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ABOUT THIS ISSUE In this issue of the Caribbean Examiner, we take a close look at a few things like the CXC e-Certificates, which is our cover story – to see the benefit it brings to not only students but also Universities, colleges and employers. We take a deep dive into the CXC® Associate Degree so that there is a better understanding of the opportunities to learners, including areas of specialisation, the course selection and registration requirements. This issue also looks at the next steps stemming from the recommendations of the CXC Task Force on History. There is also some news for teachers as approval was granted for the Teacher Orientation Workshops to be conducted online through the CXC® Learning Institute. Additionally, we get insight into Guyana’s Education Curriculum reform starting with the country’s primary school Maths curriculum from the country’s Minister of Education, Nicolette Odella Henry. All this and more, can be found in this edition of the Caribbean Examiner.
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In a continuation of the proud Caribbean Examination Council (CXC) tradition, the top performing Caribbean Certificate of Secondary Level Competence (CCSLC), Caribbean Secondary Education Certificate (CSEC), and Caribbean Advanced Proficiency Examination (CAPE) candidates from across the region were treated to a week of activities, concluding with an awards ceremony.

St. Vincent and the Grenadines host the 2018 Top Performing Students

The 2018 venue was St Vincent and the Grenadines, a paradise which undoubtedly left fond memories with the 15 outstanding young people. From the moment the students landed, the cohort started their packed schedule of courtesy calls, speaking engagements with students, and visiting places of interest across the islands of St Vincent.

The first stop was a visit to the beautiful Grenadine island of Bequia where they interacted with students from two high schools there offering encouragement to the students to pursue excellence. Before heading back to the mainland, the group toured the Bequia Fisheries where they learned about the process of processing the nation’s abundant seafood. Additionally, they visited the Old Hegg Turtle Sanctuary to observe sea turtle conservation efforts, and Fort Hamilton to take in the scenic views.

Courtesy Calls

The following day, the awardees and a delegation from CXC and the Ministry of Education, National Reconciliation, and Information paid courtesy calls several political dignitaries in St Vincent and the Grenadines; Honourable St Clair Prince, Minister of Education, National Reconciliation and Information; Honourable Frederick Stephens, Minister of National Mobilization, Social Development, The Family, Persons with Disabilities and Youth; and Leader of Opposition, Dr Honourable Godwin Friday.
The awardees were encouraged by all dignitaries to continue to excel in their fields of endeavors. They were also advised to view their accomplishments, not as the end of the road, but as the beginning of a journey that has started.

Afterwards they toured Fort Charlotte and the Botanical Gardens in Kingstown and were guests of honour at a student forum with secondary school students from across the island.

Young Island
Later that afternoon, the candidates took a short ferry ride to Young Island to tour the island. They then engaged their creative sides in a fun 'sip and paint' art class sponsored by Jujube, a local bookstore and art supplies outlet in the nation. It was a treat for all, especially the art students among the cohort, who demonstrated the talents that earned them their regional awards.
Awards Ceremony
To bring the week of activities to a close, the candidates donned their school uniforms for the presentation of awards for outstanding performances in the May/June 2018 CAPE, CSEC, and the CCSLC examinations. Held at the Methodist Church Hall in Kingstown, the ceremony’s feature address was delivered by Dr. the Honourable Ralph Gonsalves, Prime Minister of St Vincent and the Grenadines. Honourable St Clare Prince, Minister of Education, National Reconciliation and Information delivered remarks, while Professor Sir Hilary Beckles, CXC Chairman and Mr. Glenroy Cumberbatch, CXC Registrar gave brief addresses.

Professor Sir Beckles gave remarks urging the awardees to become advocates of causes.

He also noted that the CSEC awardees were provided with a full scholarship by the University of the West Indies once they complete their CAPE or an associate degree. Sir Hilary explained that the scholarship is meant to attract the region’s brightest and best minds to the region’s top university.

During the ceremony, students from six Caribbean countries—Antigua and Barbuda, Grenada, Guyana, Jamaica, St Kitts and Nevis, and Trinidad and Tobago— received awards for outstanding performances in CAPE, CSEC and CCSLC.

Christian Chung of Presentation Boys’ College in Grenada received the award for the Most Outstanding Male Student in CCSLC, while Daria James of Washington Archibald High School in St Kitts and Nevis received the award for Most Outstanding Female Student in CCSLC.

CAPE Awardees
Students from schools in Guyana and Trinidad shared the 2018 Regional Top Awards for outstanding performances in the CAPE May/June sitting.

• Aadilah Ali of Queen’s College in Guyana received the Dennis Irvine Award for 2018, the symbol of academic excellence at the CAPE level. She also received the award for the Most Outstanding Candidate in Natural Sciences;

• Rajiv Muneshwer, another student from Queen’s College in Guyana, took the award for RM Education award for the Most Outstanding Candidate in Mathematics.

Trinidadian students walked away with the other awards.

• Mikhaili Toney of Presentation College in Trinidad and Tobago took the Hodder Education award for Most Outstanding Candidate in Humanities;

• Kirese Narinesingh of Naparima Girls’ College in Trinidad and Tobago took the award Most Outstanding Candidate in Language Studies, while Seline Sundar of Lakshmi Girls’ Hindu College continued that school’s dominance of regional business awards. Seline received the ACCA CAPE Business Studies Award; and

• Jade Lakhan of St Joseph’s Convent in Trinidad and Tobago copped the award for Most Outstanding Candidate in Environmental Science.

Mrs. Jennifer Benn of Queen’s College in Guyana received the award for CAPE School of the Year 2018.
CSEC Awardees

- **Keondre Herbert**, a student from St Joseph’s Academy in Antigua and Barbuda, received the prize for the Most Outstanding Candidate Overall in the CSEC. Keondre is the second student in four years from St Joseph’s Academy to win this award.

Students from Guyana and Jamaica copped the other awards.

- **Daniel Baldeo-Thorne** of Queen’s College in Guyana received the award for Most Outstanding Candidate in Sciences;
- **Salma Majeed** of ISA Islamic School in Guyana copped the award for the Most Outstanding Candidate in Humanities; and
- **Rebekah Persaud** of St Roses High School, also in Guyana, received the award for Most Outstanding Candidate for Business Education.

Three Jamaican students received awards for outstanding performance in Visual Arts and Short Story.

- **Kae-Shanae Virgo** of Montego Bay High School received the prize for the Best Short Story in the English A examination with a story entitled “Betrayal”;
- **Okeen Wallace** of St Georges’ College copped the Best 3-Dimensional Visual Arts Award with a piece entitled “The Forest”; and
- **Danielle Gennard** of Wolmers’ Girls School received the award for the Best 2-Dimensional Visual Arts award for her creation entitled “Deal with the Devil”.

Mr. Rudolph Davis, principal of St Joseph Academy, Antigua was presented with the CSEC School of the Year award 2018.

The evening was a wonderful mixture of speeches interwoven with well-crafted entertainment including dance and instrumental music by a five-member band, a violin quartet and the acclaimed Rodney Small on steel pan. To conclude the evening, Ms. Aadilah Ali, the Most Outstanding Candidate Overall at CAPE offered the Vote of Thanks.

With a successful tour of St Vincent and the Grenadines completed, CXC is currently working on the 2019 event which will be held in the spice isle of Grenada! Who will be this year’s cohort? Time will tell.
Guyana’s Education Curriculum to undergo reform

Primary school Math curriculum first to be reformed
Reform pegged at US$6.03M

The Ministry of Education, through the Guyana Education Sector Improvement (GESIP) project, has conducted a series of consultation sessions across the country as part of efforts to reform the national curriculum. The Education Ministry towards this end ‘fanned out’ to various parts of the country to garner feedback and suggestions to aid in this process.

There have been consultations at Anna Regina in Essequibo and Bush Lot in the Ancient County of Berbice, Bartica, Mahdia, Kato and Paramakatoi.

The Integrated Curriculum Reform, which is pegged at some US$6.03 million is intended to improve student achievement at nursery, primary, and at lower secondary levels. This will be achieved by implementing a phased revision of the curriculum, defined not only as the content students are expected to learn in each subject and grade level, but also the way in which that content is taught. Emphasis will be placed on interactive, student-centred pedagogies, social inclusion and gender-informed approaches.

Additionally, the reform is intended to bring about continuous improvement in the education system, the reforms will be phased in by subject and level. This will be guided by an overall curriculum framework, each subject course outline will be revised; including revised teaching methods, assessments, and materials to be implemented in pilot schools.

The pilot schools will represent different regions of Guyana, including schools in hinterland regions and riverine areas; different levels of student preparation and academic performance; different sizes and mixes of grade levels; and schools with students with disabilities.

Additionally, the pilot schools will be randomly assigned from a sampling frame in selected regions to enable an impact evaluation.

The Ministry of Education (MoE) intends to draw on the experience of the pilot schools and feedback gathered will inform further revisions before the new subject curriculum is scaled up nationwide.

The first subject curriculum to be revised, piloted, and scaled up nationwide will be primary-level mathematics, in view of Guyana’s challenges in mathematics and the critical importance of improving early grade outcomes for students’ future success. The Project will then repeat the process for secondary-level mathematics and primary-level English followed in later years by secondary English and other subjects, as well as the nursery curriculum.

Added to those, the MoE curriculum reform will ensure coherence across subjects and levels. Further, to articulate the desired learning outcomes for each level, the development of a curriculum framework for the nursery, primary and lower secondary levels will be done. The framework will establish a vision of the ideal graduate from each level of the school system and a map for the subject-specific revisions of curriculum and pedagogy.

To augment this, training for MOE Staff on current best practices in curriculum writing, teaching methods, and teacher training, including cross-cutting dimensions such as social inclusion and gender-informed approaches will be done.

Additionally, teaching guides and course outlines for selected subjects for nursery, primary and lower secondary grades will be produced.
CXC Stakeholder Engagement

During the month of March, CXC was proud to participate in three events attended by hundreds of students, in Barbados and Jamaica. The aim was to arm candidates when they are at that pivotal decision-making stage with information to assist them in making subject choices and next steps towards their career goals.

Education, Career and Business Expo

The CXC team in Jamaica participated in the fourth staging of the Education, Career and Business Expo hosted by the Southaven Citizens’ Association (in partnership with the Yallahs High School and Alumni Association). The purpose of the Expo was geared towards a scholarship fund development for youth education within the Yallahs community and its environs.

Science and Technology Festival

The University of The West Indies, Cave Campus

The CXC team in Barbados was excited to manage a booth at the Science and Technology Festival at the University of The West Indies Cave Campus. With the theme “Discover the Joys and Wonders of Science” we engaged with scores of students who learnt about CXC’s product offerings!

13th Annual National Career Showcase

The Lloyd Erskine Sandiford Conference Centre, Barbados

CXC was a proud sponsor and participant at the 13th Annual National Career Showcase at the Lloyd Erskine Sandiford Conference Centre in Barbados. The event was themed “Embracing the Opportunity… Expanding Your Vision” and was hosted by the Barbados Association of Guidance Counsellors in collaboration with the Technical and Vocational Education and Training Council and Sandy Lane Charitable Trust.
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Mr Kwesi Marshall, joined the Finance & Office Management Department, effective March 1, 2019.

Mr Marshall, a senior financial management professional is a member of the Association of Chartered Certified Accountants, the Institute of Chartered Accountants of Barbados and possesses a General Practising Certificate from that institution. In addition, he is also a member of the Caribbean Corporate Governance Institute.

He has over fifteen (15) years expertise in the local, regional and international financial arena. Mr Marshall has extensive knowledge and application of International Financial Reporting Standards (IFRSs) and the application of International Standards on Auditing (ISAs).
CXC e-Certificates

CXC e-Certificates are here
Now yours to digitally share

By Tracy Moore

The Caribbean Examinations Council (CXC) becomes the first educational body in the Caribbean to use Blockchain technology to digitise its certification process — an achievement that has yet to be realized by any other academic institution in the region.

The rollout of the certificates on Blockchain will allow candidates, colleges, universities and prospective employers to access the certificates from any geographical location, without the need to send or present physical certificates.

All candidates graduating with Caribbean Advanced Proficiency Examination (CAPE), Caribbean Secondary Education Certificate (CSEC) and Caribbean Certificate of Secondary Level Competence (CCSLC) will now be able to share the credential of their certificates with future employers and higher education institutions around the world without any hassle.

CXC Registrar/CEO, Glenroy Cumberbatch, said, “Having started the pursuit for continuous innovation in education with our e-testing, online registration and so on for our students as well as our Information Systems Division which handles all the technology requirements of the Council, CXC stands on a strong foundation of technological platforms across its systems and processes and in following that legacy, CXC is now set for another precedent to adopt Blockchain in our critical certification process.”

Blockchain is a decentralized distributed digital ledger, which is collectively maintained by a network of computers. It can be visualized as a large ledger book shared among many people (members) who collectively keep the records. No data on the ledger can be modified by a single person without every other member of the ledger agreeing to the change. The ledger book is not stored in one place but is distributed among all the members, ensuring that no single person can tamper with the records, which is highly probable in a centralized database. This makes Blockchain hugely secure.

“Students can now simply share their certificates with prospective employers and tertiary educational institutes for instant verification in a highly secure environment. While the adoption of Blockchain technology is still very young in the education industry, we believe it can help make the education system in the region more dependable and trustworthy so this is truly groundbreaking for us in the region, and particularly for our students,” Mr Cumberbatch further added.

This process was made possible when CXC collaborated with Learning Machine in June 2018 to develop this open-source standard for Blockchain-based records for Caribbean students.

Kausar N. Samli, Learning Machine Senior Vice President of Global Services, said, “CXC is among an elite group of institutions that are leading the charge globally for the issuance of secure, portable, and shareable digital credentials. CXC is now building upon last fall’s successful launch of Blockcerts (or Blockchain-based credentials) for issuance of official student records. From this March, the next batch of students will be receiving Blockcerts that will empower them with individual ownership of their official records in a digital format that is portable and easily shareable.”

Tracy Moore
is a Corporate Communications Consultant at CXC

www.cxc.org JANUARY–MARCH 2019 15
Universities, Colleges and Employers’ Guide to e-Certificate verification

By Tracy Moore

**Employers, Colleges, or Universities** as you seek for the best possible candidate, the Caribbean Examination Council (CXC) is providing candidates with e-Certificates across the region that will allow you to access valid certificates just by the touch of a button.

Because candidates will be able to access digital versions of their certificates quickly, you as a potential employer, can easily validate it online immediately and securely. This process is free, does not require a login and provides employers with trust in the authenticity of CXC’s candidates’ achievements.

CXC partnered with Learning Machine, a Cambridge-based software company, in June 2018 to develop the open-source standard for block chain-based records for Caribbean students.

**How it works:**
The app anchors the digital files on the block chain, which works like a spreadsheet accessible to a global network of computers and holds millions of lines of encrypted transactions. For e-Certificates, they transmit credentials from school to student. The transactions are verified in batches (or blocks) by having computers solve mathematical puzzles. Then the blocks are added to the chain, where they are accessible to the entire network but encrypted to keep their contents secure.

The idea is to let students securely store and share their certificates, and allow employers, as well as Colleges and Universities, to immediately verify them.

**For verifiers: What do you need to know**
For Colleges, Universities and Employers, CXC e-Certificates adds value to YOU because verification of records now only requires a mobile device or web browser and it's:
- Instant
- Free
- Globally Accessible

The verification process answers questions about the certificate’s integrity and validity:
- Is the certificate the same as when the issuer issued it? (i.e. how do I know it wasn’t tampered with?)
- Was the certificate revoked?

The verification process ensures that the certificate you see wasn’t tampered with by comparing hashes* with what is registered on the block chain.

*Note: A hash is a function that converts an input of letters and numbers into an encrypted output of a fixed length. A hash is created using an algorithm and is essential.

CXC e-Certificates will be offered for the Caribbean Advanced Proficiency Exam (CAPE®), Caribbean Secondary Education Certificate (CSEC®) and Caribbean Certificate of Secondary Level Competence (CCSLC®).

Learn more about CXC e-Certificates here
CXC E-Certificates - What you need to know.
NEW MODEL for Teacher Orientation Workshops

By Jodine Williams

The Caribbean Examination Council (CXC®) has maintained its commitment to ensure that teachers are apprised of the changes made to new and revised syllabuses. Over the years the Council has partnered with Ministries of Education across the region to facilitate face-to-face Teacher Orientation Workshops in Antigua and Barbuda, Barbados, Belize, Guyana, Jamaica and Trinidad and Tobago.

However, at the last meeting of the Sub-Committee of the School Examinations Committee (SUBSEC) in October 2018, approval was granted for Teacher Orientation Workshops (TOWs) to be conducted online through the CXC® Learning Institute, the training arm of the CXC®.

Effective 2019 the CXC® Learning Institute will facilitate TOWs for newly developed or recently revised syllabuses using a combination of synchronous and asynchronous modalities. These will be done online through scheduled live sessions during the last two weeks of June each year.

The sessions are designed to orient teachers to the requirements of the syllabuses which will be augmented by training resources that may be accessed by teachers on demand. The schedule will be shared with regional Ministries of Education by the 30 April 2019 and will detail the times and dates for the live workshops. With this approach, CXC® hopes to increase the number of teachers accessing workshop sessions as well as resources that will better equip them to implement its syllabuses.

To ensure a smooth transition from face-to-face to online TOWs, the CXC® will begin online sensitisation and training of stakeholders via the new and innovative CXC® Learning Institute Platform.

TOWs are critical for the smooth implementation and assessment of the syllabuses and improved teacher efficacy. The Council recognises that the partnership to provide teacher orientation and training has been beneficial and has resulted in the successful staging of a number of training initiatives. In this regard, CXC® wishes to assure all stakeholders that the Council remains committed to this process and are anticipating that through continued partnership more teachers will be empowered through this new model.

Effective 2019 the CXC® Learning Institute will facilitate TOWs for newly developed or recently revised syllabuses using a combination of synchronous and asynchronous modalities.

Jodine Williams is Senior Manager, Syllabus and Curriculum Development Department at CXC’s Western Zone Office in Jamaica
Recently, PVC Prof. Alan Cobley presented “The Report of the CXC Task Force on History: Findings, Recommendations and Proposed Action Plan” at a History Forum of the University of the West Indies Cave Hill Campus to review the evidence on the state of History as a CXC subject offering in the Caribbean region. This was to identify the reasons for its perceived decline, and to offer recommendations for its revival.

The Task Force found that the decline in History in the region was due to several major factors including:

- The perception that History is irrelevant for the purpose of employment in the 21st century and;
- History is a hard subject; several other subjects were less challenging and/or more relevant to study.

The Task Force also found that incorporating History into Social Studies at the primary and lower secondary school levels had a long-term negative effect, while at the CXC level, the curriculum designed over many years had steadily increased privileged content over skills, resulting in too much unimaginative and unengaging teaching.

Now that we have the findings, what’s next? Up-coming Activities/Next Steps emanating from the recommendations of the CXC Task Force on History:

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<tr>
<th>DATE</th>
<th>ACTIVITY</th>
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<tr>
<td>TUESDAY, 30 APRIL</td>
<td>Meeting with regional History curriculum officers</td>
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<tr>
<td>DURING THE MONTH OF APRIL</td>
<td>Consultations with CSEC and CAPE History teachers in Barbados, Belize, British Virgin Islands, Grenada, Guyana, Jamaica, Trinidad and Tobago, and St Lucia</td>
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<tr>
<td>MAY</td>
<td>History Task Force/working group meeting</td>
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<tr>
<td>SEPTEMBER TO DECEMBER</td>
<td>Online workshops for CSEC and CAPE History teachers</td>
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<tr>
<td>2019 – ONWARDS</td>
<td>The availability of resource materials for teachers and learners via the CXC Learning Hub</td>
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GvP School received Quality in Education Certification with the full implementation of CXC programmes

The Gwendoline van Putten (GvP) School, which is the sole secondary and vocational school in St. Eustatius, recently received its Basic Quality in Education certification from the Dutch Ministry of Education.

For the past six years, from 2013 until now, the school has been busy with the implementation of the Caribbean Examinations Council (CXC) educational programme while simultaneously phasing out the Dutch education system. And in the past four years GvP has been the only school in the Dutch Caribbean successfully implementing two completely different educational systems simultaneously.

According to the school principal Rosalie Edelstein, this coming school year will hopefully be the last graduates of the Dutch education system.

She said, “Every change is a process and its calls for a mind-shift, flexibility and the ability to move away from one’s comfort zone to achieve growth both on a professional and a personal level,” Edelstein said. The change, she explained, is only possible with the cooperation of all stakeholders involved because this significant milestone was achieved with the effort and support of the GvP school board, management team, both local and regional stakeholders, students as well as the parents.

“It took some time to get ourselves acquainted with the student-centred approach that characterised the new Caribbean Educational system that we have ventured into,” she added.

Despite the challenges that the GvP management and staff have encountered during the transition phase, Edelstein said that the school was proud to announce that they have reached their goals and that GvP School now heads full force to full implementation of the CXC programme.

“This year our fourth form students were introduced to their first CVQ (Caribbean Vocational Qualification, Ed) and CSEC (Caribbean Secondary Education Certificate) programmes, which opens for them a new world with new experiences, while our third form students are getting prepared to sit for their CCSLC (Caribbean Certificate of Secondary Level Competence) Exit Exams in June 2019.

“Every great achievement is but a small peak in the mountain range of contributions. One of our greatest achievement as a small school community has been that we have managed to take the diversity and variety of our people from different backgrounds and turned all of the into unity,” said Edelstein.
CXC/NCU SIGNS MOU
CXC Associate Degree (CXC®-AD)

By Tracy Moore

The Caribbean Examinations Council (CXC) and the Northern Caribbean University (NCU) signed a Memorandum of Understanding (MOU) on April 1, 2019 that will facilitate working collaboratively to ensure advanced standing to prospective candidates who present the CXC Associate Degree (CXC®-AD).

On the occasion, Registrar/CEO Glenroy Cumberbatch said, “This is a major milestone and an amazing accomplishment as we continue to work with institutions across the region to increase access to higher education for our learners. This comes after a number of meetings to review the CXC®-AD and to seek recognition of the CXC®-AD as a higher education qualification. I would like to recognise and thank all staff who participated in this exercise. This is part of CXC’s efforts to increase access to affordable higher education opportunities for Caribbean learners”.

In 2018, conversations began with a number of institutions across the region. In October 2018, the Sub-Committee of the School Examinations Committee (SUBSEC) approved the revised CXC®-AD Handbook. Subsequent to approval, the Council signed letters of intent with tertiary institutions in the region including the NCU, as well as the University of the Southern Caribbean (USC) and the College of Agriculture, Science and Education (CASE). In addition, the University of the West Indies (UWI) indicated its intention to award students with specified CXC®-ADs with advanced standing.

In December 2018, members of the Syllabus and Curriculum Development team participated in a curriculum mapping exercise with the NCU that led to the identification of a number of programmes offered by the NCU for which candidates presenting the CXC®-AD would be given advanced standing. That meant that candidates entering certain programmes could receive up to two years off for their bachelor’s degrees.

NCU is a private, liberal-arts institution, located in Jamaica. It is owned and operated by the Jamaica Union Conference and the Atlantic Caribbean Union Mission of Seventh-day Adventists (comprising the territories of the Bahamas, Cayman Islands and the Turks and Caicos Islands).

The CXC®-AD creates the ideal foundation that will make allowances for candidates to be credited for up to two years when seeking admissions to a four-year degree programme; and one year for a three-year degree programme.

Mr Cumberbatch further added that, “The CXC®-AD is one of the ways CXC is seeking to meet the changing demands of our stakeholders. We anticipate that with the CXC®-AD, more candidates will be able to access tertiary level education and transition to further studies or to the world of work. The Council continues to engage tertiary institutions across the region to improve awareness and encourage greater recognition of the CXC®-AD. This will be based on the alignment of the respective CXC®-AD to the institutions’ offerings. This exciting undertaking will continue throughout 2019 and beyond as the Council seeks to collaborate with institutions, equivalency boards and accreditation bodies to improve the recognition and opportunities afforded candidates who are awarded the CXC®-AD”.

For more information on CXC Associate degrees, please visit us at https://www.cxc.org/examinations/cxc-associate-degrees/
The Caribbean Examinations Council® (CXC®) arrived at the decision to award the Caribbean Examinations Council® (CXC®) Associate Degree (CXC®-AD) in December 2004 in response to the changing educational demands of the region. This award, now issued at Level IV on the CXC® Qualification Structure (CXC®-QS), empowers the learner to select subjects that will meet specific requirements for work and further education.

The number of credits required for the award of associate degrees typically range from 60 to 90 credits. According to the second edition of the “Procedures and Guidelines for the Regional Mechanism for Accreditation, Equivalency and Articulation” (May 2000), compiled by the Tertiary Level Institutions Unit of the University of the West Indies and published by the Association of Caribbean Tertiary Institutions (ACTI), persons must complete at least 60–70 credits to meet the requirements for an associate degree. However, in the United States requirements for an associate degree generally range from 60 to 90 credits.

The CXC®-AD was carefully benchmarked against these regional and international stipulations and is quality assured from the design of the syllabus through to the approval of the award. The award is built on a solid foundation. This foundation is the Caribbean Advanced Proficiency Examination® (CAPE®). CAPE® has, over the years, gained significant recognition from universities and colleges in the region and in other countries including Canada, the United States, United Kingdom and India.

The award has gone through three revisions. The first was in 2014, then in 2015 and the most recent being in 2018. This revised approach to the offering of the CXC® Associate Degree has improved its relevance as we continue to meet the needs of the region’s students and labour force. With the 2018 revision, the configuration of the award structure was amended for better alignment to the University Council of Jamaica (UCJ) Tertiary Qualification Framework (TQF), where the courses were categorised as General Education Courses, Core Courses and Electives. The General Education Courses are compulsory; the Major or Core Specialisation Courses are based on the areas of specialisation; Adjunct or Supporting Courses complement or enhance the value of the major or core specialization while the Electives may be selected based on personal interest and self-development from CAPE® subjects not included in the other components.

Candidates who earn Grades I to V in clusters of ten CAPE® units are eligible for the award provided that the units are selected in accordance with the specifications for the award and accumulated over a maximum period of five years. The cluster of ten units is equivalent to 100 CXC® credit hours, which is equivalent to 60 credits on the TQF as each CAPE® Unit accounts for a maximum of six credits. The revised CXC®-AD Handbook, which gained governance approval in October 2018, now makes provision for the acceptance of CAPE® Pure and Applied Mathematics Units in lieu of CAPE® Integrated Mathematics as a General Education Course.

### Areas of Specialisation for the CXC®-AD

Persons seeking to earn the CXC®-AD may opt to pursue studies in one of the 21 specialisations as shown in Table 1.1. CXC® offers Associate of Arts degrees in 12 different specialisations and Associate of Science degrees in nine specialisations. These areas of specialisation will be expanded to include newly developed CAPE® subjects. At present there are two CAPE® syllabuses under development, namely Design and Technology and Bio-Technology. Once these syllabuses obtain governance approval, the CXC®-AD offerings will be updated to include them.

### Course Selection

Candidates must acquire the relevant knowledge, skills and attitudes in the prescribed ten CAPE® units, which must be selected from the four bands as shown in the table below.

For example, a candidate desirous of receiving the award in Visual Communication, Option 1, will be required to complete the three General Education Courses, two Adjunct or Supporting Courses, one from the Humanities and Fine Arts listing and one from the Social and Behavioural Science listing or the Natural Physical Sciences and Technology listing. The candidate would also be required to complete the Core Courses and an Elective as shown in the table below.

In the example presented above, while this candidate’s course selection is consistent with the requirements of the

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<th>ASSOCIATE OF ARTS</th>
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<td>Modern Languages</td>
<td>Sociology</td>
</tr>
<tr>
<td>Performing Arts</td>
<td>Natural Sciences</td>
</tr>
<tr>
<td>Logistics and Supply Chain Operations</td>
<td>Visual Communication</td>
</tr>
<tr>
<td>Tourism Studies</td>
<td>Sports Studies</td>
</tr>
</tbody>
</table>

Table 1.1: Areas of Specialisation for the CXC® Associate Degrees (2018)
The CXC® Associate Degree

CXC®-AD, other subject clusters could have been pursued. For example, for the Adjunct or Supporting Courses, the candidate could have selected History or Performing Arts Unit 1 or 2 along with Environmental Studies or Information Technology or Sociology Unit 1 or 2. The candidate would then be required to select one unit as an Elective. Candidates may also elect to study one unit of Applied or Pure Mathematics in lieu of Integrated Mathematics. Candidates are encouraged to select electives that best complement the area of study and which are most valuable in advancing their chosen vocation.

Articulation
The Council works closely with colleges and universities to identify equivalencies in programmes so that persons with CXC® Associate Degrees will be at an advantage when entering other degree programmes. This is necessary in order to facilitate the transfer of credits and to increase the opportunities for more persons to obtain tertiary education through collaborative and cost-effective strategies. Currently, there are existing articulation agreements with Berkeley College, University of South Florida (USF), Monroe College, SUNY-Plattsburgh, Ogletorpe University, Johnson and Wales and a Memorandum of Understanding with Illinois Institute of Technology.

Additionally, the Council has secured preliminary commitments from tertiary institutions in the region including the Northern Caribbean University (NCU), The University of the West Indies (UWI), University of the Southern Caribbean (USC) and the College of Agriculture, Science and Education (CASE). These, along with other institutions, are working collaboratively with the Council’s Syllabus and Curriculum Development Team to ensure that as early as September 2019 they will be able to offer prospective students who present the CXC®- AD advanced standing. This will be based on the alignment of the respective CXC®-AD to the institutions’ offerings. This exciting undertaking will continue throughout 2019 and beyond as the Council seeks to collaborate with institutions, equivalency boards and accreditation bodies to improve the recognition and opportunities afforded students who are awarded the CXC®-AD. The 2018 revision of the CXC®-AD has created the ideal foundation that will make allowances for students to be credited for up to two years when seeking admissions to a four-year degree programme, and one year for a three-year degree programme.

Registration Arrangements
Candidates who are desirous of being issued the award must select the CXC®-AD of their choice when registering for the final set of CAPE® units.

Conclusion
The CXC®-AD is one of the avenues through which the Caribbean Examinations Council is seeking to meet the changing demands of our stakeholders. It is anticipated that more of our students will be able to access tertiary level education and transition to further studies or to the world of work.

Full details on the revised CXC®-AD are available in the CXC® Associate Degrees Handbook, Revised 2018, on CXC’s website, www.cxc.org.

<table>
<thead>
<tr>
<th>General Education Courses (Compulsory)</th>
<th>Core Courses (Based on Specialisation)</th>
<th>Adjunct/Supporting Courses</th>
<th>Elective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caribbean Studies – one-unit CAPE® course</td>
<td>Integrated Mathematics – one-unit CAPE® course</td>
<td>At least 2 single units can be chosen from any of the CAPE® options based on the following categories:</td>
<td>A single unit can be chosen from any CAPE® options not included in the General Education, Adjunct/ Supporting or Core Course Requirements.</td>
</tr>
<tr>
<td>Communication Studies – one-unit CAPE® course</td>
<td>At least four CAPE® units relevant to their area of specialisation.</td>
<td>See OPTION 1 for CAPE® Listing</td>
<td></td>
</tr>
</tbody>
</table>

Note: Candidates pursuing the CXC® Associate Degree in Mathematics or pursuing Pure and Applied Mathematics Unit 1 OR Unit 2 are not required to do Integrated Mathematics. However, these candidates will be required to do THREE Adjunct/Supporting Courses to meet the requirements to be issued with the CXC®-AD. One Unit must be selected from each of the categories in the Adjunct/Supporting Course listing.

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The EU General Data Protection Regulation and the Blockchain

The Blockchain: Data Protection by Design and Default  
By Natalie Smolenski
All together, the GDPR could be considered a “Digital Declaration of Rights.” In listing the detailed requirements by which any institution or individual that processes personal data must abide, it places limits on the power of “digital states”—software platforms—and those who make use of them. By doing so, it reflects a commitment to many of the principles of digital self-sovereignty articulated by Christopher Allen in an influential 2016 essay. However, the GDPR also takes for granted centralized models of digital data storage and transmission that are now in the process of being replaced by newer ones based on distributed ledger technologies, most prominently blockchains. Blockchains get us closer than ever before to modes of digital identity in which the user is the primary owner of their data.

Centralized models of data storage rely on the implicit premise that custodians of information are trustworthy actors with a mandate to steward personal data. Blockchains, however, were designed in light of the frequent failure of even the best-intentioned centralized authorities to live up to their promise as stewards of the public trust. Accordingly, blockchains were built to function in a “trustless” environment—that is, one in which people can transact directly with one another without needing to trust any other actor in the ecosystem. This is why blockchains are not only decentralized but distributed—none of the nodes in the network running a blockchain protocol acts as an authority over others. A structure of incentives mediated by unidirectional cryptography ensures the integrity of a ledger of transactions that is shared by all the nodes, without relying on human beings to come to consensus. In short, math, executed and validated by a network of computers, functions as a substitute for middlemen.

Not only does the blockchain remove the need to trust a centralized authority in order to keep an accurate record of activity, but it makes surveillance of activity extremely difficult. There are many different types of blockchains out in the world today, but the Bitcoin blockchain, the world’s largest and most secure blockchain, was designed with pseudonymity and data minimization built in. All it records are the following pieces of data:

- The public key of the transaction sender
- The public key of the transaction recipient
- A cryptographic hash of the transaction content
  (This could be anything: a land title, a birth certificate, an academic diploma, a copyright, an article of clothing, currency, a quantity of precious metal, etc.)

Blockchain Applications: Centralization All Over Again?

The Bitcoin blockchain was built with the intention that each individual transacting on it would own their own blockchain “address”—that is, their public and private keys. This makes individuals the true owners of their personal data, which they can transport and present for verification wherever they need to. However, management of one’s own keys is far from an intuitive process. And the stakes are high: if a private key is lost or stolen, all of the data it owns is gone as well. For this reason, many applications that write transactions to the blockchain don’t give users their own keys. Rather, they function as new centralized authorities; they write transactions to the blockchain using their own keys. While appearing convenient for the user, this strategy has three broad implications:

- **Uncertain identity:** Without proof of ownership, identity verification (i.e. making sure the person presenting a blockchain transaction is the one who really received it) continues to be insecure.
- **No longevity:** If these centralized blockchain applications go away, the individual has the same problem they would have had if a traditional centralized software platform (like Facebook or their University account) disappears: their data is gone.
- **Vendor/Issuer Dependence:** The recipient of blockchain transactions is in a new relationship of dependence: now with the application provider (usually a software vendor, but it could also be an issuing institution).

In other words, many of the applications that use the blockchain are still functioning from the centralized authority model whose overreach the EU General Data Protection Regulation was designed to reign in. Some applications, however, hew very closely to the original promise of the blockchain for self-sovereign digital identity—a promise whose values are echoed in the GDPR legislation.

**Blockcerts: Beyond GDPR Compliance**

In order to achieve wide adoption as a consumer-facing technology, key management must be radically simplified and mediated through an intuitive user experience. The Blockcerts Wallet (iOS and Android) is an example of an application that manages users’ public and private keys in a way that allows them to independently receive official records anchored to the blockchain. It doesn’t rely on centralization to achieve this: the app and the data it stores are not owned by any vendor or issuing institution, which means there is no centralized honeypot for attackers. It is also fully open source, so anyone can inspect the code and confirm that it meets the highest security standards, or build their own versions of the app.

Blockcerts allows for issuing official records to the blockchain in a common, machine-readable format (JSON-LD). By using an open technology standard, Blockcerts also solves for maximum portability and interoperability of official records: recipients can take them anywhere in the world, and any organization can verify their authenticity and their ownership by the individual presenting them.

The issuing institution may choose to retain copies of issued certificate files in their own database, in which case they will need to protect them under the auspices of the GDPR, along with any other recipient data they choose to store. But Blockcerts recipients can rest assured that for the first time, they have vendor-independent, authentic digital documents which they own directly. And because they are written to a maximally-secure blockchain using an open standard, they have them for life and can verify them anywhere in the world.

The blockchain represents the opportunity to not only fulfill but go beyond the promise of the European General Data Protection Regulation. While not all applications that write transactions to the blockchain achieve this promise, some, like the Blockcerts open standard, do—and those will be at the forefront of digital privacy and self-sovereignty for years to come.

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**Except taken from Learning Machine, The EU General Data Protection Regulation and the Blockchain**

**Written by Natalie Smolenski, Cultural Anthropologist & Business Development at Learning Machine.**

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