Three college boys used to dream about building an electric car. Since their dormitory days at NCKU, the trio have come a long way. They were persistent in the pursuit of their dream and managed to draw 30 like-minded classmates into joining their team “NCKU Formula Students” in the Formula SAE competition that was held in Shizuoka, Japan in September 2019. After the competition, the team returned to Taiwan and joined forces with NCKU’s department of mechanical engineering student-formed racing team “NCKUME Racing” to form the “NCKU Formula Racing” team, which currently has 55 members strong. The newly formed team will endeavor to reach new heights in the 2020 competition.

Guan Wei Chiao, the captain of the “2020 Formula SAE, Here we come!” team is confident that their combined efforts and past experience will up their game and enable them to do even better in the 2020 competition.

Turning back the clock two years when Ting-Kai Chou from the Department of Engineering Tzu Hsiang Lin and Yu Xiang Zhuang from the Department of Mechanical Engineering matriculated at NCKU in the 109th class, the trio were immediately cognizant of the learning advantages afforded to them at NCKU and were confident that they would graduate from NCKU with much gained. While in pursuit of their dream of building an electric car, they actively engaged in critical thought, discussions, and club activities until their vague ideas gradually came into focus. They formed a six-person group and created a very simple three-wheeler electric car. In 2018, the group put their creation to the test in a national competition for electric car demos. Despite their less-than-stellar performance, the team was resolved to overcome their failures and set their eyes on the Formula SAE competition.
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The Formula SAE competition requires that all participating teams to imagine themselves as electric car companies and design and build a small-sized formula racecar. Teams are also required to submit design, cost analysis, and business reports, forcing each team to work across disciplines.

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Not long after, Ting-Kai Chou, Tzu Hsiang Lin, and Yu Xiang Zhuang began to ramp up their recruitment efforts, even going as far as visiting classrooms with students from different years and asking the instructors to give them a few minutes at the beginning of class to announce that they were recruiting. They had their own booth at the university club and activities fair and passed out fliers and pamphlets to share their vision. Students from 11 different departments responded to their call, and together they formed the “NCKU Formula Students” team. At the Formula SAE 2019 competition in Japan, the team succeeded in building an electric car with a top speed of 100 kmph. The team’s market and cost analysis reports won them an award for “Best Business Model”.

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After the competition, the team returned to Taiwan and combined with NCKUME Racing team from the department of mechanical engineering, the aspirations of which align with that of NCKU Formula Students. The combined team, now named NCKU Formula Racing team, have already begun preparations for Formula SAE 2020.

The Formula SAE is a student engineering competition held by the globally active Society of Automotive Engineers. Currently, there are 15 regional competitions around the world with around 800 or so teams participating. The 2019 Asia regional competition in Japan had 98 teams show up of which 27 teams were for electric cars. Current competition regulations limit one team per university.
At the Formula SAE 2019 competition in Japan
NCKU Launches Weather Balloon to Gauge Air Pollution

NCKU Press Center

On January 5th, Associate Professor Alfred B. Chen from the NCKU’s Institute of Space and Plasma Science led a team of nine students in launching two weather balloons equipped with apparatuses weighing one to two kilograms from the NCKU campus. One balloon will track the impact of air pollution in Tainan being brought in by high altitude winds while the other balloon will track the changes in ultraviolet light intensity and ozone density at different altitudes.

The two weather balloons were actually final projects for the “Space and Astronomical Apparatus Development” course at the institute. Nine students conducted their experiments in two groups.

The first weather balloon primarily gauges the effects brought on by air pollution in Tainan which is carried in by high altitude winds. The balloon will take one atmospheric sample once every 3, 5, and 8 kilometers traveled. After the sample has been collected, the mission payload will detach from the balloon via a small blast.
Nine students conducted their experiments in two groups

The second balloon has been fitted with an ozone detector and a UV ray probe. The research objective is to monitor the changes in ozone density and UV ray intensity at multiple altitudes. Data received from the balloon in transit will be simultaneously analyzed upon receipt.

Alfred B. Chen expressed that compared to sounding rockets or man-made satellites, weather balloons are safer, have lower research costs, higher flexibility, shorter mission periods, and are recyclable among other advantages. Conducting experiments with these balloons on a university campus does not endanger public safety. In Taiwan, NCKU is the only university that offers a course where students are allowed to launch weather balloon experiments.

The two weather balloons were actually final projects for the “Space and Astronomical Apparatus Development” course at the institute.
EmedIC Global 2019  NCKU Department of Medical-Engineering Students Win Gold

NCKU Press Center

The research and development of innovative medical technology and medical equipment has gradually attracted social attention in recent years. Students from the Department of Medical Engineering of Success University put their knowledge into action and organized a team to go to Singapore to participate in the "EmedIC Global 2019"—a competition organized by Zhou Yuhao's Innovative Medical Technology Center. "Periodontal Healthcare" won the only gold award for research and development. Another group of excellent works was developing an app and joining ABA therapy to train autistic children to recognize emotions and respond correctly to others' emotions.

The Engineering Medical Innovation Competition (EMedIC) Global is a global challenge in which teams of university students. The EMedIC Global was first organized in 2016 in Hong Kong; its second competition was organized and held in 2017 in Taipei and last year in 2018, it was again held in Hong Kong. had attracted students from China, Singapore, Switzerland, Taiwan and USA. This year, the competition was held in Singapore.had attracted students from fifteen countrys, about forty excellent students'group ,this competition is fierce.
Gold-winning team has three members. Captain Tina Zhuo is the UI designer, Jessica Li is responsible for software design and market analysis, and Jeff Huang is responsible for hardware and 3D model design. The whole process is to give a briefing in English and accept the inquiry. The main goal of this technology is to develop a light oral care sheath set. Use electric toothbrush brush heads, near-infrared light probes, and ultraviolet light probes to clean and periodontal teeth for simple home inspection. The goal of oral health and care is to reduce periodontal disease and oral bacteria growth.

This set of oral care electric toothbrush kits includes electric brush heads, near-infrared (NIR) probes, ultraviolet (UV) probes, and grips with built-in low-power Bluetooth transmission modules and wireless charging modules. Wireless charging tray. Not only can the near-infrared light discriminate the oxygenated heme and deoxyheme concentrations, and the characteristics of the heme concentration in the inflamed area, but the near-infrared light source and receiver can detect whether there is a potential period of inflammation or the initial period Inflammation to facilitate early diagnosis and timely treatment; at the same time installing a corresponding APP on the smart phone can record data, user segmentation, calculation, judgment, prediction, and automatic appointment of dentist.

Tina said, in addition to the design and theoretical basis with universal needs, the reason for winning the competition is to be able to propose a market assessment. A work from scratch, from idea to entity, can experience a step-by-step problem solving process, and learn to organize a team, integrate opinions, and then produce a work. The ultimate goal of the competition is to be able to actually use the work in the medical field, taking into account its feasibility and market size. Faced with Taiwan, where biomedical related industries are booming, this is a very good training and learning opportunity.

As for the product ideas that have achieved good work, the most commonly used therapy for autism is behavioral analysis. However, the current treatment methods can easily make autistic children lose patience. At the same time, studies have shown that autistic children have 3C products It ’s more interesting. Although there are many apps developed for autistic children on the market, they are rarely dedicated to emotional recognition. Therefore, this product is mainly to develop an APP and add ABA therapy to train children with autism to identify emotions and respond correctly to the emotions of others.
NCKU Holds Benefit Concert for Sufferers of Epidermolysis Bullosa

NCKU Press Center

Epidermolysis Bullosa is a rare genetic condition that causes skin diseases and ulcerations. Those who have this condition are bound to a life of perpetual open wounds and endless amounts of gauze. NCKU has been a long-time investor in the research and development of the condition and its treatments. In order to bring more awareness to the condition, NCKU held a benefit concert in January 2020. Even international professional tennis player Hsieh Su-wei, who normally does not engage in celebrity endorsement activities, shot a charity commercial as a way to support the cause. NCKU hopes that through these efforts more people can come to learn about those suffering from epidermolysis bullosa.

The “Love and Scars” benefit concert was held on January 3rd and 5th in National Taichung Theater and National Kaohsiung Center for the Arts – Weiwuying, respectively. All proceeds from the concerts were donated to the Taiwan Epidermolysis Bullosa Patient Association. Through the multiple mediums of storytelling and music, NCKU hoped that music aficionados would share the love they have more music with those affected by epidermolysis bullosa.

Ms. Li, an epidermolysis bullosa patient, explained that sufferers develop blisters on the skin with even the slightest of abrasions. Once the blister bursts, it turns into a damp ulcer. This happens many times. The wound is painful, itchy, and can bleed from excessive scratching. These blisters can also appear in the mouth cavity which would inhibit swallowing and lead to malnutrition. The body’s internal mucous membrane linings could also be damaged and negatively affect the immune system as a result. In addition to tangible wounds, sufferers of epidermolysis bullosa are often susceptible to unwanted stares and verbal harassment. Living with this condition since childhood,
Ms. Li assured that growing up there was no shortage of these. She pointed out that sufferers do not need your pity or sympathy but rather your genuine concern for their well-being.

Ms. Li, an epidermolysis bullosa patient, explained that sufferers develop blisters on the skin with even the slightest of abrasions.

The chairman of the NCKU International Center for Wound Repair and Regeneration Ming-Jer Tang expressed that epidermolysis bullosa is more commonly known as a genetic skin condition causing blisters on the surface of skin. One in five people suffer from epidermolysis bullosa. In Taichung, there are only 100 or so of these patients which makes them one of the most disadvantaged groups in society.

The patient’s epidermis on their skin, inside their mouth cavity or digestive tract are abnormally fragile. Any abrasion, no matter how light, will cause the epidermis to form blisters and open wounds. More severe sufferers are susceptible to skin cancer as adults. Sufferers have to spend countless hours dressing their wounds every day. Special wound dressings are costly and economically burdensome to sufferers, driving them to resort to home remedies which only exacerbate their condition.
Modern medicine currently does not yet have any method of fully curing epidermolysis bullosa. NCKU’s medical research team is working in tandem with international research efforts to investigate the gene that causes this condition in hopes of better understanding how to diagnose and treat epidermolysis bullosa. Moreover, the collaboration endeavors to create a genetic database and consultations as a base for preventative measures in parallel with strengthening care training and social support systems.