

Mathematics A-Level

and the reasons why you should study it

α β γ δ ε ζ η θ ι κ λ μ ν ξ ο π ρ σ τ υ φ χ ψ ω

It's the perfect companion
 Mathematics A-Level helps with all of these subjects too:
Physics, Chemistry, Biology
Computing, Geography,
Psychology, Sociology, PE,
Business Studies,
Economics, History

Employers want Super Heroes
 Mathematicians have **super powers!**
 Being able to: **understand data,**
recognise patterns, solve problems,
think clearly and **work systematically,**
 are all invaluable in the work place.
 Studying mathematics boosts your super power skill set!

Real world
 The more mathematics you study the greater your understanding of the real world. A-level Mathematics studies 3 key pillars of mathematics: **Pure, Statistics** and **Mechanics**. In Further Mathematics you will uncover even more wonder.

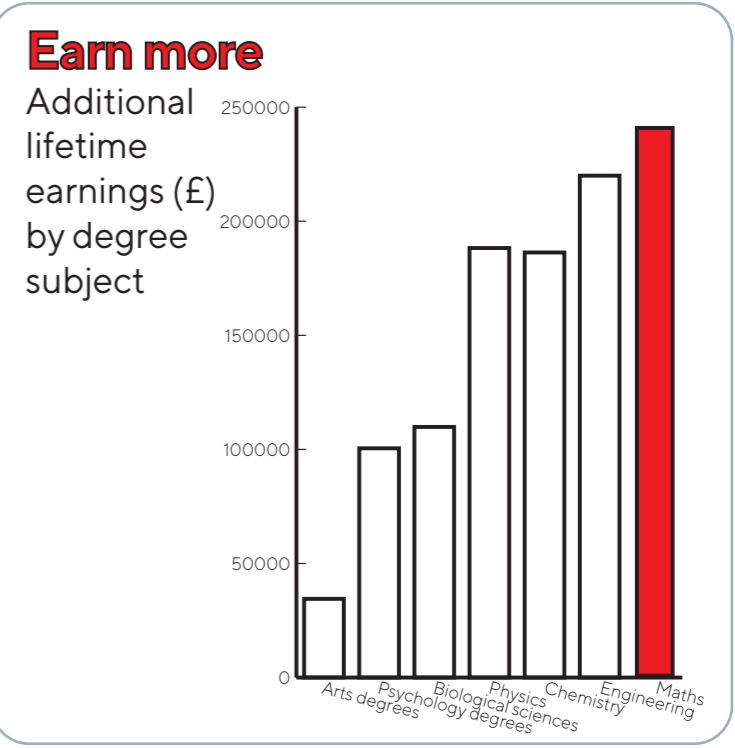
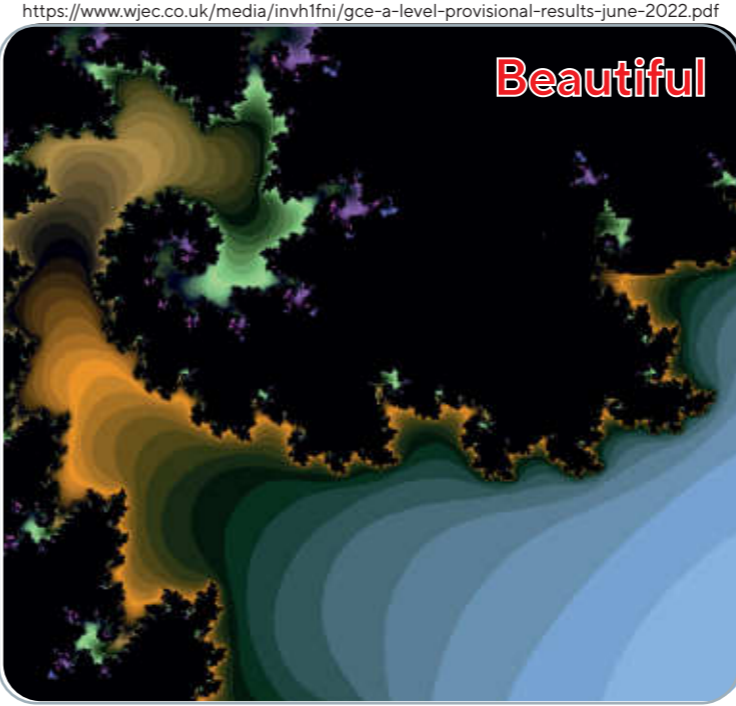
You need to be prepared!
 Many universities courses will have considerable amounts of mathematics in them, perhaps even whole modules. If you are wanting to study any of the following, being a mathematician will be a huge bonus to you: **Climate Science, Geography, Psychology, Sociology, Sport Science, Earth Science, Medicine, Chemistry, Biology, Business, Economics** and more...

Career Choices
 Careers that may follow on from studying mathematics are interesting and varied:
Finance: Actuarial Work, Accountancy, Financial Modelling, Investment Banking
Computing: Games Design, Internet Security, Telecommunications
Engineering: Renewable Energy, Aircraft Modelling, Fluid Flows, Acoustic Engineering, Quantity Surveyor, Planner
Mathematical Biology: Population Modelling, Epidemics and Vaccination, Teaching and Lecturing
Statistics: Medical Statistics, Traffic Planning, Project Management, Business Consultancy

R.E.S.P.E.C.T
 Mathematics has respect of employers and university admissions tutors.

Mathematics is achievable
 Mathematics results are some of the best. Percentages of students achieving A or A*

All subjects	Maths	Further Maths
40.9%	57.7%	74.8%
English Lang.	Law	Business Studies
27.7%	36.3%	30.9%



The key to your degree?
 Mathematics A-Level is nearly always a requirement for the following degree courses at university: **Mathematics, Statistics, Computer Science, Physics, Accountancy, Engineering**

Enjoyment
 Studying maths can be incredibly satisfying, not convinced, only 1 way to find out...

There is more to Mathematics than you think.... visit rhgmc-mspw.cymru to find out more.
Level 2 Additional Maths can be studied during key stage four.
 In key stage five **A Level Mathematics** is the most popular¹ A-level and **A Level Further Mathematics** is the perfect accompaniment.
 The Mathematics Support Programme Wales (MSPW) is here to support **students, teachers** and **departments** across Wales in enriching and developing their Mathematical domain across all key stages.
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<https://www.wjec.co.uk/media/invh1fni/gce-a-level-provisional-results-june-2022.pdf>
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 Managed by Swansea University, Wales Institute of Mathematical and Computational Sciences
 Aelwedd gan Lywodraeth Cymru Funded by Welsh Government
rhgmc-mspw.cymru



Further Maths A-Level and what you need to know

Students taking Further Mathematics overwhelmingly find it to be an **enjoyable, rewarding, stimulating and empowering experience**.

It is a challenging qualification, which both extends and deepens your knowledge and understanding beyond the standard A level Mathematics.

Students who do it often say it is their favourite subject.

For someone who enjoys mathematics, it provides a **challenge** and a chance to **explore new and more sophisticated mathematical concepts**.

Students who take Further Mathematics find that the additional time spent studying mathematics **boosts** their marks in single **A level Mathematics**.

Studying A level Further Mathematics is **excellent preparation** for a degree in Mathematics. Many university mathematics departments encourage students to take Further Mathematics at A level as it introduces a wider range of pure and applied content, such as matrices and complex numbers. Students who have studied Further Mathematics often find the transition to university far more

straightforward. Some leading universities now specify **Further Mathematics as an entry requirement for their mathematics degrees**. Find out more at furthermaths.wales/students/university-courses/

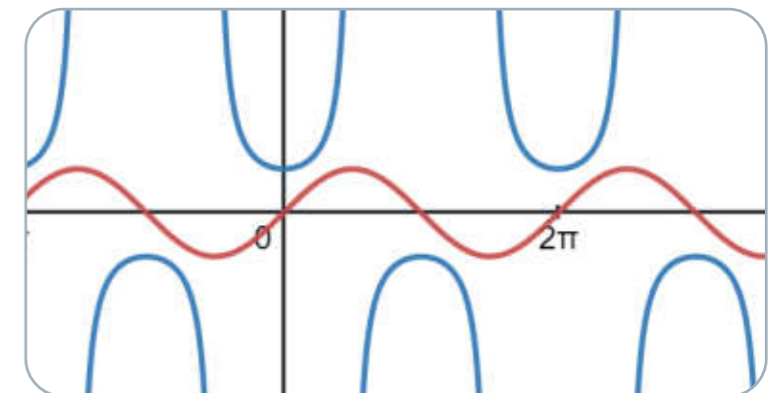
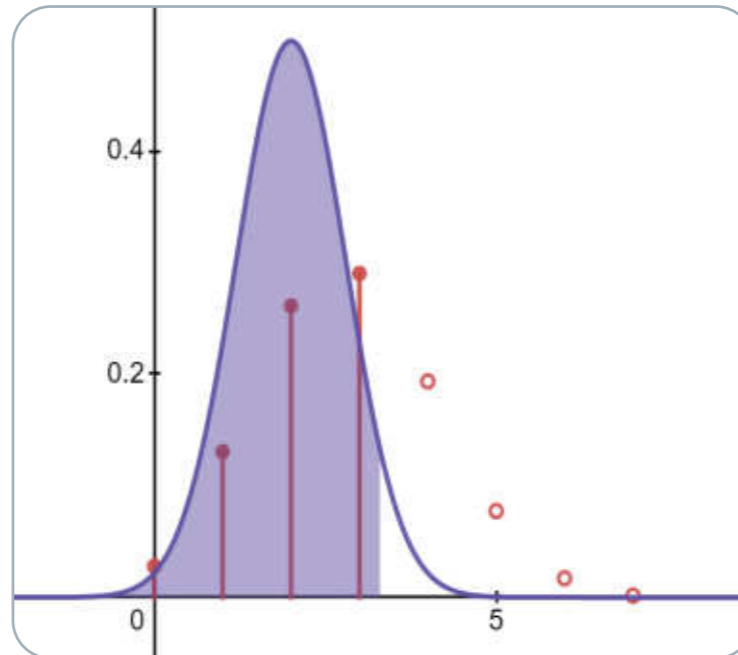
Must be studied at the same time as Mathematics A-Level or afterwards. It **cannot** be studied as a single subject.

Nine exams in total, if you choose both Mathematics and Further Mathematics.

It enables students to distinguish themselves as **able mathematicians** in their applications for university and future employment.

Further Mathematics qualifications are highly regarded and are warmly welcomed by universities. Students who take Further Mathematics are really demonstrating a strong commitment to their studies, as well as learning mathematics that is very useful for any mathematically rich degree.

It makes the transition from sixth form to university courses which are **mathematically rich** that much **easier** as more of the first year course content will be familiar. If you are planning to take a degree such as Engineering, Sciences, Computing, Finance/Economics, etc., or perhaps Mathematics itself, you will **benefit enormously from taking Further Mathematics**



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¹<https://www.wjec.co.uk/media/invh1fni/gce-a-level-provisional-results-june-2022.pdf>

How the courses work and what you will study

AS Level Maths Modules

AS Unit 1: Pure

25% of final A-level Grade
Proof, Surds, Quadratics, Inequalities, Polynomials, Functions, Transformations, Coordinate Geometry, Binomial Theorem, Trigonometry, Exponentials, Calculus, Vectors

AS Unit 2: Applied

15% of final A-level Grade
Sampling, Data Presentation, Probability, Distributions, Hypothesis Testing, Kinematics, Forces, Vectors

A2 Level Maths Modules

A2 Unit 3: Pure

35% of final A-level Grade
Proof, Functions, Transformations, Partial Fractions, Modelling, Parametric Equations, Sequences & Series, Trigonometry, Calculus, Numerical Methods

A2 Unit 4: Applied

25% of final A-level Grade
Probability, Normal Distribution, Critical Values, Trigonometry and Vectors, Differential Equations, Calculus, Kinematics, Projectiles, Newton's Laws, Moments

AS Level Further Maths Modules

AS Unit 1: Further Pure A

13.3% of final A-level Grade
Complex Numbers, Matrices, Roots of Equations, Proof, Vectors

AS Unit 2: Further Statistics A

13.3% of final A-level Grade
Random Variables, Poisson and Exponential Distributions, Correlation Coefficients

AS Unit 3: Further Mechanics A

13.3% of final A-level Grade
Momentum & Impulse, Hooke's Law, Energy, Work & Power, Circular Motion, Vectors

A2 Level Further Maths Modules

A2 Unit 4: Further Pure B

35% of final A-level Grade
De Moivre's Theorem, Argand Diagrams, Hyperbolic Functions, Maclaurin Series, Polar Coordinates

A2 Unit 5: Further Statistics B

25% of final A-level Grade
Central Limit Theorem, Estimation, Confidence Intervals

STUDY EITHER UNIT 5 OR UNIT 6

A2 Unit 6: Further Mechanics B

25% of final A-level Grade
Rectilinear Motion, Momentum & Impulse, Centres of Mass, Simple Harmonic Motion

Year 12: Maths Only Student
Maths AS **Unit 1 & Unit 2**

Year 13: Maths Only Student
Maths A2 **Unit 3 & Unit 4**

Year 12: Further Maths Student
Maths AS **Unit 1 & Unit 2**
Further Maths AS **Unit 1, Unit 2 & Unit 3**

Year 13: Further Maths Student
Maths A2 **Unit 3 & Unit 4**
Further Maths A2 **Unit 4 & Unit 5 or Unit 6**

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α β γ δ ε ζ η θ ι κ λ μ ν ξ ο π ρ σ τ υ φ χ ψ ω



Mathemateg Safon Uwch

a'r rhesymau pam y dylech ei astudio

Dyma'r cydymaith perffaith

Mae Mathemateg Safon Uwch yn helpu gyda'r holl bynciau hyn hefyd:

**Ffiseg, Cemeg, Bioleg
Cyfrifiadura, Daeryddiaeth,
Seicoleg, Cymdeithaseg, AG,
Astudiaethau Busnes,
Economeg, Hanes**

Mae cyflogwyr eisiau Uwch Arwyr

Mae gan fathemategwyr **bwerau uwch!** Mae gallu: **deall data, adnabod patrymau, datrys problemau, meddwl yn glir a gweithio'n systematig**, i gyd yn amhrisiadwy yn y gweithle. Mae astudio mathemateg yn rhoi hwb i'ch set sgiliau pŵer uwch!

Y byd go iawn

Po fwyaf o fathemateg rydych chi'n astudio'r mwyaf fydd eich dealltwriaeth o'r byd go iawn. Mae Mathemateg Safon Uwch yn astudio 3 piler allweddol mathemateg: **Pur, Ystadegaeth a Mecaneg**. Ym Mathemateg Bellach byddwch yn datgelu hyd yn oed mwy o ryfeddod.

Mae angen i chi fod yn barod!

Bydd gan lawer o gyrsiau prifysgol gryn dipyn o fathemateg ynddynt, efallai hyd yn oed modiwlau cyfan. Os ydych chi eisiau astudio unrhyw un o'r canlynol, bydd bod yn fathemategydd yn fonws enfawr i chi: **Gwyddor Hinsawdd, Daeryddiaeth, Seicoleg, Cymdeithaseg, Gwyddor Chwaraeon, Gwyddoniaeth y Ddaear, Meddygaeth, Cemeg, Bioleg, Busnes, Economeg** a mwy...

Dewisiadau Gyrfa

Mae gyrfaoedd a all ddilyn ymlaen o astudio mathemateg yn ddiddorol ac amrywiol: **Cyllid:** Gwaith Actiwaraid, Cyfrifeg, Modelu Ariannol, Bancio Buddsoddi **Cyfrifiadura:** Dylunio Gemau, Diogelwch y Rhyngwryd, **Peirianeg Telathrebu:** Ynni Adnewyddadwy, Modelu Awyrennau, Llif Hylif, Peirianeg Acwstig, Syrfewr Meintiau, Cynllunydd, **Bioleg Fathemategol:** Modelu Poblogaeth, Epidemigau a Brechu, Dysgu a Darlithio **Ystadegaeth:** Ystadegaeth Meddygol, Cynllunio Traffig, Rheoli Prosiectau, Ymgynghoriaeth Busnes

P.A.R.CH

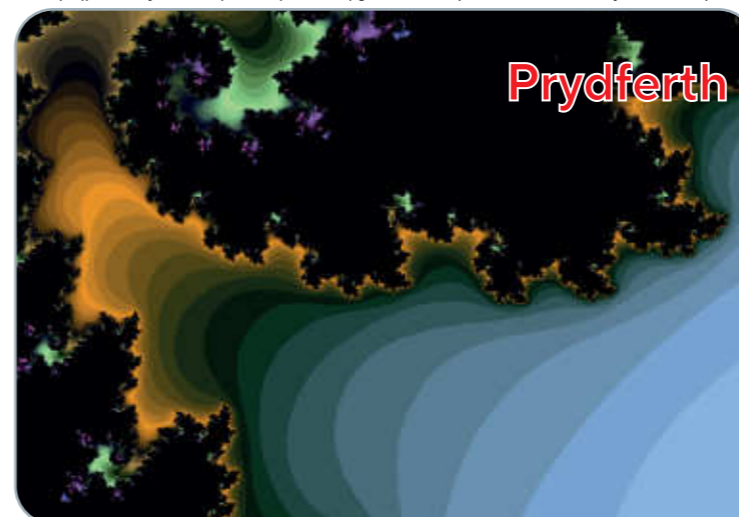
Mae gan fathemateg barch cyflogwyr a thiworiaid derbyn prifysgolion.

Mae mathemateg yn gyraeddadwy

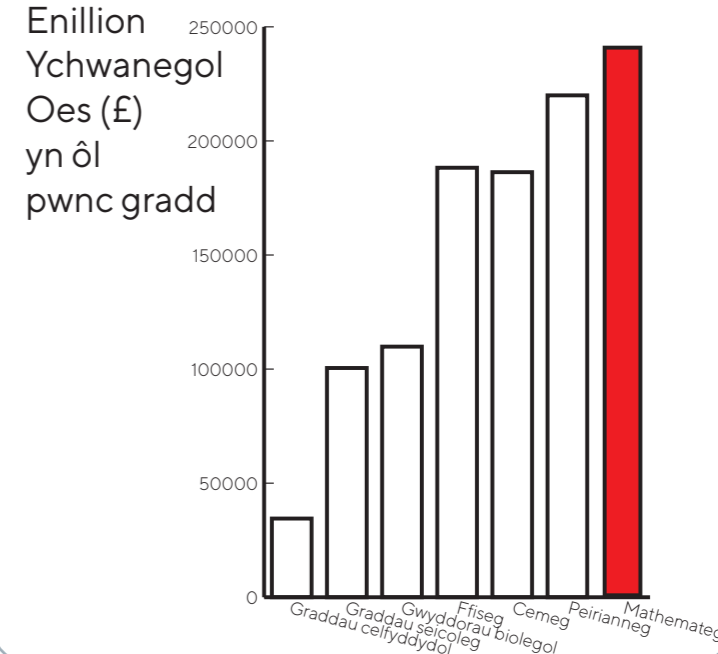
Canlyniadau mathemateg yw rhai o'r goreuon. Canrannau myfyrwyr yn cael A neu A*

Mathemateg 57.7%
Mathemateg Bellach 74.8%
Astudiaethau Busnes 30.9%
Iaith Saesneg 27.7%
Y Gyfraith 36.3%
Pob pwnc 40.9%

<https://www.wjec.co.uk/media/invh1fni/gce-a-level-provisional-results-june-2022.pdf>



Ennill mwy



<https://warwick.ac.uk/fac/soc/ier/ngri/stem/basics/awareness/5.where-the-money-is1.pdf>

Yr allwedd i'ch gradd?

Mae Mathemateg Safon Uwch bron bob amser yn ofynnol ar gyfer y cyrsiau gradd canlynol yn y brifysgol: **Mathemateg, Ystadegaeth, Cyfrifiadureg, Ffiseg, Cyfrifeg, Peirianeg**

Mwynhad

Gall astudio mathemateg fod yn hynod foddhaol, ddim yn argyhoeddedig, dim ond 1 ffordd o ddarganfod...

Mae mwy i Fathemateg nag ydych chi'n feddwl.... ymwelwch â rhgmc-mspw.cymru i ddarganfod mwy.

Gellir astudio **Lefel 2 Mathemateg Ychwanegol** yn ystod cyfnod allweddol pedwar.

Yng nghyfnod allweddol pump **Safon Uwch Mathemateg** yw'r Safon Uwch mwyaf poblogaidd¹ a **Mathemateg Bellach Safon Uwch** yw'r cydymaith perffaith.

Mae Rhaglen Gymorth Mathemateg Cymru (RhGMC) yma i gefnogi **myfyrwyr, athrawon** ac **adrannau** ledled Cymru wrth gyfoethogi a datblygu eu parth Mathemategol ar draws pob cyfnod allweddol.

Cyfoethogi + Dysgu Proffesiynol + Hyfforddiant + Adnoddau + Ymchwil



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Mathemateg Bellach

Safon Uwch

a'r hyn sydd angen i chi ei wybod

Mae myfyrwyr sy'n cymryd Mathemateg Bellach yn teimlo'n gryf ei bod hi'n **brofiad pleserus, gwerth chweil, ysgogol a grymusol**. Mae'n gymhwyster heriol, sy'n ymestyn ac yn dyfnhau eich gwybodaeth a'ch dealltwriaeth y tu hwnt i'r Safon Uwch Mathemateg.

Mae myfyrwyr sy'n ei wneud yn aml yn dweud mai dyma eu hoff bwnc.

Mae'n gwneud y newid o'r chweched dosbarth i gyrsiau prifysgol sy'n **fathemategol gyfoethog** cymaint â hynny

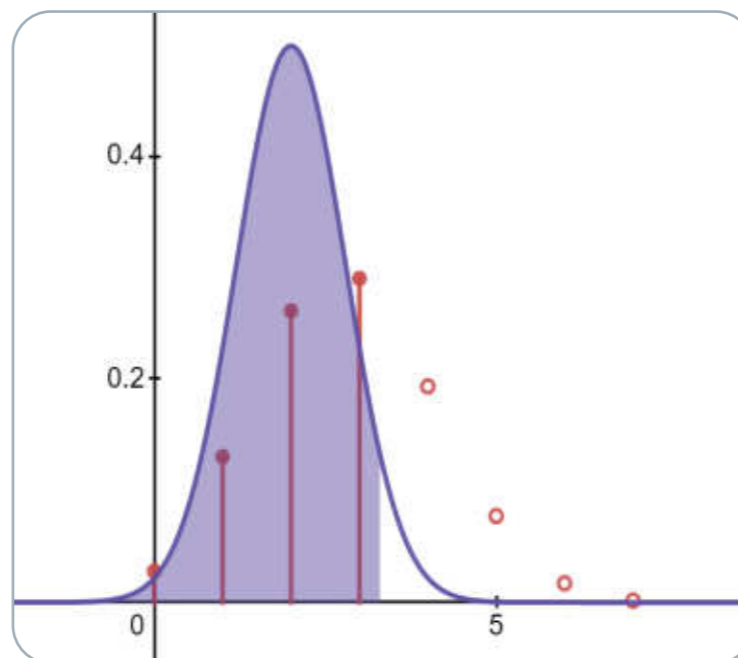
haws

gan y bydd mwy o gynnwys y cwrs blwyddyn gyntaf yn gyfarwydd. Os ydych chi'n bwriadu dilyn gradd fel Peirianeg, Gwyddorau, Cyfrifiadura, Cyllid/Economeg, ac ati, neu efallai Mathemateg ei hun, byddwch chi'n **elwa'n aruthrol o gymryd Mathemateg Bellach**

I rywun sy'n mwynhau mathemateg, mae'n rhoi **her** a chyfle i a **rchwilio cysyniadau mathemategol newydd a mwy soffistigedig.**

Naw

arholiad i gyd, os dewiswch chi Fathemateg a Mathemateg Bellach.



Mae myfyrwyr sy'n cymryd Mathemateg Bellach yn gweld bod yr amser ychwanegol a dreulir yn astudio mathemateg yn rhoi **hwb** i'w marciau mewn **Mathemateg Safon Uwch sengl.**

Rhaid ei

astudio ar yr un pryd â Mathemateg Lefel A neu wedyn. **Ni ellir** ei astudio fel un pwnc.

Mae'n galluogi myfyrwyr i wahaniaethu eu hunain fel **mathemategwyr galluog** yn eu ceisiadau am brifysgol a chyflogaeth yn y dyfodol.

Mae cymwysterau Mathemateg Bellach yn uchel eu parch ac maent yn cael croeso cynnes gan brifysgolion. Mae myfyrwyr sy'n cymryd Mathemateg Bellach wir yn dangos ymrwymiad cryf i'w hastudiaethau, yn ogystal â dysgu mathemateg sy'n ddefnyddiol iawn ar gyfer unrhyw radd fathemategol gyfoethog.

Mae astudio Mathemateg Bellach Safon Uwch yn

baratoad rhagorol

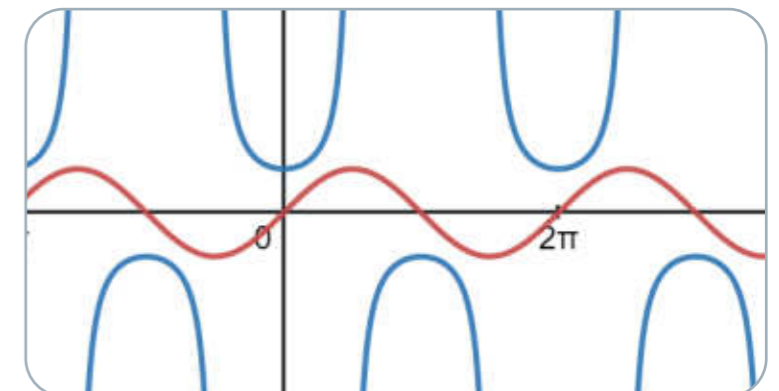
ar gyfer gradd mewn Mathemateg. Mae llawer o adrannau mathemateg prifysgol yn annog myfyrwyr i gymryd Mathemateg Bellach ar i Safon Uwch gan ei fod yn cyflwyno ystod ehangach o gynnwys pur a chymhwysol, fel matricesau a rhifau cymhlyg.

Mae myfyrwyr sydd wedi astudio Mathemateg Bellach yn aml yn cael y newid i'r brifysgol yn

llawer mwy syml.

Mae rhai prifysgolion blaenllaw bellach yn nodi Mathemateg Bellach fel gofyniad mynediad ar gyfer eu graddau mathemateg. Mwy o wybodaeth yn

furthermaths.wales/cy/cy-students/cy-university-courses/



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Sut mae'r cyrsiau'n gweithio

a beth fyddwch chi'n ei astudio

Mathemateg UG Modiwlau

Mathemateg Lefel A2 Modiwlau

UG Mathemateg Bellach Modiwlau

Mathemateg Bellach A2 Modiwlau

UG Uned 1: Pur

25% o radd Safon Uwch terfynol
Prawf, Syrddiau, Cwadratigau, Anhafaleddau,
Polynomialau, Ffwythiannau,
Trawsfurfiadau, Geometreg Gyfesurynnol,
y Theorem Binomial, Trigonometreg,
Esbonyddion, Calcwlws, Fectorau

A2 Uned 3: Pur

35% o radd Safon Uwch terfynol
Prawf, Ffwythiannau, Trawsfurfiadau,
Ffracsiynau Rhannol, Modelu,
Hafaliadau Parametrig, Dilyniannau a
Chyfresi, Trigonometreg, Calcwlws,
Dulliau Rhifiadol

UG Uned 1: Pur Bellach A

13.3% o radd Safon Uwch terfynol
Rhifau Cymhlyg, Matricsau,
Gwreiddiau Hafaliadau, Prawf, Fectorau

A2 Uned 4: Pur Bellach B

35% o radd Safon Uwch terfynol
Theorem De Moivre, Diagramau Argand,
Ffwythiannau Hyperbolig, Cyfresi
Maclaurin, Cyfesurynnau Pegynol

UG Uned 2: Cymhwysol

15% o radd Safon Uwch terfynol
Samplu, Cyflwyniad Data, Tebygolrwydd,
Dosraniadau, Profi Rhagdybiaethau,
Cinemateg, Grymoedd, Fectorau

A2 Uned 4: Cymhwysol

25% o radd Safon Uwch terfynol
Tebygolrwydd, y Dosraniad Normal,
Gwerthoedd Critigol, Trigonometreg a
Fectorau, Hafaliadau Differol, Calcwlws,
Cinemateg, Taflegrau, Deddfau Newton,
Momentau

UG Uned 2: Ystadegaeth Bellach A

13.3% o radd Safon Uwch terfynol
Hapnewidynnau, Y Dosraniadau Poisson ac
Esbonyddol, Cyfernodau Cydberthyniad

A2 Uned 5: Ystadegaeth Bellach B

25% o radd Safon Uwch terfynol
Theorem y Derfan Ganolog, Amcangyfrif,
Cyfyngau Hyder

UG Uned 3: Mecaneg Bellach A

13.3% o radd Safon Uwch terfynol
Momentwm & Ergyd, Deddf Hooke, Ynni,
Gwaith a Phŵer,
Mudiant mewn Cylch, Fectorau

ASTUDIO NAILL AI UNED 5 NEU UNED 6

ASTUDIO NAILL AI UNED 5 NEU UNED 6

ASTUDIO NAILL AI UNED 5 NEU UNED 6

ASTUDIO NAILL AI UNED 5 NEU UNED 6

ASTUDIO NAILL AI UNED 5 NEU UNED 6

ASTUDIO NAILL AI UNED 5 NEU UNED 6

ASTUDIO NAILL AI UNED 5 NEU UNED 6

ASTUDIO NAILL AI UNED 5 NEU UNED 6

ASTUDIO NAILL AI UNED 5 NEU UNED 6

B12: Myfyriwr Mathemateg yn unig
Mathemateg UG **U1** ac **U2**

B13: Myfyriwr Mathemateg yn unig
Mathemateg A2 **U3** ac **U4**

B12: Myfyriwr Mathemateg Bellach
Mathemateg UG **U1** ac **U2**
Mathemateg Bellach UG **U1**, **U2** ac **U3**

B13: Myfyriwr Mathemateg Bellach
Mathemateg A2 **U3** ac **U4**
Mathemateg Bellach A2 **U4** ac **U5** neu **U6**

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