Institute of Clinical Biochemistry and Laboratory Diagnostics, 1st. Medical Faculty, Charles University, Prague, Czech Republic

e-Learning experiences of National Societies of Clinical Chemistry and Laboratory Medicine
Petr Kocna

IFCC Symposium - May 16, 2011
eLearning and Distance Education in Clinical Chemistry and Laboratory Medicine
Questionnaires - Survey for all National societies

- **Working Group on Distance Education (WG-DE)**
  chaired by prof. Juretic
  1st. survey 2005

- **Committee on Education and Curriculum Development (C - ECD)**
  chaired by L.C. Allen and P. Kocna
  2nd. survey 2010

- **Working Group on Internet - Distance Learning (WG - IDL)**
  chaired by V.T. Thanh and P. Vervaart
- eLearning - Distance Education
- IFCC 1.survey 2005
- Changes 2005 - 2010
- C-ECD Educational Database
- Committee on Education and Curriculum Development
- IFCC 2.survey 2010
- WG-IDL Perspectives
- Working Group on Internet - Distance Learning
- eLearning - Distance Education
- IFCC 1.survey 2005
  Working Group on Distance Education
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- C-ECD Educational Database
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- IFCC 2.survey 2010
- WG-IDL Perspectives
  Working Group on Internet - Distance Learning
eLearning - Distance Education

- Interactive, "constructivist"
  - Interactive IT package allows feedback during lectures
  - Bulletin board and "virtual bar"
  - MCQs for self-assessment on local intranet
- Fully web based interactive degree course
  - Freestanding web based study modules
- Computer assisted group work within traditional degree course

Low tech, low cost, low skill
- Email contact between tutor and student
- Students post summaries on local intranet
- Assignments submitted on floppy disc
- "Hard copy" materials, eg reading lists, on local intranet

High tech, high cost, high skill
- Students use presentation software (PowerPoint, etc)
- Online books, atlases, archives, and galleries
- Web based non-interactive degree course
- Lectures on digital video disc

http://david.openflows.org/edutech/wraparound2.ppt
eLearning - Distance Education

**eLEARNING**

**eEDUCATION**

**CBT (Computer-Based Training)**

**WBT (Web-Based Training)**

*eLearning - they are multimedia support of the educational process using modern information and communication technology to improve the quality of education.*
- eLearning - Distance Education
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  Working Group on Internet - Distance Learning
1st. IFCC SURVEY 2005

- 34 responded societies of Clinical Biochemistry
- 24 societies with Website on the Internet (70.59%)
- 14 societies with Educational part of website (41.18%)

WEB BASED EDUCATION

undergraduate study program in CBLM
postgraduate study program in CBLM
program of specialisation in CBLM
clinical cases
multiple choice questions
e-mail teaching communication
electronic books
educational use of EQA national programs
lectures of congresses or courses

in 2005
2.9 %
20.5 %
14.7 %
5.8 %
2.9 %
2.9 %
17.6 %
29.4 %

in 2010
??
- eLearning - Distance Education
- IFCC 1.survey 2005
  Working Group on Distance Education
- Changes 2005 - 2010
- C-ECD Educational Database
  Committee on Education and Curriculum Development
- IFCC 2.survey 2010
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  Working Group on Internet - Distance Learning
most of cities connected with only 1 - 2.5 GB
6 international connections with 25 GB

First DWDM connection
Dense Wavelength Division Multiplexing

http://www.cesnet.cz
INTERNET CONNECTIVITY in CR - 2010

ALL edu-centers connected with 10 GB - DWDM
8 international connections with 60 GB

10 GB DWDM connection
Dense Wavelength Division Multiplexing

http://www.cesnet.cz
MEFANET
MEdical FAculties – Educational NETwork

<table>
<thead>
<tr>
<th>1LFUK</th>
<th>2LFUK</th>
<th>3LFUK</th>
<th>LFP</th>
<th>LFHK</th>
<th>LFUP</th>
<th>LFMU</th>
<th>LFUKB</th>
<th>JLFM</th>
<th>LFPJS</th>
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<td>4099</td>
<td>1501</td>
<td>1420</td>
<td>1814</td>
<td>1699</td>
<td>4201</td>
<td>1531</td>
<td>3359</td>
<td>1688</td>
<td>1524</td>
</tr>
</tbody>
</table>

Total: 25,000 students at 10 faculties
MEFANET - Network of educational portals

- Central gateway
- Authentication system - Shibboleth

1. Medical Faculty UK in Prague
2. Medical Faculty UK in Prague
3. Medical Faculty UK in Prague

- Medical Faculty UK in Plzen
- Medical Faculty Masaryk's University in Brno
- Medical Faculty UK in Hradec Králové
- Medical Faculty Palacky's University in Olomouc
- Jesseius’s Medical Faculty UK in Martin
- Medical Faculty Pavel Jozef Šafárik's University in Košice

http://portal.mefanet.cz/
EDUROAM - WiFi - CONNECTIVITY in CR

452 WiFi EDUROAM CONNECTED CENTERS

http://www.eduroam.cz
- eLearning - Distance Education
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  Working Group on Internet - Distance Learning
July 2006: Syllabus Project Summary

Syllabus 25 topics, with 110 subtopics

September 2007: Database structure finalized

website URL, title, topics, annotation, keywords, date of last actualization, type of publication, accreditation of website

C-ECD members and corresponding members prepared list of more than 300 websites described all database fields

June 2008: Educational database of C-ECD available on-line
Selected Modern Curricula and Training Program

SELECTED MODERN CURRICULA AND TRAINING PROGRAM REQUIREMENTS FOR TRAINING IN CLINICAL CHEMISTRY AND MEDICAL BIOCHEMISTRY
Updated January 2010

Lynn C. Allen
Former Chair, IFCC Committee on Education and Curriculum Development (C-ECD)
Division of Clinical Biochemistry, Department of Laboratory Medicine and Pathobiology,
University of Toronto, Toronto ON, Canada M5G 1L5

Introduction

Syllabuses of study and curriculum requirements in clinical chemistry and in medical specialties of laboratory medicine from a number of professional associations and accrediting/licensing bodies have been compiled in this document. The intent of this article is to assist individuals to gain insight into modern curricula by providing examples from a number of countries, and to provide this information electronically for easy access. It is not the intent of this article to offer an evaluation of these curricula.

These curricula were compiled to provide examples of contemporary curricula in the fields of clinical chemistry and medical biochemistry, which are used in a variety of countries. The curricula were selected for their relevance and quality, but it is important to note that they are not exhaustive and do not represent all the training programs available.

- "Selected Modern Curricula and Training Program Requirements for Training in Clinical Chemistry and Medical Biochemistry"
- updated January 2010
- prepared by Lynn C. Allen, C-ECD Former Chair
Aims - IFCC recommended educational resources

Prepared by contributors to Syllabus Project and C-ECD members: Lynn C. Allen, Nilda E. Fink, Dubravka Juretic, Petr Kocna, Rossa Chiu, Eser Sozmen, Annayya Aroor, Rita Paroni, Hideo Sakamoto, Jelena Storozenko, Montserrat Blanes González, Dolores Balsells Rosello, Stella Raymondo, Hoang Van Son, Mariam Klouche

Visitors could search database by keywords, annotation text and other database fields (actualization date, type of presentation, specific accreditations, type of courses, with/without assessment, tuition fee, language and other fields).
### IFCC Educational Resource Database

- **254 educational resources**
- **checked for availability in February 2010**

#### Web link: From chemistry to biochemistry
- **Annotation:** Hypertext oriented distant education of chemistry - biochemistry in 24 chapters, PowerPoint presentations, notes and comments.
- **Type of publication:** Lecture, text, notes
- **Date of publication:** 2004
- **Accreditation:** View full record data View It

#### Web link: Biochemical Theory - Steve Science
- **Annotation:** Hypertext lectures of chemical and biochemical principles, pH, enzymes, DNA, proteins, lipids, genes, chromatography and electrophoresis, others. Lectures are finished with short tests.
- **Keywords:** Acids, bases and pH, Atomic structure, Biochemical nomenclature, Biotechnology, Carbohydrates, Cell communication, Cell cycle, Chromatography and electrophoresis, DNA replication, Electron microscopy, Enzymes, Genetics, Lipids and membranes, Molecular biology.
- **Type of publication:** Lecture, text, notes
- **Date of publication:** 2007
- **Accreditation:** View full record data View

#### Web link: Lactose Intolerance - eMedicine
- **Annotation:**
- **Keywords:**
- **Type of publication:** Lecture, text, notes
- **Date of publication:** 2007
- **Accreditation:** View full record data View
Educational Resource Database

International Federation of Clinical Chemistry and Laboratory Medicine
Education and Management Division
Education and Curriculum Development (C-ECD)

Educational Resource Database is prepared and updated by team of C-ECD Committee members. Visitors could search database by keywords, annotation text and other database fields (actualization date, type of presentation, specific accreditations, type of courses, with/without assessment, tuition fee, language and other fields).

Educational Database Search - by string or substring, or multiple strings of any database fields separated by coma e.g. Public Merck, HON, MedEdPORTAL, pancreas ...).

Educational Resource Database is prepared from data authorised by contributors to Syllabus Project C-ECD: Lynn C. Allen, Niida E. Fink, Dubravka Juretic, Petr Kocna, Rossa Chiu, Eser Sozmen, Annyaya Aroor, Rita Paroni, Hide Sakamoto, Julena Storozenko, Montserrat Blanes Gonzalez, Dolors Balsells Rosello, Stella Raymond, Hoang Van Son.
### C-ECD Database Visitors 2011

<table>
<thead>
<tr>
<th>Country</th>
<th>Visitors</th>
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<tbody>
<tr>
<td>numeric IP address</td>
<td>271</td>
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<tr>
<td>.net generic domain</td>
<td>86</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>78</td>
</tr>
<tr>
<td>.com generic domain</td>
<td>54</td>
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<tr>
<td>Italy</td>
<td>29</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>21</td>
</tr>
<tr>
<td>Spain</td>
<td>17</td>
</tr>
<tr>
<td>France</td>
<td>15</td>
</tr>
<tr>
<td>Poland</td>
<td>14</td>
</tr>
<tr>
<td>Argentina</td>
<td>13</td>
</tr>
<tr>
<td>Australia</td>
<td>13</td>
</tr>
<tr>
<td>not defined</td>
<td>11</td>
</tr>
<tr>
<td>Turkey</td>
<td>11</td>
</tr>
<tr>
<td>.edu generic domain</td>
<td>10</td>
</tr>
<tr>
<td>Canada</td>
<td>10</td>
</tr>
<tr>
<td>Germany</td>
<td>10</td>
</tr>
<tr>
<td>Greece</td>
<td>9</td>
</tr>
<tr>
<td>India</td>
<td>9</td>
</tr>
<tr>
<td>Brazil</td>
<td>8</td>
</tr>
<tr>
<td>Croatia/Hrvatska</td>
<td>8</td>
</tr>
<tr>
<td>Sweden</td>
<td>8</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>7</td>
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<tr>
<td>Mexico</td>
<td>6</td>
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<tr>
<td>Romania</td>
<td>6</td>
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<tr>
<td>Netherlands</td>
<td>5</td>
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<tr>
<td>Austria</td>
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<tr>
<td>Belgium</td>
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<td>Colombia</td>
<td>4</td>
</tr>
<tr>
<td>Peru</td>
<td>4</td>
</tr>
<tr>
<td>Russian Federation</td>
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</table>

**2053 visitors up to 5/2011 from 89 countries**
<table>
<thead>
<tr>
<th>Search Query</th>
<th>Search Engine</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;colorectal cancer screening&quot;</td>
<td>Google</td>
<td>215,000</td>
</tr>
<tr>
<td>&quot;colorectal cancer screening&quot;</td>
<td>Yahoo</td>
<td>960,000</td>
</tr>
<tr>
<td>&quot;colorectal cancer screening&quot;</td>
<td>PubMed</td>
<td>2,155</td>
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<td>&quot;colorectal cancer screening&quot;</td>
<td>Scirus</td>
<td>85,111</td>
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<td>&quot;colorectal cancer screening&quot;</td>
<td>IFCC-ECD</td>
<td>2</td>
</tr>
</tbody>
</table>
- eLearning - Distance Education
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- Changes 2005 - 2010
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- IFCC 2.survey 2010
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  Working Group on Internet - Distance Learning
Survey from the IFCC Education and Management Division Committee on Education and Curriculum Development (IFCC C-ECD)

The IFCC Committee on Education and Curriculum Development is attempting to assess the needs of its member societies for curriculum development and continuing education. We want to ask some questions on website education, eLearning and distance education. We would greatly appreciate it if you could forward this survey to the appropriate individual to complete if you are not that person (your Education Committee, University program chairpersons, etc.). Thanks very much for your kind reply.

<table>
<thead>
<tr>
<th>National Society:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Associate Representative/Member to Committee on Education and Curriculum Development (If one has been appointed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Please write your Email for communication with IFCC C ECD committee:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Has your Society its own website on the Internet?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ YES ☐ NO</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Is part of your website devoted to “Education”?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ YES ☐ NO</td>
</tr>
</tbody>
</table>
2nd. IFCC SURVEY 2010

- National Society Website:
  - 2005: 90.48%
  - 2010: 57.14%

Educational Part of Website:

- National Society Website:
  - 2005: 90.48%
  - 2010: 57.14%
WEB BASED EDUCATION

- undergraduate study program in CBLM
- postgraduate study program in CBLM
- program of specialisation in CBLM
- clinical cases
- multiple choice questions
- e-mail teaching communication
- electronic books
- educational use of EQA national programs
- lectures of congresses or courses

<table>
<thead>
<tr>
<th></th>
<th>in 2005</th>
<th>in 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>undergraduate study</td>
<td>2.9 %</td>
<td>11.9 %</td>
</tr>
<tr>
<td>postgraduate study</td>
<td>20.5 %</td>
<td>38.1 %</td>
</tr>
<tr>
<td>program of specialisation</td>
<td>14.7 %</td>
<td>28.5 %</td>
</tr>
<tr>
<td>clinical cases</td>
<td>5.8 %</td>
<td>11.9 %</td>
</tr>
<tr>
<td>multiple choice</td>
<td>2.9 %</td>
<td>7.1 %</td>
</tr>
<tr>
<td>questions</td>
<td>2.9 %</td>
<td>16.7 %</td>
</tr>
<tr>
<td>e-mail teaching</td>
<td>2.9 %</td>
<td>16.7 %</td>
</tr>
<tr>
<td>communication</td>
<td>2.9 %</td>
<td></td>
</tr>
<tr>
<td>electronic books</td>
<td>17.6 %</td>
<td>9.5 %</td>
</tr>
<tr>
<td>educational use of EQA national programs</td>
<td>29.4 %</td>
<td>45.2 %</td>
</tr>
</tbody>
</table>

2nd. IFCC SURVEY 2010

- 42 responded societies of Clinical Biochemistry
- 38 societies with Website on the Internet (90.48%)
- 24 societies with Educational part of website (57.14%)
PRE undergraduate study program in CBLM
POST postgraduate study program in CBLM
SPECI program of specialisation in CBLM
CASES clinical cases
MCQ multiple choice questions
EMAIL e-mail teaching communication
BOOKS electronic books
EQA educational use of EQA national programs
LECTUR lectures of congresses or courses
Resource language

- 64.2 % English language
- 26.2 % Both - English + National language

Unify educational resource

Do you think that it would be useful to unify educational presentations among the IFCC members?

Most national societies, 76.2% (32 of 42), preferred a unified IFCC educational strategy.

IFCC educational credits

What do you think about IFCC educational credits unified for all countries?

IFCC educational credits marked as good - great - important - interesting idea 42.8% (15 of 42)
INTERNET - WEB BASED RESOURCES

Importance - marking: (1-Very important ... 5-Useless)

Mean values: 2.38 2.31 3.24 3.14 3.83
- eLearning - Distance Education
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C-ECD Corresponding members
world distribution (2010)

invitation to be members of the
WG-IDL - 2011
CPD: WG-IDL members

- might be invited to be joined to WG-IDL projects
- may promote educational database and help us with updating
- may promote IFCC educational activities to national societies web sites
- could send us new resources to be added to educational database

- development of one IFCC educational/publication database
eLearning solutions facilitate the delivery of the right information and skills to the right people at the right time.

B. W. Ruttenbur

THANK YOU