

Career & Life

- George E. Anner was a professor in the Electrical & Computer Engineering department at the University of Illinois Urbana-Champaign.
- He pioneered semiconductor fabrication instruction in the late 1960s and early 1970s, especially as the director of the undergraduate fabrication laboratory (the “Fab Lab”) and as the developer of courses like ECE 344 (now ECE 444) that blended theory with hands-on processing labs. [ECE Illinois](#)
- Anner was known for emphasizing *practical experience* in semiconductor processes, pushing UIUC’s curriculum ahead of most other universities at the time. [ECE Illinois](#)

us Earlier Life & Teaching History

- He earned a B.S. in physics (1938) from the College of William and Mary and a master’s in electrical engineering at Harvard. [ECE Illinois](#)
- He taught at New York University before being called to active duty in the U.S. Marine Corps in 1941, where he ran the Marine Corps Radar School and served in the Pacific Theatre during World War II. [ECE Illinois](#)
- Post-war, he returned to teaching at NYU, and later served as a visiting professor at the Indian Institute of Technology in Kharagpur, India in the early 1950s. [ECE Illinois](#)

UIUC Teaching & Retirement

- At UIUC, Anner was director of the undergraduate semiconductor fabrication lab from 1968 to 1982. [ECE Illinois](#)
- The lab course under his leadership became known for giving students *real hands-on experience* with planar processing techniques. [ECE Illinois](#)
- He retired from teaching in May 1982. [Library Web Site](#)

∞ Legacy

- UIUC ECE honors his impact with the George Anner Excellence in Undergraduate Teaching Award, given to faculty who exemplify outstanding teaching and mentorship. [ECE Illinois](#)
- A scholarship in his and his wife Cynthia’s name supports promising ECE students. [ECE Illinois](#)
- Alumni and departmental histories frequently cite him as *visionary* in moving the department into solid-state and microelectronics education. [Illinois Engineering](#)

☞ □ Passing

- George E. Anner passed away on May 11, 2004 at the age of 86. [Illinois Engineering](#)

George E. Anner was a foundational figure in hands-on semiconductor fabrication education at UIUC. He taught and developed lab-based microelectronics courses from the late 1960s until his retirement in 1982, and his influence lives on through awards, scholarships, and the ongoing ECE 444 Fab Lab curriculum that he helped establish. He died in 2004 at age 86.

Alumni Thoughts on George Anner

I caught the love of semiconductors from Professor Anner and Professor Streetman (undergrad advisor) in my first semiconductor classes. Anner was a great instructor. Though I think his vacuum tube analogs were lost on most students, I got the idea. Today I am responsible for all the wafer production for the fab-less semiconductor company Lattice Semiconductor where I manage four different foundry companies and 12 process lines. Thanks Professor Anner. PS: I still have my first chips from ECE 344.

--Brett Schafman (BSEE '81)

I was Nick Holonyak's student, and George frequently came into our lab to discuss his project. He was a tall man in a hurry, frequently comparing things to how they were done at NYU. He was a great scrounger of equipment for the new lab. The U of I had good fabrication capability for compound semiconductors then, but almost nothing for silicon. He had a great idea and made it come true.

--Milo Johnson (BSEE '64, MSEE '65, PhD '68)

I took Professor Anner's class [around] '77 and liked it so much I decided to be a TA for the EE 344 lab when I entered graduate school. We made MOS and BJTs on a 1/4 piece of silicon the size of a thumb nail. I still have the EE 344 lab notebook in my office. Anner helped steer my career toward semiconductor fabrication and 25 plus years later I am still involved in semiconductor fabrication working on GaAs for TriQuint Semiconductor in Dallas."

--Larry Witkowski (BSEE '79, MSEE '81)

I have very fond memories of Professor Anner. I can truly say that I owe my 30 plus years in the semiconductor industry to him and his wonderful classes and labs.

--Jeffrey Marsh (BSEE '77)

'My recollections of George Anner are based on his having taught vacuum tube circuit design (what the heck is a vacuum tube?) in 1960 to the original six undergraduate students in the new ECE honors program that had just been established by Mac Van Valkenburg. To be one of only six students in a class taught totally by Anner (no TAs) was a rare treat indeed, and one that I have never forgotten. To be sure, Anner was a tough and demanding teacher. But he was

completely dedicated to his students, and during that semester the six of us developed a great deal of respect and admiration for him.”

--Steven B. Sample (BSEE 62, MSEE 63, PhD '65)

I took the EE 344 class in 1971 from Professor Anner and it changed my life. If you remember, George taught the class at 8AM because "that way I am done with all my work for the day by 9AM" and "Only students who are really motivated will sign up for a class at 8AM". I was a TA lab instructor for George during my first year of grad school in 1973/74: it was a real treat. I ended up as a research assistant for Ben Streetman in the old Coordinated Science Lab

One of my favorite stories was George was talking about the second law of thermodynamics.

He said, 'you know, when I was in college I had this professor who told me. "if you're ever stranded on a desert island and you could only bring one equation with you. you should take the second law of thermodynamics. It is the one equation that you will need to solve most of the practical problems you would ever face'

Then George said, "well you know, I was in the army in the second world war and I happened to hit the beach on a desert island. As I lay there on sand with the waves lapping at my feet and Japanese soldiers in front of me, I recalled what my professor told me. I took my finger and wrote in the sand 'the integral of Q over T is equal to negative N. It was the most useless thing I have ever done in my life."

--Jerry Marcyk (BSEE '73, MSEE '76, PhD '78)

EE 344 brought a whole new dimension to EE for me. I had never paid much attention to solid-state devices before; to me, as far as I was concerned, silicon could have been pixie dust, and I frankly had to be dragged kicking and screaming through EE 340 because it was a physical electronics course ("what's this Fermi level nonsense?"), not the circuits course ("here's how you make a balanced modulator") I was expecting. But EE 344, which I took in spring, 1973, was fascinating because it was the place where chemistry (my second love—I would've been a chemist if I had not gone into EE), physics, and electronics converged. It opened new doors for me. (Ben Streetman taught it that semester). When I returned to Illinois in January, 1976 for the MSEE program, I had developed an itch for solid-state devices, and I signed up for George Anner's EE372 (Transistor Engineering) in the spring of 1976. (My recollection is getting fuzzy—I think EE372 was a catch-all designation for experimental courses). It was in this course that I learned of George Anner's penchant for inventing his own Greek letters—"gumbda" and "dumbda" are the two I remember.

My MSEE thesis came from a project which I proposed to Prof. Anner. There was a brief flurry of interest in a technology known as integrated-injection logic, a bipolar logic family that promised high density (no resistors except for an external current-programming resistor) and bipolar speeds with MOS-like power consumption. But it involved operating the usual planar NPN transistor upside-down—with the substrate serving as emitter and the final diffusion acting as the collector. My thesis sought to optimize the design of that upside-down transistor. Integrated-injection logic flowered briefly in the mid-70s but was eclipsed by MOS in the early 1980s. That is probably why few people beat a path to my door for my exceptional knowledge. But it was in the course of developing the thesis that I got to know George Anner best.

My analysis of the inverted NPN transistor involved a great deal of FORTRAN programming, and George once suggested that I might consider changing a variable name. George used the term “b*” to represent the base-transport factor in his transistor conduction analyses. I was computing b* in both inverted (up) and normal (down) operation, and I had used the variables “BSTARU” and (you guessed it) “BSTARD.” I think he was amused...with George, it was difficult to tell. You had to look for the little twinkle in his eyes to tell.

I remember well the day when he completely shattered my image of the EE faculty member. I was talking to him about progress on my thesis when he said, “If you want to know anything about computer architecture, don’t ask me. I don’t know a thing about it.” The confession of ignorance on the part of an EE faculty member shattered forever my image of the faculty as All-Wise and All-Knowing, Father Confessors, Holders of Advanced Degrees, Keepers of the Sacred Knowledge.

But George was an experienced faculty member who knew when a student was trying to con him. In the spring of 1977, I was the TA in EE 346 (George’s course in thin- and thick-film fabrication). A student called my apartment and apologized for missing the last few labs, and could I open the lab for him on Saturday so he could catch up with the class? I tentatively agreed...but at my next thesis meeting with George, he surprised me by asking “Did so-and-so call you?” “Yeah...” “Did he ask you to open the lab for him?” “Yeah.....” (I was beginning to wonder if George were clairvoyant). “Don’t lift a finger to help him. I checked up on him, and he does this every semester...cuts class, puts everything off, and then comes in pleading for favors.” So I begged off from opening the laboratory, and as I recall, his grade in the class reflected his effort. But George could also be a compassionate professor. I was a grader for George Anner in fall, 1976. When I picked up my first batch of papers from him, I asked him if he had any instructions for me. “Remember you were an undergraduate once” was all he said.

The last time I heard George Anner's voice was in the mid-1980s. He appeared on WILL-TV to do a promotional message for viewers to contribute to public television. It was not long afterward that I left Illinois.

George was a practical engineer, unlike some of his contemporaries. He was not a man of narrow interests; I remember the sign on his office door that said "harpsichords are my bag." He was fair, knowledgeable, demanding, and an exceptional asset to the EE faculty. It was a privilege to have known him.

--David Beams (BSEE '74, MSEE '77)

I didn't have the privilege of having Professor Anner for EE 342 but I did have him in EE 349, a non-linear analysis class. He demanded a lot but, looking back, I wish I had him for more than that one class.

--Vince Angleton (BSEE '65)

I remember getting a call from Professor Anner the evening after taking a final exam. He called at 10 pm to tell me I got an A on the final and for the class. That thoughtfulness is what I recall about him.

--Rod Parks (BSEE '70)

I had Prof. Anner in Fall '70. I remember very little about the class other than TAM (toluene, acetone and methanol) which was how we cleaned the chips after handling to clean off any finger prints, etc. I received a B but saw his dedication to each of us. He was a great instructor and was very hands-on. I have followed his example without actually realizing until recently that I was only borrowing from those who went before me – including George Anner.

Wm Ted Evans, '71 UIUC