



Pharma-Medical Engineering (PME) Program Graduate School of Science & Engineering University of Toyama

<http://pse.eng.u-toyama.ac.jp/pme/>

Our mission

- ◆ Pharmaceutical companies need not only drug discovery researchers but also “**pharma**” **engineers (PEs)** who can design, build, run, and maintain the factory lines to produce drugs.
- ◆ Many Toyama-based pharmaceutical companies have a strong demand for **PEs** as they deal with contract pharmaceutical manufacturing service and generic drug production.
- ◆ Healthcare device manufacturers need **medical engineers (MEs)** who can develop devices to cure diseases and to assist aged/handicapped persons.
- ◆ PE/MEs should:
 - ◆ be experts in either of electronics, informatics, mechanics, chemistry, biotechnology, *etc.*
 - ◆ have a great interest in pharmaceutical and healthcare device industries.
 - ◆ understand basics in pharmaceuticals and health science.
- ◆ In most Japanese universities, the pharmaceutical and medical departments focus on drug discovery and therapeutics, and the engineering department does not teach in depth pharmaceuticals and health science.
- ◆ Our goal is to solve this gap between the demand and supply of the human resources by training PE/MEs.

About PME Program

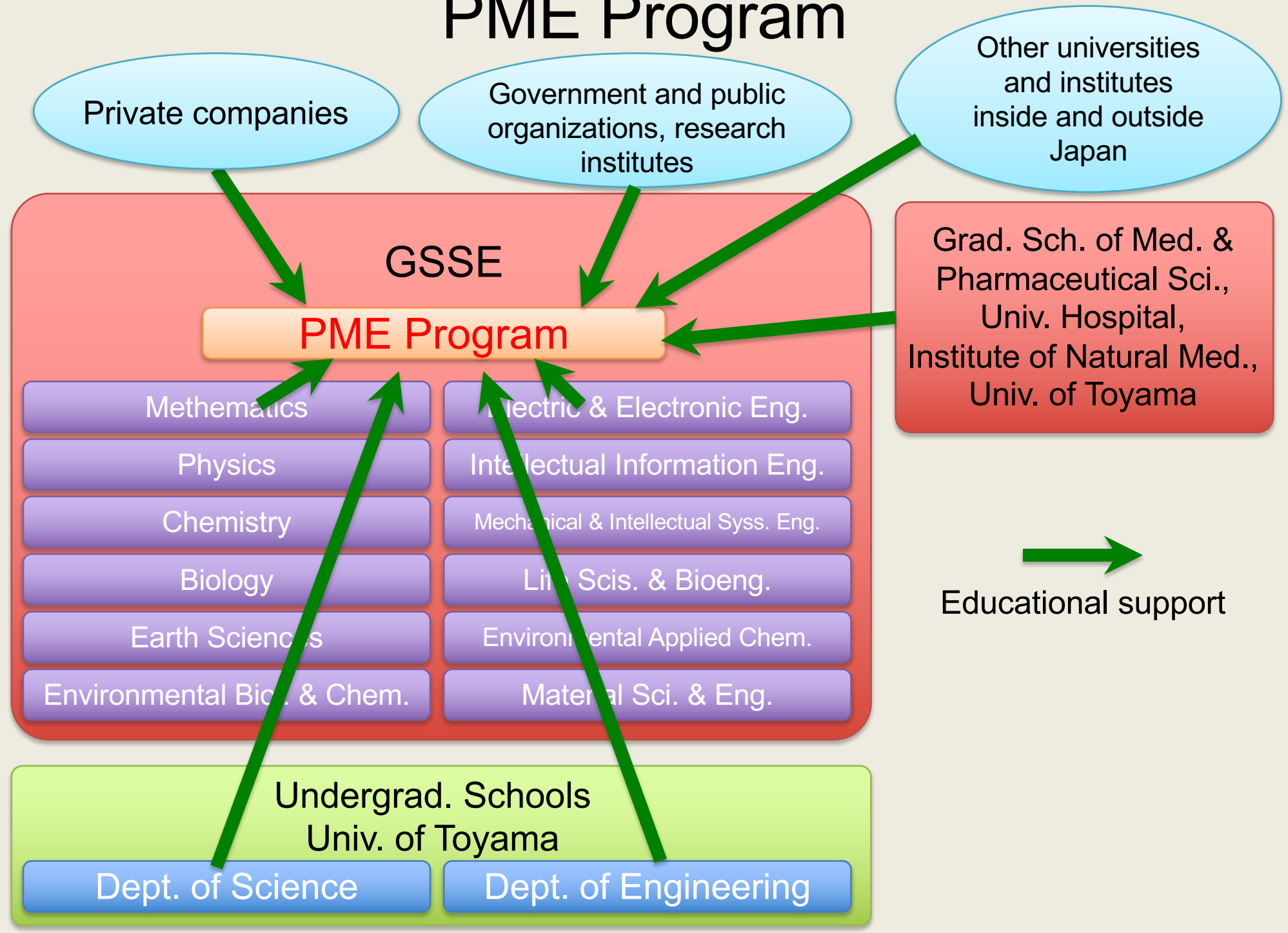
◆ The PME program:

- ◆ is currently offered to the graduate students belonging to the Graduate School of Science and Engineering (GSSE, see the following pages for details) master degree program.
- ◆ is currently run by the GSSE with the cooperation of the Graduate School of Medicine and Pharmaceutical Science and the companies and public organizations based in and near Toyama.
- ◆ has been supported by a Japanese Ministry of Education's special grant for the reformation of university education.
- ◆ was started in the spring of academic year 2014 after its one-year pilot trial in academic year 2013.

◆ The PME graduate students:

- ◆ should major in either of the academic fields of the GSSE.
- ◆ can obtain master degree in the academic field by completing the regular requirements.
- ◆ can obtain the certificate of the PME program in addition to the master degree by completing the extra requirements.
- ◆ currently counts ~20 to ~50.

PME Program



Many companies support PME Program as members of the administrative committee.

◆ Pharmaceuticals

- ◆ Daito Pharmaceutical Co., Ltd., www.daitonet.co.jp/eng/index.php
- ◆ Fuji Yakuhin, Co., Ltd., www.fujiyakuhin.co.jp
- ◆ Kokando Co. Ltd., www.koukandou.co.jp/en/
- ◆ Teika Pharmaceutical Co., Ltd., www.teika.co.jp/index.html
- ◆ Toa Pharmaceuticals Co. Ltd., www.toayakuhin.co.jp/english/top.html

◆ Medical devices, pharmaceutical manufacturing equipment, *etc.*

- ◆ Powrex Corporation, www.powrex.co.jp/english
- ◆ Sugino Machine Limited, www.sugino.com/index-e.html
- ◆ Yokogawa Electric Corporation, www.yokogawa.com

About GSSE

- ◆ The Graduate School of Science and Engineering (GSSE) is one of the seven graduate schools of University of Toyama.
- ◆ The GSSE offers a two-year program for master degree and a three-year program for doctoral degree.
- ◆ Most of the graduate students of the GSSE master degree program find jobs in private companies or public offices.
- ◆ ~480 master degree program students, ~80 doctoral degree program students, ~190 educators

Education in PME Program, part 1

◆ Regular training for master degree

- ◆ The PME students should take classes and perform dissertation studies that are required to obtain master degree in their own academic fields.

◆ PME special training

- ◆ The PME students should take some special series of lectures overviewing drug production, health care devices, economy and regulations in the related industries.
- ◆ In some special laboratory classes, the PME students should learn the principles and how to operate drug production and health care devices.

◆ Campus-wide classes

- ◆ To learn basics in pharmaceuticals and health science, the PME graduate students should take some classes offered by sections/graduate schools other than his own affiliation. For example, a PME student majoring in electronics takes classes offered by the material science section of the GSSE and the Grad. Sch. of Med. & Pharmaceutical Sci.

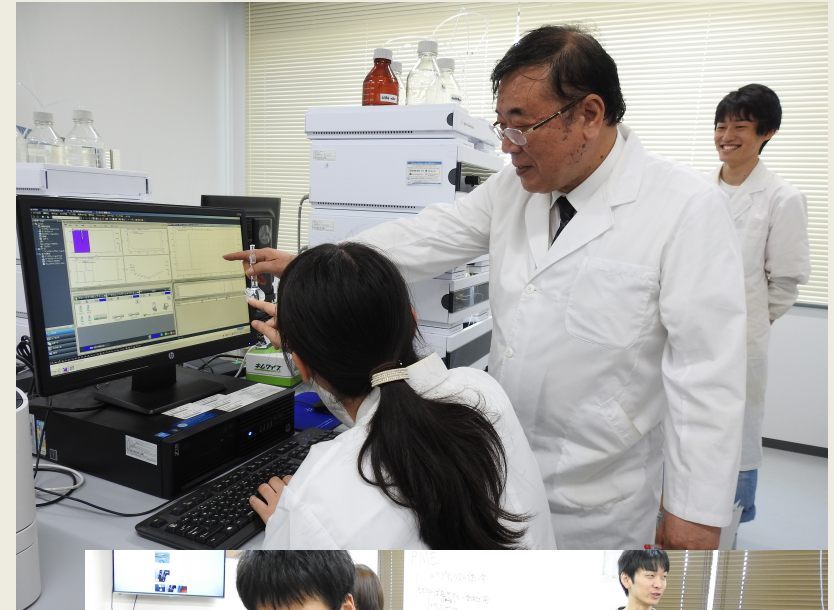
Education in PME Program, part 1

PME special training

Lectures



Lab. classes



Campus-wide classes
Grad. Sch. of Med. &
Pharmaceutical Sci.



Education in PME Program, part 2

- ◆ Vocational education through on-the-job practice
 - ◆ “Coordinator”, a tutor who has a broad experience in a wide range of industries and a professor serving as the PME Corporate Relation Manager instruct how to find a job in an attractive and growing companies.
 - ◆ Classes by many guest speakers from the pharmaceutical and health care device companies, government offices, public organizations, and research institutes.
 - ◆ Meetings with personnels from various pharmaceutical and health care device companies.
 - ◆ Factory tours to pharmaceutical and health care device companies.
 - ◆ Internship programs at pharmaceutical and health care device companies.

Education in PME Program, part 3

- ◆ Global experiences (building international survival skills)
 - ◆ PE/MEs should improve English language proficiency because they should read/write papers/patents and communicate with their business partners and consumers outside Japan.
 - ◆ The PME students brush up their English skill, using:
 - ◆ English conversation club (“International Cafe”)
 - ◆ On-line TOEIC preparation system which can be used within the campus
 - ◆ Student exchange programs with overseas universities.
 - ◆ Some PME students studied overseas, being supported by a “Tobitate” fund run by Japanese Ministry of Education and top-ranked companies.
- ◆ Presentation training
 - ◆ The PME students will make poster presentations in public at the symposium held by the PME program every year.

Education in PME Program, part 3

Global experiences

Student exchange program with University of Basel



Presentation training

Poster presentation at PME Symposium

