		Industry
						Tch	Resh	Other	Power	Other	Part Eng	Part Resh	Full Eng	Full Resh
WEST VIRGINIA														
West Virginia U.													**Semester**	
Ali Feliachi			**feliachi@cemr.wvu.edu**										**(304) 599-7439**	
Choudhry, Muhammad A.	P	D	N	Y		60	30	10	22					3
Parviz, Famouri	ACP	D	N	Y		40	40	20	8	4				3
Feliachi, Ali	P	D	N	Y		50	40	10	14	3				2
Klein, Ronald L.	PPC	D	N	Y		40	40	20	10	17				
WISCONSIN														
U. of Wisconsin - Platteville													**Semester**	
Mesut Muslu			**muslu@uwplatt.edu**										**(608) 342-1157**	
Muslu, Mesut	P	D	Y	Y		60	25	15	14		1			1
Schultz, Richard	P&C	D	Y	Y	M	25	25	50	17		6			2
Ellestad, David	INS	M	Y	Y		80	20		1	2				27

Name	Rank	Degree	PE	PES	IEEE	Academic Activity 95-96 (%)			Years Professional Experience Prior to 1995-96			
						Power			Academic	Power		Industry
						Tch	Resh	Other	Power	Other	Part Eng	Part Resh	Full Eng	Full Resh
CANADA														
U. of Calgary													**Semester**	
O.P. Malik			**malik@enel.ucalgary.ca**										**(403) 220-6178**	
Malik, O.P.	P	D	Y	Y		20	30	50	30					9
Rao, N.D.	P	D	Y	Y		70	30		29					
Universite‘ du Quebec a‘ Trois-Rivieres													**Semester**	
V.Rajagopalan			**rajagopalan@uqtr.uquebec.ca**										**(819) 376-5071**	
Sevigny, A.	P	D				75	25		20					
Cheriti, A.	P	D				60	40		5					
Rajagopalan,V.	P	D	Y	Y		25	50	25	20	5				6
Skorek, A.	P	D	Y	Y		40	40	20	10	5				
Engg. Division, Royal Military College of Canada													**Semster**	
A.Y.Chikhani			**chikhani-a@rmc.ca**										**(613) 541-6000 Ex 6371**	
Chikhani, A.Y.	P	D	Y	Y		40	30	30	20	5				5

Table 2 Summary of Faculty Ranks

	PPC	P	P +C	ACP	ATP	LEC	INS	Total
Nr	18	104	6	62	27	2	1	220
%	8	46	-	28	12	-	-	100

PPC Chair Prof. ; P Prof. ; P+C Prof & chair ; ACP Associate Prof. ; ATP ; Asst. Prof. ;LEC Lecturer ; INS Instructor

Table 3 Faculty Experience 1995-96

	Academic		Power Industry			
			Part-time		Full- time	
	Power	Other	Eng.	Res.	Eng.	Res.
Aggregate Years	3493	661	191	145	634	227
Average Years	15.87	3.00	0.87	0.66	2.88	1.03

Table 4 Power Research Areas of Universities

University of Alabama, Tuscaloosa	MC, TR, PS, CD, D	University of Minnesota	MC, TR, PS, CD, PE
Arizona State University	MC, TR, PS, HV, CD, D,PQ	Mississippi State University	TR, PS, HV, D
University of Arkansas, Fayetteville	MC, TR, PS, CD, D, PQ, PE	University of Missouri Rolla	MC, TR, PS, HV, CD, D, PE
Calpoly, San Lois Obispo	MC, PS	University of Nebraska, Lincoln	TR, PS, CD, D
San Jose State University	CD, PE	New Mexico State University	TR, PS, HV, D
University of Colorado at Boulder	MC,TR, PS	Rensslaer Polytechnic Institute	MC,TR, PS, HV, CD, D, PE
University of Hartford	PD Detect. of Power Transf.	Clarkson University	MC, TR, HV, D
Florida Atlantic University	CD	Cornell University	TR, PS, D
Florida International University	MC,TR, PS, HV, CD, D	North Carolina State University	MC, PS, D, PE
University of Florida	MC, TR, PS, HV, CD, D,PE	North Dakota State University	MC, CD, D
University of Central Florida	PS, CD	University of Akron	MC, CD, MD
University of Idaho	MC, TR, PS ,CD, D	Ohio State University	MC, TR, PS, HV, CD, D
Northern Illinois University	MC, D	University of Oklahoma	PS, CA
University of Illinois at Urbana	MC, TR, PS, CD, PE	Oklahoma State Univesity	TR, PS, CD
Purdue University	MC, PS, CD, PE	University of Tulsa	HV
Iowa State University	PS, CD	Oregon State University	MC, TR
Kansas State University	PS, CD, D	Villanova University	PS, PQ, EV
Wichita State University	MC, PS, HV, D, PQ	Drexel University	MC, TR, PS, HV, CD, D, PE
University of Kentucky	MC, PS,	Clemson University	MC, TR, PS, CD, D
University of New Orleans	MC, TR, HV, D	Texas Technological University	MC, PS, PE
University of Maine	PS, CD	Tennessee Technological University	MC, TR, PS, HV, CD, D
Worcester Polytechnic Institute	MC, TR, PS, D, PQ	University of Houston	PS, CD
Wayne State University	MC, TR, PS, PE	University of Texas at Arlington	MC, TR, PS, CD, D, PQ,
Michigan State University	MC, TR, PS, CD	A & M University	MC, TR, PS, CD, D, PE
Michigan Technological University	MC, TR, PS, HV, CD, D	Virginia Polytechnic and State Univ.	MC, TR, PS, HV, CD, D.

Table 4 Power Research Areas of Universities (Continued)

University of Virginia	MC, CD, MD
University of Washington	MC, TR, PS, HV, CD, D
Gonzaga University	PS, CD, D
Seattle University	PS
Washington State University	TR, PS, HV, CD, D
Howard University	MC, TR, PS, CD, D, PE
West Virginia University	MC, TR, PS, D, PE
University of Wisconsin, Platteville	PS, CD,D
Royal Military College of Canada	D
University of Calgary	MC, PS, HV, D
University of Quebec at Trois Rivieres	MC, PS, D

MC Machines TR Transmission PS Power System Engineering
HV High Voltage CD Course Development D Distribution
PQ Power Quality PE Power Electronics

Table 5 Centers for Power Research

University	Name of Center Related to Power Research
University of Alabama, Tuscaloosa	Energy System and Power Quality
Arizona State University	Center for Advanced Control of Energy and Power Systems (ACEPS)
San Jose State University	Power Electronics and Controls Laboratory
University of Hartford	Signal Processing Institute for Data Acquisition and Monitoring
University of Florida	International Center on Lightning Research and Testing (ICLRT)
University of Florida	Florida Power Affiliates Power Quality Laboratory
Iowa State University	Electric Power Research Center
Wichita State University	Center for Energy Studies Power Quality Laboratory
University of New Orleans	Center for Application of Power and Instrumentation
University of Maine	University of Maine Power Research Association
University of Minnesota	University of Minnesota Center for Electric Energy (UMCEE)
Mississippi State University	Mississippi State University High Voltage Laboratory
University of New Mexico	Electric Utility Management Program
Cornell University	Power System Energy Research Center PSerc
University of Urbana-Champaign	Power System Energy Research Center Pserc
North Carolina State University	Electric Power Research Center
Oklhoma State University	Engineering Energy Laboratory
University of Tulsa	Electrical Energy Laboratory
Oregon State University	Motor Systems Resources Facility
Drexel University	Center for Electric Power Engineering
Clemson University	Clemson University Electric Power Research Association (CUEPRA)
Tennessee Technological University	Center for Electric Power
University of Texas at Arlington	Energy System Research Center
Texas Technological University	Center for Energy Research
Texas A & M University	Electric Power Institute
Virginia Polytechnic Inst and State Univ.	Center for Power Engineering
Virginia Polytechnic Inst and State Univ	Center for Energy and the Global Environment (CEAGE)
Howard University	Center for Energy System and Control

Table 6 Funding for Power Research and Education (in 1000s of $)

University	Internal	Govt.	Mfr	Utility	Frn.	Other	F&S	Eq.
University of Alabama, Tuscaloosa	60	123		120		50	20	50
Arizona State University	50	205	175	465			42	50
University of Arkansas, Fayetteville	10	50	30	55				
Calpoly, San Lois Obispo							3	
San Jose State University	5		30				2	5
University of Colorado at Boulder		20		100				
University of Hartford	12			110		100	12	25
Florida Atlantic University								
Florida International University	20			25		35	40	50
University of Florida	44	142	8	400		303	5	
University of Central Florida	30	50						
University of Idaho	20		310	62			8	15
Northern Illinois University								
University of Illinois at Urbana	25	150	50	120			80	30
Purdue University				50				50
Iowa State University		240		442		405		60
Kansas State University	22	120		19				
University of Kentucky		115	80					20
University of New Orleans		30		600			6	
University of Maine		40		15			33	
Worcester Polytechnic Institute	10	100	100	20			20	10
Wayne State University	10		8				12	
Michigan State University	60	85			75			
Michigan Technological University		30	84	59			30	32
University of Minnesota		100	10	181			25	

University	Internal	Govt.	Mfr	Utility	Frn.	Other	F&S	Eq.
Mississippi State University	5	105	3	122				29
University of Missouri, Rolla	123	908	99	192			22	10
University of Nebraska, Lincoln	10	35					3	
New Mexico State University			37	45			40	
Rensslaer Polytechnic Institute	23	177	151	446	5		165	58
Clarkson University	20	38	23	125			14	
Cornell University		147		160			24	
North Carolina State University	20		88	107		25	125	20
North Dakota State University		10	25	30				5
University of Akron	3	22						147
Ohio State University	50	200	350	50			50	25
University of Oklahoma				70				6
Oklahoma State Univesity	20	50		45		5		20
University of Tulsa			60					
Oregon State University		240		575			40	50
Villanova University		25						
Drexel University	10	200		100		100	40	100
Clemson University		150	50	400				
Tennessee Technological University	871	14	48	687	17	24		71
University of Houston				25			14	10
University of Texas at Arlington		200		300	200	300		25
Texas Technological University	50	500		200			20	50
A & M University		324	90	111		374	80	60
Virginia Polytechnic and State Univ.	101	531	111	243	16	44	6	80
University of Virginia								5
University of Washington	15	246	15	407	3		2	

Table 6 Funding for Power Research and Education (in 1000s of $) (Continued)

Gonzaga University								
Seattle Universsity								
Washington University		300		150			6	250
Howard University		1		40	50		100	50
West Virginia University		30	19	5				
Wichita State University				74			120	
University of Wisconsin, Plattville							5	12
U.S. Total	1699	5807	2054	7552	366	1765	1214	1480
Fraction of Total	0.088	0.302	0.107	0.393	0.019	0.091		
Royal Military College of Canada		6000					6000	500
University of Calgary	10	65	5				30	
University of Quebec at Trois Rivieres	20	200	200				150	150
Canadian Total	30	6265	205				6950	650
Fraction of Total	0.004	0.964	0.032					

Nomenclature: Internal Utility; Govt. = Government; Frn. = Foreign; F&S = Fellowships and Scholarship; Mfg. = Manufacturing; Other Equipment

Table 7 Graduate Students Enrollment and Degrees Awarded in 1995-96

University Enrollment	**Graduate Degrees Granted**			
	M.S	**Ph.D**	**M.S**	**Ph.D**
University of Alabama, Tuscaloosa	7		2	1
Arizona State University	9	15	1	2
University of Arkansas, Fayetteville	9		6	1
Calpoly, San Lois Obispo	8	3		
San Jose State University	5		2	
University of Colorado at Boulder	7		2	1
University of Hartford	8		4	
Florida Atlantic University				
Florida International University	16	2	4	1
University of Florida	7	5	5	3
University of Central Florida	5	1		
University of Idaho	37		5	
Northern Illinois University				
University of Illinois at Urbana	8	4	7	2
Purdue University	5	5		
Iowa State University	13	12	5	3
Kansas State University	25	4	1	1
Wichita State University				
University of Kentucky	11	5	4	1
University of New Orleans	8		5	
University of Maine	4		1	
Worcester Polytechnic Institute	11		4	1
Wayne State University	15		8	
Michigan State University	9	1	4	2
Michigan Technological University	14	1	6	
University of Minnesota	16	6	3	4
Mississippi State University	20	3	10	1
University of Missouri, Rolla	19		11	1
University of Nebraska, Lincoln	4	1	2	1
New Mexico State University	17		7	2
Rensslaer Polytechnic Institute	77		23	4
Clarkson University	12		4	
Cornell University	11		5	2
North Carolina State University	20	2	7	1
North Dakota State University	1	1	1	
University of Akron	3		6	1
Ohio State University	32	10	10	1
University of Oklahoma	2		2	3
Oklahoma State Univesity	7	3		
University of Tulsa				
Oregon State University	8		3	2
Villanova University				
Drexel University	22	15	11	4
Clemson University	14		7	3
Tennessee Technological University	5	6	4	1
University of Houston	2			
University of Texas at Arlington	35	17	4	4
Texas Technological University	6	4	5	
A & M University	21	25	7	6
Virginia Polytechnic Institute	31		7	6
University of Virginia				0
University of Washington	13	10	6	6
Gonzaga University	3		2	
Seattle University				
Washington State University	6	11	1	2
Howard University	12	10	6	2
West Virginia University	7		4	2
University of Wisconsin, Platteville				
Royal Military College of Canada				
University of Calgary	3	9	1	
U.S. Total	667	182		
Royal Military College of Canada			234	78
University of Calgary	3	9	1	
University of Quebec, Trois Rivieeres	10		2	3
Canadian Total	13	9	3	3

Table 8 Power Course Offerings

UA - Undergraduate, required of all EE students
UR - Undergraduate, required of all power students
UE - Undergraduate, elective power course
GR - Graduate, required of all power option students
GE - Graduate, elective power course.

Course	Cred Hrs	Enrolled	Code
ALABAMA			
U. of Alabama			
Electromech	30	60	UA
Elec Mach & Drives	30	10	UE
Pwr/Mach Lab	20	15	UR
Pwr Sys I	30	15	UE
Pwr Sys Stab	30	80	GE
Pwr Sys in Steady St	30	80	GR
Large Net Simul	30	60	GR
ARIZONA			
Arizona State U.			
Engy Conv & Trans	4	134	UR
Pwr Plant Sys	3	17	UA
Pwr Sys Anal	3	15	UE
Power Elec Devices	3	20	UE
Elec Mac	3	13	UE
Pwr Sys Plan & Anal	3	9	GR
Trans & Distri	3	9	GR
Pwr Sys Transients	3	7	GE
Adv Pwr Electronics	3	17	GE
Com Soln of Pwr Sys	3	5	GE
Elem of Nuc Engg.	3	13	GE
Elec Pwr Quality	3	15	GE
Advanced Topics	3	5	GE
ARKANSAS			
U. of Arkansas-Fayetteville			
Intro to Pwr Elect	3	2	UG
Elec Pwr Distri Sys	3	8	UG
Pwr Elect & Mot Driv	3	6	UG
Elecmech Engy Conv	3	78	UG
CALIFORNIA			
California Polytechnic Institute			
Elec Mach	4	400	UA
Trans Line	3	35	UR
Pwr Electr I	4	20	UR
Pwr Electr II	4	20	UR
Pwr Sys Anal I	4	35	UR
Pwr Sys Anal II	4	30	UR
AC Mach	4	15	UR
Pwr Sys Prot	3	15	UR
Pwr Sys Lab	1	10	UR
San Jose State U.			
SemiCond Pwr Elect	3	37	UE
Grad Stud Proj	3	4	GR
UnderGrad Proj	3	4	UR
COLORADO			
U. of Colorado-Boulder			
Energy Conversion I	3	50	UE
Pwr Laboratory I	2	25	UE
Energy Conversion II	3	12	UE
Pwr Qual in Pwr Sys	3	4	GE
Adjust Speed Drives	3	0	GE
CONNECTICUT			
U. of Hartford			
Elec Mach	3	12	UR
Pwr Sys Anal	3	6	GR
Tfmr Theory	3	6	GR
Pwr Elect	3	8	GE
Protective Relaying	3	3	GE

Course	Cred Hrs	Enrolled	Code
DISTRICT OF COLUMBIA			
Howard U.			
Elec Engy Conv	3	45	UR
Pwr Sys Anal I	3	8	UA
Pwr Sys Anal II	3	8	UR
Engy Conv Lab	3	46	UA
Pwr Elect	3	15	UR
Adv Pwr Sys	3	5	GR
Comp Aided Pwr Sys	3	5	GR
Optim for Pwr Sys	3	5	GR
Pwr Sys Ctrl	3	5	GR
Spl top Pwr Sys& Ctrl	3	3	GE
FLORIDA			
Florida Atlantic U.			
Elec Mach	3	50	UA
Elec Pwr Sys	3	20	UE
PhotoVol Pwr Sys	3	7	UE
Florida International U.			
Engy Conv (Pwr I)	4	102	UR
Pwr Sys Anal (Pwr II)	3	28	UE
Pwr Sys Anal(Pwr III)	3	26	UE
Pwt Elect	3	16	UE
Pwr Sys Prot	3	14	GE
Pwr Sys Engg.	3	19	GR
Elec Transients	3	21	GR
App in Pwr Sys	3	29	GE
Num Anal Elec Dev	3	12	GE
Mot Drive Ctrl	3	14	GE
U. of Florida			
Bas Elec Engy Engg.	3	61	UA
Elec Engy Conv Lab	1	12	UE
Elec Engy Sys I	3	10	UE
SrgOver Vol Pwr Sys	3	12	UE
Elec Utility Seminar	1	12	UE
Elect Driv & Mot Ctrl	3	11	UE
Adv ElecEngy SysI, II	3	10	GR
Hi Volt DC Trans Sys	3	7	GE
Anal Pwr Trans Lines	3	7	GE
Pwr Elect Ckts	3	10	UE
Intro to Pwr Elect	3	7	GE
Lightning	3	12	GE
Srg OverVol Pwr Sys	3	10	UE
U. of Central Florida			
Pwr Sys Anal I	3	25	UE
Pwr Sys Anal II	3	10	GE
Machines	3	25	UE
Pwr Elect I	3	15	GE
Pwr Elect II	3	10	GE
IDAHO			
U. of Idaho			
Elec Mach	5	36	UA
Intro to Pwr Sys	3	20	UE
Pwr Sys Anal	3	20	UE
Pwr Elect Ckts	3	17	UE
Pwr Elect Lab	1	3	UE
Adv Elec Mach	3	8	GE
Pwr Sys Plang & Res	3	18	GE
Symm Compo	3	18	GE
Trans in Pwr Sys	3	13	GE
Pwr Sys Prot & Rel	3	16	GE

Course	Cred Hrs	Enrolled	Code
AC Drives	3	6	GE
Util App of Pwr Sys	3	16	GE
Unders Pwr Qual	3	20	GE
ILLINOIS			
Northern Illinois U.			
Electro Dynamic	3	50	UA
Pwr Electronics	3	12	UE
Elec Drives	3	5	UE
Adv Pwr Elect	3	5	GE
U. of Illinois-Urbana			
ElecMech & Pwr Circ	3	130	UE
Elec Mac	4	27	UE
Pwr Electronics	3	50	UE
Adv Elec mac & Driv	3	0	UE
Pwr Electronics lab	2	22	UE
Adv Des of Elec Veh	3	96	UE
Tech Engg. Des Mak	3	36	UE
Pwr Sys Anal	3	27	UE
Adv Pwr Sys Anal	3	16	UE
Com Meth Circ Anal	3	26	GE
Adv Mod & Ctrl Mac	3	12	GE
Pwr Sys Oper & Ctrl	3	0	GE
Pwr Sys Dyna & Stab	3	0	GE
Elec Res Plan	3	10	GE
INDIANA			
Purdue U.			
Emech motion dev	3	50	UR
Elec mach	3	10	UE
Elem Pwr sys Engg.	3	15	UE
Pwr Elect	3	15	UE
Engy Conveersion	3	7	GE
Mod sim pwrsys com	3	4	GE
Anal emech sys	3	4	GE
Dyn ctrl integ pwr sys	3	4	GE
Flex ctrl Trans sys	3		GE
IOWA			
Iowa State U.			
Intr mod Pwrsys Anal	2	80	UA
Elec Machines	3	40	UE
Engy Sys	2	20	UE
Pwr Sys Anal I	3	20	UR
Pwr Sys Anal II	3	15	UR
Steady State Anal	4	11	GR
Pwr Sys Dynamics	4	9	GR
Anal of Distrib Sys	3	0	GE
Trans Engy Fn Meth	3	0	GE
Seminar on Elec Pwr	1	24	GR
Advanced Topics	3	10	GE
KANSAS			
Wichita State U.			
Pwr Sys Anal	3	50	UR
Elec Mac & Tfmrs	4	67	UA
Adv Elec Motors	3	7	UE
Elec Pwr Sys Anal	3	28	UE
Pwr Electronics	4	11	UE
Com Ap Pwrsys Anal	3	5	GE
Adv Elecpwrsys Anal	3	10	GE

Table 8 Power Course Offerings (Continued)

UA - Undergraduate, required of all EE students
UR - Undergraduate, required of all power students
UE - Undergraduate, elective power course
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Course	Cred Hrs	Enrolled	Code
Kansas State U.			
Engy Conv	3	51	VA
Pwr Elect	3	25	UE
Pwr Sys Des	3	8	UE
Pwr Sys Prot	3		UE
Pwr Sys Stab	3	22	GE
Pwr Qual	3		GE
Adv Pwr Elect	3	7	GE
Pwr Sys Oper & Ctrl	3	14	GE
Distri Sys Engg.	3		GE
KENTUCKY			
U. of Kentucky			
Electro Mech	3	75	UA
Engy Conv Lab	2	38	UE
Elec Pwr Sys I	3	23	UE
Elec Pwr Sys II	3	20	UE
Adv Electro Mech	3	16	UE
Elec Drives	3	19	UE
Emag Engy Conv	3	2	GR
Pwr Elect	3	6	GR
LOUISIANA			
U. of New Orleans			
Elec Mach	3	30	UA
Elec Pwr Sys	3	30	UA
Pwr Distri	3	20	UE
Pwr Gen	3	5	GE
Pwr Sys Relia	3		GE
Pwr Sys Stab	3		GE
Adv Mach	3		GE
Pwr Sys Fault Anal	3		GE
MASSACHUSETTS			
Worcester Polytechnic Institute			
El Meth Engy Conv	3	36	UE
Pwr Electronics	3	38	UE
Pwr Sys I	3	37	UE
Pwr Sys II	3	46	UE
Pwr Electronics	1	23	GE
Comp Meth Pwr Sys	1	10	GE
Comp Meth Pwr Sys	1	9	D
Sel Topics in Pwr	1	64	UA
Pwr Quality	1	10	GE
Pwr Quality	1	10	UE
MICHIGAN			
Wayne State U.			
Pwr Elect & Control	4	18	UE
Emech Conversion	4	0	UE
Elec Engy Sys Engg.	4	12	GE
Michigan State U.			
Engy Conv\Pwr Elect	3	99	UE
Pwr Sys Anal	3	24	UE
Pwr Sys Stab & Ctrl	3	8	GE
Intel Ctrl of Pwr Sys	3	7	GE
AC Mach & Drives	3	7	GE
Pwr Sys Oper & Ctrl	3	7	GE

Course	Cred Hrs	Enrolled	Code
Michigan Tech U.			
Intro Engy Conv	4	9	UA
Intro to Pwr	4	82	UA
Elec Mach I	4	15	UR
PwerSys Anal I	4	26	UR
PwerSys Anal II	4	24	UR
PwerSys Anal II	3	24	UR
Tfmr Design	3	30	UE
Distrib Design	3	27	UE
Comp Meth Pwr Sys	3	5	GR
Transi srgsPwr Sys	3	4	GR
Pwr Sys Stability	3	4	GR
Spl Topics Elec Pwr	3	4	GE
MINNESOTA			
U. of Minnesota			
Electromech	4	25	UR
Elec Mach	4	12	UR
Elec Pwr Sys	4	14	UR
Finite Elem Anal	3	5	GE
Mach Dyn	3	5	GE
Pwr Elect I	3	14	GE
Pwr Elect II	3	8	GE
Pwr Elect Lab	3	6	GE
Pwr Sys Engg.	3		GE
Pwr Sys Anal	3	15	GE
Pwr Gen,Oper&Ctrl I	3	15	GE
Pwr Gen,Oper&Ctrl II	3	15	GE
Pwr Sys Rel	3		GE
Sparse Mat	3		GE
MISSISSIPPI			
Mississippi State University			
Engy Conv	3	59	UA
Engy Conv Lab	1	59	UA
Pwr Sys Trans	3	62	UR
Pwr Sys Distrib	3	73	UR
Insul Coord	3	29	UE
Insul Coord	3	29	GE
Hi voltmeas tech	3	8	GE
Pwr Sys Lab	1	62	UR
Hi Volt Engg.	3	16	GE
Pwr Sys Planning	3	10	GE
Pwr Sys Oper & Ctrl	3	22	GE
Pwr Sys Stab	3	10	GE
Pwr Quality	3	10	GE
Pwr Elect	3	10	GE
MISSOURI			
U. of Missouri-Rolla			
Elec Mac	3	108	UR
Pwr Sys	3	75	UA
Flex Distri Sys	3	3	UA
Elec Distri Sys	3	12	UE
Mach & Drives	3	15	UE
Pwr Sys Engg.	3	13	UE
Pwr Electr	3	12	UE
Adv Elec Mach	3	4	GE
Pwr Sys Reli	3	7	GE
Pwr Sys Prot	3	5	GE
Surg Phen Pwr Sys	3	4	GE
Com.meth PwrSys anal	3	10	GE
Econ. Op of Pwr Sys	3	5	GE
Pwr Sys Stab	3	9	GE
Elec Drives	3	12	GE

Course	Cred Hrs	Enrolled	Code
NEBRASKA			
U. of Nebraska-Lincoln			
Pwr Sys Anal	3	50	UR
Intro Elec Pwr Engg.	3	30	UR
Pwr Sys Anal	3	10	UE
Pwr Sys Plan	3	8	UE
Pwr Sys Oper & Ctrl	3	8	UE
Pwr Sys Rel	3	5	UE
NEW MEXICO			
New Mexico State U.			
Intro Elec Pwr Engg.	3	82	UR
Pwr Sys II	3	40	UE
Pwr Sys III	3	25	UE
Distri Sys	3	16	UE
Distri Sys	3	6	GR
Formul Pwr Sys Prob	3	10	GR
Pwr Elect	3	10	GR
Dyna of Pwr Sys	3	8	GR
Pwr Sys Prot	3	7	GR
Adv Distri Sys	3	0	GR
NEW YORK			
Rensselaer Polytechnic Institute			
Semicond Pwr Elect	3	18	UR
Pwr Engg. Fundas	3	12	UR
Farad Law Mac Lab	3	8	UR
EPE Proj	1-6	15	3UE
EPE Proj	1-6	15	12GE
Pwr Engg. Analysis	3	22	GR
Protective Relaying	3	18	GE
Elec&Mag Field EPE	3	24	GR
Surge Phenomena	3	21	GE
Masters/Thesis Proj	1-6	0	GE
EPE Sem	0	21	GR
Doct Thesis	1-12	26	GE
SR Proj	3	0	UE
Pwr Elect	3	1	UE
Elec Mach	3	8	UR
Pwr Sys Des	3	11	UR
Elec Pwr Des	3	8	UR
Adv Pwr Elect	3	0	GE
Pwr Sys Anal	3	9	GE
Pwr Gen,Op & Ctrl	3	12	GE
Mech Aspects	3	19	GR
Comp Meth in EPE	3	20	GR
Clarkson U.			
Mac & Drives	3	14	UE
Pwr Sys protection	3	13	UE
Engy Conv	3	46	UR
Pwr Electronics	3	3	GE
Pwr Distrib & Util	3	10	UE
Elec Pwr Ctrl	3	20	GE
Cornell U.			
Autom for Distri Sys	4	16	UE
Nonlin Sys Theory	4	10	GE
Pwr Sys I	3	12	UR
Adv Pwr Sys Anal I	3	0	GE
Adv Pwr Sys Anal II	3	6	GE

Table 8 Power Course Offerings (Continued)

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Course	Cred Hrs	Enrolled	Code
NORTH CAROLINA			
North Carolina State U.			
Elec Pwr Sys	3	75	UA
Pwr Sys Anal	3	7	UE
Elem Ctrl	3	20	UE
Elec Pwr Distri	3	20	UE
Elec Pwr Distri	3		UE
Semi Cond Pwr Conv	3	18	UE
Sys Ctrl	3	20	UE
Pwr Sys Oper & Ctrl	3	8	GR
Swit mode Dc-DC Con	3	11	GE
Pwr Sys Stab & Ctrl	3	6	GE
Comp Anal Pwr Sys	3	6	GR
NORTH DAKOTA			
North Dakota State U.			
Engy Conv	3	70	UR
Pwr Sys	3	26	UE
Pwr Sys Des	3	25	UE
Pwr Elect	3	20	UE
Pwr Sys Prot	3	13	GE
Pwr Distri	3	15	GE
OHIO			
U. of Akron			
Engy Conv	3	40	UR
Engy Conv Lab	2	40	UR
Mod Pwr Sys	3	20	UE
Elec Motor Drives	3	20	UE
Dyn of Mach	3	6	GE
Ctrl of Mach	3	4	GE
Pwr Elect I	3	20	VE
Ohio State U.			
Engy Conv Pwr Sys	3	131	A
Elec Mach Lab I	2	48	E
Pwr Elect I	3	23	E
Pwr Elect Lab	2	11	E
Ind/Comm Pwr Sys	3	20	E
Elec Mach	3	10	E
Elec Mach Lab II	2	13	E
Pwr Elect II	3	9	E
Pwr Sys Anal	3	8	E
Pwr Sys Prot	3	5	E
Pwr Sys Trans	3	7	E
Ctrl of Elec Mach	3	12	E
Mod ctrl Ind ElecMac	3	8	E
Pwr Sys Reliability	3	7	E
Hi Vol Engg. & Lab I	4	7	E
Hi Vol Engg. & Lab II	4	5	E
Pwr Sys Lab	2	5	E
Comp Meth Pwr Sys	3	7	E
Pwr Sys Ctrl	3	7	E
U.Grad. Spl Studs	3	10	E
Grad. Spl Stud	3	25	E
HV Trans Sys	3	7	E
Pwr Elect III	3	7	E
OKLAHOMA			
U. of Oklahoma			
Engy Conversion	3	37	UA
Elec Pwr Sys	3	33	UE
Anal Faulted Pwr Sys	3	7	GR
Pwr Gen,Oper & Ctrl	3	9	GE

Course	Cred Hrs	Enrolled	Code
Oklahoma State U.			
Engy Conv I	3	67	UA
Pwr Sys Anal	3	11	UE
Pwr Electronics	3	11	UE
Com Met PwrSys Anl	3	7	GE
Sys Reliability	3	15	GE
Direct Engy Conv	3	9	GE
Adv Pwr Electronics	3	7	GE
Pwr Economy & Reg	3	8	GE
Load Forecasting	3	2	GE
U. of Tulsa			
Elect mach	3	20	UA
Sys Anal	3	10	UE
OREGON			
Oregon State U.			
Energy Conversion	4	70	UA
Machine Analysis	4	8	UR
Pwr Sys I	4	8	UR
Pwr Sys II	4	8	UR
Pwr Electronics I	4	12	UE
Pwr Electronics II	4	8	UE
Pwr Sys Operation	3	3	GE
Elec Energy Devices	3	4	GE
Pwr Electronics Sys	3	6	GE
PENNSYLVANIA			
Villanova U.			
Pwr Sys	3	10	UR
Oper Pwr Sys	3	10	UR
PhotoVolt Pwr Gen	3		GR
Pwr Elect	3		GR
Drexel U.			
Pwr Sys I - III	9	20	UE
Pwr Elect I - III	9	7	UE
Pwr Elect I - III	9	7	GE
Elec Macs	4	40	UA
Prot Rel I - III	9	8	UE
Prot Rel I - III	9	8	GE
Pwr Sys Security	3	12	GE
Pyr Sys Dyn	3	12	GE
Econ Oper Pwr Sys	3	10	GE
Pwr Sys Anal I - III	9	15	GR
Adv Top PwrSysl - III	9	10	GE
Pwr Seminary I - III	9	7	UE
Adv Elec Mach I - II	6	4	UE
SOUTH CAROLINA			
Clemson U.			
Pwr Sys Anal	3	20	UE
Distrib Sys	3	15	UE
Elec Mach	3	18	UE
Pwr Elect	3	22	UE
Pwr Sys Transients	3	8	GE
Pwr Sys Ctrl	3	8	GE
Comp Applic	3	10	GR
Pwr Sys Stab	3	6	GE
TENNESSEE			
Tennessee Technological U.			
Pwr Sys I	3	33	UR
Pwr Sys II	3	23	UE

Course	Cred Hrs	Enrolled	Code
Pwr Elect	3	11	UE
Elec Mac Dev I	3	59	UA
Pwr Sys Anal	3	5	GE
Elec Transi	3	4	GE
Pwr Sys Prot	3	7	GE
Elec Pwr Trans	3	8	GE
Des HV Pwr	3	3	GE
Pwr Sys Ctrl	3	3	GE
TEXAS			
U. of Houston			
Emech Engy Conv	4	51	UR
Pwr Trans & Distri	4		GE
Pwr Sys Anal	3		GR
Adv Pwr Sys Anal	3		GE
Elec Macs & Tfmrs	3		GE
Pwr Sys Ctrl & Stab	3	5	GE
U. of Texas - Arlington			
Pwr Sys Anal	3	10	GR
Pwr Load Flow	3	12	GR
Pwr Sys Dyn	3	20	GE
Pwr Sys Oper	3	6	GE
Sht Ckt Anal & Prot	3		
App Stoch Meth Pwr Sys Anal	3	7	GE
PwrSys Prot,Mon Ctrl	3	7	GE
Ctrl Ckt DesPwr Sys	3		
Pwr Sys Engg.	3	25	UR
Pwr Elect Des	3	15	UE
Pwr Sys Des Proj	3	20	UR
Engy Conv	3	35	UA
Texas Tech U.			
Pwr Elect	3		UE
Pwr Elect	3		GE
Elec mach & Driv	3		UE
Elec mach & Driv	3		GE
Pwr Sys Engg.	3	6	UE
Pwr Sys Engg.	3	14	GE
Pulsed Pwr	3		UE
Pulsed Pwr	3		GE
Texas A&M U.			
Pwr Sys Flt & Prot	3	9	GE
Comp Relays	3	5	GR
Hi Volt DC Trans	3	18	GE
Motor Drive Dyna	3	15	GE
Anal of Pwr Elect Sys	3	10	GE
Emech Engy Conv	4	24	UE
Pwr Sys State Esti	3	5	GE
Elec Transients	3	6	GE
Gen Theo Elec Mac	3	15	GE
Elec Mach Design	3	15	GE
Recti & Inverter Ckts	3	20	GE
Swit Pwr Supplies	3	10	GE
Pwr Elect	4	25	UE
Elect Motor Drives	4	25	UE
Pwr Sys Stab	3	10	GR
Pwr Sys Anal	3	11	GR

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Course	Cred Hrs	Enrolled	Code
VIRGINIA			
Virginia Poly & State U.			
Elec Engy & Env Sys	3	10	GR
Elec Pwr Engg.	2	35	UA
Alt Engy Sys	3	42	UE
Spl Study	2	43	GR
Soft Dev &C++ Engg.	3	99	UE
Networks	3	56	UE
App Spectral Anal	3	6	UE
Design in Pwr Engg.	1	34	GE
Pwr Sys Anal.	3	18	UR
Design in Pwr Engg	3	13	UE
Pwr Sys Prot	3	28	UE
Pwr Sys Prot Lab.	1	4	UE
Elec Pwr Engg,	2	72	UE
Network Anal	3	103	UE
U. of Virginia			
Emech Engy Conv	3	30	UE
Emech Engy Con lab	1.5	19	UE
WASHINGTON			
U. of Washington			
Pwr Elect Des	5	12	UE
Elec Drives	5	14	UE
Pwr Sys Anal I	4	15	UE
Pwr Sys Anal II	4	8	UE
CAD of Pwr Sys	4	8	UE
Elec Engy Distri Sys	4	14	UE
Pwr Elect	4		GE
Pwr Sys Prot	4		GE
Pwr Sys Dyn & Ctrl	4		GE
Pwr Sys Econ	4	8	GE
Adv Pwr Sys Anal	4	12	GE
Engy Sys	5	107	UA
Gonzaga U.			
Intro Elec Pwr	4	20	UA
Pwr Sys Anal	3	9	UE
Comp Meth Pwr Sys	3	6	UE
Comp Meth Pwr Sys	3	6	GE
Pwr Distri Engg.	3	6	UE
Oper & Ctrl Pwr Sys	3	1	GR
Seattle U.			
Engy Conv	4	22	UA
Engy Conv Lab	2	24	UA
Pwr Sys Anal	4	6	UE
Washington State U.			
Pwr Sys Anal I	3	12	UR
Pwr Sys Anal II	3	8	GR
Engy Sys	3	50	UA
Adv top in Pwr Sys	3	8	GE
Prot Sys I	3	10	UE
Prot Sys II	3	10	GE
WEST VIRGINIA			
West Virginia U.			
Engy Conv	3	40	UE
Intro to Pwr Sys	3	14	UA
Pwr Sys Anal	3	46	UE
Distribution	3		UE
WISCONSIN			
U. of Wisconsin-Platteville			
Intro Elec Pwr Engg.	3	46	UA
EMach & Pwr Elect	4	16	UE
Pwr Sys Anal & Des	4	19	UR
Pwr Elect	4	18	UE
CANADA			
U. of Calgary			
EMach : Stdy State	3	85	UA
Pwr Sys : Stdy State	3	45	UA
Pwr Sys Oper	3	5	GE
Rot Mach	3	6	GE
U. du Quebec a Trois-Rivieres			
Elec Pwr Trans	3	15	UR
Elec Mach I	3	15	UR
Elec Mach II	3	15	UR
Motor Ctrls	3	10	UE
Spl Topics Elec Tech	3	5	GE
Spl Top Etherm Proc	3	5	GE
Pwr Conv I	3	5	GE
Pwr Conv II	3	5	GE
Spl Topics Pwr Elect	3	6	GE
HVDC Trans	3	6	GE
Royal Military College of Canada			
Elec Mach & Trans	5	20	UA
Pwr Sys I	5	10	UR
Pwr Sys II	5	6	UE
Adv Topics Pwr Sys	3	2	GR