

Dental Hygiene

1st Floor Taylor Health Science Bldg.
(435) 879-4905
<http://dixie.edu/health/dental/>

To find faculty & staff phone numbers and email addresses, please consult the University Directory (<http://www.dixie.edu/directory/directory.php>).

Program Chair

Patricia Wintch MSDH

Administrative Assistant for Dental Hygiene

Cindy Mulder

Clinic Secretary

Elyse Perkins

Health Sciences Advisor

Esther Pugmire

Dean

Eliezar Bermudez, Ph.D.

Administrative Specialist

Julie Goodsell

Program Description

The Dixie State University Baccalaureate of Science in Dental Hygiene Program strives to produce dental hygienists of the highest ethical and professional standards by providing an exceptional academic and experiential curriculum, serving the needs of the students, the University and the community at large. The program vision is to provide a progressive education which prepares the graduate to promote the art and science of the advancing dental hygiene profession.

Licensure

All Baccalaureate of Science in Dental Hygiene students will comprehensively prepare for success on the National Board of Dental Hygiene Examination and Regional or State Board Exams.

Accreditation

The Dixie State University Dental Hygiene Program is fully accredited by the Commission on Dental Accreditation (CODA). The Commission on Dental Accreditation, which operates under the auspices of the American Dental Association, is a peer review mechanism that include the involvement of members of the discipline, the broad educational community, employers, practitioners, then dental licensing community and public members. All of these groups participate in a process designed to ensure educational quality.

The Commission on Dental Accreditation can be contacted at:

211 East Chicago Avenue
Chicago IL 60611
(312) 440-4653
<http://www.ada.org>

Facilities

The Dixie State University Dental Hygiene Program is located on the first floor in the state-of-the-art Russell C. Taylor Health Science Building. The building is located at 1526 E. Medical Center Drive, St. George UT. The Dixie State University Dental Hygiene Program has a 24-chair campus dental clinic as well as a 4-chair mobile dental clinic.

Clubs

The Dental Hygiene students belong to the Student American Dental Hygienists Association (SADHA). The purpose of SADHA is to help students understand the unique demands and experiences student dental hygienists encounter on the road to graduating and obtaining licensure. The goal of SADHA is to empower, support, and develop student members by offering professional development, leadership, and recognition of achievements.

Services

The Dixie State University Dental Hygiene Program offers many dental hygiene services at a greatly reduced rate. Please contact Dental Hygiene Clinic at (435) 879-4900 for information.

Course Prefixes

- DHYG

Degrees & Certificates

- Bachelor of Science in Dental Hygiene (catalog.dixie.edu/programs/dentalhygiene/bachelor_of_science_in_dental_hygiene_new)
- Associate of Applied Science in Dental Hygiene (on hiatus)

Admission Requirements

Students are admitted to the dental hygiene program without discrimination regarding, gender, age, creed, ethnic origin, or marital status. Individuals should give careful consideration to the mental and physical demands of the program prior to making application. The pressure involved in undertaking the responsibilities of direct patient care should be considered when applying to the program.

To be considered for admission to the Dental Hygiene program, applicants must first apply to become a student of Dixie State University. All applicants must also complete a dental hygiene application.

Prerequisite courses which must be completed before applying to the Dental Hygiene program:

BIOL 2320 & BIOL 2325	Human Anatomy and Human Anatomy Lab	5
BIOL 2420 & BIOL 2425	Human Physiology and Human Physiology Lab	4
CHEM 1110	Elem General/Organic Chemistry ¹	4
FSDH 1020	Sci Foundations of Nutrition	3

¹ CHEM 1115 is co-requisite to CHEM 1110, but not required for Dental Hygiene program admission.

Prerequisite courses which must be completed before beginning the Dental Hygiene program:

ENGL 1010 or ENGL 1010D	Introduction to Writing Introduction to Writing	3
ENGL 2010	Interm Writing Selected Topics:	3
MATH 1040	Introduction to Statistics	3
PSY 1100 or PSY 1010	Human Development Through Lifespan General Psychology	3
SOC 1010 or SOC 1020	Introduction to Sociology Social Problems	3

The applicant must be admitted to Dixie State University, all prerequisite requirements must be met, and the following must be received by the application deadline:

- Official transcript showing grades for all pre-requisite classes submitted directly to the Dental Hygiene Department (in addition to the official transcript sent to the DSU Admissions Office). Applicants will be judged on their performance in the Chemistry, Biology, and Nutrition & Family Science classes listed above.
- Confirmation of 100 minimum clinical hours (must be on dentist's letterhead, signed by dentist and stating exact hours)
- Completed background check: Students with a history of misdemeanors, felony charges or convictions involving moral turpitude may not be eligible for state licensure and should contact the Dental Hygiene department before enrolling.

A pool of applicants will be invited to complete additional tests at Dixie State University on specific dates. Applicants will be invited to enroll based on their performance in specific courses and on the required tests. Students who enroll in the Dental Hygiene program will be required to provide proof of CPR/AED and health care provider First Aid certification and specific immunizations.

Class size for the Baccalaureate of Science in Dental Hygiene program: 20-24 students.

Career Opportunities *

Most dental hygienists work in private dental offices, but many provide preventive and educational services in community health clinics and hospitals, military installations, and schools. Graduates will be qualified for an array of challenging career opportunities in public health, administration, teaching, research, management and related fields.

Some dental hygienists advance into management positions and supervise other hygienists. Those who obtain a bachelor's or master's degree may become teachers, researchers, or administrators in dental hygiene programs. Some hygienists become dental sales representatives or work for drug companies.

Job Outlook *

Dental hygiene is among the fastest growing occupations. Employment of dental hygienists is expected to grow 19% from 2014 to 2024. Job prospects are expected to be favorable in most areas but will vary by geographic location.

Salary Range

The median annual wage for dental hygienists in May 2015 was \$72,330. The lowest 10 percent earned less than \$50,140, and the highest 10 percent earned more than \$98,440. However, salaries vary by geographical location, employment setting, and years of experience.

* Data from the Occupational Outlook Handbook, 2015

Courses

DHYG 1005. Intro to Dental Sciences. 1 Hour.

Recommended (but not required) for all students interested in entering the dental profession. Introduces fundamental concepts related to dentistry and will provide a basic education of the roles of various dental personnel, dental specialties, dental terminology, concepts, instruments, materials, and procedures. FA, SP.

DHYG 1010. Dental Hygiene Theory I. 4 Hours.

Covers the theoretical foundations of preventative oral health services used in the dental hygiene process. Emphasizes prevention of disease transmission, body mechanics, patient assessment, basic dental hygiene instrumentation, oral healthcare planning, extrinsic stain removal, topical anesthesia, ethical decision making, and the role and responsibilities of the dental hygienist. Prerequisite: Admission to the Dixie State University Dental Hygiene program. FA.

DHYG 1015. Dental Hygiene Clinic I. 3 Hours.

The first year dental hygiene student will practice introductory skills, including clinical and laboratory applications of elements taught in DHYG 1010, that are essential to rendering oral health services to patients with emphasis on basic dental hygiene instrumentation. Course fee required. Prerequisite: Admission to the Dixie State University Dental Hygiene program. FA.

DHYG 2020. Radiology. 2 Hours.

Covers the nature and production of X-rays and basic principles and procedures in oral radiology. Emphasizes radiation physics; radiation biology; radiation protection; basic intraoral radiographic techniques; film processing; and mounting procedures as well as supplemental intraoral, extraoral, and localization techniques; radiographic interpretation; and patient management topics. Prerequisite: Admission to the Dixie State University Dental Hygiene program. FA.

DHYG 2025. Radiology Clinic. 1 Hour.

Clinical portion of DYHG 2020. Students will be required to study and practice the production of both film and digital radiographs and basic principles and procedures in oral radiology. Emphasis is on radiation protection, basic intraoral radiographic techniques, film processing, and mounting procedures. Focus is placed on supplemental intraoral techniques, extraoral techniques, localization techniques, radiographic interpretation, intraoral camera imaging and patient management topics. Students will participate in taking intraoral and extraoral radiographs on mannequins and patients. Prerequisite: Admission to the Dixie State University Dental Hygiene program. Corequisite: DHYG 2020. Course fee required. FA.

DHYG 2035. Head/Neck Anatomy. 3 Hours.

The student will study the anatomy and physiology of the head and neck, including the bones, muscles, glandular tissue, innervation, blood supply, lymphatic drainage and temporomandibular joint. Emphasis is on location, function, nomenclature and clinical considerations of normal anatomy and variations. The course will include the anatomy of the most common local anesthetic injections and the anatomic spread of infection. Prerequisite: Admission to the Dixie State University Dental Hygiene program. FA.

DHYG 2040. Tooth Morphology. 1 Hour.

The student will be able to identify the structures that make up the roof, floor and lateral borders of the oral cavity proper. Included are the following areas of discussion: oral cavity, tooth functions, terminology, fundamental and preventative curvatures of the oral cavity, the dentition, the development, form, and eruption of the teeth, occlusion, dental anomalies, supporting structures of the teeth, clinical consideration of the dental anatomy, permanent and deciduous tooth identification and morphology. Prerequisite: Admission to the Dixie State University Dental Hygiene program. Corequisite: DHYG 2045. FA.

DHYG 2045. Tooth Morphology Lab. 1 Hour.

Laboratory portion of DHYG 2040. The student will be able to identify the individual teeth of the human dentition within and without the surrounding oral structures by evaluating the crown and roots of the teeth. The student will be able to draw to scale individual teeth and have practiced eye hand coordination, paying very careful attention to detail, utilize a digital caliper, carve and wax both a maxillary canine and mandibular molar tooth in wax. Prerequisite: Admission to the Dixie State University Dental Hygiene program. Corequisite: DHYG 2040. FA.

DHYG 2052. Oral Histology/Embryology. 2 Hours.

To acquire an understanding of how cells, tissues, and organs develop and function, with emphasis placed on the oral cavity, including a review of basic cells and embryologic developments. Histology of the structures of the oral cavity from embryonic stages through complete development are examined. Common embryologic defects of the oral cavity are covered also. Prerequisite: Admission to the Dixie State University Dental Hygiene Program. FA.

DHYG 2062. Care of Medically Complex Patients. 3 Hours.

Covers psycho-social, physical and oral characteristics of medically complex patients. Also included are the care and clinical management of special needs patients and management of medical emergencies in the clinical setting. Prerequisite: Admission to the Dixie State University Dental Hygiene program. FA.

DHYG 2510. Dental Hygiene Theory II. 3 Hours.

Continuation of the study of the theoretical foundations of preventative and therapeutic oral health services used in the dental hygiene process with emphasis on preparation for patient care. Prerequisite: Admission to the Dixie State University Dental Hygiene program. SP.

DHYG 2517. Dental Hygiene Clinic II. 4 Hours.

Clinical portion of DHYG 2510. Course fee required. Prerequisite: Admission to the Dixie State University Dental Hygiene program. SP.

DHYG 2520. General/Oral Pathology. 3 Hours.

To acquire functional knowledge base for the clinical diagnosis and understanding of soft and hard tissue lesions, syndromes, diseases and disorders affecting the oral cavity, head and neck. Covers diseases that affect the oral cavity primarily or as a secondary affect. Disease processes, clinical signs and symptoms and treatment of inflammatory, immunologic, neoplastic, infectious, developmental and genetic diseases will be studied. Prerequisite: Admission to the Dixie State University Dental Hygiene program. SP.

DHYG 2530. Pharmacology. 2 Hours.

Preparation, chemical formula, effects, and applications of pharmacological and therapeutic agents are analyzed, including medical agents used in the prevention and management of emergencies in the dental field. Emphasis will be placed on prescription and nonprescription drugs commonly used by patients which may require the alteration of treatment procedures and / or medications used in the dental setting. Prerequisite: Admission to the Dixie State University Dental Hygiene program. SP.

DHYG 2540. Periodontics I. 3 Hours.

Principles of periodontology involving assessment, etiology, risk factors, and classification of periodontal disease; basic treatment planning; and non-surgical periodontal therapy, as well as various types of therapeutic techniques available. Prerequisite: Admission to the Dixie State University Dental Hygiene program. SP.

DHYG 2580. Dental Materials. 1 Hour.

Introduction to various dental products and materials with a comprehensive background in the art and science of dental materials use, including the physical properties, advantages, and disadvantages of metals, hydrocarbons, and other dental materials, as well as evaluation of allergenicity and other complications that may arise as a result of the use of these materials. Prerequisite: Admission to the Dixie State University Dental Hygiene program. SP.

DHYG 2585. Dental Materials Lab. 1 Hour.

Laboratory portion of DYHG 2580. This course is designed to give the student exposure and experience using, handling, and understanding dental materials typically used in the dental office. Information learned will give the student the ability to accurately educate patients as the need arises. Prerequisite: Admission to the Dixie State University Dental Hygiene program. Corequisite: DHYG 2580. SP.

DHYG 2990. Seminar in Dental Hygiene. 0.5-3 Hours.

For students wishing instruction that is not available through other regularly scheduled courses in this discipline. Occasionally, either students request some type of non-traditional instruction, or an unanticipated opportunity for instruction presents itself. This seminar course provides a variable-credit context for these purposes. As requirements, this seminar course must first be pre-approved by the department chair; second, it must provide at least nine contact hours of lab or lecture for each credit offered; and third, it must include some academic project or paper (i.e., credit is not given for attendance alone). This course may include standard lectures, travel and field trips, guest speakers, laboratory exercises, or other non-traditional instruction methods. Note that this course is an elective and does not fulfill general education or program requirements. Fees may be required for some seminar courses and instructor permission will be optional at the request of the instructor.

DHYG 3015. Dental Hygiene Clinic IV. 5 Hours.

Service Learning course. Supervised experience in the clinical setting with continued development of clinical proficiency and decision making in rendering comprehensive preventive oral health services using dental hygiene processes. Emphasis on clinical appreciation and development of skills in maintenance, management and evaluation of the periodontal patient; treatment planning; disease control; scaling and root planning for the periodontally involved patient; and increased treatment in the expanded duties of the dental hygienist. Course fee required. Prerequisite: Admission to the Dixie State University Dental Hygiene program. FA.

DHYG 3020. Special Care Populations and Cultural Diversity. 2 Hours.

Students explore psycho-social, physical and oral characteristics of special needs patients. 'Health, Illness, and Healing' are explored across diverse cultures along with reflection of the student's own perceptions. Explores complex issues related to the delivery of healthcare both on a national level and individually to populations with unique cultural, socialization and clinical needs. Prerequisite: Admission to the Dixie State University Dental Hygiene program. SP.

DHYG 3030. Periodontics II. 3 Hours.

Continuation of DYHG 2540 with emphasis on aggressive forms of periodontal disease, periodontal treatment planning, maintenance procedures, surgical procedures, related systemic diseases and therapy. Prerequisite: Admission to the Dixie State University Dental Hygiene program. FA.

DHYG 3050. Legal & Ethical Issues. 2 Hours.

Current legal and ethical issues that influence the practice of dental hygiene. Prerequisite: Admission to the Dixie State University Dental Hygiene program. FA.

DHYG 3055. Expanded Functions Clinic I. 1 Hour.

Clinical application of expanded duties for the dental hygienist, including anesthesia, placing and removing rubber dams; matrix and wedge; placing bases and liners; placing, carving, and finishing amalgam restorations; placing and finishing tooth-colored restorations; placing temporary restorations; and four-handed dentistry. Course fee required. Prerequisite: Admission to the Dixie State University Dental Hygiene program. FA.

DHYG 3060. Community Oral Health. 2 Hours.

The dental hygiene student will have an introduction to the principles of dental public health, community oral health education and community program planning. This course will prepare the dental hygiene student for the role of dental public health practitioner, educator, consultant, and resource person in community settings. Prerequisite: Admission to the Dixie State University Dental Hygiene program. FA.

DHYG 3065. Community Health Services Lab. 1 Hour.

This is the lab/service learning portion of DHYG 3060. The course provides experiential learning of topics related to community health or service learning experiences. Students will provide clinical and/or educational services in a community or public health setting. Additional experiential opportunities explore professional roles of the dental hygienist in inter-professional healthcare settings and with diverse population groups. Prerequisite: Admission to the Dixie State University Dental Hygiene program. FA.

DHYG 3515. Dental Hygiene Clinic V. 5 Hours.

Service Learning course. Supervised experience in the clinical setting with continued development of clinical proficiency and decision making in rendering comprehensive preventive oral health services using dental hygiene processes. Emphasis on clinical appreciation and development of skills in maintenance, management and evaluation of the periodontal patient; treatment planning; disease control; scaling and root planning for the periodontally involved patient; and increased treatment in the expanded duties of the dental hygienist. Course fee required. Prerequisite: Admission to the Dixie State University Dental Hygiene program. SP.

DHYG 3555. Expanded Functions Clinic II. 1 Hour.

Continuation and amplification of skills developed in DHYG 3850 and DHYG 3055, emphasizing clinical experience in restorative expanded functions and four-handed dentistry. Course fee required. Prerequisite: Admission to the Dixie State University Dental Hygiene program. SP.

DHYG 3560. Community Public Health Administration. 2 Hours.

Course including the public health paradigm on the general policies, philosophies and current public/community health issues. Emphasis is placed on assessment of oral health needs, planning and evaluation of oral health promotion and disease prevention programs. Also assists identification of career opportunities within public health settings. Prerequisite: Admission to the Dental Hygiene program. SP.

DHYG 3565. Community Oral Health Lab. 1 Hour.

This course emphasizes community oral health field activity with practical experience in assessment, planning, implementation and evaluation of a public oral health program in a variety of community or public health settings. Additional experiential opportunities explore the professional roles of the dental hygienist in inter-professional healthcare settings and with diverse population groups. Prerequisite: Admission to the Dixie State University Dental Hygiene program. SP.

DHYG 3570. Dental Hygiene Practice Management. 1 Hour.

Students will learn the principles of practice management as it relates to dental hygiene, common expectations for employer and employee, and how to work with a team and manage a dental hygiene practice. Students will construct an effective resume and learn the process of working and standard interviews. Future trends in oral health care and their impact on practice will be examined. Prerequisite: Admission to the Dixie State University Dental Hygiene program. SP.

DHYG 3580R. Advanced Clinical Studies. 1-3 Hours.

Opportunity to acquire additional clinical experience (45 hours supervised clinical time per credit) as required to remediate, maintain, or improve the clinical skills of dental hygiene students or graduates. Prerequisites can also be met by having an AAS in Dental Hygiene; or by permission of the Dental Hygiene Program Director. Variable Credit: 1.0 - 3.0. Repeatable up to 3 credits subject to graduation restrictions. Course fee required. Prerequisites: DYHG 1015; and DYHG 2517; and DYHG 3015; and DYHG 3515. Offered by arrangement.

DHYG 3590. Oral Microbiology. 2 Hours.

Provides knowledge of mechanisms and structures of bacteria colonizing the oral cavity. Focus is on those specific bacteria that contribute to the pathogenesis of two major oral diseases specifically, periodontitis and dental caries. The role of biofilm in pathological outcomes and possible involvement oral bacteria have in exacerbation of systemic diseases are also explored. Prerequisite: Admission to the Dixie State University Dental Hygiene program. FA.

DHYG 3890. Pain Control Methodology. 1 Hour.

Designed for the student to gain an understanding of neurophysiology of pain and the methods to manage and control this for patients before, during and after procedures. They will gain a working knowledge of the mechanism of action of local anesthetic agents, how to titrate and deliver them to the patient safely. The patient evaluation of dental anxiety will be addressed and the efficacy and mechanism of action of nitrous oxide: oxygen sedation taught. The management of medical emergencies as related to the pharmacological agents used in the dental hygiene setting will be reviewed and evaluated. Prerequisite: Admission to the Dixie State University Dental Hygiene program. Corequisite: SP.

DHYG 3895. Pain Control Methodology Clinic. 1 Hour.

Clinical course allows the students to practice the administration of local anesthetic and nitrous oxide/oxygen sedation on patients. Will learn to handle to armamentarium of local anesthesia and deliver a number of anatomical nerve blocks of the oral structures. They will be introduced and practiced to a level of competency during the clinical laboratory sessions. Prerequisite: Admission to the Dixie State University Dental Hygiene program. SP.

DHYG 3990. Seminar in Dental Hygiene. 0.5-3 Hours.

For students wishing instruction that is not available through other regularly scheduled courses in this discipline. Occasionally, either students request some type of non-traditional instruction, or an unanticipated opportunity for instruction presents itself. This seminar course provides a variable-credit context for these purposes. As requirements, this seminar course must first be pre-approved by the department chair; second, it must provide at least nine contact hours of lab or lecture for each credit offered; and third, it must include some academic project or paper (i.e., credit is not given for attendance alone). This course may include standard lectures, travel and field trips, guest speakers, laboratory exercises, or other non-traditional instruction methods. Note that this course is an elective and does not fulfill general education or program requirements. Fees may be required for some seminar courses and instructor permission will be optional at the request of the instructor. Course fee required.

DHYG 4010. Biostatistics & Epidemiology. 2 Hours.

Online course covering principles and methods of epidemiologic investigation and the use of classical statistical approaches to describe the oral health of populations. Prerequisite: Admission to the Dixie State University Dental Hygiene program. SU.

DHYG 4020. Research Methodology. 2 Hours.

Online course covering fundamental and working knowledge of scientific method employed in oral health research. Students will perform critical analysis of research utilizing scientific method and evidence-based publications. Prerequisite: Admission to the Dixie State University Dental Hygiene program. SU.

DHYG 4030. Leadership & Group Dynamics. 2 Hours.

Online course focusing on the theories, concepts, and principles of leadership; emphasizes the development of leadership skills related to personal behavior, communication, organization, and self-examination; and explores the opportunity to develop leadership roles appropriate to the dental hygiene profession. Prerequisite: Admission to the Dixie State University Dental Hygiene program. SU.

DHYG 4510. Instructional Design and Practice. 2 Hours.

This course will introduce the A.D.D.I.E. model of instructional design. Students will understand instructional design models used in education and will develop a set of outputs by creating instructional material for an adult target population. Instructional strategies such as motivation, active learning, and discussion will be learned and applied in the design and development of instructional materials. Prerequisite: Admission to the Dixie State University Dental Hygiene program. SP.

DHYG 4570. Senior Project. 2 Hours.

Online capstone course provides students with the opportunity to apply knowledge, skills and values attained during the program curriculum to demonstrate competency required in student learning outcomes. Prerequisite: Admission to the Dixie State University Dental Hygiene program. SP.

DHYG 4990. Seminar in Dental Hygiene. 0.5-3 Hours.

For students wishing instruction that is not available through other regularly scheduled courses in this discipline. Occasionally, either students demand some type of non-traditional instruction, or an unanticipated opportunity for instruction presents itself. This seminar course provides a variable credit context for these purposes. As requirements, this seminar course must first be approved by the department; second, it must provide for a minimum of nine contact hours of lab or lecture time for each credit hour offered; and third, it must include some academic project or paper, i.e., credit is not given for attendance alone. This course may include traditional lectures, travel and field trips, guest speakers, laboratory exercises, or other non-traditional instruction methods. Note that this course is elective and does not fulfill general education or program requirements. Variable credit: 0.5 - 3.0. Repeatable for credit as topics vary. Course fee required. Prerequisite: Instructor permission. Offered by arrangement.

DHYG 4991. Seminar in Dental Hygiene. 0.5-3 Hours.

For students wishing instruction that is not available through other regularly scheduled courses in this discipline. Occasionally, either students demand some type of non-traditional instruction, or an unanticipated opportunity for instruction presents itself. This seminar course provides a variable credit context for these purposes. As requirements, this seminar course must first be approved by the department; second, it must provide for a minimum of nine contact hours of lab or lecture time for each credit hour offered; and third, it must include some academic project or paper, i.e., credit is not given for attendance alone. This course may include traditional lectures, travel and field trips, guest speakers, laboratory exercises, or other non traditional instruction methods. Note that this course is elective and does not fulfill general education or program requirements. Variable credit: 0.5 - 3.0. Repeatable for credit as topics vary. Course fee required. Prerequisite: Instructor permission. Offered by arrangement.

DHYG 4992. Seminar in Dental Hygiene. 0.5-3 Hours.

For students wishing instruction that is not available through other regularly scheduled courses in this discipline. Occasionally, either students demand some type of non-traditional instruction, or an unanticipated opportunity for instruction presents itself. This seminar course provides a variable credit context for these purposes. As requirements, this seminar course must first be approved by the department; second, it must provide for a minimum of nine contact hours of lab or lecture time for each credit hour offered; and third, it must include some academic project or paper, i.e., credit is not given for attendance alone. This course may include traditional lectures, travel and field trips, guest speakers, laboratory exercises, or other non traditional instruction methods. Note that this course is elective and does not fulfill general education or program requirements. Variable credit: 0.5 - 3.0. Repeatable for credit as topics vary. Course fee required. Prerequisite: Instructor permission. Offered by arrangement.