TEACHING PORTFOLIO

Helmer ASLAKSEN
Department of Mathematics
National University of Singapore

aslaksen@math.nus.edu.sg
www.math.nus.edu.sg/aslaksen/
# Table of contents

- Teaching Philosophy for Helmer ASLAKSEN ........................................................ 3
- Challenges to My Teaching .................................................................................. 7
- My GEMs .............................................................................................................. 8
- Letters from Students .......................................................................................... 9
- Teaching Awards .................................................................................................. 24
- Student Feedback Highlights ............................................................................. 25
- Teaching Props and Java Applets I Use in My GEMs and Public Lectures ....... 30
- Student Projects and Homework from My GEMs ............................................. 38
- Supervision .......................................................................................................... 42
- Letter from Student I Have Supervised .............................................................. 44
- Academic Consulting ............................................................................................ 45
- Web Sites .............................................................................................................. 46
- Outreach on TV and Radio .................................................................................. 47
- Competitions ........................................................................................................ 48
- Additional Outreach ............................................................................................. 49
- Public Lectures and Lectures at Schools ............................................................. 51
- Invitation Flyers to Selected Public Lectures ...................................................... 55
- Letters about My Outreach .................................................................................. 62
- Teaching Leadership ............................................................................................. 67
- Other teaching related activities ......................................................................... 68
- Development of new courses .............................................................................. 69
- Use of innovative teaching methods and use of IT ............................................. 70
- Papers on Education ............................................................................................. 71
- Education Scholarship ........................................................................................ 72
- International Educational Work .......................................................................... 73
Teaching Philosophy for Helmer ASLAKSEN

My teaching philosophy centers on the following concepts.

- **General education** to broaden the minds of the students.
- **Respect for teaching** guides my attitude towards the students and my course.
- **Active learning** helps create an engaging learning environment.
- **Visualization** allows me to explain complex ideas in a simple way.
- **Alternative assessment** gives hand-on learning experience.
- **Computers** make calculus realistic.

General education

Teaching General Education Modules (GEM) allows me to put into practice everything I've always wanted to do in teaching!

**Appreciation of mathematics.** I love mathematics, both for its internal beauty and for its relevance to the world around us. One of the primary goals of my teaching is to communicate this to my students. Unfortunately, many of our students have been deeply traumatized by the way mathematics is taught in schools. In my GEMs, I’m able to show them that mathematics is related to a wide range of everyday phenomena. I want to communicate that mathematics is an exciting and relevant subject and give them a positive feeling about mathematics.

**Multidisciplinary approach.** Until I was 15 years old, I wanted to study history, and I still am a “closet historian”. My GEMs are multidisciplinary, and one of my main goals is to make the students see links between mathematics and other fields. I want them to understand that mathematics is not just about formulas, but also about looking at patterns in the world around us. I want them to look at the world around them differently, and to gain knowledge that they will enjoy for the rest of their lives.

**Lifelong learning.** The main reason why I wanted to become a professor is because I love learning! One of my main goals is to make them appreciate knowledge and learning and understand that going to a university is not about getting a degree, but about picking up intellectual life skills that will serve them well no matter what they do later in life.

**Presentation and writing.** It is a sad fact of life that most of the time, it doesn’t matter what you know or what you do, but how you present it. I try to teach the students the importance of clear presentation. Unfortunately, there is not much time for it in my GEMs. However, with my undergraduate research and honours students, I spend a lot of time on improving their writing. I spend hours tearing their drafts apart! Some of them get a bit shell-shocked, but many of them have actually thanked me for it afterwards.

General Education Modules. I have designed two GEMs.

*GEK1506 Heavenly Mathematics & Cultural Astronomy* starts with basic astronomy, focusing on what the sky looks like from a tropical point of view. I then look at applications of astronomy with a cultural flavor, like calendars, navigation, sundials and map making. My goal is to make them more conscious of nature, appreciate the struggles of our ancestors in trying to understand the heavens, and see the centrality of mathematics in understanding the world around us.

*GEK1518 Mathematics in Art and Architecture* focuses on how we perceive patterns and symmetry. I try to include art and architecture from Singapore. My goal is to change the way they look at the world around us, and make them understand that mathematics is not just about formulas and logic, but the abstract study of patterns.
History, culture and society. Scientists don’t live in a vacuum. It is important to understand the relationship and interplay between science and society. I want my students to appreciate how people throughout the world and throughout the ages have struggled with the same problem.

Singapore context. Many astronomy textbooks (including primary school science textbooks used in Singapore!) take a “high-latitude centric point of view”. I try very hard to be “hemispherically correct”, and to teach astronomy for “latitudinally-challenged people”.

Singapore is not just a multiracial and multicultural society, but also a multicalendrical society! A major part of my astronomy GEM is a detailed study of the four calendars that determine the public holidays in Singapore: the Chinese, Muslim, Indian and Western calendars. At the beginning of the course, I often get strange looks if I ask a Chinese student about the date of Hari Raya Puasa. They seem to think that I’m a stupid “ang moh” who can’t tell that they are Chinese and not Malay. But by the end of the semester they seem to appreciate the links between science and society.

Critical thinking. The bookstores are filled with books about astrology, “sacred geometry” and “lost civilizations”. I want to give my students the knowledge and thinking skills to enable them to separate fact from fiction.

Respect for teaching

I am passionate about knowledge, and I love sharing it. That’s why my public lectures and outreach activities are an integral part of my work.

Public lectures and outreach. I do a lot of public lecturing on topics in mathematics, astronomy and art at museums, libraries, science centers and schools. I have also been academic advisor for the exhibition “Art Figures: Mathematics in Art” at the Singapore Art Museum and “The Dating Game - Calendars and Time in Asia” at the Asian Civilisation Museum and for the TV series “Ancient Chinese Inventions” on the Discovery Channel. This ties in very well with my teaching.

When I agree to give a public lecture at a place like the Asian Civilisations Museum or Singapore Art Museum, I have no guaranteed audience. I have to come up with an interesting topic and abstract and make sure that working professionals want to take time off their busy schedule to come to my talk. This teaches me not to take my audience for granted.

When people come up to me after a talk and say “My mother has always wondered how Qing Ming is determined and now I can explain it to her!” or “Now I can answer the questions my kids ask me about Chinese New Year!”), then I know that I have made a difference! These are the experiences that I wanted to recreate in my GEMs.

Adding value. When I lecture I always ask myself: “Am I adding value?” If you give the students detailed lecture notes, why should they bother coming to class? I always approach each lecture asking myself what I want the students to get out of my lecture that they cannot get from books or lecture notes.

Treat the students with respect. I started working as a Teaching Assistant at the University of Oslo when I was 19 years old and still in high school. All the students were older than me and, and I knew several of them from high school. I had to gain their respect through demonstrating that I actual help them learn the material. This required treating my students with respect, and looking at the classroom situation from their point of view.
Active learning

I believe that math is not a spectator sport. The students don’t learn from watching me do mathematics, but from struggling with the concepts themselves.

Cordless microphone. The cordless microphone enables me to move around the whole lecture theatre, and to ask questions of individual students. As much as possible, I try to drive the presentation in a dialogue form by asking simple questions like: “What do we do next?”, “Why do I do this?” or “Why can’t I do that?” By making the lecture interactive, I keep the students alert and force them to think about what’s going on. I also get instant feedback about whether they get it or not, and I can move towards noisy or sleepy students to get them involved in the class.

One of my teachers at UC Berkeley told me that teachers should be more like doctors and less like preachers. We should diagnose to find what the students don’t understand, and not just go on talking about what we think is interesting. The cordless microphone allows me to diagnose in a big lecture theatre.

Discussion forum and email. I have active discussion forums on IVLE. In 2002/03 Semester 1 there were 586 postings and 94 out of 274 students posted. I made 201 postings myself.

I get a lot of email from my students, but in the past I didn’t like writing long email letters to individual students. It only benefited one student and it was not always an efficient way to communicate and explain problems. But now I can copy the reply to the forum and the whole class can benefit. I encourage people to ask me questions on the forum, but if people are too shy, they can email me, and I copy the reply to the forum. I also use the forum for practical information and clarification to the lectures. This makes the forum more attractive to the students. They know that there will be useful information there and that I will respond to their posting.

However, the real test of the success of the forum is whether the students use it to discuss among themselves. One trick is to encourage them to use the forum as a way of forming groups for the homework. This gets the students used to communicating among themselves on the forum.

In my astronomy GEM, I usually have some students with a passion for astronomy, and they often respond to questions from other students and discuss among themselves. Once I made a minor error in class, and when I checked the forum that night, there was already a thread of 10 postings about my mistake! Just the kind of active learning environment I wanted to create.

Visualization

I believe that there are four levels of knowledge. First you know, then you understand, then you can explain and finally you can explain it in simple terms! My experience is that simple terms often involve geometrical or visual ideas.

Demonstrations. I always try to come up with analogies to explain the concepts. For geometrical concepts, I create physical demonstrations involving my own body, teaching props or the students. I have a vast collection of celestial globes, sundials, navigational instruments and soft toys!

In my astronomy GEM, I assign the students to be the different heavenly bodies. In the student comments, they often say that the demonstrations help them remember the concepts better. And the more hilarious the demonstration, the better they remember it!
For my GEM on art and architecture, I use various kits for building polyhedra and making tilings. There is really no way you can talk about these topics in a meaningful way without physical models. One of the homework asks them to build paper models of the five Platonic solids. These models are then used for the rest of the course.

**Animations.** It allows us to go one step further by adding animations and interactive applets. With the help of CITA, I have created Java applets for my astronomy GEM. They are essential to my course. Many web pages link to them, and I have received a lot of requests for the source code, including from Columbia Earthscape at Columbia University.

**Video.** My lecturing style is very interactive, which makes it hard to make it into a good video. On the other hand, I believe in short video clips. Next to the lecture notes and applets on the web page I have created short video clips where I highlight difficult points and give geometric demonstrations. This allows me to take advantage of the strengths of video.

**TV and movies.** I show several movies and TV programs in my class. Some of them are very good (especially the ones that I have been academic advisor for!), while some of them are very bad! I use those as starting points for discussions about pseudoscience.

**Web.** I have an extensive web site. My web page on the Chinese calendar www.chinesecalendar.org was for a long time the highest ranked page about the Chinese calendar on Google! (It has since been overtaken by the Wikipedia entry.) Around the time of Chinese New Year, I get up to 50,000 hits each month.

**Guest lectures.** One year I had a submarine officer from the Singapore Navy give a talk about navigation. It was exciting for both the students and me to see the links between what he had discussed in class and what the navy was doing.

**Alternative assessment**

**Innovative homework.** For the astronomy GEM the students have to make a series of observations of the rising or setting position of the Sun in the course of the semester, to observe the zenith passage, and to make a series of observations of the Moon to determine the start of the Muslim month.

For the art and architecture GEM, the first homework is to make models of the five Platonic and 13 Archimedean solids. These models are then used for the rest of the course. The second homework is to take pictures of five mathematically interesting things around them. Thanks to my students, I am accumulating a huge database of unique pictures from Singapore!

I want to drive home the message that math is all around us and make my students more conscious of the world around them.

**Computers**

**Computer algebra.** Whenever I teach calculus, I rely heavily on computer algebra. Computers have changed mathematics and we can look at more realistic models and focus on the concepts rather than the calculations. I believe this will prepare students better for the real world.

**Emperor’s New Clothes.** At the same time, we must not use computers just as eye candy. The graphics looks pretty, but does it add value? It is important that we use computers for what computers are good at, and use our mind for what our mind is good at.
Challenges to My Teaching

I must confess that I don’t really like putting together a teaching portfolio. I get very tired of trying to convince people how great I am. So I decided to add a section on what I’m not good at. This is partially based on the teaching feedback, but also on my personal feelings.

The lecture notes are not good enough

Both my GEMs are based on geometry, and a lot of it involves three-dimensional and spherical geometry. This is not easy for the students to visualize. Unfortunately, it is extremely time consuming to write good lectures notes for such courses. In order for the lecture notes to be useful, they would have to include excellent graphics, animations or applets, and these are not easy to create. Thanks to CITA, I have some excellent applets for my cultural astronomy GEM, but it is not enough. I’m planning to write a book based on my cultural astronomy GEM during my upcoming sabbatical, and I hope that will make it easier for the students.

I wish I didn’t have to repeat myself all the time!

I use a cordless microphone in lectures, and most of the time I walk around asking questions. The students are often not able to answer, or they give the wrong answer. When they don’t seem to know the answer, I have to judge whether they really don’t know, or whether they are just too shy or intimidated. But when they actually give the wrong answer, I can only conclude that they don’t understand. So I repeat myself. This is something that some students keep complaining about.

There are several issues involved here. First of all, I hate lecturing to blurred faces. I think it is a waste of both my time and their time to go on talking if most people don’t understand what I’m saying. At the same time, I need to be more demanding of the students. Some people take advantage of my willingness to slow down so they don’t prepare or revise. I need to be more demanding, communicate those demands to the students, and create notes that enable them to meet the demands.

At the same time, I know from personal experience that many people are “spatially challenged”. My sister was a straight A+ student at school until she had to take a class on “descriptive geometry” during her last year in high school. She actually flunked the class. She simply couldn’t grasp the three-dimensional geometry. I believe that the better students will have to show some patience.

Another problem is that I often introduce the harder concepts in stages. If in the first week I give a simple definition of an equinox and many of the students memorize that. When I later on in the course give several other definitions of an equinox and elaborate on the concept, some of them seem to believe that I’m just “repeating” myself.

How to deal with S/U students?

The percentage of students who take my GEMs as S/U in increasing. Last semester almost one third took it S/U. Unfortunately, my course evaluation scores keep dropping. I cannot tell for sure, but I do suspect a relationship. I spend a lot of time thinking about how to make the class attractive to a large number of people who normally would not take a math class, while at the same time not getting a reputation as an “easy” class. In particular, I have been decreasing the CA component from 60% to 30%.
My GEMs

I have designed two multidisciplinary general education modules that aim to change the way the students look at the world around them, give them knowledge that they will enjoy for the rest of their lives, and make them appreciate the beauty and relevance of mathematics.

GEK1506 Heavenly Mathematics & Cultural Astronomy was first offered in 2001/02 Semester 1 with 121 students. It continues to be successful, and I have to set a quota. Because of the heavy grading, I set the quota at 200.

GEK1518 Mathematics in Art and Architecture was first offered in 2001/02 Semester 2 with 89 students. As Director of Special Programme in Science I am only teaching one semester each year, so I have not offered this since 2004.
Letters from Students

From: Eow Cheng Zheng
Sent: Thursday, 7 May, 2009 11:19 PM
Subject: RE: IVLE8: [GEK1506] Hope the exam went well!

Hi sir,

I'm glad that I had chosen this GEM module. **I think I had learnt many interesting things which enable me to show off to my friend later, haha.** I appreciated and enjoyed your passionate and interesting teaching a lot.

Thank you!

Best regards,
Eow Cheng Zheng

From: Bhatt Nischal
Sent: Wednesday, 6 May, 2009 10:45 PM
To: Helmer Aslaksen
Subject: RE: IVLE8: [GEK1506] Hope the exam went well!

Hi Sir,

I really enjoyed ur class this sem and honestly, **urs was the only class i could sit thru for the 2 hours without feeling restless or bored.**

thanks !! :D

With Warmest Regards,
Nischal

From: Linghan
Sent: Thursday, 9 October, 2008 12:38 AM
Subject: Greetings from a student from Pioneer Batch of Heavenly Mathematics & Cultural Astronomy (GEK1506) Semester 1 2001/02

Hello!

I was a student from your pioneer batch of Heavenly Maths! I'm really happy when I googled "heavenly maths + helmer" and your website pops up in the search!

I really love your classes!

I was just debating with another friend a few days back that in Singapore, we do not see the stars movement across the sky. Instead, the stars "appear" to move only up and down the sky! I hope I did not get that wrong! :P

Keep it going! I'm sure the all the students adore you!

Cheers,
Linghan

From: Feng Ying
Sent: Sunday, 5 October, 2008 2:53 AM
Subject: Hello!

Dear Prof Aslaksen,
Hello! It's great to see your website! I was one of your students in year 2001/2 and you are one of the most interesting lecturers I have seen and that's why your lectures leave me deep impression even until now. I was surfing for the latest time for sunset in Singapore and happen to see your website. It is so informative! Thanks!

Your children are so cute!

Take care and good luck!

Regards,
Foong Yee

From: Azhar Bin Ismail
Date: 08-May-2008 12:33 PM
Topic: thank you Prof Helmer

Would like to take this opportunity to express my heartfelt appreciation to prof. Helmer for making your lectures so interesting (despite the late odd hours, it seems so short) even though you have been teaching this mod so long!!!. Many after taking this module said that

"If you never take heavenly mathematics in NUS, you haven't seen everything"

This is definitely true (definitely the WHOLE truth) from firsthand experience. Thank you so much for replying promptly to my queries in this forum.

If there is any one module I will remember after leaving NUS, it will be GEK1506!! Btw, sir, I think you should be part of the YouTube University!!

!!Tusen takk!!

Thank you Chun Lin for your assistance too!!

From: Muhammad Norhafiz Bin Samsudin
Date: 08-May-2008 12:40 PM
Topic: Re: thank you Prof Helmer

I absolutely agree with you Azhar!! This mod is by far the most interesting and useful mod I've ever taken so far! I'm gona miss the fun and laughter, and also dear Edvard!

Thank you Prof Helmer for the knowledge and I'm sure to remember for the rest of my life..

From: Mas'uud Ibnu Samsudin
Date: 08-May-2008 12:45 PM
Topic: Re: thank you Prof Helmer

Same here. I think there will never be another lecture where i would look forward to as much as the ones for this module.

This was the last level one module that i could take and i certainly do not regret taking it.

Although some concepts are still a bit unclear to me, I am still captivated by the knowledge taught in this module. Also, I guess "there are some things in life that we have to figure out ourselves".
On a final note, thanks a lot professor Helmer for all the help and extremely fun lectures that you gave us. All the best to you sir! Keep the passion going!

Tusen tack!

**From: Gwee Hung Jin**

**Date:** 09-May-2008 04:45 ARE  
**Topic: Re: thank you Prof Helmer**

Thank you Prof, for your effort and passion!! Indeed, this is by far the most interesting and fun module I’ve ever taken in my 3 years in NUS. And i must add that I have wonderful team mates too :)

If you are teaching another module, I will most certainly sign up for that module! Also, I just found out that I have listened to one of your talks before, when you came to my JC 4 years back :D

I will spread good words of this module around, and I am sure future batches of students will enjoy your lessons as much as we do.

Jin

**From: Carina Cassandra L Calugcug**

**Date:** 11-May-2008 06:49 PM  
**Topic: Re: thank you Prof Helmer**

Well, it's definitely not an easy module. But it's one of the few modules I've taken where I really didn't mind putting in the effort for the homework and project, because they were fun to do. And while the concepts take some time to grasp fully, it's fun learning them.

Thanks, sir, for sharing all of that knowledge to us. Now I know that we can really actually have fun while learning and it's not just a myth. I really enjoyed attending the lectures.

I hope they do a better job at the webcast though. It's helpful listening to some parts for revision, but a little hard to imagine the demos that aren't shown. Teaching astronomy may be an extreme sport, but part of the magic is gone when the demonstrations are not shown.

**From: Liang Tianfa**

Sent: Monday, 29 May, 2006 1:45 AM  
To: aslaksen@math.nus.edu.sg  
Subject: GEK 1506

Hi Sir,

Thank you for your interesting lectures and lessons. I enjoyed them very much! And yes, your patience also, for consultation times. From the bottom of my heart, I want to say that this module is the module that really makes my life in this semester an interesting and enriching one. I never felt bored in the lessons. they are FUN! I learnt a lot of things that I don't take much notice in my daily life - the calendar, Earth, the skies, the stars and why one of them kept appearing at the same spot every night in front of my house.

Thank you for making this course a memorable one!!  
Thank you for your guidance.
Thank you for your patience.
Thank you for your humour.
All the best in the future!
Cheers,
Tirana

From: Kartini Binti Mohamed Suhaimi
Sent: Saturday, 27 May, 2006 1:11 AM
To: aslaksen@math.nus.edu.sg
Subject: Thanks =)
Dear Prof Aslaksen,
I just wanted to tell you that I really enjoyed your Heavenly Mathematics: Cultural Astronomy module this semester. Although I S/U-ed the module, I found myself reading up a lot on the stuff that you taught! It truly helped me to answer many of the curiosities and interests that I have of the sun, moon and stars.

I admit that I have been teaching (and showing off to) my friends a lot about the natural things that go on daily in our lives. Sad to say, not many of us are aware of the environment as much as we think we do.

That said, I hope your upcoming students would enjoy the module as much as I did! Thanks for being a wonderful lecturer, great job =)
Cheers,
Kartini

From: Li Xinyi
Sent: Tuesday, 9 May, 2006 4:38 PM
To: aslaksen@math.nus.edu.sg
Subject: thanx & feedback
Hi prof,
Thought I’d just drop a note to thank you for an enriching course… I enjoyed learning about the sun & moon, and am now more observant about them before the course, I’ve never noticed the sun’s setting position changing throughout the year, nor have I ever noticed the bottom crescent!! Ha, & I never used to give much attention to the Moon’s visibility either… just thought that it can’t be seen when it’s covered by the clouds…
Now I know that it actually rises in the east & sets in the west, so sometimes one might just have been looking in the wrong direction.

Was affected by your enthusiasm & I think your demonstrations really helped! Can still remember the concepts you explained with the soft toys… and your anecdotes too…eg. of how some foreigners got stuck in the forest in the dark coz they didn’t expect dusk to be over in a flash…
Thanks for conducting an engaging & interesting course & in trying your best to help us to understand the concepts (ha… im one of the students that looked blur most of the time…)

Regards & best wishes,
From: Lin Xunzhong Don

Sent: Friday, 2 December, 2005 10:17 PM
To: aslaksen@math.nus.edu.sg
Subject: RE: IVLE: Exam

Dear Prof Helmer,

I had to let you know that Heavenly Mathematics is a really fun module to take, especially with all the demonstrations using soft toy pandas and polar bears, as well as students posing as sun and moon. I certainly learnt a lot of useful information from you, and now I can even "forecast" to my mom when Chinese New Year will fall on for the next few years, as well as to my friends about the Julian vs the Gregorian calendar! I will definitely recommend my friends to take this module. I hope all this information will stay with me throughout my life. Thank you for a fun and enriching time. Merry Christmas and a happy New Year!

Regards,
Don.

From: Guo Kunyao Alvin

Sent: Wednesday, 30 November, 2005 5:11 PM
To: aslaksen@math.nus.edu.sg
Subject: Re: Thank you sir

Dear Sir,

I'm one of your students in your GEK1506 module course. I must tell you that you did a very good job in making your lecture special and interesting. Although I'm just in the first year of my university, but I've been through polytechnic and you are the only lecturer that teaches lectures this way. Initially I thought that astronomy is a boring subject and I would never pick it up, but you made it into an interesting and digestible one. I really appreciate your efforts you put in to teach us and wait to clear our doubts at the end of every lecture. (And of course introducing us to the cool applets and Stellarium) My main point of this email is to say thank you to you. :)

Thank you
Alvin

From: Lin Qifeng

Sent: Wednesday, 30 November, 2005 2:27 PM
To: aslaksen@math.nus.edu.sg
Subject: GEK1506 - Thanks!

Hi Dr Aslaksen!

Now that everything’s over, just like to say big thanks for this great module! Really enjoyed the lectures and it’s been a memorable experience, not to mention the really interesting exam.
Hope you’d enjoy marking the papers!
Thanks again!

Regards,
Lin Qifeng

From: Wang Ailing

Sent: Wednesday, 19 November, 2003 10:58 PM
To: aslaksen@math.nus.edu.sg
Subject: A letter for you!

Dear Sir,

I have always wanted to write this email to you but I don’t want to feel that I’m bootlicking so I wait for the end of the exam. Hehe… I probably just another ordinary girl in your class who, I guess, you do not have any idea who I’m! However, YOU will always be a lecturer that I will always admire and one lecturer in NUS that I would not say you suck!

I remember during the first few lessons that I attend, I’m just like any other students in the class. Shocked, fascinated and amazed by what you are teaching. This raises my interest in this subject! However I’m not that type that will go up to you and ask you questions. I have only done it once throughout the whole semester. So lucky for me, I have a friend to help me throughout this module.

Soon, as the semester gets more and more busy, I seem to forget about heavenly maths. In the sense with all the mid-term coming up and a reluctant project group, I started to slowly forget to revise about my heavenly maths. Then there was this once that you said something that really touched my heart. It goes something like that:

“I don’t believe in exams and what’s most important is that I hope you will learn something out of this class. Every time you see the sun or moon or anything I teach in this class, you will remember this class that you attend.”

Seriously, this touched me greatly. I mean it’s not every day you hear a lecturer say that to you right? To me, this also shows your passion in teaching and not just earning your pay! It’s also obvious you have the passion when you will repeat what you say to make sure more people understand what you saying. I admit that sometimes I find it “naggy” but hey! It’s for people who don’t understand and still want to learn! It does not mean that you understand then you are great or something like that.

Then I started to study about the subject and I must tell you that now I know much more! When I see the crescent or full moon, I would think of the moon stuff that you taught me! Once, the friend who always helps me with heavenly maths and I happen to observe the moon on the same night and had great fun talking about it! We are both working on the moon home work previously! The most funny incident occurred when my boyfriend bought the Siemens hand phone SL55, there is this screen saver termed moon phase. It shows the predicted moon shape for the night as it also has the lunar calendar function in it! I was busily explaining to my boyfriend about moon phases!

Seriously, now I don’t care about the grade I get in this class because the most important thing is that I had learnt something! I just want to thank you for your teaching and your passion for it! So sad that I can’t take your module next semester! But it's okay… I will go for other semester year’s modules! I just started my university life! Hehe…THANK YOU SIR! If you ever feel that no one enjoy your class, remember that I had! Cheers!
Ps: The paper is indeed interesting! You must have put in a lot of effort! Hee...

From: San Kin Mun Craig
Sent: Friday, 14 November, 2003 1:40 AM
To: aslaksen@math.nus.edu.sg
Subject: RE: An interesting e-mail

Helmer

Personally I think you've done a great job, in fact I think you've gone beyond what is expected. In my feedback of the class, I did in fact mention that you should be more strict with the students, esp in terms of asking "irrelevant" questions like exam formats and easier questions, etc. I think you've been pointing out the fact that this is a class based on gaining new knowledge, understanding fundamentals, answering curiosity, the true meaning of education, rather than memorization and regurgitation. I totally agree with you, and we need more teachers like you!

As a matured student in NUS (I did my first degree in the States), I find that some classes in NUS simply feed students with info without engaging students into the subject. In a way, the kiasuness of students feed this habit, and it becomes a vicious cycle of teacher-student creating this memorization, regurgitation scheme of teaching. Unfortunately this is very common, and it's good to see that there's some passion left in teaching, such as yours, and that education thru pure interest (rather than the end grade) is still alive.

Having said all that, I also understand the students' points of views since they (including me, except I'm so far away from it now!) have been schooled in this kind of environment for so long. SO in a sense, there's a long way to go before this mindset changes.

But I suppose my feedback to you is to keep going. I believe you're making changes in the mindset of students, and perhaps in a bigger way, the way education is conducted. The concepts are fairly simple, perhaps it may be beneficial to shrink the class by specifying pre-requisites, such as a certain level of mathematics (not sure if this was done already). This is vis-avis the 3-d-ness of it, and I can appreciate that some people just can't see it.

Thanks for a very interesting class, I've learnt many interesting things, and it has certainly sparked my interest in heavenly bodies. BTW, I find myself some days just staring at the moon against a fixed wall, like that dude on the Harrison vid, just to see it move, and it moves quickly!

Thanks
Craig

From: Zheng Minghui
To: aslaksen@math.nus.edu.sg
Subject: GEM 1506
Date: Mon, 8 Sep 2003 10:27:59 +0800

Hi Prof Aslaksen!

Sorry for this rather late note; I was really busy over the weekend. After last Friday regarding what you said about people giving you feedback that you repeat yourself unnecessarily while others say they don't understand you, I feel some encouragement is due.
I think that you are really patient, intelligent and both a nice and good teacher. Although I'm not a super-ace regarding Astronomy, you caught my attention and interest with your lively (and wonderfully funny, not stupid!) illustrations and acts!

So, yep, that's it. My previous teacher told me that although all good teachers have passion to teach students, it's the students that give teachers the drive when they are tired as all humans would be.

You said you'd be proud of yourself if you teach us things that we'd remember for the rest of our lives. So far, I think then you should be! Keep up the great work!

Cheers,
Minghui

**From: Chen Xin**

To: aslaksen@math.nus.edu.sg  
Subject: hello Dr Helmer  
Date: Sun, 10 Aug 2003 00:50:27 +0800

Dear Helmer:

hello dear Professor:), my name is Chen Xin and i am a scholar from China. you may see me during the lecture often in the coming term. (if i am not too blur to be able to find a seat in the crowded crlecture theater:) and if you feel comfortable, you can just call me Claire:) which is my english name:)

i have received your welcome letter and i felt so warm reading it. it is really wonderful to know tat i am going to be your student:). being a freshman in a foreign university, i felt confused and panic quite easily and reading your warm letter has really calm me down a bit. so Thank you truely. maybe you never realise how much you have helped me just through this email..but yah..Thank you:)

i am so looking forward to attend your lecture and i hope i can do well:) pls help me if i do things wrongly..(i am not very confident actually as my language level is not really high..n i actually failed my QET..very sad.)

Thank you:) and good night!!

Claire Chen Xin

**From: Nurhidayah Bte Mohamed Ali**

Sent: Monday, 28 April, 2003 10:48 PM  
To: aslaksen@math.nus.edu.sg  
Subject: RE: Merci!

Hie Sir!

Just want to say thanks alot for everything. I did have lots of fun and have learnt to look at things in a different perspective which is cool..Like cloth can never have just nice intricate patterns and place mats arent just place mats now ..heh. Irrespective of what the exam outcome is gonna be, what is impressive lies on how this module provides one with the opportunity to forge new friendship through group project which is really great!

Thanks so much for providing this opportunity.

Hidayah
From: Goh Jiahong
Sent: Saturday, 26 April, 2003 7:43 PM
To: aslaksen@math.nus.edu.sg
Subject: RE: Gp 10

Hi Dr Aslaksen!

I did Heavenly Mathematics last semester also, and it has been most fortunate of me to come under your guidance for 2 consecutive semesters.

Know what? My friends and I keep each other informed whenever beautiful crescent appears in the sky ever since =) And, surprise* I can figure out wall patterns without referring to the chart now ...

I thought, it isn't everyone's fortune to come across really great teacher like you. I've learnt lessons that I would never forget in my life.

I want to say, thank you. And do take care too Dr Aslaksen.

Most sincere and with many many regards,
Jiahong.

From: Liew Wen Hwee
Sent: Wednesday, 18 December, 2002 12:45 PM
To: Helmer Aslaksen
Subject: The theory of hanging clothes to dry
Importance: High

Hi Sir,

Oh my... I just discovered the theory behind my mum's "theory of hanging clothes to dry"...

My mum have been telling me since I was a kid that for half of the year that she will have to hang the clothes out in the kitchen and the other half of the year in the corridor for them to dry... I was perplexed by her "theory" for a long time... I thought "wasn't the sun suppose to rise East always"??

And your lesson cleared my doubts!!! My flat lies exactly (ermmm maybe not that exact...didn't notice tat until I used the compass... Was almost scared by a faulty compass that points "west" in the direction where the sun rises!!!( in the East-West plane.... And so for half of the year, the sun is in the South-east and the other half in the North-east... MY MUM IS AN ASTRONOMER !!!(ha...)

Sir, what u have taught is of practical purpose!!! (Maybe u could tell the next batch of students abt tat and they could advise their mum on how to better dry their clothes.. =))

Thanks a lot, Sir!!!

Warmest regards,
Wen Hwee

From: Leow Dasheng, Jackson
Sent: Friday, 22 November, 2002 7:21 PM
To: aslaksen@math.nus.edu.sg
Subject: RE: Guess it was too easy! :-(

17
Dear Sir,

It was easy but tricky. One question wrong will result in several wrong. I think partly it is easy because you have taught well in the lectures! Students are always attentive to your lectures because they are interesting. Please do not make it too hard especially hugh amount of information is already torturing a lot of us (nerds do not!). However, some of the questions especially the front section do repeat most of the time. I do enjoy this lecture. I started from zero knowledge to knowing what are solstices and equinoxes. You have managed to teach astro, something so abstract so physic, into something even an art student can understand. You are great lecturer. I admire you!

Regards,
Jackson Leow

From: Yang Yirong, Aaron

Sent: Wednesday, 20 November, 2002 10:48 PM
To: aslaksen@math.nus.edu.sg
Subject: RE: Best of luck on the exam!

hey proff.....
not sure if it's right to just call u helmer......
anyways, just wanted to thank u for the really great module.....
best one this semester. it's the only lecture that i go to and2 hrs seem pretty short, the rest seem like it's a year or something. think u can expet an even bigger class next tme from all the good publicity ur getting.
take care and thanks for explaining things so clear to us.
Aaron

From: Lee Yulin, Clara

Sent: Wednesday, 06 November, 2002 6:23 PM
To: aslaksen@math.nus.edu.sg
Subject: RE: So much to remember? NOT!

Hi Mr Helmer,
You r a great teacher and i think we'll alwaz remember ur lessons 4 life...! =)

From: Fazylah Bt Abdul Rahman

Sent: Sunday, 03 November, 2002 8:21 PM
To: Aslaksen, Helmer
Subject: questions

hi sir. sorry to bother you but my friend just emailed me some questions regarding h maths, but after answering them, i'm afraid i might be misinterpreting the concepts. would it be too much to ask if you would mind scanning through the document to see if anything's wrong with my explanation? i know you're probably very busy, what with our projects and everything. sorry. oh, and some parts are pretty casual cos i was writing to my friend.
oh, and i would just like to say one more thing. thanks for everything. heavenly maths was wonderful. it was by far my favourite module. (don't get me wrong-- i'm NOT trying to
curry favour you or anything, and even if i was, it'll probably not work cos everything's on computer systems right? and everything is marked and graded and trying to curry favour a lecturer after lectures are over is pretty pointless ANYWAY...)

i just want to say the course was really really great. the stuff we learnt was awesome and the best part was that it was real. it's not like history, where you learn about dead people or literature where you read a book and forget about it. i think i learnt some stuff which i will remember for life, stuff that's really REAL like the equation of time especially, and the path of the sun across the sky, and the cool calender stuff. it's fascinating. if only there was a heavenly maths level 2000 as well... i'll really miss it.

and i know this is going to sound really really really lame but i'm going to say it anyway. i think i'm not just going to miss the course, i'm going to miss you as well. i wish all my lecturers were as enthusiastic and inspiring and caring as you. it's amazing how you're still so vibrant and smiling while all my other lecturers seem tired and cynical and weary of life. i really admire that. i really really admire that. I hope one day i'll be just like you.

thanks for everything.

fazylah.

From: Lim Tiong Yeow
Sent: Friday, 01 November, 2002 6:20 PM
To: Helmer Aslaksen
Subject: 
Dear Dr. Helmer,

Once again thank you very much for this wonderful course, it has been very beneficial for me. I think the things that I had learned here will stick in my mind for the rest of life like what you said in the beginning of the course, these are things I can tell my grand children next time.

And if I ever get to be a professor myself next time, you would definitely be my role model!

Regards.

Tiong Yeow.

From: Lin Xinhuan
Sent: Thursday, 09 May, 2002 1:55 PM
To: 'aslaksen@math.nus.edu.sg'
Subject: RE: Hope you all survived the exam!

Dear Sir,

I had a fun time at your class too. Having been an arts student since Junior College, I never realize that there's so much more to maths other than numbers. Thanks for your guidance throughout the past semester!

Yours sincerely,

Xinhuan
From: Wong Teck Boon
Sent: Saturday, 04 May, 2002 12:20 PM
To: aslaksen@math.nus.edu.sg
Subject: RE: Hope you all survived the exam!

Dear Sir

Thnx for teaching us this module and allowing us to know something that we really take for granted in the past. It's a very interesting module and I really appreciate your effort for making it very interesting. Your method of teaching is indeed unique and i really enjoy it. Hope to be able to take up your module again if i got a chance to. By the way, just went past Lau Pa Sat the other day and finally found out that the topview photo of Lau Pa Sat that we took is from the UOB building. It just happen that the staircase has a window and we went to the top floor to snap it.

In the meantime take care and we will miss u! Thnx once again!

From: Tay Tze Hian
Sent: Thursday, 02 May, 2002 2:45 PM
To: aslaksen@math.nus.edu.sg
Subject: Thank You

Sir,

Thank you for your teaching.

You are a good lecturer with a lots of enthusiasm in teaching and all of us can feel your passion in Mathematics.

You provide good web site for learning.

You always make every lectures an interesting one.

Many times when we are doozing off or dreaming away, u always make an effort to keep us awake and attentive by asking us questions....( hehe, even tho sometimes we cannot answer your question... u still gave HINTS in order not to embarass ourselves....).

We really learn a lot from u in terms of patterns and other interesting Mathematical stuffs.

I find the course very enriching and will recommend my classmates to support u!(Hehe..SMILE!)

You are a different lecturer in NUS because u are more friendly than the rest. But we did not take advantage of your friendliness and respect u a lot. Respect your enthusiasm in your work, the knowledge that you have and your passion in life as well! ( U like running rite? Saw the newspaper cutting on your office door the other day...cool!)

Last but not least, i wish u all the best in your life!

Yours sincerely,
TAY TZE HIAN
ID Yr1

From: Dawn Yin
Date: Wed, 2 Jan 2002 21:37:37 -0800
To: aslaksen@math.nus.edu.sg
Subject: A word of Thanks
Hello Dr. Aslaksen!

I had meant to thank you for a great semester 1 before the exams, but work got in the way... Anyway, as they say, better late than never! So, I'd just like to express my gratitude for enriching me with a better knowledge of the universe around me! I actually impressed my mum and friends with my knowledge of the Chinese lunisolar calendar and the prediction of the CNY dates! Well, I know I didn't do terribly well for the exams, but nonetheless, I learnt a lot. So, thank you once again! Have a great 2002!

Thank you,
Dawn Yin

P/S: I'm taking up Salsa soon!!

From: Yanchun Ong
Sent: Sunday, 02 December, 2001 8:17 PM
To: aslaksen@math.nus.edu.sg
Subject: Re: I've finished marking!

Dear Helmer

Wow, that's very very efficient of you, to have completed the marking of the exam scripts *_*

Just want to thank you for the exam feedback....i hate it when the lecturers just keep quite after marking the scripts, cos i won't be able to find out where are the areas of weakness in the answers ^_^

Once again, thanks for your heavenly maths.its a real gem.

Sincerely
yanchun

From: Chia Peipei
Sent: Friday, 23 November, 2001 10:23 PM
To: 'Helmer Aslaksen '
Subject: RE: Dinner after exam?

Dear Sir,

Sorry for the late reply as I had to study for a Friday paper. It is the worst among the lot as it requires me to write 3 essays in 2 hours. It is a Sociology paper. How was the dinner on Thursday? Hope it went well.

Thanks for setting an 'okay' paper for us and also for that BIG SMILE when you went round collecting our scripts. Hope you wont faint from reading our not so good answers and terrible handwriting.

I took 2 GEM modules this sem, One is yours, the other is a physics module called Einstein's Universe and Quantum Weirdness. It is basically about Relativity and its really interesting, though tough! Thus its a real pity that I wont be taking ur module next sem. Dont worry, I will 'advertise' your module and urge my friends to take it.

You have been a GREAT prof and you have made the module really interesting despite all the technical stuff that you have to teach us. Despite being so blur even when we should have already known our stuff (because you have taught us time and time again, but didnt bother to remember it ), you still have the PATIENCE to repeat ur explainations and even
try new teaching methods to help us to understand better. I really appreciate it and I hope that you will continue with such zest and inspire all your future students!

There are a few questions for you though, why did you choose to come to Singapore to teach? What about ur family? What is your religion?

Oh, as for your question, I am going to take Economics, Statistics, ICM, Theatre Studies and maybe a Singapore Studies module.

Peipei

From: Ho Wan Hing, Raphael

Date: Mon, 19 Nov 2001 14:27:31 +0800
To: aslaksen@math.nus.edu.sg <aslaksen@math.nus.edu.sg>
Subject: RE: Best of luck on the Heavenly Math exam!

Dear Doc Helmer,

thanks so much for your efforts to make this class so interesting for the whole semester. most of us chose this module 'cos it sounded interesting from the start. but you've made it really enjoyable! :) thanks so much! i've had a very enriching and refreshing experience that i can take out of NUS and apply to daily life! sigh! if only more modules were like that. i've felt that this is what education should be. not just studying and mug for the exams. but this course has given us a great way to apply to everyday knowledge! (we'll never look at the sun OR the moon in the same way ever again! ) once again, thanks Doc! for a wonderful semester!

i'll probably not be taught by you again, so God bless you in everything, may you find joy and love wherever life takes you!

cheers
Raphael
Dear Sir

Just wanted to express my appreciation for your wonderful teaching. You have really given me a pleasant surprise too! I seldom have teachers who teach with such passion. Astronomy class was really fun, though my mind isn't that inclined towards certain "abstract" ideas! =)

I feel really lucky to have attended this module, which might probably be my last modules in WUS. I would be "quitting school" to do Med @ Glasgow. So just wanted to thank you. I enjoyed these few months very much! Of your cute polar bear, Pengin & Singa!

P.S. Hope you like Dumbo!

Best Wishes!

-She Min-
28.04.10
Teaching Awards

- GEM Incentive Award, 2005/2006 Semester 1.
- The course page for Mathematics in Art and Architecture (www.math.nus.edu.sg/aslaksen/teaching/maa.html) was named Editor's Choice in the DMV Mitteilungen, 2004.
Student Feedback Highlights

Please note that in 2001/02 I taught both my GEMs and the mathematics part of Science Foundation Module. The mathematics part only consists of three hours of lectures in the middle of the semester.

For 2001/02 Semester 1, I received 148 nominations for Best Teaching and 208 nominations for Innovative Teaching. I had 121 respondents in my GEM and 777 in SFM. My score for GEK1506 Heavenly Mathematics & Cultural Astronomy was 4.579.

For 2001/02 Semester 2, I received 115 nominations for Best Teaching and 187 nominations for Innovative Teaching. I had 89 respondents in my GEM and 782 in SFM. My score for GEK1518 Mathematics in Art and Architecture was 4.562.

Since the nominations in 2001/02 were not separated between my GEMs and Science Foundation Module, I cannot say how many percent of my GEM students nominated me.

For 2002/03 Semester 1, I received 193 nominations for Best Teaching out of 244 respondents (79%). My score for GEK1506 Heavenly Mathematics & Cultural Astronomy was 4.619.

For 2002/03 Semester 2, I received 16 nominations for Best Teaching out of 80 respondents (20%). My score for GEK1518 Mathematics in Art and Architecture was 4.138.

For 2003/04 Semester 1, I received 99 nominations for Best Teaching out of 290 respondents (34%). My score for GEK1506 Heavenly Mathematics & Cultural Astronomy was 4.241.

For 2003/04 Semester 2, I received 16 nominations for Best Teaching out of 80 respondents (23%). My score for GEK1518 Mathematics in Art and Architecture was 4.323.

For 2005/06 Semester 1, I received 54 nominations for Best Teaching out of 171 respondents (32%). My score for GEK1506 Heavenly Mathematics & Cultural Astronomy was 4.292.

For 2005/06 Semester 2, I received 29 nominations for Best Teaching out of 156 respondents (19%). My score for GEK1506 Heavenly Mathematics & Cultural Astronomy was 4.115.

For 2006/07 Semester 2, I received 48 nominations for Best Teaching out of 177 respondents (27%). My score for GEK1506 Heavenly Mathematics & Cultural Astronomy was 4.311.

For 2007/08 Semester 2, I received 53 nominations for Best Teaching out of 213 respondents (25%). My score for GEK1506 Heavenly Mathematics & Cultural Astronomy was 4.225.
Highlights from the student comments

Innovation
He is highly innovative. He is able to use anything under the Sun to aid him in his teaching. In doing so, he not only makes difficult concepts appear less alien, he also lightens up the mood and makes learning much more enjoyable.

The material that he has developed on the mathematics of calendars is one of the most innovative ever seen in the mathematics courses in NUS. It is an example of the utility of interdisciplinary research in teaching, as students get to explore a crucial and relevant (yet almost invisible) part of their lives mathematically and historically.

Innovative, as he tries to deliver his ideas by demonstrating physically. Although it made him look silly, it really did help in visualizing.

He is innovative because the course he taught was actually hard to understand and with rather deep concepts. However, he tries to simply them by demonstrating the movements using his own actions and models.

He uses unconventional methods of teaching and these methods appear to be very useful and helpful.

Teaches pretty complicated topics in an extremely unconventional way. Very effective just to sit in lectures.

Active learning
Very seldom do we see such a dedicated teacher. His lecture is not based on reading lecture notes but he actually covers the syllabus as he is going along without one even noticing. His teaching methods is one that gets everyone involved as he could just pop by your seat and ask you a question and of course there is no penalty involved when you cannot answer. This would only indicate to him that the students do not understand him.

His teaching really moved me. I was really touched and inspired by his teaching style. He not only gives the lecture but also asks questions and makes the students understand the concepts well. I personally feel that’s how a teacher should be.

He’s full of weird ideas and let the students participate in them as well. He’s a really good teacher to have. He’s fun and interesting. Never had a dull moment in class.

A lot of student interaction makes him a very different lecturer from the rest.
He encourages active participation from students sitting in the lecture.
He engages student participation and manages to keep our attention on him.
Visualization

Heavenly Mathematics being a fairly unheard-of topic, which people have little idea about, it is exceptionally difficult for him to bring ideas across to us in simple English yet with the difficult astronomical terms. He does this with teaching tools such as globes, pictures, websites, video clips and java applets created by himself. At times, to help us understand some concepts, he may even use students to represent different things and like he always says, he is not afraid of looking stupid in front of us, taking different positions like being the Sun when explaining to us how the Earth revolves around the Sun. His innovative methods of teaching have certainly helped us understand much more than we would have without them. Even though there are still points which we may be unsure of, being where we are now in terms of understanding is certainly a feat in itself brought by his innovative ways of teaching.

I used to believe that attending lecture is simply coming to the lecture hall and spending the rest of the time keeping myself awake. Never did I expect models and pictures to be brought in and used to aid us in our learning. However, this lecturer actually uses the student body to be his learning aids. Students are used to represent certain heavenly bodies and demonstrate how they move. Truly a new concept in teaching.

By using those examples, he not only makes his point clearer, but we are also more likely to remember the points because of the radical examples used.

He is able to come up with interesting and effective ways of explaining complex ideas and theories. It is fascinating to know how he can make use of any object he can find around him during lecture to help in his description.

He can use anything to illustrate a concept, from students themselves to their heads and sunglasses.

He uses a lot of visuals in his lessons and there are also a lot of hands on participation. His lessons are conducted in a more creative way as compared to the norm and this serves to provide a greater insight into the topic.

Can turn LT23 into a perfect observatory through visualization that uses everything – from the lamps to the stairs.

Creative in explaining difficult concepts. Uses live demonstration to allow students to see the whole picture.

He makes a boring topic come to life and thus enables a student to easily comprehend and grasp difficult concepts.

Cracking module-related jokes and using real life examples.

Made good use of models and graphics as teaching aids. He goes round to ask questions which is really a very good teaching technique because not only it made the lecture more interactive but at the same time, becomes a good gauge of how much the students comprehend.

Thinking skills

Able to engage the students and think beyond the boundaries of the classroom, such as real-life examples of the world we live in. As a result, students are more interested in their pursuit of knowledge in the subject.

Encourages students to think critically and get students actively involved in the lecture.
Encourages students to think out of the box.
Asks questions which induce students to think.
Creates a fun atmosphere at the same give understanding and stimulate thinking.
His examples are also quite thought provoking.
He wants us to understand and think further on what he has taught.
Stimulates students to think.
He has enhanced my thinking ability.
He is able to enhance students' thinking skills and ensures the lecture is fun and interesting to the students.

**Creativity**

He poses no restrictions on how the format of projects and assignments should be, hence giving students maximum freedom to stretch our creativity. One of the assignments he has assigned required us to take photographs of any interesting forms we can find in our living environment. This has made us view our surroundings with a new approach.

His flexibility in assignment requirements gives us maximum freedom to stretch our creativity. I look forward to his lessons every time and in fact, I enjoyed doing the assignment that he has assigned us! His enthusiasm influences his students, too!

Encourages creativity in students.
Allows students space for creativity.

**Alternative assessment**

Tutorial questions and assignments are interesting and out of the box.
He came up with interesting homework like making models and going around Singapore to take interesting photos. The project is also very interesting to work on.

**General education**

He tries to incorporate National Education into our lessons, which is amazing, since I never knew that astronomy had anything to do with National Education!

I have gained a totally new insight into the way I look at math now. Further more, the knowledge gained has made me more aware of my surroundings, where I can relate back to what he had taught.

Changes perspective of people who says that maths is dull.

Brings in fun, yet very basic applications of Mathematics in our lives, which we never thought about.

The things that he taught are very applicable to our daily life and interesting.

The best teacher I’ve ever come across in my life who can relate subject matter with everyday life.

I’ve learned something practical from mathematics other than just numbers.

He applies the concepts to life very well. Make me understand and able to use concept.
He makes us realise how maths can be applied to daily life situations through various interesting ways and he also makes the lessons interactive and less boring.

Teaches mathematics with relevant and practical situations.

His lectures are fun and interesting. He encourages us to have fun while learning new, and to appreciate the beauty of the world around us. He also uses interesting model to teach.

**Generating interest in mathematics**

Could never imagine how a lecturer could deliver so much knowledge on such a difficult subject to students. Now I can say that the majority of Heavenly Maths students have developed high interest on this subject.

Has turned half the class into lifetime astronomers.

Humorous make lecture interesting and therefore arouse our interest in the lesson.

His interest in mathematics has been passed on to the students.

He use props, games and real life examples to illustrate his point, helping us generate interest for the subject.

His unorthodox way of teaching has made me more interested in the area of mathematics. He is able to make a really boring math lesson into something interesting.

**IVLE and Web**

Never fails to answer our questions in IVLE Discussion Forum.

The web page created by him is very useful and the IVLE discussion forum is very useful also. We can exchange our opinion easily.

His website is FANTASTIC! It has got many useful links.

**General comments**

Has a keen sense of how a student would think.

The attempts to see things from the students perspective is also much appreciated.

He tries to observe students’ expressions to see if we are still blur about what he’s talking about and make sure that we leave the lecture satisfied.

He is not afraid of admitting his own mistakes.

He talks to us instead of telling us.

Looking forward to attending the lecture and it has made my study life rich.

You are one of the best Maths lecturers/tutors I've ever had! :)

He makes a very great teacher and is very approachable and adds colours to the dullness of the modules that are available for students to choose. I've enjoyed his lessons very much, right from the very beginning. Also, the topics he choose to teach is also very different from others modules, thus enable the students to learn a wider variety of things, which is what I think education is about.
Teaching Props and Java Applets I Use in My GEMs and Public Lectures

Figure 1: Building models at a GEP Mathematics Enrichment Camp

Figure 2: Comparing the views for a polar bear at the North Pole and a penguin at the South Pole
Figure 3: Using the panda bear, the lion and the plastic Sun to illustrate the sunrise times in China and Singapore

Figure 4: What does the Penguin have to do with the Singapore flag?
Figure 5: When does the Muslim month start?

Figure 6: Polyhedral models
Figure 7: Mathematics is like a box of chocolate! Especially if you eat it at Lau Pa Sat!

Figure 8: Using my plastic Analemma to explain the sunrise time in Singapore.
Figure 9: Sextant, GPS and picture of Analemma on the whiteboard

Figure 10: Polyhedral models
Figure 11: Projection of a 4-dimensional polytope into 3-space

Figure 12: More polyhedral models!
Figure 13: The students can click on the map to see the path of the Sun at any given location at any month

The Apparent Motion of the Sun at Different Times of the Year

Figure 14: The previous picture is for an observer in Singapore, this is for an observer in Beijing
The Motion of the Sun Along the Ecliptic

Figure 15: The motion of the Sun along the ecliptic

The Astrological Houses at Different Latitudes

Figure 16: This applets show how the astrological houses changes at high latitudes

Figure 17: What does the waxing or waning Moon look like in different parts of the world in the course of the year?
Student Projects and Homework from My GEMs

Sample projects from GEK1506 Heavenly Mathematics & Cultural Astronomy

Zu Chongzhi and the Chinese Calendar Reform of 462 AD
This project is based on original Chinese sources. Very impressive!

Stonehenge
I get a lot of Stonehenge projects, but this is by far the best. Wonderful design and a beautiful clay model.

Astronomical Alignments in Egyptian Pyramids
Nice Flash animations!

The Chinese Calendar
Very strong project. Corrected an error I had made in one of my papers.

Astronomy and Astrology in the Works of Chaucer
One of my favorite topics!
**Heavenly secrets**

A project on Chinese astrology that includes a 20 min video with interviews with fortunetellers (with subtitles) and clear explanations.

**Celestial navigation**

Replicas of ancient navigational instruments.
Sample projects from GEK1518 Mathematics in Art and Architecture

Landscapes of Mathematical Interest in Singapore
My favorite! Careful study of the mathematics behind the fountain at Bugis, the ring at Suntec and the Marriott Hotel among others.

Mathematical Influences in the Islamic World
One of the best! Lovely interactive models!

Understanding Escher, an Insight to the Mathematical Aspect of Tessellations
Great graphics!

Early Mathematics in Chinese Musical Scale
Very interesting topic!

The Mathematics of Diamonds
A real GEM project!

Interview with the Minotaur
Very cute web site about labyrinths and mazes!
Homework from my GEMs

For the astronomy GEM, the first homework is to make a series of observations of the Sun in the course of the semester. The second is to make a series of observations of the Moon in the course on one lunar month.

The left pictures shows the sunset in August, the right shows the sunset in September

For the art and architecture GEM, the first homework is to make models of the five Platonic and 13 Archimedean solids. These models are then used for the rest of the course.

The five Platonic and 13 Archimedean solids

The second homework is to take pictures of five mathematically interesting things around them. Thanks to my students, I am accumulating a huge database of unique pictures from Singapore!

Bugis, Clementi, Lau Pa Sat and Shaw House
Supervision

I have supervised 2 Master’s theses, 20 Honours Projects and 17 UROPS projects. Several of them have received or are currently pursuing Master’s degrees. One later received a Ph.D. in mathematics from the University of Illinois, Urbana-Champaign, and one later received a Ph.D. in astrophysics at the University of Colorado, Boulder. He is currently a Postdoc at the Institute of Advanced Study, Princeton.

My projects are innovative and original. I refuse to lecture to the students, but insist instead on driving them forward through dialogue sessions. My grading is strict, which unfortunately sometimes puts my students at a disadvantage compared to their classmates who have more lenient supervisors.

Supervisor of Master’s theses.


Honours Projects

Undergraduate Research Opportunities Programme in Science (UROPS) Projects

13. Akhil DOEGAR and Akshay PRASAD, Indian Calendars, 2002

Science Research Project

2. ZHENG Ser, Quasi-Periodicity in Medieval and Islamic architecture and ornament, 2008.

NUS Science Mentorship Programme Project

1. Akmal bin Abd. Rahman and Amit Jain, Astronomy and Calendars, 1995,
2. SHI Fangying, ZHANG Mengshi, Enumerating 9 x 9 Sudoku Grids, 2008.
Letter from Student I Have Supervised

Kevin did not do very well for his courses in his first semester, but when he came to see me about doing a UROPS project, I sensed that he really was interested, so I took him on. He ended up doing two projects with me before he left to do his Ph.D. in astrophysics at University of Colorado, Boulder. He is currently a Post-Doc at the Institute of Advanced Study at Princeton.

Letter from Kevin Heng Ser Guan

I am currently a Physics honours student and have known Associate Professor Helmer Aslaksen of the Department of Mathematics for two years. I was his student for two UROPS projects – “The Mathematics of Astrology – Does House Division Make Sense?” and “Perspective in Mathematics and Art” (the first project was one of only seven presented by the Faculty of Science at the 2001 NUROPS congress)

I remember being only an average student when I first met him, but I was allowed to blossom as he guided and mentored me in a way few other professors could have done. We enjoyed an excellent working relationship, as he is a creative, candid, enthusiastic and meticulous mentor who would spend many hours on end discussing our projects; I can only attribute the same set of traits to less than three other professors I have met in NUS. Professor Aslaksen has shown me that mathematics can be used in creative and unusual ways. Furthermore, I have come to appreciate that the history of mathematics is important – something I used to disregard.

In addition, he encouraged me to pursue graduate studies, an option I did not consider when I first entered NUS. I am now poised to start a Ph.D. in astrophysics at the University of Colorado at Boulder in 2003.

Besides academics, we enjoy a good teacher-student friendship, and I enjoy conversing with him. Our topics of discussion range from education, mathematics and philosophy to sports, books and entertainment. Incidentally, he is an accomplished marathon runner. It is in my strongest opinion that Professor Aslaksen is the most well-rounded professor in the Departments of Mathematics and Physics (two departments whose professors I am well acquainted with).

In short, Professor Aslaksen has helped me develop from being an average student to a NUROPS congress presenter (2001) and recipient of the 2002 A*STAR Pre-graduate Award.
Academic Consulting

- Academic consultant for a program on Chinese New Year on the PBS radio show Earth & Sky. Earth & Sky is funded by the National Science Foundation and heard by nearly 4 million U.S. listeners, 2001.
Web Sites

- The course page for "Heavenly Mathematics & Cultural Astronomy" (www.heavenlymathematics.com), which is linked to by many leading astronomy and mathematics sites.
- The course page for Mathematics in Art and Architecture (www.math.nus.edu.sg/aslaksen/teaching/maa.html) was named Editor's Choice in the DMV Mitteilungen, 2004.
Outreach on TV and Radio

- Science Content Committee for the TV quiz show “National Science Challenge”, MediaCorp Channel 5, 2008.
- Interview on Channel News Asia on lunar eclipse, 2007.
- Programme Committee member, coordinator of the mathematics section and judge for the TV quiz show “National Science Challenge”, MediaCorp Channel 5, 2005.
- Programme Committee member, coordinator of the mathematics section and judge for the TV quiz show “The Great Science Challenge”, MediaCorp Channel 5, 2004.
- Interview about Mathematics and Arts on “Art Nation” on Arts Central TV channel, 2003.
- Guest on Koh Joo Kim's 1 1/2 hour live talk show “The Living Room” in conjunction with Chinese New Year, NewsRadio 93.8, Singapore, 2002.
- Interview about the Maya calendar on Gold 90.5, 2002.
Competitions

- Chairman, Singapore Mathematical Olympiad Organizing Committee, 2003 to present.
- Chief Judge for the Brands’s Sudoku Challenge 2008 Singapore Open and Brands’s Sudoku Challenge 2008 Asia Pacific Open, a national and Asian competition with a $10,000 top cash prize, 2008 and 2009.
- Chief Judge for the Brand’s Sudoku Challenge Singapore 2007, a national competition with a $10,000 top cash prize, 2007.
- Created the puzzles for the first national Sudoku competition in Singapore, the Sudoku Super-Challenge 2006, jointly organized by the Singapore Mathematical Society and the People's Association, 2006.
- Organizer of the first Sudoku competition in Singapore at the National University of Singapore Mathematics Enrichment Camp, 2005.
- Grader, Bay Area Math Olympiad, USA, 2005.
- Member of the Programme Committee, coordinator of the mathematics section and judge for the TV quiz show “National Science Challenge”, MediaCorp Channel 5, 2005.
- Member of the Programme Committee, coordinator of the mathematics section and judge for the TV quiz show “The Great Science Challenge”, MediaCorp Channel 5, 2004.
- Panel of Judges, CHAOS (Creative & Heuristic Applications of Science), 2003.
- Selection Panel for the ICAAS (Imperial College Alumni Association of Singapore) Outstanding JC Science Student Award, 2002.
- Instructor in the training camp for the Singapore team for the International Mathematical Olympiad, 1991.
Additional Outreach

Science Centre Singapore


Museums

- Lecture for the guides at the Singapore Art Museum in conjunction with the exhibition “Art Figures: Mathematics in Art”, 2002.
- Series of three lectures at the Asian Civilisations Museum in conjunction with the exhibition "The Dating Game - Calendars and Time in Asia", 2000.
- Series of two lectures for the guides at the Asian Civilisations Museum in conjunction with the exhibition "The Dating Game - Calendars and Time in Asia", 1999.

Singapore Mathematical Society

- Vice-President of the Singapore Mathematical Society, 2009.
- Chairman, Singapore Mathematical Olympiad Organizing Committee, 2003 to present.
- Coordinator of the Singapore Mathematical Society-Royal Institution Masterclasses, 2007 to present.
- Created the puzzles for the first national Sudoku competition in Singapore, the Sudoku Super-Challenge 2006, jointly organized by the Singapore Mathematical Society and the People's Association, 2006.
- Assistant Editor of the Singapore Mathematical Society, 2005.

The Astronomical Society of Singapore


NUS High School of Mathematics and Science

- Assembly talks, 2005 and 2008 (twice).
- Advisor for student project, 2008.
• NUS High School Curriculum Advisory Committee, 2005.

**Gifted Education Programme**

• Gifted Education Branch Primary Mathematics Masterclass, 2008 and 2009.
• Seminar for Gifted Education Programme Primary Science teachers, 2003.
• Lecture at the Gifted Education Programme Mathematics Seminar, 2003.
• Mentor in the Gifted Education Programme Mentorship Programme, 1993.

**School Organizations**

• Academic advisor to schools in West 1 Cluster, 2003 to 2004.
Public Lectures and Lectures at Schools

Public lectures and outreach to schools are an essential part of my teaching. Both my GEMs were tested out beforehand. I also learned a lot from being academic advisor for Asian Civilisations Museum, Singapore Art Museum and the Discovery Channel.

Lectures to the General Public and at Special Events for Students

  - Science.05, a month of Science, Technology and Biomedicine, 2005.
  - National University of Singapore Mathematics Society, 2005.
  - Outstanding Educator Award Public Lecture Series, NUS, 2005.
  - Bay Area Mathematics Adventure, mathematicaladventures.org, San Jose State University, USA, 2005.
  - Singapore Malaysia Students' Association, University of California, Berkeley, USA, 2005.
  - Berkeley Math Circle, University of California, Berkeley, USA, 2005.
  - Evening lecture, Harvey Mudd College, USA, 2004.
  - Winkelman Lecture, Macalester College, USA, 2004. (An annual lecture series in mathematics, past speakers include Herb Wilf, Gilbert Strang, and Tom Banchoff.)
  - Oslo katedralskole, Oslo, Norway, 2003. This lecture at my old high school was part of the activities surrounding the first Abel Prize in mathematics. Niels Henrik Abel was a student at this school, which celebrated its 850th anniversary a few months earlier.
  - Science Focus, National University of Singapore, 2001 and 2006.
  - Annual General Meeting of the Norwegian Business Association (Singapore), 2001.
  - Science Millennium Lecture, National University of Singapore, 2000.
  - Singapore Science Centre, 2000.
• National University of Singapore Science and Technology Camp, 1999 and 2000.
• Lectures on “Observing the Sun and the Moon from Different Parts of the World” or “When Does the Sun Rise in Singapore and What is ‘Wrong’ with the Singapore Flag?”.
  • San Jose Math Circle, San Jose State University, USA, 2005.
  • Berkeley Math Circle, University of California, Berkeley, USA, 2004.
  • Open House, Department of Mathematics, National University of Singapore, 2003.
  • Singapore Mathematical Society Annual Prize Presentation Ceremony, Chinese High School, 2003.
• Lectures on “Symmetry in Art and Architecture”, “The Mathematics of Symmetry: From Wallpaper to Islamic Art” or “The Mathematics of Ceramics”:
  • Open House, Department of Mathematics, National University of Singapore, 2003.
  • National University of Singapore Museums, 2002.
  • Asian Civilisations Museum, 2002.
• Lecture on “The Beauty of Polyhedra”:
  • Gifted Education Branch Primary Mathematics Masterclass, 2008.
  • Singapore Mathematical Society, 2002.
• Lecture on “The Mathematics of Sudoku”:
  • People's Association, 2006.
  • Open House, Department of Mathematics, National University of Singapore, 2006.
• National University of Singapore Open House, Faculty Lecture, 2003.
• Lecture for the guides at the Singapore Art Museum in conjunction with the exhibition “Art Figures: Mathematics in Art”, 2002.
• Series of three public lectures, at the Asian Civilisations Museum in conjunction with the exhibition “The Dating Game --- Calendars and Time in Asia”, 2000.
• Series of two lectures for the guides at the Asian Civilisations Museum in conjunction with the exhibition “The Dating Game --- Calendars and Time in Asia”, 1999.

Lectures, Seminars and Workshops for Teachers
• Keynote speaker at Mathematics Symposium at Centre of Excellence at Zone East, 2008.
• Lecture at in-service course on the history of mathematics for high school teachers, University of Oslo, Norway, 2006.
• Lecture on “The Mathematics of the Public Holidays of Singapore” at the Mathematics Workshop for Primary School Teachers in conjunction with the Singapore Mathematical Olympiad for Primary Schools, Chinese High School, 2004.
• Seminar for Gifted Education Programme Primary Science teachers on “The Mathematics of the Public Holidays of Singapore” and “When Does the Sun Rise in Singapore and What is ‘Wrong’ with the Singapore Flag?”, Anglo-Chinese School (Primary), 2003.

Lectures at Schools

In Singapore, junior college is grade 11 to 12 and secondary school is grade 7 to 10. High school is an unofficial name, which usually means 7 to 10, but can also mean 7 to 12. A * marks that the school instead visited the NUS. I've visited 15 of the 23 pre-university centers in Singapore (including Junior Colleges and Integrated Programmes).

• Anderson Junior College, 2002 and 2003.
• Catholic Junior College, 2004.
• Dunman High School, 2002 and 2006.
• NUS High School of Math and Science, 2005 and 2008 (twice).
• Pioneer Junior College, 2001*.
• School of the Arts, 2008.
• Raffles Junior College, 2009.
• Tampines Junior College, 2006*.
• Temasek Junior College, 2001* and 2008.
• Victoria Junior College, 2002.
• Yishun Junior College, 2002.
• Fuchun Secondary School, 2007*.
• Outram Secondary School, 2002 (twice).
• Paya Lebar Methodist Girls' School, 2007*.
• Raffles Girls’ School (Secondary), 2003 (twice) and 2007.
• Singapore Chinese Girls’ School, Singapore, 2004 (twice).
Invitation Flyers to Selected Public Lectures

I have attached invitation flyers to some public lectures.

Asian Civilisations Museum Public Lecture Series

Public Holidays of Singapore
by Dr. Helmer Aslaksen

in conjunction with the exhibition
The Dating Game: Calendars and Time in Asia
a millennium project by the Asian Civilisations Museum

Friday, 14 January 2000 at 7:00 pm
Asian Civilisations Museum
39 Armenian Street, Singapore 179941

Free Admission

Singapore is probably the most exciting place in the world for anyone interested in the study of calendars. This is because, in order to understand the calculations of the public holidays, you will need to know four different calendars.

Of the 11 public holidays in Singapore, four of them, New Year’s Day, Labour Day, National Day and Christmas Day are fixed on a particular date in the Gregorian calendar. The remaining ones, namely, Chinese New Year, Good Friday, Hari Raya Puasa, Hari Raya Haji, Vesak Day and Deepavali move around from year to year.

In this 45-minute lecture, Dr. Helmer Aslaksen will explain the astronomy and mathematics behind these ancient holidays and calendars.

About the speaker

Dr. Helmer Aslaksen is an Assistant Professor with the Department of Mathematics at the National University of Singapore. Dr. Aslaksen did his undergraduate degree at the University of Oslo, Norway. After obtaining his Ph.D. at the University of California, Berkeley, he joined the National University of Singapore in 1989.

Dr. Aslaksen has always had a keen interest in history and the study of calendars provides a wonderful mix of both mathematics and history.

Registration is necessary for the above talk. Please call Ms. Norita Senin at Tel: 332 3284; Fax: 983 0732 or e-mail: norita_zemin@nhb.gov.sg. All information is correct at the time of printing. The museum reserves the right to make changes and modifications to the programme without prior notice.
SYMMETrY IN ART: THE mATHemATICS Of CERAmICS

By Dr. Helmer Aslaksen

Wednesday 3 July 2002, 7pm-9pm
Asian Civilisations Museum
39 Armenian Street
Free Admission

About the Talk
Mathematics is not simply formulae and logic. It extends to the appreciation of patterns, symmetry and aesthetics. It is known that different cultures have marked preferences for specific symmetry types. By examining these unique patterns, one can determine the origin of the artefacts.

By studying the mathematics behind ornamental patterns, it is discovered that three main types of patterns exist; rosette patterns, frieze patterns and wallpaper patterns. Rosette patterns are individual motifs that have rotational and/or reflectional symmetry. Frieze patterns are obtained by covering a strip with copies of a fundamental motif, while wallpaper patterns are obtained by covering a surface with copies of a fundamental motif. From the mathematical viewpoint, there are infinitely many types of rosette patterns, but only seven types of frieze patterns and 17 types of wallpaper patterns.

In this lecture, Dr. Helmer Aslaksen will provide a non-technical explanation of applying the rigours of mathematics to examine and distinguish the various types of ornamental patterns on Chinese and Peranakan ceramics.

About the Speaker
Associate Professor Helmer Aslaksen, a graduate from the University of Oslo, was born in Norway. After receiving his Ph.D. at the University of California, Berkeley, USA, he joined the Department of Mathematics at the National University of Singapore in 1989.

Dr. Aslaksen’s research interests include geometry, astronomy and the relationship between mathematics and art and culture. He is particularly interested in Asian calendars and other areas of cultural astronomy.

For registration, please call Norita at Tel: 6332 3284, Fax: 6883 0732 or email: nhb_acm@nhb.gov.sg. All information correct at time of printing. The museum reserves the right to make changes and modifications to the programmes without prior notice.

The views and opinions expressed by the speakers/ facilitators/ artists in the talks, workshops and performances do not represent the position of the Asian Civilisations Museum.
NUS MUSEUMS invites You to EXPLORE

A CULTURAL PERSPECTIVE OF THE CHINESE CALENDAR

Discover ......

The basic scientific and historic facts about the Chinese calendar
The importance of the calendar in Chinese culture
The influence of foreigners such as Indian Buddhists, Muslims and Jesuits
The role of astrology
The reasons why the modern Chinese calendar was designed by a German
The difference between a “sui” and a “nian” .......... and much more!

Our Saturday Afternoon Talk in English is by distinguished speaker, Dr Helmer Aslaksen.

about the speaker Dr Aslaksen is currently attached to the Department of Mathematics at NUS. He obtained his doctorate from the University of California, Berkeley. His interests include geometry, astronomy and history of science. Look out for Dr Aslaksen’s website http://www.math.nus.edu.sg/aslaksen/calendar for information about the four calendars used in Singapore.

Date : Saturday, 5 August 2000
Time : 2.00 pm - 3.00 pm
Venue : Lee Kong Chian Art Museum
        Block AS6, 6th floor
        National University of Singapore
        10 Kent Ridge Crescent
        Singapore 119260
        Telephone Number: 874-6917 / 874-6496

ADMISSION IS FREE & ALL ARE WELCOME
Symmetry in Art.
What Does Wallpaper, Islamic Art and Batik Have in Common?

by Associate Professor Helmer Aslaksen

Mathematical ideas behind ornamental patterns are found in wallpaper, Islamic art and Indonesian batik. Join Associate Professor Helmer Aslaksen as he analyses the fundamental structure behind these patterns, and shows how mathematical ideas can be applied to art.

Associate Professor Aslaksen is currently a lecturer with the NUS Department of Mathematics. His interests are many from mathematics and astronomy to salsa dancing and Latin music.

Associate Professor Helmer Aslaksen
Department of Mathematics

DATE: Saturday, 21 September 2002
VENUE: Celadon Room, NUS Museums
50 Kent Ridge Crescent
National University of Singapore
Singapore 119279

TIME: 3:00 pm – 5:00 pm

Free Admission.
For enquiries, please call 68744616 / 68744617 / 68744618.
Chinese Astronomy for Historians

Assoc Prof Helmer ASLAKSEN
Department of Mathematics,
National University of Singapore

VENUE : HY/PS Lounge, AS1-04-02

DAY/TIME: Wednesday, 9 October 2002, 3.30 pm

Abstract

Everybody knows that the Jesuits were able to become high officials at the Qing court because of their astronomical skills. But why? In Europe at that time, the Church leaders refused to look into Galileo's telescope. Why were the Chinese rulers so receptive to the skills of the Jesuits? In Europe, the Jesuits were some of the harshest prosecutors of Galileo, yet in China they seemed to be pro-science.

In many ways, Chinese culture has tried to close itself off. However, the last three main calendar reforms in China were all carried out or inspired by foreigners: Buddhist monks from India during the Tang dynasty, Muslims from the Middle East during the Yuan dynasty, and the Jesuits from Europe during the late Ming and Qing period. Why this reliance on foreign talent?

In the West, there have only been two major calendar reforms, the Julian and the Gregorian. In China, there have been more than a hundred. Why this "obsession" with tinkering with the calendar?

I will argue that these questions can be explained by understanding the difference between the Western and Chinese calendar. It is hard for ordinary people to tell if a solar calendar is accurate or not, but for a lunar calendar, anybody can detect errors of more than a day.

I will outline the necessary astronomical background in simple terms, and hopefully give you a better understanding of astronomical issues that come up in history and a clearer view of the link between science and society.

About the Speaker

Associate Professor Helmer Aslaksen was born in Oslo, Norway, and did his undergraduate at the University of Oslo. After receiving his Ph.D. at the University of California, Berkeley, he joined the Department of Mathematics at the National University of Singapore in 1986.

His interests include geometry, astronomy and the relationship between mathematics and culture, art and architecture. He is particularly interested in Asian calendars and other areas of cultural astronomy.

He has been academic advisor for the exhibition "Art Figures. Mathematics in Art" at the Singapore Art Museum and "The Dating Game - Calendars and Time in Asia" at the Asian Civilisation Museum and for the TV series "Ancient Chinese Inventions" on the Discovery Channel.


2674 3383#68743383#68742528#68743383#68742528#68743383#68742528#bissim@nus.edu.sg
Talk on the Chinese Calendar
(in English)

Dates: 13 February 2000
Time: 2:30 p.m.
Venue: The Maxwell, Singapore Science Centre

An Introduction to the Chinese Calendar

Have you ever wondered why Chinese New Year falls between January 21 and February 21? Chinese New Year is the main holiday of the year for more than a quarter of the world’s population. Yet very few people know how to compute the date. The exact rules are very complex, but some simple rules of thumb will be given that will explain the basic principles. Some aspects of the history of the Chinese calendar will also be discussed.

Speaker on 13 Feb: Dr Helmer Aslaksen

Helmer Aslaksen is an assistant professor of Mathematics at the National University of Singapore. He did his undergraduate degree at the University of Oslo, Norway, and his Ph.D. at the University of California, Berkeley. He has been with the NUS since 1989. His interests include the study of Asian calendars.

Join us and get a free souvenir at the end of the talk.
NOTICE OF TASOS TALK

12th May 2001

Dear TASOS members,

TASOS Management Committee 2001 is proud to announce the below talk. All members are most cordially invited to attend. Details are as follows:

Title: The Mathematics of the Public Holidays of Singapore
Speaker: Helmer ASLAKSEN from Dept of Mathematics, NUS
Date: 25th May 2001 (Friday)
Time: 7.30 pm
Venue: 2nd Floor Community Hall
G Block (Geranium Block)
Kent Vale (opposite entrance to NUS, nearer to Clementi)
Singapore

Synopsis

Have you ever wondered why Chinese New Year always falls between 21st January and 21st February? Have you wondered why Chinese New Year, the two Hari Raya’s, Good Friday, Vesak Day and Deepavali fall on different days each year? Then this is the talk for you. The speaker will give an overview of the four calendars in official use in Singapore: the Gregorian, Chinese, Islamic and Indian calendars. The Gregorian calendar is fairly simple, while the other three involves deep mathematical problems. The speaker will give the audience a simple outline and will also try to teach what he believes every “educated person” in Singapore should know about the four calendars. It should also be obvious that this talk has deep connections to astronomy.

All members, including student and affiliate members, are encouraged and most welcomed to attend. Finally, I look forward to meeting all of you at the above talk.

Yours most sincerely,
for TASOS Management Committee 2001

Mr. Albert Lim, President - TASOS
Letters about My Outreach

I have attached some letters about my outreach activities.

23rd April 2002

Ms Jean Wee
Singapore Art Museum
71 Bras Basah Road
Singapore 189555

Prof Lee Seng Luan
Head
Department of Mathematics
National University of Singapore
Singapore 117543

Dear Prof Lee

Helmer Aslaksen's Contribution to Art Figures: Mathematics in Art Exhibition at the Singapore Art Museum

The Singapore Art Museum's year-long exhibition, Art Figures: Mathematics in Art is designed to combine an appreciation of art in galleries 9 and 10, with a hands on activity area known as the Art Education Galleries.

A total of 15 art works were selected, and as project consultant, Dr Aslaksen was asked to contribute a mathematical reading for them in a manner that was simple enough for children as well as adults. Combined with an art reading, this made for a novel experience for our visitors.

As the exhibits have educational purpose, it was crucial that the math was explained in a way that is both correct and simple. I felt that Dr Aslaksen was a good choice, given his active outreach efforts and approachable math topics.

Dr Aslaksen also contributed several educational worksheets to the accompanying educational kit, as well as explained these to volunteer docents at two teaching sessions in March which were well received.

I would like to thank Dr Aslaksen for his contribution in enriching the exhibition content and I hope that the Singapore Art Museum will have opportunities to collaborate again with NUS in the near future.

Yours Sincerely

Ms Jean Wee
Curator, Art Figures: Mathematics in Art Exhibition
Manager, Education and Programmes

[Signature]

Ruben
For Helmer's file
SL Lee
9/7/2012

[Stamp]
71 Bras Basah Rd. Singapore 189555, Republic of Singapore
www.nlb.gov.sg

an institution of the National Heritage Board
5 August, 2000

Dr Helmer Aslaksen
Dept of Mathematics

Dear Helmer,

I would like to thank you for presenting such a stimulating talk on such an interesting subject this afternoon at the Lee Kong Chian Art Museum. The turnout was excellent and you had the audience rapt. I am so glad we had it captured on video for posterity.

Once again, my sincere and grateful thanks for your wonderful support and sharing of time and knowledge with us at NUS Museums!

With best wishes and warmest regards,

Sincerely,

Angela Sim (Ms)
Head
NUS Museums
Our Ref: SE 90
Date: 29 March 2004

A/Prof Tan Eng Chye
Dean, Faculty of Science
National University of Singapore
Block S16 Level 9
6 Science Drive 2
Singapore 117546

Dear Eng Chye

GREAT SCIENCE CHALLENGE 2004

The Great Science Challenge started broadcast on Channel 5 @ 7.30pm every Wednesday. The seventh and final episode would be broadcasted on 21 April 2004. The participants had enjoyed themselves thoroughly and the programme has received good feedback.

The programme promotes science in a fun and exciting format; as a visual and learning experience for all who watch the show, and a demanding but yet satisfying experience for the participants. There was a Great Science Challenge Programme Committee that worked tirelessly on the format and content of the competition.

On behalf of the organisers, the Agency for Science, Technology and Research (A*STAR), and the Singapore Science Centre, I would like to thank your staff, Dr Roland Su Jong Hee from the Science Dean’s Office and A/Prof Helmar Aaslaksen from Department of Mathematics. They have both taken up leadership roles in the committee as the Physics in-charge and the Mathematics in-charge respectively. Without their assistance and commitment, the project would not have been as successful.

Thank you.

Yours sincerely

Dr Chew Tuan Chiong
Director & Chief Executive
SINGAPORE SCIENCE CENTRE

Hi Roland & Helmer, Thanks for your help.

EC 14

p-510
15 September 2008

Thru: Professor Chong Chi Tat
Head of Department of Mathematics
National University of Singapore
Singapore 117543

To: Professor Helmer Aslaksen
Department of Mathematics

Dear Prof Aslaksen

**Appreciation to the Keynote Speaker for EZ Mathematics Symposium 2008**

As advisor of the Centre of Excellence for Mathematics (COE@ZE), I would like to thank you for the insightful keynote address at the Mathematics Symposium 2008, on 5 September.

The audience was totally enthralled by your basic but yet rich content knowledge of your keynote address as well as the creative use of teaching aids. Your talk has certainly inspired teachers to reflect and explore the connections of Mathematics with the real world, which is beyond the confines of the textbook.

We look forward to more of your insightful talks at the COE@ZE at Tao Nan in the near future.

Once again thank you for being an inspiration to all of us.

Yours sincerely,

Christine Anne Kong (Mrs)
Superintendent, East 7 Cluster
Schools Division, Ministry of Education
From: Siew Shan WONG [WONG_Siew_Shan@moe.gov.sg]
Sent: Friday, 5 September, 2008 6:06 PM
To: aslaksen@math.nus.edu.sg
Cc: Christine Anne KONG; Choon Kheng TAN; Kum Fong FOO
Subject: Thank You

Dear Prof Helmer

On behalf of Mr Tony Tan, Chairman of COE@ZE (Math), I would like to thank you for taking time off from your extremely busy schedule to deliver the Keynote Address at the Mathematics Symposium 2008, this morning. Your keynote address has underlined the most important aspect of the teaching profession - as teachers, we should never confine our minds to what is printed in textbooks. It underlines the need for teachers to be curious about 'natural' occurrences and find logical reasons to explain them.

You were an excellent role model of an inspiring teacher to all of us who had the privilege of hearing your Keynote Address. We were totally immersed in your keynote address though the topics that you touched on challenged our pre-existent 'knowledge' that we are now fully aware is erroneous in so many ways =D There was never a dull moment as you moved around the stage a lot and pulled out such interesting teaching aids from your magician's bag that held all of us enthralled!

Thank you for being an inspiration to all of us.

Mrs Wong Siew Shan
Vice-Chairman
East Zone Centre of Excellence for Mathematics
Teaching Leadership

University

- NUS Teaching Academy Executive Committee, 2009.
- Founding Fellow of the NUS Teaching Academy, 2009.
- Steering Committee for proposed Liberal Arts College, 2008 to present.
- General Education Programme Committee, 2001 to 2002.

Faculty

- Integrated Science Programme Committee, 2008 to present.
- Coordinator for joint M.Sc. in Science Communication with the Australian National University and the Science Centre Singapore, 2007 to present.
- Director of the Special Programme of Science, 2007 to present.
- Member of the Faculty of Science Curriculum Committee, 2007 to present.
- Member of the Freshmen Seminar Committee, 2005.
- Member of the Teaching Methodology Committee, 1990 to 1992.
- Member of the Science Foundation Module Committee, 1994 to 2001.

Department

- Deputy Director of the Departmental Teaching Evaluation Committee, 2005 to 2006, member 2002 to present.
- Member of the Calculus Reform Committee, 1998 to 1999.
- Member of the Curriculum Committee, 1995 to 1997.

Centre for Development of Teaching and Learning (CDTL)

Other teaching related activities

University
• Study trip to the US with the Liberal Arts College Steering Committee, 2008.
• Outstanding Educator Award Public Lecture Series, 2005.

Faculty of Science
• Study trip to the US with the Integrated Science Programme Committee, 2009.
• Lecture at the NUS Science Faculty Teaching Workshop, 2005 and 2007.

Department
• Conducted the Departmental Graduate Tutor Training Programme, 1999 to 2000.

Internationally
• Instructor in Teaching Assistant Training Workshop at University of California, Berkeley, 1984 to 1988.

Participation in thesis and oral examination committees
• Member of the following Ph.D. committee.
  1. LIU Xiaoqing, 2003
• Member of the following M.Sc. committees.
• In addition to my own honours students, I have been examiner for the following honours students.
  1. LIM, 1989.
  2. NG, 1990.
• External examiner in the course Design Thinking organized by Ang Yian San in the School of Architecture, 2001.
Development of new courses

- Co-developed a General Education Module, GEK1539 A Brief History of Science.
- Co-developed "Why Calculus?" for the University Scholars Programme, 2001.
- Developed the mathematics part of the Science Foundation Module, 1999.
- Developed GM105 Computer-based Calculus, 1996. This was the first completely lab-based class in the department.
Use of innovative teaching methods and use of IT

I have been actively involved in implementing IT in the department since 1992. I started using computer algebra in my lectures in 1992. In 1996 I set up a new course, Computer-based calculus. It was the first completely lab-based class in the department. It was based on the “Calculus&Mathematica” programme developed at the University of Illinois.

I have been quoted in promotional material from Wolfram Research, the makers of Mathematica for my work on IT in calculus teaching.

I have used IVLE extensively, including the discussion forum, online test and class groups.

For my General Education Module, GEK1506 Heavenly Mathematics & Cultural Astronomy, I have worked with CITA to produce Java applets and video clips for the web page. The Java applets have been very successful, and have also achieved international recognition, including use at Columbia Earthscape at Columbia University. Earthscape is an award-winning, non-profit initiative in Earth science education published by Columbia University Press in connection with SPARC (Scholarly Publishing & Academic Resources Coalition) and the National Science Foundation.

Since 1994, I have an extensive web site on mathematics and astronomy that generates heavy traffic and is ranked highly on the search engines. My web page on the Chinese calendar, www.chinesecalendar.org, is the highest ranked page about the Chinese calendar on Google. Around the time of Chinese New Year, I get up to 50,000 hits each month.

There are six pages of links to the web page of my astronomy GEM on Google. The page is currently ranked about number 25 in the directory.google.com/Top/Science/Astronomy/Education/ category in Google.

Member of the Calculus Reform Committee, 1998 to 1999.

For my General Education Module, GEK1506 Heavenly Mathematics & Cultural Astronomy, I have worked with CITA to produce Java applets and video clips for the web page. The Java applets have been very successful, and have also achieved international recognition, including use at Columbia Earthscape at Columbia University. Earthscape is an award-winning, non-profit initiative in Earth science education published by Columbia University Press in connection with SPARC (Scholarly Publishing & Academic Resources Coalition) and the National Science Foundation.
Papers on Education


6. Helmer Aslaksen and Ng Kah Loon, *The Graduate Tutor Training Workshop in the Department of Mathematics*, CDTL Brief, Centre for Development of Teaching and Learning, National University of Singapore, 6 (2003), no. 6, 11-12.


Education Scholarship

International Lectures

- Mathematical Association of America Contributed Paper Session on Innovative and Effective Ways to Teach Linear Algebra, New Orleans, USA, 2007.
- Plenary speaker, International Conference on Education (ICE'05), Singapore, 2005.
- Plenary speaker, Spring Meeting of the Southern California and Nevada Section of the Mathematical Association of America, Los Angeles, USA, 2005.
- Mathematical Association of America Contributed Paper Session on Uses of the WWW that Enrich and Promote Learning, MathFest, Providence, USA, 2004.

Local Lectures

- Seminar on Teaching of Science at Tertiary Level, Faculty of Science, NUS, 1991.

Reviewer of Textbooks for Ministry of Education

International Educational Work

- Member of organizing team for a Topic Study Group, International Congress on Mathematical Education, Copenhagen, Denmark, 2004.