

Minutes of the School of Engineering and Materials Science (SEMS) Industrial Advisory Board (IAM) – Materials Stream

Date: 29th October 2015

Location: SEMS meeting room.

Start: 2pm

1a. Attendance

Internal (SEMS):

Prof. James Busfield (JB), Dr. Emiliano Bilotti (EB), Dr. Julien Gautrot (JG), Prof. Ton Peijs (TP), Dr. Andy Bushby (AB).

External members:

Last Name	First Name	Acronym	Company	Job title
Ballocchi	Paolo	PB	Bombardier Aerospace	Senior Project Engineer
Bennett	Martyn	MB	ARTIS	Chief Scientist
Kinsella	Tony	TK	Lucideon Ltd	Chief Executive
Lewis	Andy	AL	Biocompatibles UK Ltd	Technical Director
McElroy	Liam	LM	Advanced Healthcare Ltd	Research & Technology Manager
Small	Carolyn	CaS	Alcoa	Process & Product Development Manager
Stevens	Chris	ChS	NGF Europe	Technical Manager
Whear	Roly	RW	Jaguar & Land Rover	Principle Technical Specialist
Wood	Alan	AW	The Polymer Society	Chairman
Joe	Hallet	JH	Carbon Clean Tech AG	R&D Manager

1b. Apologies and substitutions

None.

JB distributed a form for each external member to fill in and hand in.

The form needs to be signed by the external members to give consent to being added to the website as IAB members

The form also serves the purpose of confirming each member most updated info and affiliation (e.g. current role/job title if changed from previous meeting, etc.).

2. Review the Role of the IAB

The role of the IAB remains unchanged.

Only two minor amendments:

- a) From this meeting onwards the meeting is chaired by an external member (The Chair). Carolyn Small has accepted to chair the Materials IAB
- b) There should be a mechanism in place to consistently record the action points from each meeting, reflect upon them at different levels within the School and, if agreed, to implement them.

3. Review and Approve the Minutes of the Previous Meeting from the 4th March 2015

Minutes approved.

The point raised by MD (Baxter) at previous IAB meeting and recorded in Part C of last meeting Minutes, was discussed further (see Part 4 of this document).

4. Review the core UG and TPG programme specifications in each stream and the learning outcomes.

It was decided not to go into the details of each Programme of Study at this meeting. Instead it was thought more useful starting from refining the Programme Specs (PS). Current Materials PS were handed in to external members. Feedbacks from each external member is expected.

CaS started by stating that according to her experience the quality of Materials students from QMUL is very high. They are normally “willing to give full answers” and express their opinion instead of just providing “one word” answers. JB and AB believe that this might be the beneficial effect of problem-based learning (PBL)/students-centred learning (SCL).

Nevertheless there are a number of aspects in which students (this is a general comment rather than specifically related to QMUL/Materials students) could improve in order to make them more appealing to industry and therefore more employable.

The specific points raised and discussed were:

i. Statistics

Statistics in Materials are more and more needed in industry and not only.

Several external members agreed that Design of Experiments (DoE) and SixSigma is among the first things that graduate students go through once employed in industry.

It might be useful to give Materials students a basic training in SixSigma (just a “green belt” rather than a “black belt”).

Industrial members are going to look for an internal Standard Training Pack that their newly employed personnel go through so that our Materials students can benefit from a more fit-for-purpose and concise training too (action against AL).

AB and JB said that these aspects are partially covered in SCL2 (e.g. DoE) but perhaps in a more intuitive and informal way.

JH suggests that it might be sufficient to follow up what already introduced in SCL2, with a more formal introduction (e.g. definitions, etc.).

That's where the Standard Training Pack from industry could come useful.

CaS pointed out that there Minitabs offers some useful self-training materials of Quality control. To be used in 1st year PBL?

ii. Risk management/risk Assessment

It was observed by several external members that newly graduated students find it difficult to go beyond equations, formulas, predictions, which are believed to be "true" by definition. Unfortunately there are a lot of engineering/materials problems which cannot simply be described by an "exact" analytical formula.

Students should be made more aware of the safe<->capacity "design envelop".

iii. Presentation/"Marketing"

It is desirable that students are able "get the message across" concisely and effectively.

It was acknowledged that Materials students from QMUL are generally already good at it. There are a lot of occasions for the students to develop their presentation skills.

iv. Regulatory aspects

AL underlined the importance of teaching regulatory aspect to Materials Students.

JB/AB replied this is already offered to medical students. Needs to extend to other Materials students?

v. Project planning/time management

AL/CaS said that in general students often lack project planning and time management skills. Can it be improved?

Student should get these skills during their final year project and MEng group projects as well as during SCL2 (and perhaps MAT4444).

vi. Different writing styles

AL said that it would be useful if students would be exposed to (and ideally would practice) different writing styles: regulatory, technical papers, IP, etc.

TP suggested to expose the students to patent search apart from scientific literature search during their project for instance.

This idea received mixed feedback from the external members.

However it was generally agreed that it would be useful if students would understand what a patent claims are so to understand problems of patent infringement.

The above could be delivered perhaps via a PBL/Case study (input from external members needed).

For instance students could be asked to guess what the product could be in relation to a patent.

Or an “expert witness” act could be set up in which students are supposed to defend or challenge a patent.

Few external members have expressed their interest in guest lecturing:

PB - composite materials

ChS - rubber physics

CaS - manufacturing processes – how to validate/proof that a process is going to work long-term rather than one off (MAT601 or MAT321). Other external members to provide Case Studies for MAT601 – Manufacturing processes

5. Review recent innovation in curriculum development

5a. New Programme Plans

Medical Materials in SEMS is effectively dead. To tackle this problem a new Programme has been set-up and launched: “Biomaterials for Biomedical Science”.

There is a nationwide problem in recruiting Materials students.

A strategy could be to have a General Engineering entry point for all the School, with Materials as a specialisations in later years. Importance of Core Materials modules to be delivered by enthusiastic lecturers, in order to attract General Engineers to select Materials as specialisation.

PB said that Composites for instance could be an inspiring field for engineers. A lot of hand-on activities could be organised. Also it is much more complicated and educational to do design/moulding in composites instead of other materials (e.g. metals).

TP mentioned about his positive experience in setting up his “ice-composite” experiments. This is done at home, with little strains on teaching labs space, and is perhaps more useful and educational.

5b. New Modules into existing programmes

6. Explore new potential collaboration opportunities

There are different mechanisms of collaboration already in place like: individual BEng projects, individual MSc projects, group MEng projects, industrially sponsored research (full or partially

funded), in curriculum support (e.g. guest lectures, field trips, prize sponsorship, careers fair participation, vacation work experience, annual placements, etc.).

The above mechanism have been quickly reviewed.

External members highlighted the needs to have a calendar with typical milestones/times during the years when each specific interaction can be initiated (e.g. MEng group projects by the end of second term, etc.).

EB pointed out that, with the recent changes in RCUK and Innovate UK funding strategies, it is becoming more and more difficult to fund PhD students. There might be an opportunity to apply for DTC if the external members can identify specific fields where specialised labour (PhD level) would be required.

The 1851 scheme was also mentioned as a different mechanism to fund PhD students.

During next meeting the possibility of directly funding PhD students or research in general at SEMS/QMUL will be discussed.

It would be useful to circulate a summary price list of how much would cost for a company to directly fund different types of research at SEMS/QMUL (e.g. fully funded PhD, etc.). The external members to comment on the competitiveness of the prices.

7. Any other business

None.

8. Date of next meeting

Thursday 3rd March 2016. Not 4th March 2016 as in Agenda.

Summary of Action plan

Action	Against...
Form distributed by JB to be signed and handed in	All external
Standard Training Pack for SixSigma to be shared	AL
Case Studies for Patents (patent infringement/"expert witness" act)	
Case Studies for Modules like MAT601	CaS (other externals?)
Suggest topics for potential Doctoral Training Centres	All external
Calendar of "interactions"	JB
Circulate a summary price list of funding different type of Research at SEMS/QMUL	JB
The external members to comment on the competitiveness of the prices	All external

Meeting Finished: 4pm

Minutes Recorded by: Dr. Emiliano Bilotti