



UNIVERSITY OF
BIRMINGHAM



Critical Thinking: Argumentation

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Learning objectives

By the end of this session you should be able to:

1. Define the word 'argument' as it relates to critical thinking and academic study.
2. Distinguish claims from non-claims.
3. Analyse arguments, identify the premises and conclusions and recognise the usefulness of standard form.
4. Use diagramming to map logical chains within arguments.



Activity 1: definitions

First of all, it's essential to know what we mean when we say the word 'argument'.

- In pairs, discuss different meanings of the term 'argument' and try to come up with a working definition that covers all interpretations. Be prepared to share your findings with the group.



Characteristics of an argument

- An argument is made-up of a set of statements, or **claims**.
- One of these must be a **conclusion** that the writer wants the reader to accept.
- The other(s) are offered as reasons (**premises**) as to why the conclusion is correct. If this doesn't happen, it's not an argument.



Claims

True or false

Declarative

Unambiguous



Activity 2: Distinguishing claims from non-claims

Which of the following are claims, and which are not?

1. All cats have four legs.
2. Barack Obama was the 44th president of the United States.
3. Don't walk through the city at night.
4. Why do people always talk on their phones on the bus?
5. My uncle is very tall.
6. There is life in outer space.
7. All dogs have fleas.
8. Are you serious?
9. Julius Caesar was the best.
10. You shouldn't be in here.



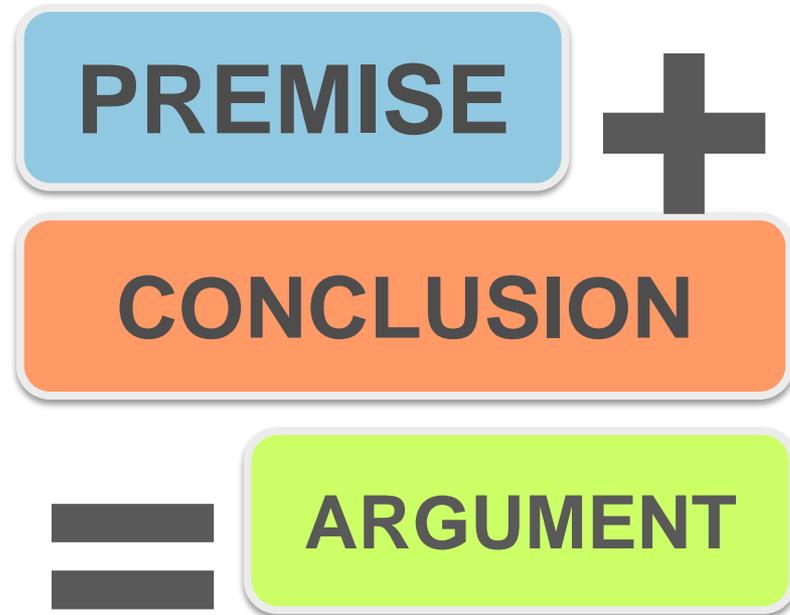
Examining an argument

1. Identifying an argument and labelling the parts (argument structure).
2. Ordering the parts (standard form).
3. Mapping the argument (logic condition).
4. Testing the premises (truth condition).



Argument structure

- An argument needs at least one premise and one conclusion. If it doesn't, it's not an argument.



Argument structure

‘You should join your local gym. Regular exercise is key to losing weight and staying healthy, and local gym memberships are cheaper than ever!’



Argument structure

CONCLUSION

'You should join your local gym. Regular exercise is key to losing weight and staying healthy, and local gym memberships are cheaper than ever!'



Argument structure

CONCLUSION

PREMISE 1

‘You should join your local gym. Regular exercise is key to losing weight and staying healthy, and local gym memberships are cheaper than ever!’



Argument structure

CONCLUSION

PREMISE 1

'You should join your local gym. Regular exercise is key to losing weight and staying healthy, and local gym memberships are cheaper than ever!'

PREMISE 2



Argument structure

CONCLUSION

PREMISE 1

'You should join your local gym. Regular exercise is key to losing weight and staying healthy, and local gym memberships are cheaper than ever!'

PREMISE 3

PREMISE 2



Standard form

P1: Regular exercise is key to losing weight.

P2: Regular exercise is key to staying healthy.

P3: Local gym memberships are cheaper than ever.

C: You should join your local gym.



Activity 3: argument structure

Animals do not have a choice in whether they are used for food or not, and killing them for our own needs is selfish, so all people should be vegetarian.

You enjoy socialising with others, so you should get a job that involves talking to people. You've always hated boring office work!

The Prime Minister is a Communist, because only a Communist would allow such rampant abuse of the welfare system. Her policies have directly contributed to this.

You should complete your degree course. People who graduate from university not only earn, on average, more money than those who do not; they also report much higher levels of satisfaction in life.



Activity 3: argument structure

Animals do not have a choice in whether they are used for food or not, and killing them for our own needs is selfish, so all people should be vegetarian.

Animals do not have a choice in whether they are used for food or not, and killing them for our own needs is selfish, so all people should be vegetarian.

Standard form:

Premise 1: Animals do not have a choice in whether they are used for food or not.

Premise 2: Killing animals for our own needs is selfish.

Conclusion: All people should be vegetarian.



Activity 3: argument structure

You enjoy socialising with others, so you should get a job that involves talking to people.
You've always hated boring office work!

You enjoy socialising with others, so you should get a job that involves talking to people. You've always hated boring office work!

Standard form:

Premise 1: You enjoy socialising with others.

Premise 2: You've always hated boring office work!

Conclusion: You should get a job that involves talking to people.



Activity 3: argument structure

The Prime Minister is a Communist, because only a Communist would allow such rampant abuse of the welfare system. Her policies have directly contributed to this.

The Prime Minister is a Communist, because only a Communist would allow such rampant abuse of the welfare system. Her policies have directly contributed to this.

Standard form:

Premise 1: Only a Communist would allow such rampant abuse of the welfare system.

Premise 2: The Prime Minister's policies have directly contributed to the rampant abuse of the welfare system.

Conclusion:

The Prime Minister is a Communist.



Activity 3: argument structure

You should complete your degree course. People who graduate from university not only earn, on average, more money than those who do not; they also report much higher levels of satisfaction in life.

You should complete your degree course. People who graduate from university not only earn, on average, more money than those who do not; they also report much higher levels of satisfaction in life.

Standard form:

Premise 1: People who graduate from university not only earn, on average, more money than those who do not.

Premise 2: People who graduate from university report much higher levels of satisfaction in life.

Conclusion: You should complete your degree course.



Analysing arguments

An argument should conform to two basic conditions if its conclusion is to be accepted.

These are known as the **logic condition** and the **truth condition**.



Analysing arguments

You can perform checks on an argument to see whether it satisfies these:

Logic condition

Does the conclusion make sense, given the premises stated?

Does the conclusion follow, logically, or is the writer asking you to take a leap of faith?

Truth condition

Are the premises offered credible and reliable? That is to say, are they believable? What is their source?



Logic condition: argument mapping

- Argument maps are visual diagrams which show the structure of the argument.
- They are useful for showing INDEPENDENT and JOINT premises.



Logic condition: argument mapping

An argument with one premise would have a simple map, like this:

My uncle is from
Aberdeen, so
he is Scottish.

P(1)



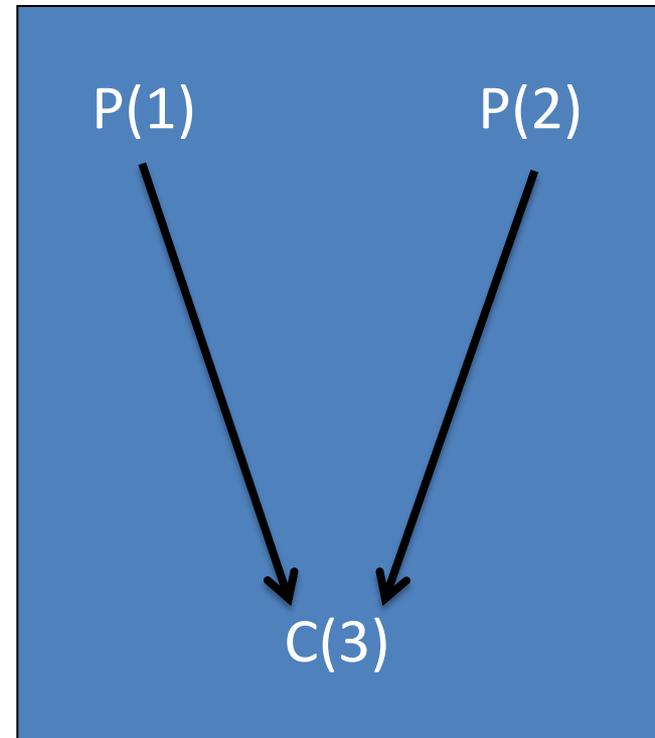
C(2)



Logic condition: argument mapping

When an argument has more than one premise, the map becomes more complicated.

Big Brother is fun to watch, and gives ordinary people the opportunity to be on TV. Therefore, it should be on television more often.



Logic condition: argument mapping

These arguments have **INDEPENDENT PREMISES**, meaning that each premise supports the conclusion in its own right.

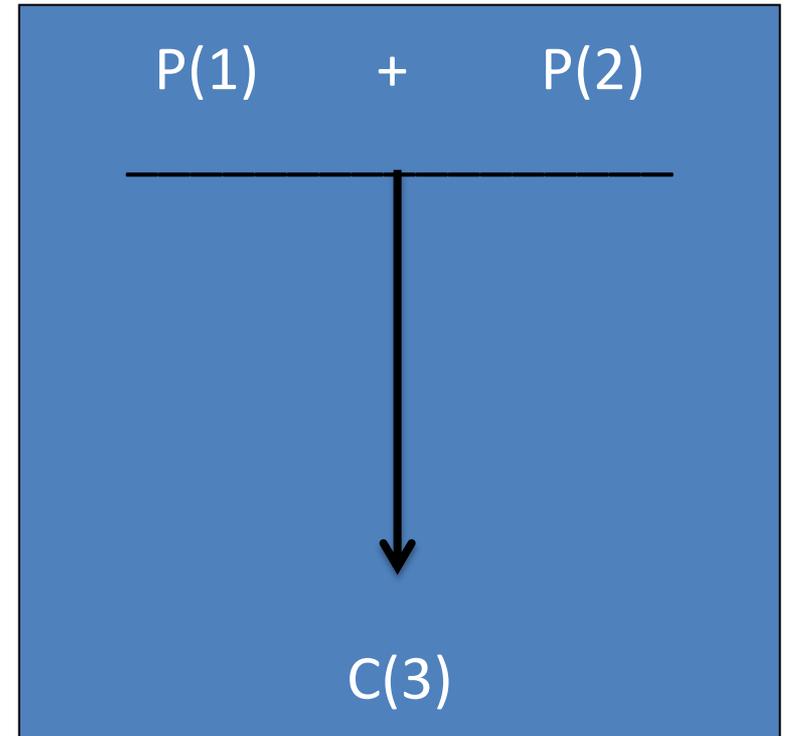
The first example is a **single** and the second is a **multiple** premise argument.



Logic condition: argument mapping

When an argument has two or more JOINT PREMISES leading to the conclusion, the map looks different.

All university
Students like
eating chips.
Dave is a university
student.
So Dave likes eating chips



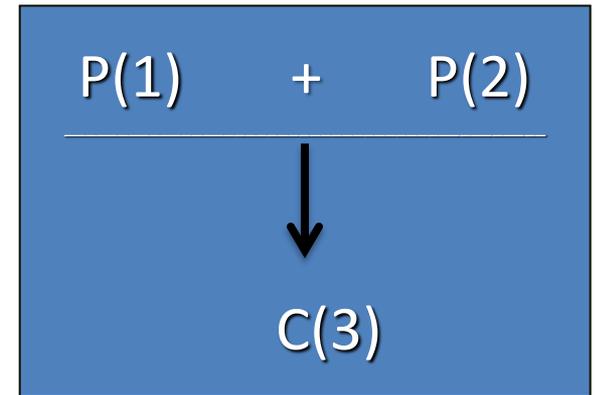
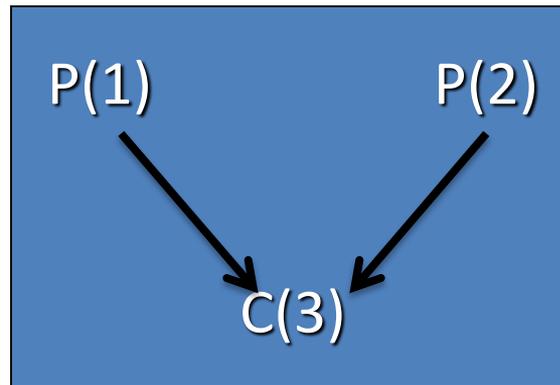
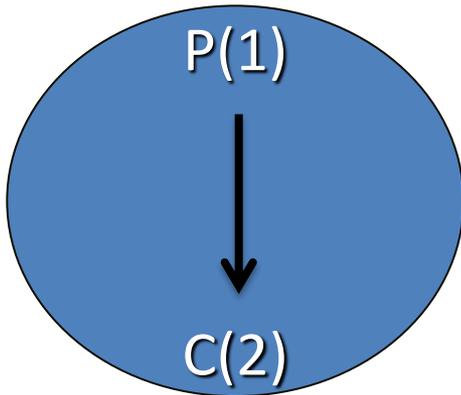
Logic condition: argument mapping

The two premises join together to lead to the conclusion.



Logic condition: argument mapping

Using argument mapping, you can now SHOW how arguments are put together.



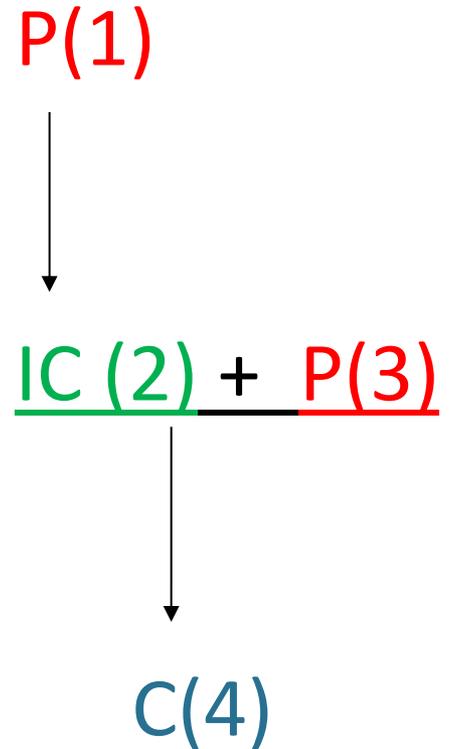
Logic condition: argument mapping

Intermediate conclusions: initial conclusions which are used as premises for a further conclusion.



Logic condition: argument mapping

[P(1)Dennis punched Bob] so [IC(2)he deserves to be severely punished].
[P(3)A beating with a cane is a severe punishment]. So [C(4)Dennis deserves to be caned].



The steps so far...

1. Identify an argument and label the parts (argument structure).
2. Order the parts (standard form).
3. Map the argument (logic condition).



The steps so far...

A SINGLE PREMISE argument:

Putting your hand into a fire will cause it to burn,
so you shouldn't do it.



The steps so far...

1. Identify an argument and label the parts (argument structure).

[(1)Putting your hand into a fire will cause it to burn], so [(2)you shouldn't do it].

There are TWO claims.



The steps so far...

Identify which claim is the PREMISE, and which is the CONCLUSION

[P(1)Putting your hand into a fire will cause it to burn], so [C(2)you shouldn't do it].

(1) = PREMISE

(2) = CONCLUSION



The steps so far...

2. Order the parts (standard form).

P(1) Putting your hand into a fire will cause it to burn.

C(2) You should not put your hand into a fire.



The steps so far...

3. Map the argument

$P(1)$



$C(2)$



The steps so far...

A MULTIPLE PREMISE argument

Participating in musical groups, like orchestras and choirs, is fun. It also teaches valuable lessons about discipline and teamwork. Therefore, children should be encouraged to participate in musical groups.



The steps so far...

[(1)Participating in musical groups], like orchestras and choirs, [(1)is fun]. [(2)It also teaches valuable lessons about discipline] [(3)and teamwork]. Therefore, [(4)children should be encouraged to participate in musical groups].



The steps so far...

[P(1)Participating in musical groups], like orchestras and choirs, [P(1)s fun]. [P(2)It also teaches valuable lessons about discipline] [(3)and teamwork]. Therefore, [C(4)children should be encouraged to participate in musical groups].



The steps so far...

P(1) Participating in musical groups is fun.

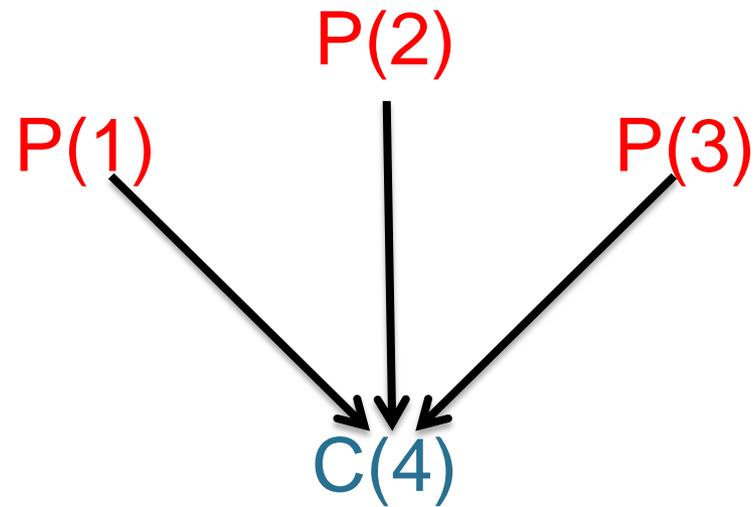
P(2) Participating in musical groups teaches valuable lessons about discipline and teamwork.

P(3) Participating in musical groups teaches valuable lessons about teamwork.

C(4) Children should be encouraged to participate in musical groups.



The steps so far...



The steps so far...

A JOINT PREMISE argument

The reigning monarch opens UK Parliament each year. Queen Elizabeth II is the reigning monarch, so she will be performing this duty.



The steps so far...

[(1)The reigning monarch opens UK Parliament each year]. [(2)Queen Elizabeth II is the reigning monarch], so [(3)she will be performing this duty].



The steps so far...

[P(1)The reigning monarch opens UK Parliament each year]. [P(2)Queen Elizabeth II is the reigning monarch], so [C(3)she will be performing this duty].



The steps so far...

P(1)The reigning monarch opens UK Parliament each year.

P(2)Queen Elizabeth II is the reigning monarch.

C(3)Queen Elizabeth II will open Parliament this year.



The steps so far...

$$\underline{P(1) + P(2)}$$



$$C(3)$$



The steps so far...

Arguments with INTERMEDIATE CONCLUSIONS

There is a finite amount of oil in the world. Thus, we cannot continue to use oil forever. That's why we need to develop alternative sources of energy.



The steps so far...

Identify CLAIMS

[(1)There is a finite amount of oil in the world].
Thus, [(2)we cannot continue to use oil forever].
That's why [(3)we need to develop alternative
sources of energy].



The steps so far...

Identify which claims are PREMISES, and which is the CONCLUSION – this time, highlighting any INTERMEDIATE CONCLUSIONS

[P(1)There is a finite amount of oil in the world].

Thus, [IC(2)we cannot continue to use oil forever].

That's why [C(3)we need to develop alternative sources of energy].



The steps so far...

Write the argument in the STANDARD FORM

P(1) There is a finite amount of oil in the world.

IC(2) We cannot continue to use oil forever.

C(3) We need to develop alternative sources of energy.



The steps so far...

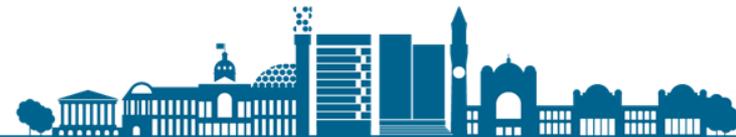
P(1)



IC(2)



C(3)



Activity 4: argument mapping

1. Your face is covered in chocolate. So it must have been you that ate my cake. Therefore you owe me a cake.
2. The door was left unlocked. You were the last one out. So you mustn't have locked it. Next time you should remember to lock the door.
3. The country's economy is in a bad state. So the Prime Minister is unpopular with the public. Unpopular politicians don't win elections. Therefore, this Prime Minister won't win the next election.
4. You score lots of goals. You also dominate the midfield, playing with great energy. It follows that you are a superb footballer. Superb footballers get picked for the England squad, so you will certainly get picked to play for England in the next international fixture.



Truth condition: testing the premises

When you've mapped an argument, what then?

Step 4:

- Check out the **truth condition** of the premises
 - Are all the premises true?
 - Can they be verified?
 - Can you refute or object to any of them?

These things can weaken the argument.



Using this in your work

Mapping your own arguments for your essays:

- ❑ Chop your essay question into different issues.
- ❑ Pose questions for yourself, related to these issues.
- ❑ Read around and research these issues, assessing the truth condition (reliability and credibility) of sources.
- ❑ Categorise quotes and paraphrased ideas (find premises).
- ❑ Arrange your findings as premises on a map and infer or deduce conclusions.
- ❑ Test your arguments (logic and truth).
- ❑ Write your arguments as paragraphs.
- ❑ Use paragraph argument conclusions as INTERMEDIATE CONCLUSIONS for your essay conclusion.
- ❑ Test your overall argument.



Recommended resources

Online

- ❑ The Critical Thinker Academy (Dr. Kevin Delaplante)
- ❑ Online Critical Thinking programme – Fayetteville State University (Dr. Gregory Sadler)

In print

- ❑ AS Level Critical Thinking (CGP books)
- ❑ Palgrave Critical Thinking Skills (Stella Cottrell)
- ❑ A Workbook for Arguments (David R. Morrow & Anthony Weston)
- ❑ Where's your argument? (Helen Cooper & Michael Shoolbred)

And many more...

The screenshot displays a webpage titled "Workshop resources" with several sections:

- UNDERSTANDING ARGUMENTS** and **FURTHER ARGUMENT MAPPING** (navigation tabs)
- Links and further reading** section featuring:
 - Kevin Delaplante - The Critical Thinker Academy**: A profile for Dr. Kevin Delaplante with a bio stating his videos are aimed at general students and cover a wide range of critical thinking topics. Below his name is a list of video series:
 - BASIC ARGUMENTS IN LOGIC & ARGUMENTATION (12 VIDEOS)
 - COMMON VALID AND INVALID ARGUMENT FORMS (9 VIDEOS)
 - CRITICAL THINKING ABOUT SCIENCE (12 VIDEOS)
 - 4- ESSAYS, A STRUCTURED APPROACH TO SUCCESSFUL ESSAY WRITING (25 VIDEOS)
 - HOW TO WRITE A GOOD ARGUMENTATIVE ESSAY (12 VIDEOS)
 - Gregory Sadler - Critical Thinking Programme, Fayetteville State University**: A profile for Dr. Gregory Sadler with a bio stating he has a YouTube playlist of 24 lectures recorded live with students. Below his name is a video player for "CRITICAL THINKING PROGRAMME, FAYETTEVILLE STATE UNIVERSITY, 2011 (48 VIDEOS)".
- Below the profiles are four book covers:
 - AS Level Critical Thinking (CGP)
 - Palgrave Critical Thinking Skills (Stella Cottrell)
 - A Workbook for Arguments (David R. Morrow & Anthony Weston)
 - Where's your argument? (Helen Cooper & Michael Shoolbred)
- Jamal DeWald's Argument Mapping tutorials**: A section titled "Crash Course The Basics" with an eight-part PDF series detailing how to use mapping to deconstruct and analyse arguments. The series includes:
 - Part 1: Introduction
 - Part 2: Claims and Reasons
 - Part 3: Issues and Issues
 - Part 4: Identifying Assumptions (premises)
 - Part 5: Objections
 - Part 6: Model Maps
 - Part 7: Power to Map
 - Part 8: Crime Tables
- At the bottom are four more book covers:
 - Crash Course Critical Thinking
 - Crash Course Critical Thinking
 - Crash Course Critical Thinking
 - Crash Course Critical Thinking



Links at www.stephengriffin.org/critical

Academic Skills Centre

Location

1st floor, main library

Telephone

(0121) 414 3666

Email

asc@contacts.bham.ac.uk

Web

intranet.birmingham.ac.uk/as/libraryservices/library/skills/asc

The screenshot shows the University of Birmingham Intranet page for the Academic Skills Centre (ASC). The header includes the University of Birmingham logo, the text 'UNIVERSITY OF BIRMINGHAM | INTRANET', and navigation links for 'Main website', 'Login', 'For students', and 'For staff'. A search icon is also present. The breadcrumb trail reads: 'University of Birmingham Intranet > Academic Services > Library Services > Library > Skills and training > Academic Skills Centre'. The main heading is 'Academic Skills Centre (ASC)'. The page is organized into a grid of service tiles and a right-hand navigation menu. The tiles include: 'Academic skills' (Workshops and guides to develop your skills), 'Mathematics Support Centre' (Maths and stats support), 'Library and information skills' (Find and cite resources for your study and research), 'Digital Skills' (Training in stats software, digital images, spreadsheets and more), 'One-to-one appointments' (Develop and improve your academic skills), and 'PASS' (Peer Assisted Study Sessions for first year undergraduates). The right-hand menu is titled 'In 'Academic Skills Centre'' and lists various resources and events.

UNIVERSITY OF BIRMINGHAM | INTRANET

Main website Login

For students For staff

University of Birmingham Intranet > Academic Services > Library Services > Library > Skills and training > Academic Skills Centre

Academic Skills Centre (ASC)

- Academic skills**
Workshops and guides to develop your skills
- Mathematics Support Centre**
Maths and stats support
- Library and information skills**
Find and cite resources for your study and research
- Digital Skills**
Training in stats software, digital images, spreadsheets and more
- One-to-one appointments**
Develop and improve your academic skills
- PASS**
Peer Assisted Study Sessions for first year undergraduates

[Academic Skills Gateway](#) [Feedback](#) [Contact us](#)

In 'Academic Skills Centre'

- > Academic Skills Centre
- > New Taught Student Welcome events
- > Events and workshops
- > Transition to University
- > Mature undergraduate students
- > Taught Postgraduates
- > What to expect
- > ASC resources
- > Top tips for revision
- > Appointments
- > Maths Support
- > Academic skills support
- > Contact us



Academic Skills Gateway

The screenshot displays the Academic Skills Gateway website. At the top, a navigation bar includes links for Home, Learning how to learn, Maths and statistics, Research skills, Working with others, and Writing skills. The main content area is divided into several sections: a header for Library Services Academic Skills Gateway; a grid of six skill categories with icons and images (Learning how to learn, Maths and statistics, Research skills, Working with others, Writing skills); and a sidebar on the right. The sidebar contains sections for Confidential 1-1 appointments, Workshops and classes, Library and Information Skills, and Stand-alone resources. At the bottom of the sidebar are buttons for Feedback, Accessibility, Mathematics Support Centre, and FindIt@Bham. The footer of the website features the University of Birmingham logo and the Library Services Academic Skills Centre logo.

Home Learning how to learn Maths and statistics Research skills Working with others Writing skills

Library Services
Academic Skills Gateway

Learning how to learn Maths and statistics

Research skills Working with others

Writing skills

Academic Skills Centre

Confidential 1-1 appointments

- [Academic Skills appointments](#)
- [Digital Skills appointments](#)

Workshops and classes

- [Academic Skills workshop registration](#)
- [Digital Skills workshop registration](#)

Library and Information Skills

- [A-Z list of Guides](#)
- [College of Arts and Law](#)
- [College of Engineering and Physical Sciences](#)
- [College of Life and Environmental Sciences](#)
- [College of Medical and Dental Sciences](#)
- [College of Social Science](#)

Stand-alone resources

- [Guide to Effective Learning \(GEL\)](#)
- [Successfully transitioning to postgraduate studies](#)
- [Skills4Study Campus](#)

Feedback

Accessibility

Mathematics Support Centre

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