



CARBON CALCULATOR FOR STUDENTS: USER GUIDE

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The SusTEACH Carbon Calculator is a Microsoft Excel based tool that aims to help students calculate the carbon impacts associated with their studies. The Calculator uses information about the activities involved with a course or module and converts this information to carbon impacts.

The tool is aimed at students in higher education, studying at undergraduate or postgraduate level, at a campus based university or with a distance learning provider.

Where do I start?

The Carbon Calculator is available as a downloadable Microsoft Excel file from the SusTEACH website at <http://www9.open.ac.uk/SusTeach/>. The file will need to be unzipped before use but can then be opened in versions of MS Excel 2003 or later. Versions 2007 or later are recommended and you will find that the interface looks different to the screenshots in the guide if you are using Excel 2003.

Defining Key Terms

Before using the Carbon Calculator Tool it is important to define some of the terms that are used frequently within the tool, in particular the terms 'COURSE' or 'MODULE' and 'CATS CREDITS'. Further information and help is available in the Calculator Tool **FAQS** which can be accessed from any page within the Calculator Tool.

The terms 'COURSE' and 'MODULE' are both used within and across HE institutions to refer to a set of modular, standardised, independent, or interrelated teaching units that when appropriately combined, construct a degree qualification. The term course may have a second meaning when used to refer to a course of study on a qualification programme which may consist of several modules or

courses. The Carbon Calculator Tool uses the term course in the in the first sense, and we refer throughout to course or module.

The Credit Accumulation and Transfer Scheme (CATS) equate 1 CATS credit to 10 hours of total study. The 10 hours may include a combination of contact time in lectures or seminars, as well as self-directed study (e.g. field work, writing assignments, exam revision, etc.). A typical undergraduate degree requires 360 CATS credits, or 120 credits of full-time study each year, and a Master's degree requires 180 CATS credits.

The impacts of teaching, learning and assessment associated with a course/module on energy consumption and CO₂ emissions are presented using the standard measure of the energy consumption (MJ) and CO₂ emissions (kg) 'per student per 10 CATS credits' (equivalent to 100 study hours) for the course/module.

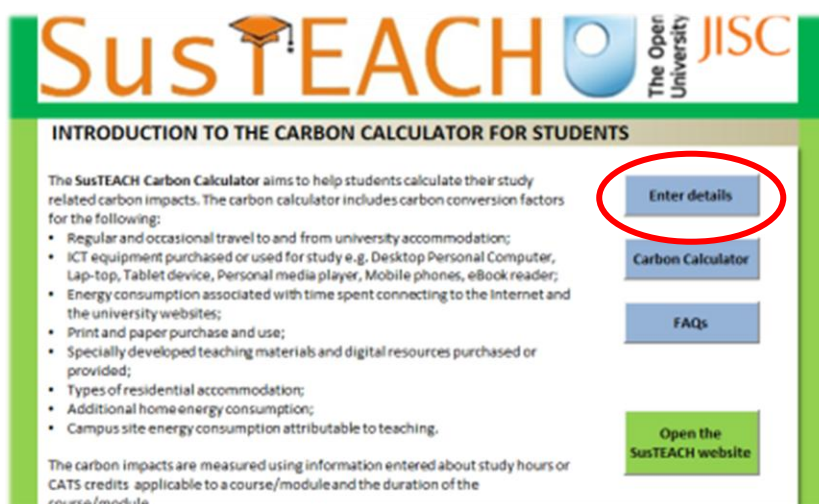
The Carbon Calculator tool opens with the **Introduction** page.

Further information is available in the Carbon Calculator **FAQS** which can be accessed from any page within the Carbon Calculator.

INTRODUCTION

The Introduction page presents an overview of the Carbon Calculator, explaining the purpose of the tool and how it can help students calculate their study related carbon impacts. Menu buttons appear at the top right to navigate to other pages, and there is also a link to the SusTEACH website where further tools and resources are available.

The assessment begins by entering some basic information about the course/module by clicking the **Enter details** button, highlighted below.



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INTRODUCTION TO THE CARBON CALCULATOR FOR STUDENTS

The SusTEACH Carbon Calculator aims to help students calculate their study related carbon impacts. The carbon calculator includes carbon conversion factors for the following:

- Regular and occasional travel to and from university accommodation;
- ICT equipment purchased or used for study e.g. Desktop Personal Computer, Lap-top, Tablet device, Personal media player, Mobile phones, eBook reader;
- Energy consumption associated with time spent connecting to the Internet and the university websites;
- Print and paper purchase and use;
- Specially developed teaching materials and digital resources purchased or provided;
- Types of residential accommodation;
- Additional home energy consumption;
- Campus site energy consumption attributable to teaching.

The carbon impacts are measured using information entered about study hours or CATS credits applicable to a course/module and the duration of the course/module.

[Enter details](#)

[Carbon Calculator](#)

[FAQs](#)

[Open the SusTEACH website](#)

Information about the course/module information is used by the Carbon Calculator to convert details about the course/module related activities to energy consumption and CO₂ emissions.

Course/module information

Please enter a name for your carbon assessment (optional)

Sustainability

Please enter the number of CATS credits associated with the course/module (10 CATS credits = 100 study hours)

20

Please enter the duration IN WEEKS of the course/module

10

Please indicate whether you are studying full time or part time during the academic year.

Full-time, equates to 120 CATS credits per academic year (3 year undergraduate honours degree, 1 year masters degree excluding final dissertation)

Part-time, equates to 60 CATS credits per academic year (5 year undergraduate honours degree, 2 year masters degree excluding final dissertation)

Other - Please enter the number of CATS credits completed during the last 3 months of term/semester

Clear details Save & close

For this example, we have used the title of the course/module as the **name** for the carbon assessment though this can be left blank.

You need to enter details, about the number of study hours (or **CATS credits**) planned to provide all teaching, learning and assessment on the course or module. The **CATS credits** applicable to the course/module and its **duration** do need to be entered, however if you are unsure about the CATS credits associated with a course/module help is provided in the **FAQs**.

You need to confirm whether you are studying **full-time** or **part-time** during the academic year. An option is also available to enter details of the CATS

credits completed during the last 3 months of term if the full-time or part-time options are not applicable.

To start again, click the **Clear details** button.

Saving the form returns you to the Introduction page and the next step is to enter details about the course/module activities by clicking the **Carbon Calculator** button.

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INTRODUCTION TO THE CARBON CALCULATOR FOR STUDENTS

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- Regular and occasional travel to and from university accommodation;
- ICT equipment purchased or used for study e.g. Desktop Personal Computer, Lap-top, Tablet device, Personal media player, Mobile phones, eBook reader;
- Energy consumption associated with time spent connecting to the Internet and the university websites;
- Print and paper purchase and use;
- Specially developed teaching materials and digital resources purchased or provided;
- Types of residential accommodation;
- Additional home energy consumption;
- Campus site energy consumption attributable to teaching.

The carbon impacts are measured using information entered about study hours or CATS credits applicable to a course/module and the duration of the course/module.

Enter details

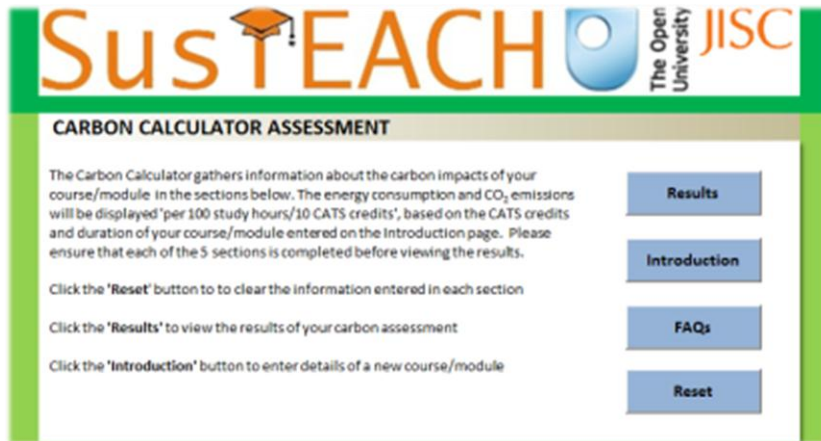
Carbon Calculator

FAQs

Open the SusTEACH website

CARBON CALCULATOR

The Carbon Calculator page is where you record details of the course/module related activities. The assessment involves entering information about course/module related travel, purchase and use of ICTs (information and communication technologies), consumption and purchase of paper, print and other materials, residential energy use, and information about the location of study.



At the top of the page there are menu buttons to return to the **Introduction** (if you need to amend the details about the course/module or start a new assessment), to view the **FAQS**, and to **Reset** the course/module activity information.

Scrolling down the page the assessment is categorised into five sections, with each corresponding to a key source of study-related carbon impacts. The Carbon Calculator gathers details about your course/module related activities using information forms. Each form must be completed for an accurate assessment of the carbon impacts.

To illustrate the process the **Travel** section is used as an example. Course/module related travel is split into regular journeys, and occasional journeys. Details of travel for each type of journey within these two categories are recorded by clicking the 'Click to enter details..' button.

TRAVEL

The impacts of your travel related to study is assessed by considering two types of journey.

1. Regular journeys during a typical week during term time, such as journeys to the university campus.
2. Occasional journeys that are related to the course or module, but which happen less frequently during the academic year, such as journeys at the start and of end of the term/semester between your usual home and term-time residence or to a residential school.

Please **click** on the buttons to enter details of your journeys.

Click to enter details of regular journeys

Click to enter details of occasional journeys

	Distance (miles)	Energy consumption (MJ)	CO ₂ Emissions (kg)
Regular journeys	0	0	0
Occasional journeys	0	0	0

Response options are provided using drop-down menus and there is also a **Clear Details** button if you need to amend any of the information entered.

Common to most of the information forms, the Regular Travel form asks you to complete your responses based on a *TYPICAL WEEK*, though it is important to read the introduction at the top of each form as you may be asked to respond based on a *term/semester* or the *duration of the course/module*. (Please note that the information that you provide is combined to calculate and apportion your impacts to the course/module appropriately).

In this example the only regular travel was for journeys to the university campus and to other study sites.

Once the information form has been completed and saved the impacts are calculated immediately and displayed using the standard measure of the energy consumption (MJ) and CO₂ emissions (kg) per 100 study hours/10 CATS credits for the course/module.

TRAVEL

The impacts of your travel related to study is assessed by considering two types of journey.

1. Regular journeys during a typical week during term time, such as journeys to the university campus.
2. Occasional journeys that are related to the course or module, but which happen less frequently during the academic year, such as journeys at the start and of end of the term/semester between your usual home and term-time residence or to a residential school.

Please click on the buttons to enter details of your journeys.

[Click to enter details of regular journeys](#)

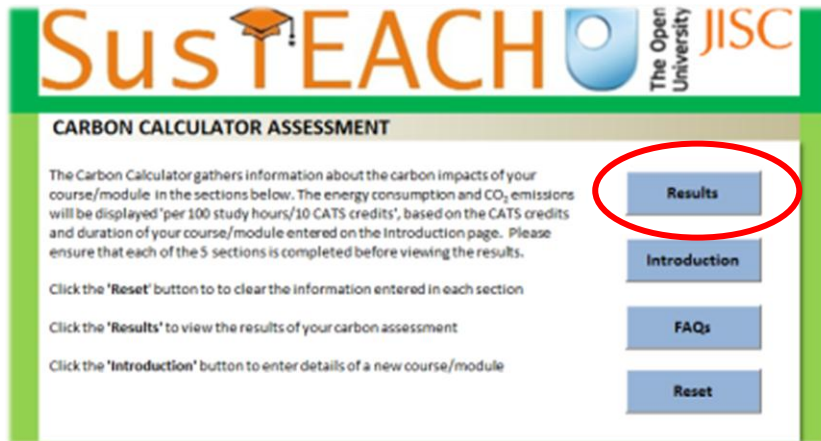
[Click to enter details of occasional journeys](#)

	Distance (miles)	Energy consumption (MJ)	CO ₂ Emissions (kg)
Regular journeys	133	408	112
Occasional journeys	0	0	0

The details of occasional travel associated with the course/module are recorded using the same approach, and also the remaining sections for **ICT, Paper, print and other materials, Residential energy**, and the **Campus site operations**.

After ensuring that each section has been completed you need to scroll back up to the top of Carbon Calculator page and click on **Results** from the menu buttons to view the results of the assessment.

Alternatively if you need to start again select the **Reset** button; though note that this will reset your responses made in ALL forms.



RESULTS PAGE

The results page aggregates the energy consumption and CO₂ emissions from each of the five sections and presents the total carbon impacts associated with the course/module per 100 study hours/10 CATS credits.

The total carbon impacts are equated to levels of travel or ICT use that would result in similar impacts as a useful comparison.




The full results are presented in two tables. The first table displays the total energy consumption and CO₂ emissions per 100 study hours/10 CATS credits from each source and the second table shows the percentage of the total energy consumption and CO₂ emissions from these sources. In this example, travel was responsible for the highest CO₂ emissions followed by residential energy and the university site impacts.

Energy consumption and CO ₂ emissions associated with your course or module		
Source of carbon emissions	Energy consumption (MJ) per 100 study hours / 10 CATS credits	CO ₂ emissions (kg) per 100 study hours / 10 CATS credits
TRAVEL	507.4	139.0
Regular travel	407.6	111.7
Occasional travel	99.8	27.3
ICT	173.7	23.2
Use of ICT devices	173.7	23.2
ICT purchases	0.0	0.0
PAPER, PRINT, AND OTHER MATERIALS	54.3	3.3
Paper consumption	13.3	1.0
Purchased books and other publications	41.0	2.3
University provided materials	0.0	0.0
RESIDENTIAL ENERGY	1281.0	78.0
UNIVERSITY SITE IMPACTS	825.7	76.7
TOTAL	3577.5	485.8

Sources of energy consumption and CO ₂ emissions associated with your course or module (percentage of totals above)		
Source of carbon emissions	Energy consumption	CO ₂ emissions
TRAVEL	14.2	28.6
Regular travel	11.4	23.0
Occasional travel	2.8	5.6
ICT	4.9	4.8
Use of ICT devices	4.9	4.8
ICT purchases	0.0	0.0
PAPER, PRINT, AND OTHER MATERIALS	1.5	0.7

The Carbon Calculator generates a summary page in the background of the results, which includes a table and chart of the total energy consumption and CO₂ emissions related to the course/module.



SUMMARY OF THE CARBON IMPACTS ASSOCIATED WITH YOUR COURSE OR MODULE

Name of assessment: Sustainability
 Date of assessment: 05/07/2012


The carbon impact of your course/module is 100kg per 100 study hours/10 CATS credits. This equates to:

- 1567 MILES DRIVING A CAR WITH A 1.3-1.6 LITRE PETROL ENGINE
- 5715 MILES TRAVELLING BY NATIONAL RAIL
- 207 WEEKS USING A LAPTOP PC
- 28 YEARS USING A TABLET PC

Energy consumption and CO₂ emissions associated with your course or module (per student per 100 study hours/10 CATS credits)

	Energy consumption (MJ)	CO ₂ emissions (kg)
TRAVEL	507.4	139.0
ICT	173.7	23.2
PAPER, PRINT, & OTHER MATERIALS	54.3	3.3
RESIDENTIAL ENERGY USE	1281.0	78.0
UNIVERSITY CAMPUS SITE OPERATIONS	825.7	76.7
TOTAL	3577.5	485.8

Sources of energy consumption and CO₂ emissions associated with your course or module (percentage of total CO₂ emissions)



This can be printed or saved from the menu buttons at the top of the **Results** page. To print the file click on the **Print summary** button. If you would like to keep a copy of the summary page, click on the **Save summary** button. The summary will then be saved as a PDF file to the computers desktop using the name of the assessment entered on the Introduction page and the date and time of the assessment.

From the Results page further information about the carbon impacts of the course/module is available via the **Charts** button.

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RESULTS
The carbon impact of your course/module is 518kg per 100 study hours / 10 CATS credits, this equates to:

- 1,671 miles driving a car with a 1.3-1.6 litre petrol engine
- 6,093 miles travelling by national rail
- 220 weeks use of a laptop PC
- 30 years use of a tablet PC

The SusTEACH project gathered data about the carbon impacts from students studying a range of courses/modules. Impacts were highest for students studying at a university campus, averaging in the region of 250kg CO₂ per 100 study hours/10 CATS credits. Impacts were lowest for students studying courses or modules with a distance learning provider using ICTs and online resources, averaging less than 50kg CO₂ per 100 study hours/10 CATS credits.

Details of the energy consumption and CO₂ emissions associated with your course, module or unit of study are presented below.

The first table presents these figures 'per 10 CATS credits', with 10 CATS credits

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CHARTS PAGE

The Charts page expands on the figures provided about the results of the assessment, providing a graphical illustration of the carbon impacts arising from each of the carbon sources.

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FURTHER ANALYSIS CHARTS
The carbon impact of your course/module is 518kg per 100 study hours / 10 CATS credits

The following charts show the carbon emissions (kg) per 100 study hours/10 CATS credits arising from each of the carbon sources considered in the Carbon Calculator assessment process. Some additional information is also provided alongside each chart.

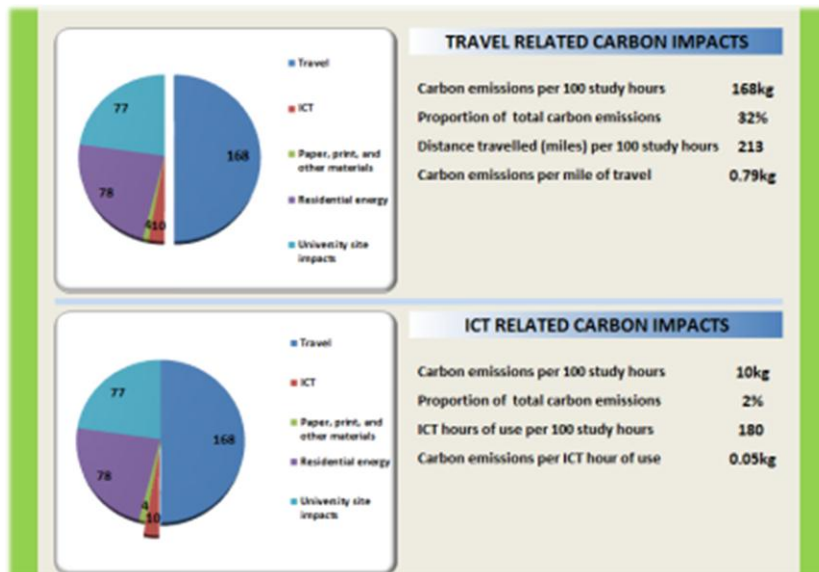
Click the 'Introduction' button to enter details of a new course or module

Click the 'Calculator' button to change or start a new assessment

Click the 'Results' button for the results of your course/module carbon assessment

Introduction
Calculator
Results
Save summary
Print summary
FAQs

The figures are displayed in a series of pie charts with information provided alongside each chart about the CO₂ emissions and the proportion of total course/module related CO₂ emissions arising from that particular source. Where relevant some additional figures are included, such as the CO₂ emissions per mile travelled in the Travel section, or the ICT hours of use per 100 study hours/10 CATS credits in the ICT section.



At the top of the page the menu buttons allow you to navigate back to any of other pages within the Carbon Calculator or you can choose to print or save a summary of the results as before.

FAQS

The FAQs page provides help and guidance for apportioning CATS credits to a course or module and also defines some of the terms used in the Carbon Calculator. The sources of the conversion factors within the Carbon Calculator are also discussed with a reference to the SusTEACH methodology, available on the SusTEACH website.

The FAQs can be accessed from the menu buttons at the top of each page.

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FAQs

What is a CATS credit?
 The Credit Accumulation and Transfer Scheme (CATS) equates 1 CATS credit to 10 hours of total study. This 10 hours may include a combination of contact time in lectures or seminars, as well as self-directed study (e.g. field work, writing assignments, exam revision, etc). A typical undergraduate degree requires 360 CATS credits, or 120 credits of full-time study each year, and a Masters degree requires 180 CATS credits.

What is a Course/Module?
 The Carbon Calculator uses the terms 'MODULE' and 'COURSE' to refer to a set of standardized, independent or interrelated teaching units that can be used to construct an education QUALIFICATION PROGRAMME (sometimes also referred to as COURSES), such as a Bachelors, Masters or Diploma programme.

Guidance for apportioning CATS credits to your course or module
1. Is your qualification programme taught on a modular basis?
 Many qualification programmes are already taught on a modular basis so check with your institution if each module or unit of study is allocated a specific number of CATS credits and number of study weeks.

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[Results](#)
[Charts](#)

Developers of the SusTEACH Carbon Calculator for Students: Ed Swithenby, Dr Sally Caird, The Open University. © 2012

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