

教育目標

1. 提昇水土保持理論、技術與實務應用：因應全球氣候變遷、坡地防災管理、生態保育之方向，教學與研究並重，以跨領域基礎科學為根基，強調農藝、植生、工程之專業為方法，建立水土保持專業學術與科技。
2. 培養團隊合作精神與溝通協調整合能力：因應水土保持領域持續擴大，除強化師資陣容外，並加強產官學合作、培養專業之研究及領導人才，擴大相關領域影響面。
3. 加強全民水土資源保育教育：研擬水土資源保育政策方針，協助解決坡地保育利用之技術與法規問題，期能有效減免或防止水土資源不當利用所造成之危害，增進國民福祉，促進永續發展。
4. 培養具獨立思考、創新與實作能力：加速培養學生紮實專業知識，訓練實作技能，誘發研究潛能，使其能在時代驟變的環境下，俱獨立思考與創新突破的能力。
5. 建立多元價值與國際觀：加強國內外學術交流與合作，藉以和全球各大學在應用科學、工程實務、科技研發等領域接軌，並成為亞太地區坡地保育研究中心。

課程規劃

以培養水土保持專業人才為目標，並針對水土保持必備的基本專業知識、法律及實務的應用等進行規劃，更增加產學合作之機會以及推廣水土保持：

1. 大學部增加實習課程，與工程顧問公司及技師事務所合作，增加學生實務經驗，研究生亦可參與研究計畫，學以致用。
2. 碩士在職專班提供相關工作人員進修的空間，並針對實務所需增加專業知識。
3. 審查水土保持計畫書、配合縣市政府參與水土保持服務團、提供水土保持相關法規諮詢、協助進行水土保持申報之相關事務。
4. 協助政府單位辦理教育宣導業務及水土保持義工訓練，鼓勵社會大眾參與水土保持尖兵的行列。
5. 配合相關單位，如：水土保持局、林務局、水利局、地質調查所、中華水土保持學會等，辦理研討會及參訪活動，積極推廣保育水土護資源。



▲上圖為惠蓀林場堰塞壩潰壩試驗場域
The photo shows a landslide dam breaching test in Huisun Forest station

主要研究領域

1. 氣象、水文分析與預測
2. 野溪治理、河道輸砂、河相學、地形變遷
3. 土壤沖蝕防治
4. 自然災害防治、集水區整體治理規劃
5. 崩塌地防治工程、地球物理探勘、環境地質
6. 植生景觀綠化、生態保育及生態工程
7. 沙塵暴與海岸防風定砂工程
8. 土石流災害研究與防治、地質災害
9. 遙測與地理資訊系統整合應用研究
10. 環境資源管理及災害預警及監測
11. 水土保持相關法規
12. 其他突發性之水土災害問題研究

教研成果

本系位處水土災害頻繁及資源豐富之台灣中部，具有進行教學研究時之地理位置優勢。並配合政府政策、科技部防災治理保育議題，申請相關研究經費補助。本系之空間有水保一館、二館等，依領域需求及教師專長分別設置各類型實驗室，並配備各種最新儀器與設備。如水文氣象實驗室、測量儀器室、植生工程實驗室、坡地泥砂災害控制實驗室、防砂工程實驗室、人工降雨實驗室、土岩力學實驗室、風洞實驗室、沖蝕實驗室、環境復育實驗室及電腦教室等，並擁有數座大型水槽、風洞、邊坡物理模型等貴重設備，另有惠蓀林場堰塞壩潰壩試驗場址，使本系研究成果豐碩，且具有國際知名度。

Mission

1. To promote theories, technologies and applications of soil and water conservation.
 - To conduct research, teaching and developing new technologies are based on fundamental science. To deal with the disturbance of the global climate change, disaster mitigation and ecological conservation, the objectives target on the specialized treatments of engineering work, vegetation work and farmland erosion control using soil and water concepts.
2. To training students in teamwork, coordination and integration.
 - In addition to focusing on soil and water conservation study, the SWC Dept. continues to hire new faculties, increase relationships with industry, and train graduates in advanced research and leadership abilities.
3. To improve the public's knowledge of soil and water resources conservation.
 - The SWC Dept. develops policies for resources conservation, resolve the technical and law related problems associated with slope land use and conservation, effectively reduce or avoid hazards due to improper use of nature resources and reach the goal of sustainable development.
4. To teach students for independent and innovative thinking, and professional practice.
 - The SWC Dept. educates students in professional knowledge and practical skills, and develops their research potential and ability to respond to rapid changing environment.
5. To establish diverse values and international viewpoints.
 - The SWC Dept. strengthens its cooperative relationships with domestic and international institutes and universities. With global connections for applied science, engineering practice, technology development, the SWC department is pursuing the goal of being the best known research center in the Asia-Pacific region.

Curriculum

Providing professional SWC course training is our educational goal. A curriculum is planned in accordance with professional knowledge, relevant regulations and practical application.



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Core Research Topics

1. Analysis and prediction of meteorological and hydrological events
2. Stream control, sediment transport, river morphology
3. Soil erosion and countermeasures
4. Natural hazard mitigation, watershed management
5. Landslide prevention and mitigation, exploration geophysics
6. Vegetation engineering, ecological conservation, ecological engineering
7. Engineering and environmental geology, windbreak and sand stability
8. Debris flow research and countermeasures
9. Remote sensing, geographic information system
10. Environmental resource management, hazard warning and monitoring
11. Laws and regulations of soil and water conservation
12. Other urgent problems of soil and water conservation

Achievements

The SWC Dept. at NCHU is located in the central Taiwan where natural resources are abundant and natural hazards are common. With the advantages of this geographical location, the opportunities of research and development for soil and water conservation practices are exceptional. External projects of SWC Dept. are frequently funded by Ministry of Science and Technology and other governmental agencies. The SWC Dept. accommodates two buildings and owns many research and teaching facilities and laboratories, such as the hydraulic, soil mechanics, soil physics, hydrology, meteorology, surveying, vegetation, wind tunnel, physical slope modeling laboratories. In addition, an outdoor full scale dam breach test site in Huisun Forest Station is established for research and teaching. All this yields a rich harvest in research and enhances an international reputation.