

IBM Systems and Technology Group
American Association of University Women



Marist Liberty Partnership STEM Program – Fall 2012

The Program

- **8 weeks, Wednesdays, 3-5pm at Marist, Oct-Dec**
- **25-39 at-risk 8th grade students from Poughkeepsie Middle School**
- **18 Marist student volunteer mentors**
- **Marist graduate (MS) teacher – Jennifer Tokos**
 - *Tied activities to 8th grade curriculum*
- **NY State funding, AAUW covered funding gap (\$836)**

STEM activities

- **Toothpick and marshmallow tower**
 - *Physics, architecture*
- **Encryption – encoding and decoding data**
 - *Mathematics, logic*
- **Egg Drop – Apollo 13 video clip**
 - *Engineering challenge, cost matters*
- **Norrie Point Environmental Center – Hudson River Life**
 - *Eels, microscopic organisms, biology of a healthy ecosystem*
- **Snap circuits – basics of electrical circuits**
 - *Properties of electricity, circuit design*
- **Take-Apart Day – 13 laptops, 2 desktops, 12 keyboards, 8 printers, 10 mice, 2 radios, 2 phones**
 - *What's inside, how does it work, input/output interfaces*

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Science, Technology, Engineering, Math.... The Value of a STEM Career

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STEM – Science, Technology, Engineering, Math

- **The next 10-15 years**

- *Accelerating technological advances*
- *Medical/health care needs for an aging population*
- *Climate issues, clean energy solutions needed*

- **But....**

- *Declining skills and interest in STEM*
- *Not enough STEM-educated people in U.S. to meet the demand*
- *U.S. is losing its competitive edge in STEM*
- *Cultural barriers discourage women and minorities*

It's not too early to think about a STEM career!

- **Yes, it means studying and hard work**
 - *Depending on the career, you will need:*
 - *High school diploma plus:*
 - *Associates degree (2 years)*
 - *Bachelors degree (4 years)*
 - *Masters degree (BS +2 years)*
 - *PhD or Professional (MD) (MS +2 or BS +4 years)*
- **But....**
 - *STEM careers are among the highest paying*
 - *high demand, low unemployment*

What if I finish high school and get a job instead of going to college?

- **2012 New York State Minimum Wage**
 - ***\$7.25 / hour***
 - ***\$1,160 / month (assuming 40 hour/week)***
 - ***\$15,080 / year***
 - ***Restaurant work, retail sales, other unskilled jobs***

- **Average rent for 1-bedroom apartment in Dutchess County**
 - ***\$1,000 / month***
 - ***\$12,000 / year***
 - ***What about food, utilities, transportation, child care, etc.??***

What is the \$\$\$ value of a STEM career?

Occupation	Avg Hourly Pay	Avg Yearly Salary
Minimum wage job	\$7.25	\$15,080
Programmer	\$36.54	\$76,010
Security Analyst	\$39.27	\$81,670
Software Developer	\$48.28	\$100,420
Mathematician	\$48.71	\$101,320

More data about other occupations available on www.bls.gov

What is the \$\$\$ value of a STEM career?

Occupation	Avg Hourly Pay	Avg Yearly Salary
Minimum wage job	\$7.25	\$15,080
Engineers		
Biomedical	\$42.48	\$88,360
Chemical	\$47.81	\$99,440
Computer Hardware	\$48.73	\$101,360
Nuclear	\$50.56	\$105,160
Petroleum	\$66.82	\$112,090

More data about other occupations available on www.bls.gov

What is the \$\$\$ value of a STEM career?

Occupation	Avg Hourly Pay	Avg Yearly Salary
Minimum wage job	\$7.25	\$15,080
Life and Physical Sciences		
Animal Scientists	\$35.66	\$74,170
Food Scientists	\$30.85	\$64,170
Biochemists	\$42.13	\$87,640
Physicists	\$42.13	\$87,640

More data about other occupations available on www.bls.gov

What is the \$\$\$ value of a STEM career?

Occupation	Avg Hourly Pay	Avg Yearly Salary
Minimum wage job	\$7.25	\$15,080
Health care		
Dentist	\$77.76	\$161,750
Oral Surgeon	\$104.51	\$217,380
Nutritionist	\$26.66	\$55,460
Pharmacist	\$53.92	\$112,160
Surgeon	\$111.32	\$231,550
Family Practice	\$85.26	\$177,330
Registered Nurse	\$33.23	\$64,110
Veterinarian	\$43.87	\$91,250

More data about other occupations available on www.bls.gov

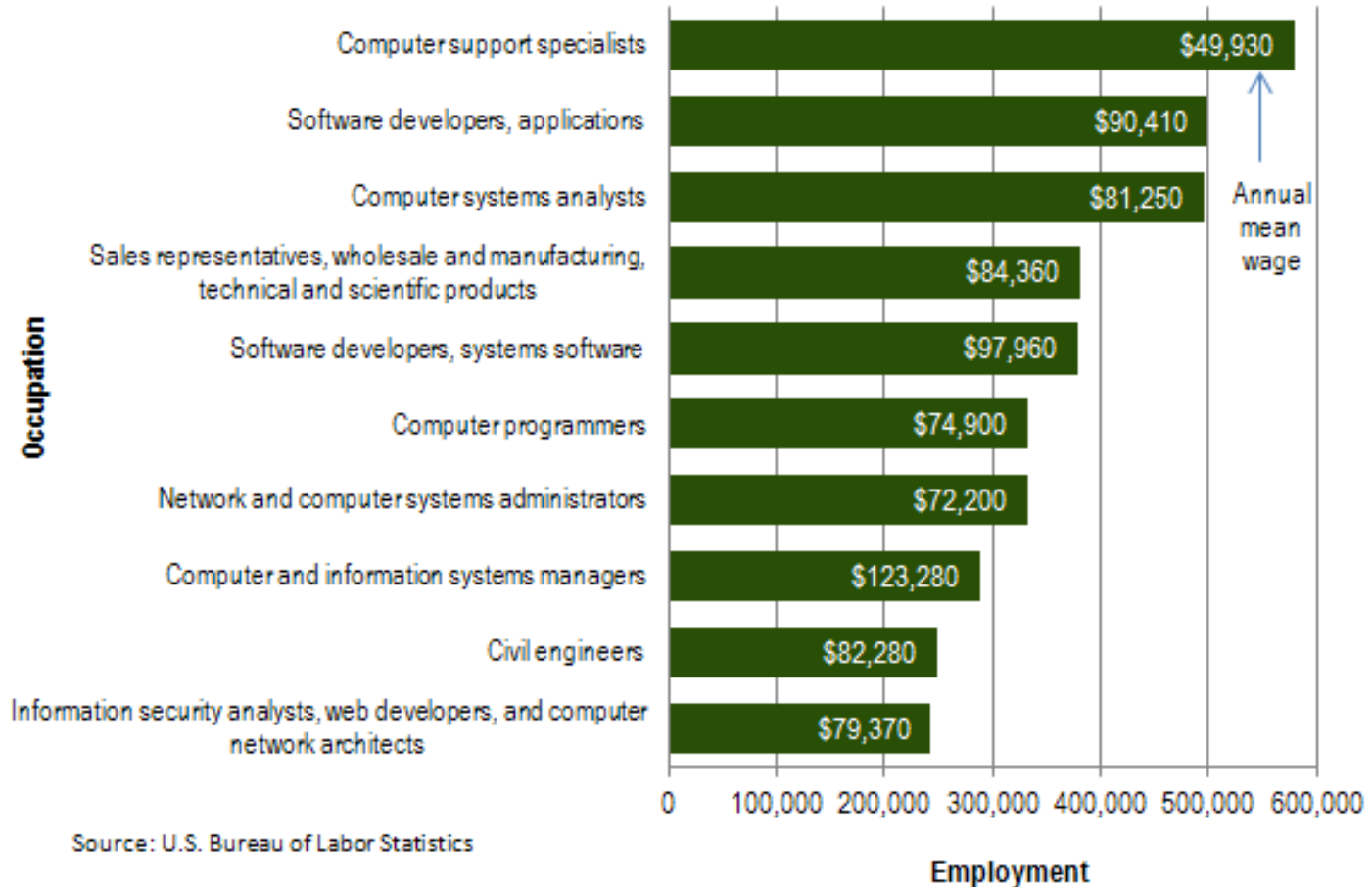
US Bureau of Labor Statistics

Fastest growing occupations - 10 year projections

Occupation	Employment	
	2012	2022
Network systems and data communications analysts	262	402
Personal and home care aides	767	1,156
Home health aides	787	1,171
Computer software engineers, applications ..	507	733
Veterinary technologists and technicians ...	71	100
Personal financial advisors	176	248
Medical assistants	417	565
Veterinarians	62	84
Financial analysts	221	295
Pharmacy technicians	285	376
Forensic science technicians	13	17
Computer systems analysts	504	650
Database administrators	119	154
Computer software engineers, systems software	350	449
Environmental science and protection technicians, including health	36	47

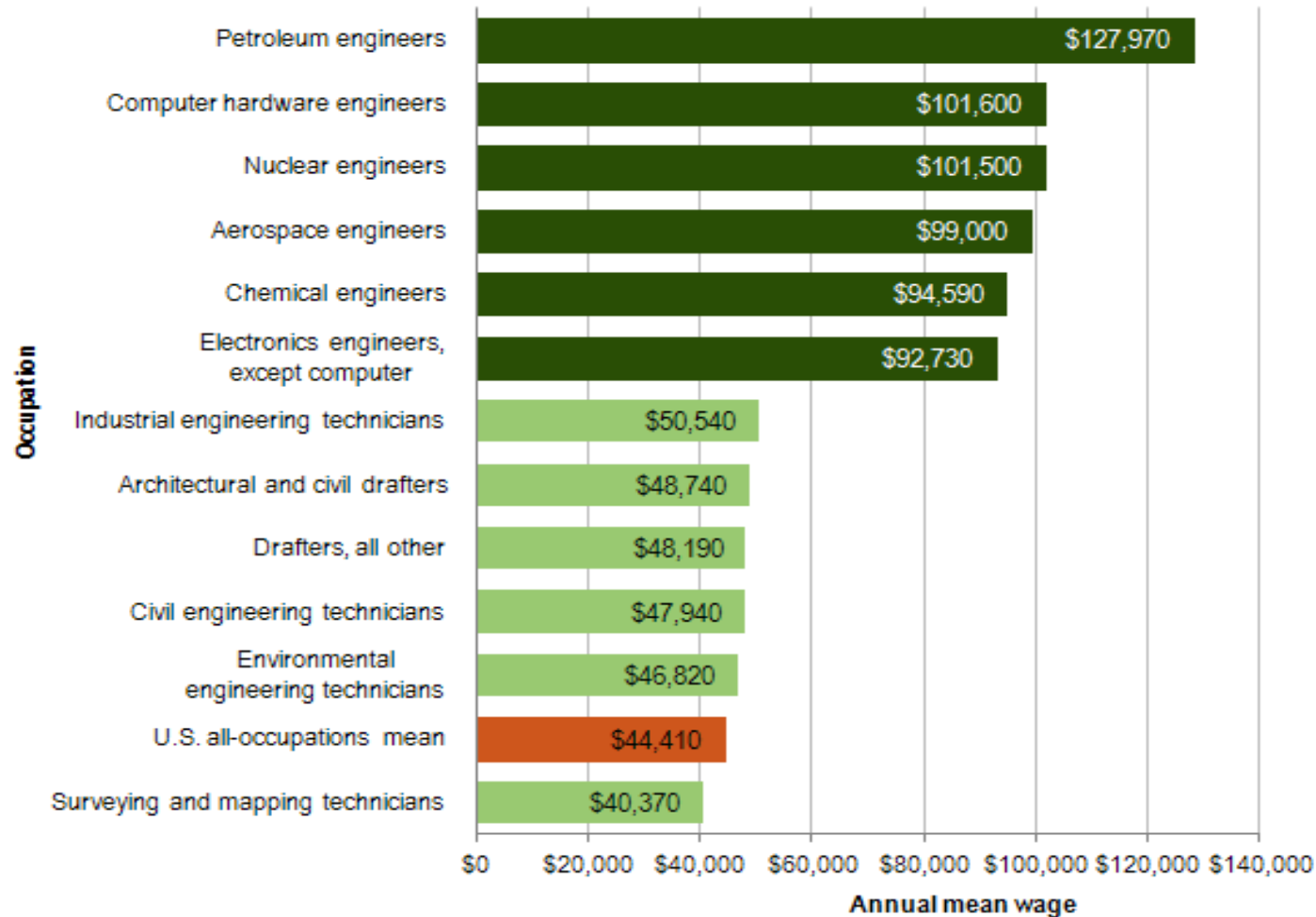
US Bureau of Labor Statistics

Employment and annual mean wages for the largest STEM occupations, May 2010



US Bureau of Labor Statistics

Annual mean wages for the highest and lowest paying architecture and engineering occupations, May 2010



Note: Darker bars indicate highest paying occupations and lighter bars indicate lowest paying occupations.

Source: U.S. Bureau of Labor Statistics

Why GIRLS/WOMEN for STEM careers??

- **MANY WOMEN HAVE:**
 - ***Strong technical abilities in STEM subjects***
 - ***A different/fresh point of view; new ideas***
 - ***Strong Communication skills***
 - ***Collaboration skills– work well with others***
 - ***Organizational skills – projects, deadlines, etc.***
 - ***Ability to multitask - juggle many tasks at once***
 - ***Good listening skills***
 - ***Patience***
- **Technology businesses want to hire more WOMEN!**

What do I do next??

- **Study hard!!!! Get good grades!**
 - *Your efforts will be rewarded.*
 - *College scholarships, internships, special programs and opportunities*
 - *Did you know.....*
 - top 10% of senior class can go to Dutchess Community College for FREE!!!*
- **Challenge yourself**
 - *Stay with science and math, and take the tougher classes*
- **Don't get discouraged**
 - *Get help when you need it, build your confidence*
- **Start thinking about careers that interest you, and plan your studies**
 - *Talk to people about their jobs, find out what they do, how they got started. Ask to shadow someone for a day.*
- **Join math and science clubs**
 - *Be with others with similar interests, improve your skills and have fun!*

Resources

- www.bls.gov
- www.yourstemcareer.com
- www.stemcareer.com
- www.onetonline.org
- <http://www.iseek.org/careers/stemcareers.html>

Thank you....

- **To all Poughkeepsie students and Marist mentors**
- **To Jennifer Tokos, program teacher and curriculum supervisor**
- **To Sue Repko and Denise Kenney at Liberty Partnership**
 - *for the wonderful opportunity to work with you and share this STEM experience!*

“It's not that I'm so smart, it's just that I stay with problems longer. “

- Albert Einstein