Siemens Professional Education

Education is the Future
Siemens offers vocational training all over Germany

As at October 2012
Siemens is one of the largest companies offering vocational training in Germany

Vocational training costs in Germany: €183 p. a.

<table>
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<th>Training Category</th>
<th>Number</th>
<th>Female Participants</th>
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<td>5,360</td>
<td>480 females</td>
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<td>Commercial professions</td>
<td>1,170</td>
<td>710 females</td>
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<td>Siemens Technik Akademie</td>
<td>390</td>
<td>60 females</td>
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<td>Trainees through trade associations</td>
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<tr>
<td>Outside trainees</td>
<td>2,670</td>
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* with VU, excl. Osram

Current (30 Sep. 2012): 6,920

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In the dual education system, the vocational school and companies work closely together

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<th>Theory periods at vocational school</th>
<th>Practical periods at the company</th>
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<td>▪ Job-specific specialist knowledge</td>
<td>▪ Career-oriented practical specialist and method knowledge</td>
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<td>▪ General knowledge (German, social studies, business management etc.)</td>
<td>▪ &quot;Real work&quot; (day-to-day operations, projects) at the company</td>
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<td>▪ Personal, social and method skills</td>
<td>▪ Supported by instructor or apprenticeship training coordinator</td>
</tr>
<tr>
<td>▪ Theme-work teaching in blocks or one day per week</td>
<td></td>
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<tr>
<td><strong>Objective:</strong> competence and decision-making skills</td>
<td>Theory and practice periods alternate and &quot;complement each other&quot;</td>
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Advantage of the Dual System of Vocational Education in Germany for Companies

Highly qualified

“Handlungskompetenz”

High employability

Highly productive

Future oriented

State or private Vocational School
Theory: administered by the state

Company A
- practical on job training
- employed at the company

Company B
- practical on job training
- employed at the company

Company C
- practical on job training
- employed at the company

Practical Training: administered by the Companies
Siemens Professional Education Berlin (SPE NE)

Education and training provider from Siemens in the region North / East Germany

Technical Education and Training
Technical professions and Bachelor programs

Business Education
Business professions and Bachelor programs

Werner-von-Siemens-Werkberufsschule
Private Vocational School

Siemens Technik Akademie Berlin
International programs for higher education
Education and Training at Siemens in Berlin

Berlin is the largest training center for Siemens AG in Germany

- **1350 apprentices and students**, of which:
  - 450 are from regional cooperation partners
- Hands-on training and vocational school under one umbrella
- Large number of external firms in the region as cooperation partners
- Comprehensive training and education with ca. 20 occupations in technical and business areas
- International programs and Bachelor programs at the Siemens Technical Academy
- Further education and training for employees
Siemens Technik Akademie Berlin

International Employee Development Program

Bachelor of Engineering incl. Associate Engineer

Specialized Expertise:
- SPS / Lean
- Smart Systems for Infrastructure

Siemens Mechatronic Systems Certification Program

Internationality
Knowledge
Networking
Teambuilding

Bachelor

SMSCP
Optional: Master Studies
(“berufsbegleitend”, offered by SPE)

work at SIEMENS in one of the Sectors
Energy, Industry, Healthcare, Infrastructure

BoE in Electronic Systems at Beuth HS
BoE in Energy Systems at Beuth HS
BoE in Mechatronic Systems at FH Brandenburg

Associate Engineer at Siemens Technik Akademie Berlin

Customer Specific e.g. Smart Grid
Customer Specific e.g. Smart MOL
Customer Specific e.g. Smart Systems
Summary
Dual Bachelor of Engineering @ STA

✓ Bachelor El.Eng. incl. Associate Eng.
  → Solid, hands-on engineering competences
  → System Approach & “Handlungskompetenz”

✓ Highly attractive for young applicants
  → Associate Engineer @ STA & Bachelor @ Beuth HS / Fh Brandenburg enable for Master degree
  → „Smart System“ modules include innovative applications e.g. for Smart Grid, Mobility, Building Technologies, Wind Power

✓ Highly attractive for org. units
  → High skilled, widely qualified and flexible employees, who are well prepared for an international work environment
  → More than 60 weeks practical phases in sum ensure targeted “on the job” training
Siemens Mechatronic Systems Certification Program

Siemens Technik Akademie Berlin - SMSCP Connection

Using key concepts from the STA-Berlins Associate Engineer Program in Mechatronic Systems, SMSCP creates an educational program that colleges and universities around the world use to strengthen their students' technical skills.
Siemens Mechatronic Systems Certification Program

- International standard industry certification in mechatronic systems

- Comprehensive skills certification offered in three levels, not a product certification

- Delivered together with partner schools

- Verified through certification examinations

- Consistent standards of achievement worldwide

→ Well-grounded individuals who can adapt to new work situations quickly and appropriately = Handlungskompetenz
System Approach:
Holistic, Hands-On Mechatronic Education

Students learn about the complexities of the system in a holistic fashion

Start at macro level

Then focus on:
- System modules
- Physical properties

Mechatronic System

Module
Application of components in the system
Characteristics and design-function in the system
Physical principles, characteristics, limit values, sources of errors

Module
System troubleshooting strategies
Tracing of signal flow
Measurements

Module
Causes of malfunctions in the system

Ability to pinpoint malfunctions

Ability to transfer their knowledge to another system „Handlungskompetenz“

- Components
- Measurements

April 2013
Katharina Steier / CHR GP SPE NE STA
SMSCP Certification Process
1st Step: Instructor Certification

Goal:
Enable instructors from partner schools to implement and teach the SMSCP at their local school.

Content and Structure of the Instructor Certification Course:

- System Approach teaching method
- Learning and practicing how to use the System Approach teaching method in the field of mechatronic
- Introduction to the content of the course-specific curriculum of the respective SMSCP Level
- Courses are 2-3 weeks long and normally held at Siemens Technik Akademie Berlin
Implementation of the SMSCP at the partner schools

- Certified instructors and the respective administrators at the school implement the SMSCP at their institution.
- The Siemens Mechatronic Systems Certification Program is designed to complement and fit into existing programs of study, not replace them.
- Flexible implementation opportunities – as part of existing study programs, weekend – or evening courses
3rd Step: Certification of Students

Goal:
To prepare students well for the working environment and give them an extra advantage over the competition on the job market with the opportunity to receive both an industry certification and a school diploma.

Three levels of student certification that are built on job profiles:

Level 1:
Siemens Certified Mechatronic Systems Assistant
▪ emphasis on efficiently operating complex mechatronic systems, troubleshooting and foreseeing problems

Level 2:
Siemens Certified Mechatronic Systems Associate
▪ focus on systems management, investigation, repair and troubleshooting

Level 3:
Siemens Certified Mechatronic Systems Professional
▪ emphasis on professional systems engineering
SMSCP Competency Areas

**Level I**
Mechatronic Systems Assistant

- Electrical Components
- Mechanical Components and Electric Drives
- (Electro) Pneumatic and Hydraulic Circuits
- Digital Fundamentals and PLCs

**Level II**
Mechatronic Systems Associate

- Process Control Technologies
- Introduction to Totally Integrated Automation
- Automation systems
- Motor control
- Mechanics and Machine Elements
- Manufacturing Processes

**Level III**
Mechatronic Systems Professional

- Requirements Engineering
- Project Management – Planning & Tracking
- Engineering
- Quality Assurance & Management
- Practical Application
- Professional Engineering Project
Program Requirements

Entire program, including instruction must be in **English**

Must have a **Mechatronic Training System** on site

Instructors must be certified through the SMSCP **Instructor Certification Courses**

Schools must have a **written agreement with Siemens** on program implementation
## Benefits

### Institutions:
- Access to an international network of Mechatronics and advanced technology educators and industry partners
- An additional mark of distinction
- Provider of SMSCP Exams

### Teachers:
- Certified by Siemens as an expert in the field of mechatronics
- Recognized practitioner of “System Approach”

### Students:
- Opportunity to acquire a world-class industry certification in mechatronic systems without disrupting normal studies
- Extra advantage over the competition on the job market
Global Partners

Siemens SITRAIN
India, South Africa, China

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