



ACS Accreditation Update September 2021

and guidance for preparing an accreditation application in 2022

See the [ACS Accreditation Website](#)
contact us at accreditation@acs.org.au or +61 (0) 2 9299 3666

1. Changes in the Accreditation Environment

The ICT field is in constant change. Accredited providers need to keep up with changes in their environment and be looking ahead if their graduates are to be relevant in coming years.

Changes in the ICT Profession

For an overview of developments in Australia see [ACS Digital Pulse 2021](#) which 'provides a snapshot of Australia's digital economy, workforce, and policy landscape'.

A key accreditation criterion is that a program must focus on specific ICT Professional role, and develop the skills necessary to fulfil that role. Recent changes in roles and skills thinking include:

- the Skills Framework for the Information Age ([SFIA](#)) which has released a fine update, Version 8.
- the European Union's e-Competency Framework (e-CF) has been updated with a useful set of professional roles (see [itprofessionalism](#))
- the [ACS Skills Whitepaper 2021](#) 'offers current state analysis of the directions being taken with tech and digital skills in Australia'

Changes in ICT Disciplines

In-depth disciplinary knowledge is a key accreditation criterion. Program design is expected to respond explicitly to the appropriate disciplinary bodies of knowledge (SFIA 8 identifies over 40 [Bodies of Knowledge](#)) and relevant reports of disciplinary organisations (eg. [Data Science task force](#) report).

Subject design should embody current disciplinary research and scholarship and use the literature in the discipline including pedagogical literature (eg. [Teaching Ethics to Computing Science Students](#), [SigCSE](#)).

Changes in ACS Accreditation

ACS Accreditation has been stable since the last major revision in 2019, but continues to evolve and adapt to the changing ICT landscape. Notable changes include:

- a revised Core Body of Knowledge
- the adoption of a Professional Standards Platform
- implementation of Specialist Accreditation in Data Science
- minor changes to the Accreditation Manual.

See the [ACS Accreditation Website](#) for details.

2. Ongoing Accreditation Issues

The major causes of conditions being imposed on accreditations in 2021 mirror those of last year.

Authenticity

Applications for accreditation point to a provider's operational information (especially the Learning Management System) to show how criteria are met in practice. Accreditation panels found cases where a providers claimed that a subject assessed a knowledge area when it clearly did not. Attempting to deceive is contrary to the Code of Ethics and reflects poorly on the professionalism of the provider. The right course of action is to prepare a development plan for future program changes that will honestly address criteria and include it in an accreditation application.

Ethics

ICT professionals are increasingly relied on to manage complex aspects of public interest and corporate reputation, and graduates are expected to have a strong grasp of ethical principles and contemporary issues. Ethics is an essential professional knowledge area in the ACS Core Body of Knowledge. Best practice is that Ethics be introduced early and developed throughout the program as an integrated, not a separate, part of computing knowledge and skill. Some examples include integrating ethics into stakeholder impact evaluation, QA, social aspects, UX/UI, value-sensitive design, data privacy, academic integrity, and integrity systems. Applications of technology have an ethical aspect so the accreditation panel will expect a capstone subject to include explicit consideration (assessment) of the ethics of the application.

ICT Ethics is, and has been for decades, a vibrant area of research and scholarship so providers have a wealth of teaching material to draw from. For example, some recent links are:

Teaching Ethics to Computing Science Students

<http://ethics4eu.eu/events/>

Addressing Ethical Concerns During Systems Design

<https://engagestandards.ieee.org/ieee-7000-2021-for-systems-design-ethical-concerns.html>

Constructive Alignment

A key dimension of program design rationale is alignment to ICT roles. In the absence of this a program may lack clear purpose and design coherence. To demonstrate that a program is coherent from a professional perspective there needs to be a clear alignment of program components - title, professional role, skills, subjects and assessment. Program components must be explicitly aligned so assessment items relied on to assess knowledge for accreditation can be seen as part of a coherent design targeting the ICT profession.

3. 'Long CoViD'

As lockdowns start to lift providers, and the ACS, will be developing a new operational equilibrium. For the ACS the increased reliance on digital accreditation adopted in 2019 was well in place when CoViD arrived so the move to virtual campus visits was not disruptive. Most higher education providers had mature Learning Management Systems in place and many had at least some online education so were reasonably well positioned when CoViD arrived. Some providers had a steep learning curve to move to digital education. The loss of international students presented significant issues to funding and staffing.

Last year's ACS Accreditation update canvassed the issues CoViD presents. In September 2021 the ACS conducted another survey of providers to gauge the ongoing impact of CoViD (see attached). Thank you to all those who responded. Your responses have been interesting and insightful. Three of the main findings concerned:

- Academic integrity ensuring outcomes for all graduates
- Preparation of all graduates for professional practice
- Staffing and leadership to adapt and sustain ICT programs.

The [Joint Statement of Principles for the Higher Education Sector COVID-19 Response](#) by Universities Australia, Australian Council of Professions et al. provides sound principles to address CoViD, as does the TEQSA resources noted in last year's Accreditation Update.

For further information

<https://www.acs.org.au/cpd-education/acs-accreditation-program.html>
please contact us at accreditation@acs.org.au or +61 (0) 2 9299 3666

Attachment to 2021 Accreditation Update.

ACS Accreditation: A Report on a Survey of Changes in Educational Practice

August 2021

Prepared for the Director, Professional Standards and Assessment Services
by Dr Chris Johnson

Executive Summary:

ACS Accreditation of higher education ICT programs assessed providers on a range of criteria, some of which have been affected by provider's responses to Covid-19.

The ACS surveyed accredited institutions in May-July 2021 about changes in educational curriculum and assessment experienced in 2020 and 2021, and planned for 2022. The survey findings indicate that:

- As expected, the practice of online teaching has expanded greatly.
- Some have modified course structures, but few have changed curricula or educational outcomes.
- After an initial surge there has been a significant drop in the reliance on remotely invigilated examinations.
- Many have adapted their Work-Integrated Learning (WIL) programs and arrangements to online
- There may be a reduction in academic staff numbers.

Analysis of the responses raises some concerns for accreditation. The analysis also provides some insight into educational practice that might be of interest for further investigation and reporting in ICT educational circles.

Recommendations:

1. That case managers ensure accredited providers recognise that their continuing accreditation depends on their continuing to meet accreditation standards.
2. That case managers and accreditation panels ensure that interaction with industry be strengthened in an online environment The amount and quality of students' direct exposure to industry in guest lectures, real internships and other workplace interactions, industry mentors or industry clients in capstone projects is a key accreditation criterion. It is at risk under COVID pressures, particularly when no face-to-face contact is possible.
3. That case managers and accreditation panels ensure that online assessment arrangements are effective, valid, and trustworthy.
4. That case managers and accreditation panels monitor changes in staffing levels and academic leadership.

The Survey:

ACS Accreditation surveyed accredited institutions in May-July 2021 about changes in educational curriculum and assessment experienced in 2020 and 2021 and planned for 2022.

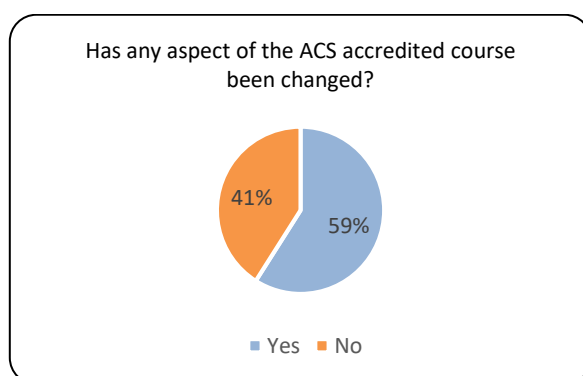
Survey questions concerned changes to the modes of offering the programs. Survey questions Q4–Q6 asked about changes that were made in year 2020 (Q4), and changes ongoing in 2021 (Q5) and (intended) 2022 (Q6):

- whether various types of class were being taught all online:
 - all lectures (Qn.1) all tutorials (Qn.2)
 - whether lab work was redesigned to be taken off campus (Qn.3)
 - whether equipment was replaced by simulators (Qn.4)
 - changes to WIL (Qn.7)
 - and about assessment:
- use of exams requiring login with invigilation or proctoring technologies and services (Qn.5)
- exams replaced by other forms of assessment (Qn.6)

An open question (Q7) asked for other changes (implicitly, in the program and offerings), and another (Q10) for any significant notifiable changes (explicitly staffing, course structures and assessment apart from the delivery mode). The number of academic staff engaged in delivering ICT courses by academic levels, and level D and E by campus (to indicate leadership) (Q8).

The Findings:

Of the 44 institutions that answered 59% stated that they had modified accredited programs. Some institutions have long experience in teaching some students or some subjects in online mode, even if not whole courses: the transition to online working with closed campuses and with some cohorts being taught overseas did not start with COVID.



Classes: lectures and tutorials

The survey responses here raise no concerns.

The practice of offering lectures online in 2020 was very widespread. A large number (88% of respondents) had offered all lectures online in 2020, considerably fewer (but more than half) in 2021 (52%), and fewer still expected to be ongoing into 2022 (25%).

Smaller numbers had all tutorials online, and many more had come back face to face: 2020 (79%), 2021

(15%), 2022 (6%).

Before COVID many if not all institutions were providing recordings of nearly all live lectures with online lecture notes, and there were anecdotal reports and discussions of concomitant low to very low in person attendance at lectures. The transition to provide all lectures in recorded form was therefore relatively low cost for many institutions and low impact for many students.

The reversion to numbers of live rather than online tutorials from 2020 (79.5%) to 2021 (16%) is striking. This may be a response to the noted significant drop in student satisfaction with learning experience reported in the media.

Laboratory work

The responses here raise no concerns.

Approximately 59% of the responded institutions redesigned lab work for off-campus in 2020, and only 27% in 2021. It is not evident how students' inability to attend campus in 2020 was covered: possibly the labs were already designed as remote tasks in many institutions.

Replacing equipment by simulators occurred in 22% cases for 2020 and only 9% in 2021 may indicate two things: few courses require specialised equipment (in the past computer networking required dedicated physical networks, but many had already turned to emulation, only a few still requiring physical patching and isolated networks; advanced technical level cyber security may also require dedicated networks and systems, but these are few and may already have been simulated).

Work Integrated Learning

43% of respondents indicated that Work integrated learning, internships, interaction with industry evidently required changes in 2020 which then drops to 25% of respondents needed to make necessary changes in 2021. The nature of the change was not explored (whether all contact with industry was lost, or contact continued but online rather than face to face). The survey itself raises no issues, but accreditation conditions, recommendations and conversations in accreditation visits make this an area of concern.

Assessment and examination

The move to online remotely invigilated exams or the replacement of exams by other assessment (Q5 and Q6) was prevalent. More than half used remote exams (52% in 2020, significantly dropping to 29.5% in 2021); 72.7% replaced exams with other assessment in 2020, dropping to 52% in 2021.

Many institutions and government policy have reflected growing concern about the integrity of assessment with respect to plagiarism and contract cheating over the past decade in particular. The use of formal, invigilated, sit-down exams to ensure the validity of assessment in subjects has often been stated as necessary alongside practical and creative assessment tasks to mitigate risks from these tasks greater exposure to dishonest practices. The technology of remote invigilation and proctoring services is fairly immature but has been able to provide the ability for some direct control over remote examinations in 2020.

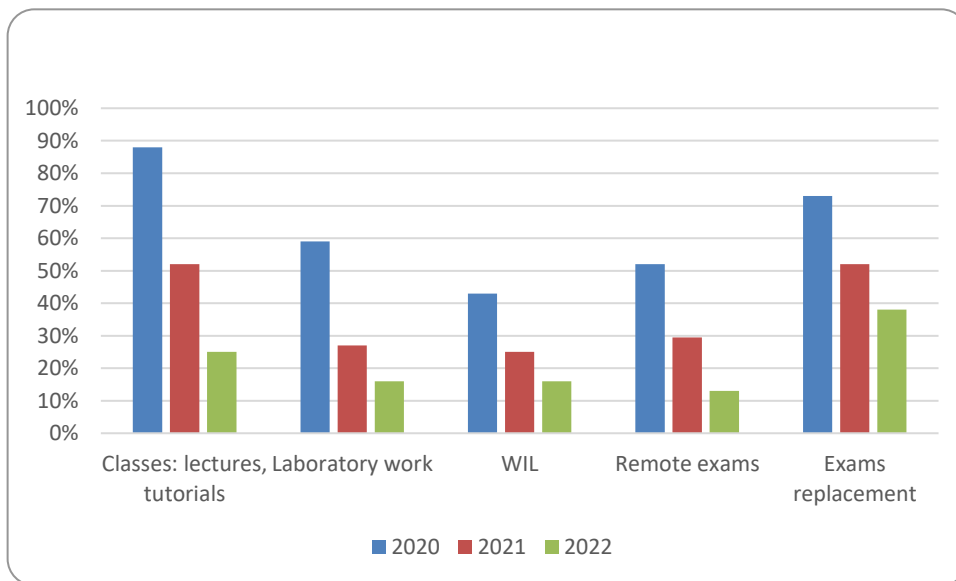
Not all institutions chose this method. The rapid reduction in numbers from 2020 to 2021 may show that this method was not found to be satisfactory.

The practical difficulties of implementation, and the disruptive effects on students of remotely invigilated exams caused some student dissatisfaction about privacy and exam conditions, according to

media reports; the cost, security, and validity of these methods is unclear. Anecdotally, university policies to use tools and methods may be at odds with coalface computing school experience of trust, fairness and effectiveness.

If remote methods are not well trusted and continue to be used beyond a span of 2 years then there is a risk to the certification of skills and knowledge learned by graduates over their typical 3 years, and therefore a reduction in trustworthiness of accreditation. The continuing provision of offshore teaching and assessment with no face to face contact provides more opportunities and fewer psychological disincentives for dishonesty. This is an issue for the universities’ internal quality assurance and for TEQSA, but also one that ACS accreditation must evaluate directly.

If assessments revert to trusted methods in 2022 and beyond then the risk to a cohort of students is reduced, and in the absence of major reports of problems this can be accepted; but if significant levels of online assessment continue then ACS must be satisfied that the quality risks are shown to be addressed and managed by the institutions.



Percentage of accredited institutions changing educational practices

Staffing

The number of academic staff engaged in delivering ICT courses by academic levels, and level D and E by campus (to indicate leadership) (Q8).

This question provided open answers. Not all respondents replied, and a few stated “no change.” Our concern was that COVID-driven reductions in income would lead to universities reducing staff numbers, possibly to the level of concern for adequate support and leadership for ICT programs. Several universities have frozen staff recruitment, some have run voluntary reductions and some involuntary reductions.

Considering the accreditation guideline of a desired minimum of 6 staff including at least 1 level D or E, nearly all institutions remain at a satisfactory level.