Student enhancements of mathematics support provision – two very different approaches

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Background

Vocational student support
- Pre-sessional material
- Additional small group support
- Alternative teaching arrangements

Cohorts
- Computer Science
- Sports and Exercise Science
- Engineering
Funding

Thriplow Charitable Trust

Activities
FURTHERANCE OF HIGHER EDUCATION AND RESEARCH IN INSTITUTIONS.

Where it operates
THROUGHOUT ENGLAND AND WALES

Funding specifically for support of vocational-entry students
Project outline

Employ students as BTEC/Access mathematics ambassadors

- Creating a ‘survival guide’ for freshers
- Discipline-based maths project
- Creating an alternative prospectus for recruitment
- Peer support

Or something else…?
Computer Science

Employed 3 students:
Year 1, Year 2, Final Year

Final Year
Peer support for Year 1 in Transition Maths module

Dedicated one-to-one support

✓ Better for student
✓ Freed up tutor time
Computer Science

Year 1 and Year 2
CS project approach

Discipline-based content online

Collected feedback informally
Welcome

This guide was created by students from the department of Computer Science at the University of Bath who did not study A-level Maths. It is aimed at new students coming to the department who also did not study A-level Maths. It aims to help you catch up with other students as well as provide means of additional help.

Course Summary
Take a look at a brief summary of some of the topics that will be covered on your course. This will help you to know what you will need to prepare for.

Relevant Examples
Take a look at some examples showing how the maths you will learn is relevant to Computer Science.

Maths Covered
Take a look at the various areas of maths that will be covered throughout the course and learn the essentials. This is the main area of the guide.

Additional Help
If you are stuck on something or are worried about the maths content this page provides ways for you to gain additional help.
Computer Science

Analytical Mathematics

Home / Maths Covered / Analytical Mathematics

Matrices

A matrix is like an array. For example:

\[
\begin{bmatrix}
1 & 2 \\
3 & 4
\end{bmatrix}
\]

We can describe the dimensions of a matrix by rows x columns. For example, a 3 x 3 matrix would look like this:

\[
\begin{bmatrix}
a_{11} & a_{12} & a_{13} \\
b_{21} & b_{22} & b_{23} \\
c_{31} & c_{32} & c_{33}
\end{bmatrix}
\]

Here the entries are labeled with subscripts which say which row, first and column, second, they are in.

Matrix addition and subtraction
Matrices can be added and similarly subtracted from each other like so:

If \( A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \) and \( B = \begin{bmatrix} 4 & 5 \\ 6 & 7 \end{bmatrix} \) then

\[
A + B = \begin{bmatrix} 5 & 7 \\ 9 & 11 \end{bmatrix}
\]
Vectors are important when it comes to simulating a physical world. For example, we can use vectors in graphics to indicate the direction a beam of light is travelling. This is useful when calculating the illumination of a surface when the beam of light falls upon it. We can imagine that a surface facing directly towards the light will be illuminated fully but a surface that is facing at least 90 degrees away from the light, then the surface will be in shadow.

For example:

Front
Spanner in the works

Digital Marketing & Communications

We’ve seen 1s and 0s you wouldn’t believe

Introducing the new Bath CMS

Posted by [Author] on September 2, 2015

Today the University’s new content management system went live, and publishers in departments around the University will begin using it to publish their content to the web.

This marks a major milestone in transforming how the University communicates and delivers services digitally.
So….

Hosted on VLE space via GitHub, but…

Survival guide: created for you by current students

Two current Computer Science students, one in first year and one in second year, who themselves studied BTEC without A level Mathematics before coming to Bath have created a Survival Guide to help you through your first year. Please do make use of this! If you are going to the site for the first time you should visit:

- Log in and go to Survival Guide

Once you have logged in you will be registered and logged on the Bath GitHub revision control service (you'll need to use this later in your studies). If you are already logged in to GitHub then you should instead visit:

- Got to Survival Guide (already logged in to GitHub)

We are trying to sort out this login issue!
Two very different approaches

CS

More Maths!

More resources!

SES

Are you crazy?!
Sport and Exercise Science

3 Year 1 students

Engagement with *current* resources, not more of them

Use students who have been through it – important to see them

Needed student input
- Survey
- Focus group
SES – Student feedback

Tell people sooner
BTECs do well
Test in week one
Keep your notes
Weekly quizzes online
Dedicated MASH drop-in

Small change, big impact
Promotional video

Pre-conceptions
Preparing for university (maths)
Maths module
...
Relevance to rest of degree
**A-Z TIPS FOR GETTING THROUGH YEAR ONE**

**A**-levels
If you don't have them, don't worry. This year is all about everyone to the same level and there is a lot of support on. If you are worried though, speak to us. We're here to help.

**Biomechanics**
One of the main SES disciplines and it will require a lot of thinking. It's all relevant to the rest of your degree.

**Calculator**
Invest in the suggested one, it will definitely come in handy. A university exam calculator is a Casio fx-83ES and you can buy it cheaply! You are given a calculator for matriculation but you should use your own, so it's definitely worth getting to know one as soon as you can.

**Diary**
Organise your time effectively, it will stop you from missing lectures. In an age where we are reliant on our phones there's no excuse to be missing meetings, lectures or library time.

**Eduroom**
The university wifi network that is about as reliable as your grandparent's phone charger.

**Facebook**
Join your course groups, support pages, add peers and start networking. Our details are on the back page - if you need any advice/ have any questions at any time, find us on Facebook and get in touch!

**DO & DON'TS**

**DO:**
- Complete as much of the pre-sessional material as you can.
- Go to the introductory lectures so you'll meet your teaching peers and get to know them.
- Go along to MASH if you have a question that you can't find an answer to.
- Do the problem sheets - the module as homework helps with management and deadlines. Most units contain coursework so this is an easy way to push up your grades.
- Ask for help! If you don't, you will be more likely to feel overwhelmed.
- Go to all of your lectures, it will be harder to catch up.
- ENJOY YOURSELF!

**DON'T:**
- Feel intimidated, it's a huge step up from school!
- Miss lectures because the content is different to school. It's always good for a change.
- Be lazy. Do the work!
- Settle for a pass, and your other Year One degree will be.
- Worry if you don’t do too well - you’re not the only one!
- Think the maths you’ve done at A-level are directly applicable to our course and that’s it.

**AND FINALLY...**
We hope you’ve found this survival guide useful. Here’s a picture of us so you will recognise us if you see us around campus...

Jodie  Steph
Fionn

...along with some idea of the societies and clubs you can join...

- BUSASS
- Mathematics and Statistics Society
- Bluff Bath Poker Society
Lessons learnt

One size does not fit all

Do not be prescriptive

Students know your target audience (they are it!)
Next steps

Resources to be distributed via Student Experience Officers

Ambassadors to attend lecture in week 1 (SES)

Monitor impact
Thank you for listening

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