

The Institutes Contribution to Improving and Advancing Engineering Education within UK Universities

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Education and Accreditation Manager

The Institute of Materials, Minerals & Mining



Summary

- Institute of Materials, Minerals & Mining
- HE & FE Involvement
- IOM3 Education Remit
- Schools Affiliate Scheme
- Secondary School Teachers' and Technician Initiatives
- Secondary School Students' Initiatives
- Conclusion

The Institute of Materials, Minerals & Mining

- The Institute of Materials, Minerals & Mining was established in 2002, as a merger between the Institute of Materials and the Institution of Metallurgy & Minerals.
- Merged with Institute of Packaging and Institute of Clay Technology in 2005.
- Licensed by EC^{uk} for EngTech, IEng and CEng.
- Licensed by Science Council for CSci.
- 21,000 members UK and overseas.
- More information about the Institute and its activities can be found on the Institute's website at www.iom3.org



HE & FE Involvement

EC^{uk} Accredited Courses

- No. of IOM3 Accredited Universities:

UK - 17

Overseas - 2

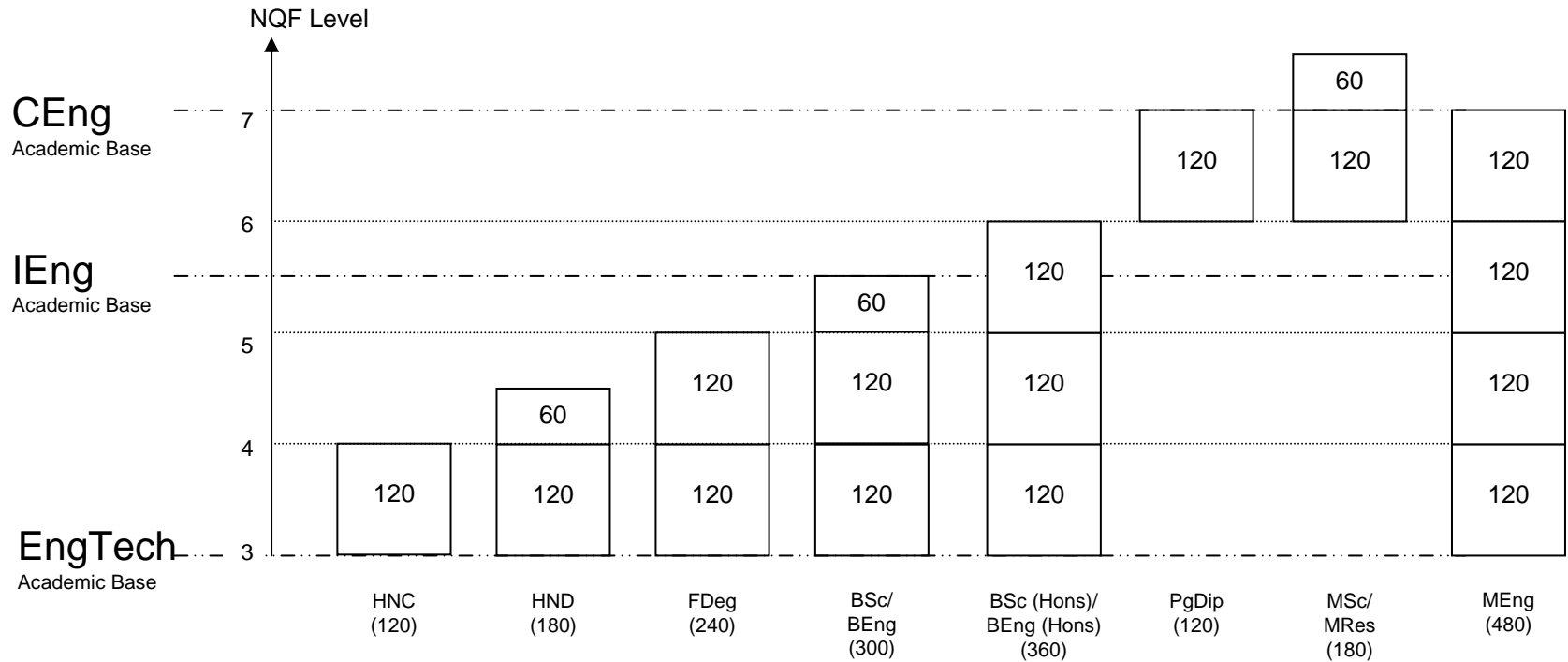
- No. of IOM3 Accredited Courses:

BEng (Hons) - 49

MEng - 46

MSc - 9

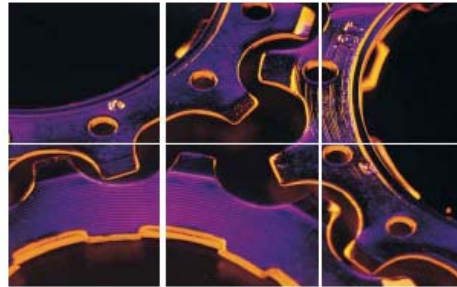
Academic Routes for Achieving Professional Qualifications



Typically 10 credits = 100 guided learning hours (30 hours contact & 70 self-directed/laboratory)

Future FE & HE Engagement

Metallurgy on Course Forum



7 November 2006

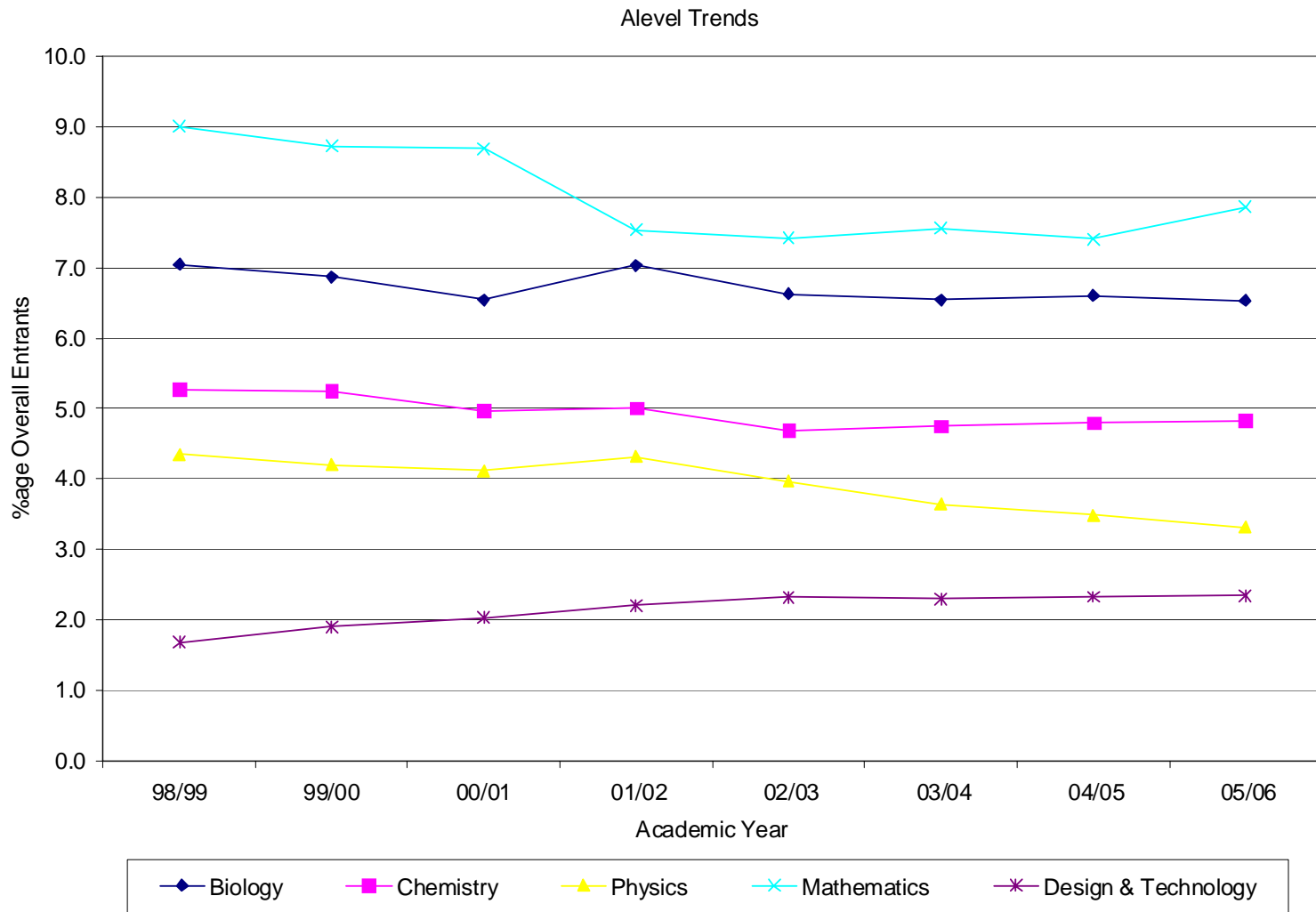
Iom³
The Institute of Materials, Minerals & Mining

Iom³

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IOM³ Education Remit

A'Level Trends Statistics (Data Source DfES)



A'Level Combinations

Source: Evaluation of participation in A'Level Mathematics (QCA)

Combination	2001	2002	2003
Chemistry, Physics, Mathematics.	4,713	2,909	2,623
Chemistry, Physics, Mathematics, Further Mathematics.	1,374	956	847
Biology, Chemistry, Mathematics.	6,462	3,900	4,007
Biology, Chemistry, Physics, Mathematics.	990	1,048	925

The Institute Education Remit

To assist with the promotion and teaching of materials, minerals & mining within education activities from secondary schools to higher education.

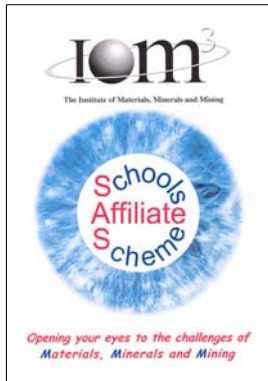
The education group is based in the Doncaster regional office and comprises:

Peter Davies, Education & Accreditation Manager
Diane Talbot, Education Co-ordinator
Anita Horton, Education Assistant



Schools Affiliate Scheme

Schools Affiliate Scheme



- Established January 1999
- 350 member schools nationwide
- Membership approximately 50% Science and 50% Design & Technology
- Annual membership fee of £30.00

Benefits of membership:

- Annual resource linked to the curriculum.
- New school to the scheme receives Corus teaching resource (value £25.00).
- Presentations/activities available in school. (General, Smart Materials, Communication, Careers, SAS, Biomaterials, Activity)
- Termly newsletter.
- Monthly in-house journal.
- Institute's Services (e.g. Materials Information Service).



Schools Affiliate Scheme Resources



Materials in Communication

- Materials for data processing
- Materials for data transmission

Materials in Aerospace

- Materials for air craft bodies
- Materials for engines
- Wings forward...

Materials in Sport

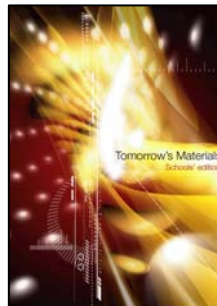
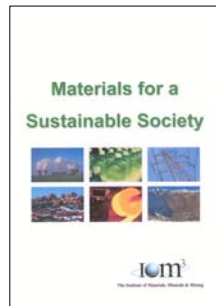
- Materials for cycling
- Materials for tennis
- Materials for job: rowing

Materials in Medicine

- Materials for dentistry
- Materials for hip joints
- Threat Engineering

Materials in Power

- Materials for generating power
- Materials for distributing power
- Materials for the future of power



SAS Presentations/Activity Outreach

Students	No. of Visits	No. of Talks	No. of Students
Sept. 03 – Jul. 04	55	121	4,620
Sept. 04 – Jul. 05	79	180	6,109
Sept. 05 – Jul. 06	88	168	6,235

Teachers	No. of Events	No. of Teachers
Sept. 03 – Jul. 04	10	221
Sept. 04 – Jul. 05	16	351
Sept. 05 – Jul. 06	10	207

Examples of Initiatives for Teachers and Technicians

Materials Congress - 2006

Teachers' Day:

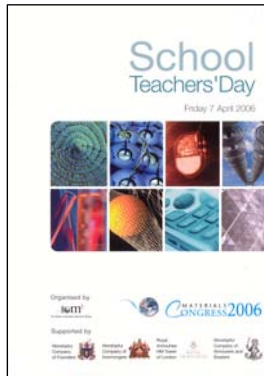
Friday 7th April 2006

Available symposia:
(pertinent to curricula)

Smart materials.
Packaging.
Materials for Future Energy Systems.
Biomaterials for Regenerative
Medicine.
Innovation in Construction Materials.

Additional activities:

Visit to The Tower of London
Education Centre with additional
presentations by CSM, Cambridge
Hitachi & IOM³.



“Relevant to education and the subjects being taught.”
“I was surprised to have people trying to give us things which
are actually tailored to the curriculum being taught.”

“Gained useful information.”

“Thanks for a great day.”

“The event was superb.”

“Will be of use to both students and staff.”



ASE & DATA Conferences



ASE Annual Conference:

5 – 7 January 2006	Reading
2005	Leeds
2004	Reading
2003	Birmingham
2002	Liverpool
2001	Surrey
2000	Leeds
1999	Llverpool

DATA Annual Conferece:

17 – 19 November 2005	NEC, Birmingham
2004	NEC, Birmingham



Polymer Study Tours & Materials Residential School

Polymer Study Tours:	17 – 20 June 2007	Napier University
	24 – 27 June 2007	London Metropolitan University
	08 – 11 July 2007	Bradford University

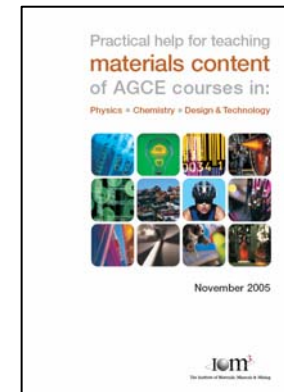
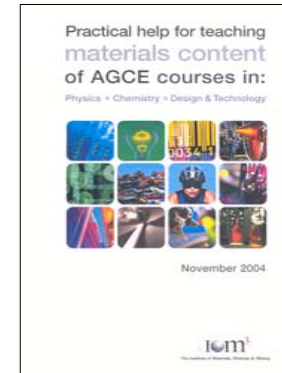
Materials Residential School:	9 – 12 July 2007	
	Imperial	
	London Metropolitan University	
	Queen Mary	



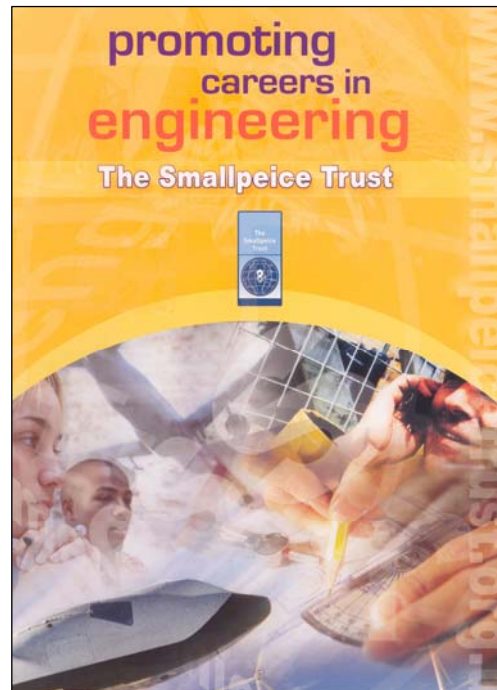
Initiatives for Students

Autumn Open Day Programme

	No. of Schools	No. of Students	No. of Sessions
2002	13	267	21
2003	23	575	52
2004	33	731	54
2005	29	537	57
2006	18	382	39



Smallpiece Trust – Minerals & Mining



Yr 10
S3


MATERIALS TECHNOLOGY

A special course designed to give students a practical and theoretical insight into Materials Science

This course is presented through a partnership between The Smallpiece Trust and The University of Cambridge.

WHY MATERIALS SCIENCE?

We move in a world that constantly demands change and which therefore presents huge opportunities for technological advancements in materials science. There is a need to invest in training young people to meet this exciting challenge and this is why The Smallpiece Trust is presenting this course in association with the Department of Materials Science and Metallurgy.



WHAT HAPPENS ON THE COURSE?

The course highlights the importance of materials science today and provides students with an excellent opportunity to explore the world of materials science, bringing theory into reality.


The course will aim to feature:

- Idea generation
- Creativity in design for aesthetic and functional reasons
- Materials selection, combination and optimum use
- Relationship between material form and intended processes
- Physical and chemical properties of modern materials
- Classification according to properties and working characteristics

Under the guidance of professionals, students work in a university environment to develop their knowledge and skills in the application of materials science.

KEY SKILLS DEVELOPMENT

The course is a curricular enhancement activity for maths, science and technology, but in addition students will enjoy personal skills development in teambuilding, communication, time management, problem solving, planning and presentations.

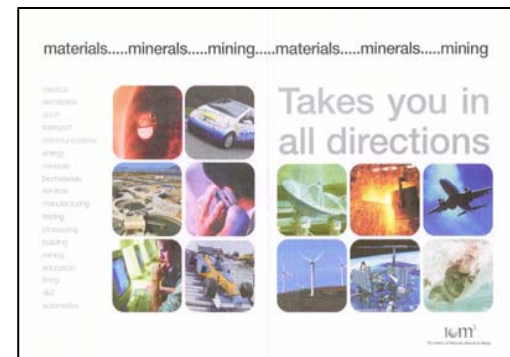
 UNIVERSITY OF CAMBRIDGE

UCAS Conventions

2006	Sheffield, London, Tyneside, Edinburgh, Cardiff, Exeter, Merseyside
2005	Sheffield, London, Tyneside, Aberdeen, Cardiff, Exeter, Merseyside
2004	Sheffield, Manchester, London, Tyneside, Aberdeen, Cardiff, Staffordshire
2003	Sheffield, Manchester, London, Tyneside, Aberdeen, Cardiff, Staffordshire
2002	Sheffield, Manchester, London, Birmingham, Bath, Tyneside, Aberdeen
2001	Sheffield, Manchester, London, Birmingham, Bath
2000	Sheffield, Manchester, London, Birmingham
1999	Sheffield, Manchester, London

Careers

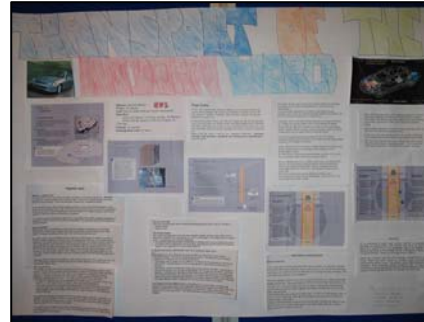
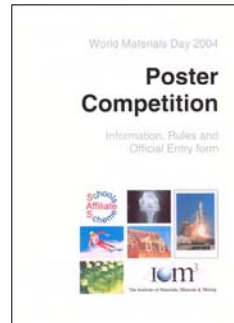
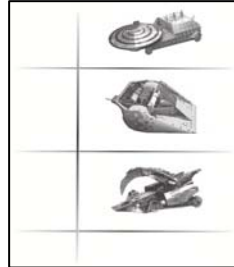
- School careers fairs.
- Careers booklet – Takes you in all Directions
(Profiles currently being sought from Minerals, Mining & Packaging disciplines.)
- Careers websites:
www.materials-careers.org.uk
www.uk-rocks.net



Competitions

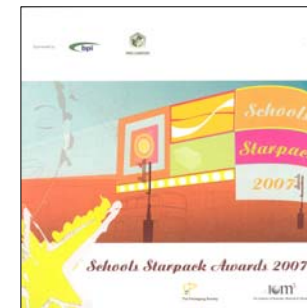
Schools:

World Materials Day



Schools & University:

Design in Plastics & Starpack



Conclusions

- Engage all providers to ensure academic progression is achievable and relevant to professional registration.
- Broker development of consortia between academic and industrial stakeholders to address perceived needs.
- Enrich Secondary school students' learning experiences to increase their appreciation of the interdependency of science and technology and their willingness to explore Engineering options as viable career pathways.

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